Jail Health Services

Electronic Health Record System

Business Case

March 31, 2005

PUBLIC HEALTH/JAIL HEALTH

EXECUTIVE STEERING COMMITTEE

Dorothy Teeter, Chief of Health Operations, Public Health (Sponsor & Chair)

Kathy Uhlorn, Chief Financial Officer, Public Health

Bette Pine, Jail Health Services Manager

Ben Sanders, Jail Health Services Medical Director

Michael Gedeon, Department of Adult and Juvenile Detention

Patty Schwendeman, MIS Manager, Public Health

Teri Wiseman-Kuhlman,Medical Record Program Manager, Public Health

Marianne Adler, Jail Health Services Fiscal & Program Manager

Judy MacCully, Jail Health Services Operations Manager

Lee Pollock, Electronic Health Record Project Manager

EXECUTIVE SUMMARY

The case for implementing an electronic health record in Jail Health Services (JHS) was first established through the Wellcon Report[1] presented to the JHS Proviso Work Group in June 2003. Jail Health's Strategic Business Plan[2] framed the Electronic Health Record System project as key within JHS' strategic direction and outlined a series of workflow and business process redesigns aimed at delivering the expected outcomes as recommended in the Wellcon Report. JHS expects that improving the management of health care information through implementation of an electronic health record will streamline work processes; improve the quality, timeliness, and appropriateness of care; reduce duplication; lower the overall cost of care; and, reduce risk of adverse clinical outcomes and litigation. During the presentation of the Wellcon report it was established that JHS could, with full implementation of the cost saving and risk reducing recommendations in the Wellcon Report, realize a 20% reduction in the annual operating budget. The Electronic Health Record is just one of the recommendations in the report. It is, however, viewed as a critical tool that will enable Jail Health Services to implement other risk reducing and cost saving recommendations.

The approach to the Electronic Health Records System project is to select a software solution with a robust and tested electronic health record application that can meet at least 80% of Jail Health Services business requirements; assist in achieving JHS objectives; meet company viability threshold; meet King County and Public Health Information System Technical requirements; and provide a sufficient return on investment within 7 years.

There are three electronic health record options, based on a response to the County's Request for Proposal that would meet the technical requirements. An analysis indicates that there is a significant cost differential between Option 1 and Option 2 in both the one-time expense and in the annual on-going expenses. Option 3 is considered high risk because of the immaturity of the health care product. This developer has a scheduled release of key modules in the spring of 2005, which may bring it to the 80% threshold for meeting business requirements. The preferred vendor, Option 1, has a strong history and experience working in correctional settings. The application[3] offers a superior set of benefits and the preliminary cost estimates fall within defined financial parameters.

The preliminary estimates of the cost of implementing the solution with the preferred vendor are $1,965,000 with an on-going annual expense of approximately $504,000. Looking at the overall summary of expected benefits the Steering Committee concluded that Option 1 met all of its criteria outlined in their approach and that it represented a solid investment. By 2009 (year 3 of implementation) JHS expects an annual net savings of $706,000 per year. The Executive Steering Committee considered it "sufficient" that the project, by year 7, will have re-paid the $2,000,000 investment and have provided an additional accumulated savings of $1,029,000.

As a result of the analysis underlying the Business Case, the Executive Steering Committee recommends a rigorous and detailed evaluation of the preferred vendor (Option 1) and its application. This detailed evaluation is to be conducted in a series of steps including scripted

product demonstrations, customer visits, and corporate visits to assure that the application can meet Jail Health Services' requirements and that the company can deliver on its promises. Additionally, during the evaluation the implementation and on-going costs will be refined through detailed discussions with the preferred vendor, the Department of Adult and Juvenile Detention, and other potential partners[4].

If the detailed evaluation improves or continues to validate continues the cost/benefit assessment contained in the Business Case, contract negotiations would lead to the signing of a contract. Implementation planning with the vendor, assuming expedited contract negotiations, would begin in the Fall of 2005 with a go-live date of no later then January 2007.

There are two potential drawbacks to this recommendation. The first scenario is that the preferred vendor and the application are not able, under further evaluation, to deliver the benefits as expected. A second scenario is that the cost to implement and/or the time to implement has been underestimated therefore changing the factors in the cost benefit analysis and resulting in insufficient return on investment within the expected 7 year period.

A fall back position would be to conduct the same rigorous review with Option 3 assuming that they have met their projected release schedule. The second fall back is to issue a second Request for Proposal to determine if there is another vendor in the market who can meet the business requirements at the established price point.

The Steering Committee believes that Jail Health Services' Electronic Health Record System Business Case clearly documents the benefits of investing in an Electronic Health Record; offers a solid comparison of the different market offerings; reports fairly on the expected costs and return on investment; and results in an accurate and thorough review of the vendor options.

TABLE OF CONTENTS

INTRODUCTION

In 1991, the Institute of Medicine (IOM) issued a report[5] concluding that computer-based patient records are an "essential technology" for health care and that electronic records[6] should be the standard for medical and all other records related to health care. Since that report numerous healthcare associations, societies, the federal government, and private industry have hosted initiatives to advance the standards and the technology related to Electronic Health Records. The promise that has spurred this work on is that of increased quality; improved care continuity and coordination; reduction of errors; and improved efficiency (with the hope of lower cost) throughout the health care delivery system. Experience and studies are now revealing that electronic health records and even components of electronic health records can improve care and reduce costs.

Jail Health Services (JHS), a section of Public Health Seattle & King County, provides a full continuum of health care services[7] to inmates housed in King County's correctional facilities[8]. Among these services are health assessment, preventative care, acute/episodic ambulatory care, specialty referrals, infirmary level care, psychiatric care, and chronic care management. The inmates bring into jail a complex set of medical and psychiatric health care needs, which require both 24/7 emergency and scheduled medical response within the facilities. This set of health care delivery requirements looks very similar to community based systems for managing the care of complex large populations. Like its community counterparts this health care delivery system faces many of the same problems and risks in delivering care.

Contributing to the complexity of the Jail Health Services health care system is rapid inmate turnover, the transfer of inmates from one facility to another, and delivery of health care services within a correctional environment. Services are provided by a FTE complement of 158 medical and administrative staff that provide or support an average of 139,000 medical encounters[9] a year. The jail admits about 55,000 arrestees each year, with an average daily population of 2,200, and an average length of stay of 18 days.

The Jail Health delivery system, like a number of community-based delivery systems, suffers from the inefficiencies and deficiencies of a paper-based medical record system, which impacts the quality of care, cost, and jail operations. The Wellcon Report[10], commissioned by the King County Council under a 2003 Proviso to improve JHS operations and delivery of constitutionally mandated care, made a series of recommendations addressing problems that represented a risk or liability to Jail Health Services, Public Health, and King County. A key recommendation within this report was that Jail Health Services implement an Electronic Health Record System to provide pertinent healthcare management data; improve efficiency of multitudes of internal processes; automate many healthcare functions thereby reducing staffing needs; increase productivity of all staff; and, eliminate duplication of effort. Sixty-four percent of the identified areas for improvements recommended in the Wellcon report would be enabled, to some degree, by the implementation of the Electronic Health Record[11]. This implementation would significantly improve JHS success in achieving the savings suggested by the Wellcon report.

The Wellcon recommendations were used to develop JHS's three year Strategic Business Plan that identifies practice improvements and infrastructure changes. This Plan - Positioning Ourselves for the Future[12] establishes the goal of acquiring and implementing an Electronic Health Record.

As a provider in a jail environment, JHS is working closely with Department of Adult and Juvenile Detention (DAJD) on all relevant aspects of its Strategic Business Plan. This partnership extends to the Electronic Health Record to ensure that overlapping business processes maximize the benefit of the implementation for both agencies.

The purpose of this Business Case is to:

- Document the benefits of investing in an EHR;
- Compare and contrast electronic health record options currently available in the market;
- Report on the costs and demonstrate the return on investment; and,
- Determine if there is a preferred vendor(s) and outline the steps for further detailed evaluation

SECTION I: JAIL HEALTH SERVICES VISION FOR HEALTH INFORMATION MANAGEMENT

Strategically, the Electronic Health Record is an essential enabler for Jail Health Services to achieve its vision of health information management. Within this vision Jail Health Services manages health information as a mission-critical function through a system that maintains a high level of integrity for business and legal purposes.

Jail Health Services health information management[13]system ensures the availability of clinical, demographic, financial, and administrative data to facilitate real-time health care delivery and critical health and business related decision making for multiple purposes across diverse organizations, settings, and disciplines.

To achieve this vision Jail Health Services will move from its paper-based medical record model to an electronic health record that will improve the quality and safety of inmate care and achieve efficiencies in the healthcare delivery system.

It is with this vision and expectation that Jail Health Services reviewed five critical problems areas within Jail Health Services and explored opportunities for improvements that would result with the implementation of an Electronic Health Record.

SECTION II: DESCRIPTION OF PROBLEMS AND IMPROVEMENTS

This section of the Business Case explores in more detail five critical problem areas that Jail Health Services' face with its current paper-based medical record and the manual processes currently used for managing health care information. The five critical problem areas are: managing the paper medical record; pharmacy and medication administration; charting and documentation; results reporting; and staff assessment of current health care information management.

The first four critical problem areas are presented in a "From→To" format identifying the situation in the current environment and imagining how this problem would be addressed in an environment using an electronic health record. Where appropriate, the "From→To" is supported with data and references from the current literature on Electronic Health Records. The fifth critical problem area addresses staff satisfaction with the current environment and provides a baseline as the Steering Committee targets improvements in staff satisfaction. Each problem area concludes with a list of objectives the Steering Committee expects to achieve as a result of implementing an Electronic Health Record.

Problem Area #1: Managing the Medical Record

Overview

All care delivered to an inmate by Jail Health Services is documented in that individual's paper medical record. This record is held to privacy and security standards set forth by HIPAA[14] and

the health care industry. Each request for service and the resulting encounter is documented in the paper chart and noted in the progress notes. The medical record contains all the information related to the medical care requested, ordered, and received by each inmate. Diagnosis and medical plans for treatment are also included.

FROM managing the medical record in the Current Environment TO managing health care information with an Electronic Health Record System

Issue	Current Environment	Electronic Health Record
Record Availability	**From** the paper record not always being available for a clinical encounter or an encounter being delayed while the chart is being located. **From** struggling to meet the standard on availability and use of health records[15] set forth by the National Commission on Correctional Health Care (NCCHC). **From** only one person having access at a time with clinical information and clinical decision-making managed in a liner fashion.	**To** records consistently available for any authorized purpose and clinicians having the information they need organized in a manner consistent with the workflow of their practice. **To** meeting NCCHC standard on availability of health records through secure information access to the electronic record from all points of care and at the time of clinical decision-making. **To** the medical record being accessed by multiple people simultaneously allowing for more timely chart completion and more timely availability of key information.
Record Accessibility (time to find)	**From** the search for a chart taking up significant amount of Medical Records staff time and delaying patient care.	**To** the time it takes for a clinician to look up a patient in the system.

	From experiencing, as others in the community experience, delays in the delivery of care as personnel search the facility for the complete record. [16] Note: A recent JHS study on the time spent to locate the chart[17] indicates that Medical Records staff spend over 5,000 hours annually searching for charts at an annual cost of approximately $117,000.	**To** managing a system that supports the concept that health care information is essential element of providing quality care and assuring continuity in that care. Note: Data from implementation of the EMR in Salt Lake County indicates that time to find a chart before the EMR = 21.3 minutes to after the EMR = 2 seconds[18]
Transportability	**From** difficulty in moving a record from one location to another. **From** risking the negative effects or bad outcomes related to missing critical medications or treatments when an inmate is transferred between the two facilities in King County. **From** summaries of care being manually transcribed for inmates transferred to Yakima and from the copying of charts for those inmates transferred to prisons. Note: Jail Health records indicate that in 2004 9,800 inmates were transferred from Seattle	**To** easily accessing clinical information from multiple locations without having to transport a physical record. **To** having the medication and treatment information immediately available to the staff on the receiving end of a transfer to ensure continuity of care. **To** summaries of care and/or portions of the medical record being printed on laser-generated forms leading to more complete and legible documents that improve the continuity of care and allow for tracking that documents have been transmitted.

	(KCCF) to Kent (RJC) and it is estimated that complete records arrived for only 10% of these in time for the 12 hour review window established by NCCHC standard on Transfer Screening[19].	
Completeness & Organization	**From** data coming into the paper medical record from many sources, locations and in many formats. **From** experiencing large stacks of back filing and risking that critical clinical information will not be in the medical record at the time a clinician needs it for a clinical decision. **From** manually checking each chart to find documents that are missing (e.g. History and Physical Exams, Operative Notes, Discharge Summaries) or documents that are not signed by the attending physician. Note: NCCHC holds JHS accountable to standards related to complete records and standards of chart completion.	**To** a system that has the capability to link to multiple data sources under one look up function. **To** improving the timeliness of all the relevant information being in the right place at the right time for the right patient with direct data entry and/or scanned documents. **To** conducting an automated chart review by establishing certain standard parameters within the system. Identifying the data that must be completed within a specific time frame, including availability in the record and signature by the physician. The unsigned documents are noted for further attention and placed on a work list. Note: Data from implementation of the EMR in Salt Lake County indicates a change in the filing lag time from 13 days

		before the EMR to < 24 hours after the EMR[20].
Stability	**From** experiencing lost or destroyed records which are impossible to replicate.	**To** having records electronically backed-up and all electronic components retrievable this meets HIPAA security requirements.
Record Linkage	**From** records being linked through various software systems that each recognizes different key elements within the record and therefore having no integration. **From** outside correspondence being filed in a tabbed section of the chart with an inability to cross reference it to physician notes or actions requested.	**To** having one comprehensive data source or limited data sources that are all linked under one look up function. **To** outside correspondence and miscellaneous forms scanned and indexed into the patient record.
Data Retrieval	**From** clinical data not being easily extracted nor being able to guarantee that you have a complete record. **From** not being able to easily track or document that appropriate actions have been taken and recorded in the patient's record.	**To** being able to access data in multiple queries and locating incomplete portions of the record. **To** having the system track events occurring within the facility and ensure the events are documented in the patient's chart according to protocol. An example is: A patient admission (based on Encounter Type, Admission Type, and Patient Type) is tied to a document (office visit note, release of information, etc.). The document must be

		sent to the chart within X hours and signed by the provider within X hours
	From a high degree of difficulty in extracting data from the paper records for Quality Assurance and Utilization Review.	**To** data easily available and routinely reported for Quality Assurance and Utilization Review audits.
Chart Pulls	**From** a large number of expensive chart pulls for daily clinics.	**To** providers interacting with the inmate's medical record during the clinic visit and chart pulls for clinics significantly reduced over time as providers become more comfortable with new visit workflow.
	Note: An analysis of the Medical Records Work Processes[21] estimates that in 2005 Jail Health Services will spend over $620,000 on chart pulls required for clinical visits or review of treatments.	Note: In a study[22] conducted in Allina Health system chart pulls reduced by 65% in year 1 of implementation of an electronic health record.
Space and Chart/Forms	**From** dedicating significant amount of square footage in the Jail Health area to store paper records and chart supplies.	**To** using some space to hold computer equipment necessary to convert documents to electronic format and shifting existing record storage space to staff areas.
	From spending over $18,000 annually on materials used to assemble medical records.	**To** computer generated forms and charts eliminating the purchase of pre-printed

	Note: Currently JHS has over 61,000 active medical records[23]. Approximately 55,000 of these records are stored on site and 6,000 active records are stored off site at US Archives because of limitations of onsite space.	forms. Note: In the Integrated Security Project (jail remodel) Jail Health Services envisions better use of its space in the Downtown jail for staff areas instead of records storage.
Safety and Security of Care	**From** risking the consequences of using incomplete data for clinical decision making as a result of inconsistent availability of the medical record. **From** manual system and procedures to secure the privacy of the medical record with no means of auditing.	**To** all information on an inmate available for all visits and clinical decision-making when data is entered and maintained on a timely basis. **To** full multi-level security (e.g., by Facility, Department, Section, Document, User, and User Type) and controlled confidentiality and information access with detailed audit reports.
Risk Management	**From** the current paper medical chart that is seen as both high risk and high cost. Note: The Wellcon Report[24] identified Jail Health Services' current paper medical chart as both high risk and high cost to Public Health and the County.	**To** an electric health record that establishes required fields leading to improvements in documentation for future reference. Note: The improved documentation helps deter and defend malpractice litigation. Research confirms that computer-based patient records improve documentation over

		hand-written records, both in volume and accuracy[25].

Conclusion

Envisioning this change from managing medical records in JHS current environment to managing health care information with an electronic health record the Steering Committee expects that implementing an electronic health record will result in:

1.1 Pertinent health care data being readily available to health care staff in a timely manner to optimize patient care and improve patient safety.

1.2 A reduction in the amount of time to locate health care information resulting in more efficient use of staff resources.

1.3 Improved efficiency in health care operations through decreased number of paper record chart pulls and a decrease in the time required to get information into the medical record.

1.4 Modifying risk of litigation through improved health care documentation and chart legibility.

Problem Area #2: Pharmacy and Medication Administration

Overview

A large part of the Jail Health Services' medical practice involves the verification of current medications at the time of booking, the ordering and filling of necessary prescriptions through the Jail Health Services' licensed pharmacies in both Kent and Seattle. While some medications are delivered to inmates according to procedures that allow self-administration (keep on Person – KOP) a large percentage are delivered to inmates in single doses by nursing staff when drugs have the potential for abuse or special housing restrictions preclude self-administration. The

pharmacy has a system in place for medication preparation, dispensing services, and quality assurance. However, the current system between the provider's orders, pharmacy dispensing, and medication administration introduces some risks and presents an opportunity for streamlining for improved cost, efficiency, and safety.

FROM managing pharmacy order and medication administration in the Current Environment TO managing these functions with an Electronic Health Record System

Issue	Current Environment	Electronic Health Record
Order Entry	**From** hand written orders with no immediate feedback to providers regarding their prescriptive choice related to allergies or contraindication.	**To** orders generated as a part of visit notes where providers are required to stay within the formulary and are notified of potential drug interactions directly at the time of the order so adjustments can be made.
	From a number of errors and omissions in the writing of the orders that then need to be adjusted by the provider sometimes causing delay in filling the prescription.	**To** providers using order templates that require all fields be completed correctly prior to sending the order.
	From orders with phone verification and co-signed the following day by provider on call.	**To** the on call provider using the system to email or fax prescriptions with an electronic signature at the time of the order.
	From a process that involves over 27 steps between writing an order and having the medication delivered to the med room for	**To** a 60% reduction in the number of steps using order entry through an electronic health record system.

	administration. Note: A study of the process for writing and filling a non-narcotic prescription[26], which is just a subset of the Jail Health Services Medication Administration process, revealed that there are over 27 key steps involved in filling a new prescription. This activity involves the provider, nurse, pharmacy assistant, and pharmacist. Note: In 2004 Jail Health Services filled over 100,500 prescriptions, a monthly average of over 5,000 new and over 3,000 refills.	Note: Steps were reduced from 27 to 11 with use of an E H R according to a recent JHS study[27].
Adherence to Formulary	**From** providers ordering according to their individual profile without the benefit of review. **From** providers receiving no offer of alternatives or assistance in the current system for appropriate management of drug utilization.	**To** providers ordering from a formulary within the system and having non-formulary choices sent for review to the Medical Director for approval. **To** a system that connects the ordering to a databank where there are detailed comparisons of average wholesale cost; therapeutic class analysis according to multiple national standards with respect to drugs; and therapeutic substitutions based on the formulary recommendations.

	Note: Not unlike its health care counterparts in the community, Jail Health Services has limited ways to manage its pharmaceutical budget line. In 2005, this line item represents almost 9% of Jail Health Services total budget and is the fastest growing line item at a average annual increase of more than 20%.	Note: In a study conducted by Wang, an expert panel[28] estimated that alternative drug suggestion reminders would save 15% (range of 5% to 25%) of total drug costs per year.
Record of Medication Administration	**From** the manual process for noting the changes and redirecting the paper-based Medication Administration Records (MARs). Note: An analysis[29] of the nursing resources assigned to the task of preparing for medication pass indicates that nurses spend almost 8,400 hours annually on this function. Assuming that 80% of this time is related to the updating and rerouting and managing the MAR, this represents a cost of almost $ 133,000.	**To** using an electronic MAR to assist with medication administration thereby greatly reducing the amount of time in managing the MARs as well as reducing errors in transcribing and copying orders.
Safety of Care	**From** not offering alerts to providers of possible adverse drug events and no way to track preventable adverse drug events (ADE's).	**To** using an alert system that notifies the provider of a possible ADE and track preventable adverse drug events as a quality improvement and patient safety improvement activity.

	Note: The patient safety literature shows that adverse drug reactions occur, most commonly in patients taking multiple medications. Numerous "sound-alike" medications get confused or misinterpreted. Poor handwriting is misinterpreted by pharmacists and by patients. [30]	Note: An expert panel involved in the implementation of an Electronic Medical Record studied by Wang[31] indicated that ADEs could be reduced by approximately 34%.

Conclusion

Envisioning this change from managing pharmacy ordering and medication administration in JHS current environment to managing these functions with an electronic health record the Steering Committee expects that implementing an electronic health record will result in:

2.1 Improved legibility of orders and assurances that renewals/refills are exactly duplicated.

2.2 Improved patient safety with alerts immediately displayed for providers regarding sensitivities and drug-drug and food-drug interactions so that modifications can be made.

2.3 Improved compliance to the approved pharmacy formulary leading to a reduction in the cost of pharmaceuticals.

2.4 Direct receipt of electronic orders changing work flow in pharmacy eliminating the need for pharmacy staff to do direct entry of the order.

2.5 Increase in the accuracy of medication administration and a decrease in staff time needed to prepare for medication pass.

Problem Area #3: Charting and Documenting

Overview

Each encounter within Jail Health Services results in a chart note. The health care team relies on this record of events and clinical information to provide continuity of care in treatments and to assure quality in clinical decision making. This documentation constitutes a legal record and represents a picture of all care provided to an individual. As with reports throughout the health care industry, the quality and legibility of Jail Health Services documentation has been raised as a high-risk issue.

FROM the charting and documenting practices in the Current Environment TO charting and documenting with an Electronic Health Record System

Issue	Current Environment	Electronic Health Record
Time spent in charting	**From** clinicians spending hours each day hand writing notes and updates in the paper medical records frequently documenting the same note in multiple locations of the chart. Note: Jail Health Services' nurses spend over 26,400 hours annually doing paperwork, charting and writing in logs[32].	**To** using a systematic data entry process with JHS designed templates to capture relevant clinical information at the point of care so that the most current information is available to other care-givers in real time. Note: EMR reduces that amount of time nurses spend working with medical records. One estimate[33] is that EMR results in a 15 percent reduction (1.2 hours per day) of a nurse's time working with the patient's record.
Accessibility of information	**From** clinicians searching the chart for the most recent information and shuffling through accumulated stacks of paper "to be filed," to locate additional clinical information at the	**To** having available the relevant clinical information necessary for a clinical decision organized and presented in a form and format that is easy to use and includes the

	time a clinical decision needs to be made. **From** a paper-based medical record system that includes related information and documents in separate labeled sections of the chart.	most current information. **To** using the system's relational database and document imaging capacity to show related documents and information that are a part of the health record.
Communication between Providers	**From** clinicians passing information related to patient care using Post-its and route and transfer slips.	**To** using a system that includes electronic mail (secured) to direct specific inmate health care information to team members supporting the care needs of the individual, along with a tracking system to assure that information was transferred.
Completeness of documentation	**From** inconsistency in the completeness of documentation within the current system leading to potential for bad outcomes.	**To** using a structured format for data entry leading to improvements in the quality and the thoroughness of the documentation.
Chart Review Time	**From** clinicians spending 2 to 3 hours a day combing charts looking for critical information in order to sign orders, adjust care plans, or order refills on prescriptions. **From** taking an average of 5 ½ minutes per chart. Note: The most expensive resources in the healthcare environment are physicians and nurses.	**To** a system that provides a Clinical Summary**,** including trend analyses. **To** reviewing a chart in under 2 minutes. Note: The EHR system is designed to increase clinician efficiency, sometimes by as much as 50%, by relegating clerical work to lesser-paid staff and delivering timely,

		organized, meaningful information to the key providers.
Safety of Care	**From** inconsistent follow up on care recommendations and no systematic tracking of compliance measures.	**To** using workflow management tools that assure that tasks, which are required to be done in support of patient care, are assigned and noted when complete.
Data Retrieval	**From** a labor intensive and disorganized approach to using existing data for support in clinical decision-making, CQI studies, and outcome studies.	**To** using increasing amounts of codified information to improve day-to-day clinical decisions and CQI studies.
Risk Management	**From** inconsistent quality, legibility and content of documentation in the medical records putting Jail Health Services, Public Health and King County at risk should the chart be introduced during litigation.	**To** legible and organized documentation of a complete medical record leading to improved communication between clinicians resulting in improved patient outcomes and reduced risk of litigation. Note: Research confirms that computer-based patient records improve documentation over hand-written records, both in volume and accuracy[34].

Conclusion

Envisioning this change from charting and documenting practices in JHS current environment to charting and documenting with an electronic health record the Steering Committee expects that implementing an electronic health record will result in:

3.1 Pertinent health care data being readily available to nursing staff and ease of data entry post patient encounter requiring less nursing time working with the patient's record.

3.2 Improved clinical decision making through critical clinical data displayed graphically and reported over time.

3.3 Improved continuity of care through improved communication between providers.

Problem Area #4: Results Reporting

Overview

Currently there is a manual system for alerting provider that results have been returned on labs and other tests. This system causes delay in provider notification and in the information being filed in the chart. Frequently, a provider will see the inmate a second time without the benefit of the test or lab results.

FROM results reporting in the Current Environment TO an integrated results reporting function within an Electronic Health Record System

Issue	Current Environment	Electronic Health Record
Timely availability of results	**From** lab and test results sitting in "to be filed" baskets making its way into the patient's paper medical record, a process that can take days.	**To** direct entry or scanning results greatly reducing the time delay and improving diagnosis and treatment.
Repeat Labs	**From** providers repeating tests previously ordered. Note: It is estimated[35] that 20% of the lab tests paid for by Jail Health are unnecessarily repeated due to lack of medical information	**To** providers having the benefit of lab results during their visit with the inmate and avoiding unnecessary repeat lab tests.

	available or inaccurate and incomplete information in the patient's medical record. This translates into an unnecessary expense of $20,000 per year[36].	

Safety of Care	**From** the risk of missing a critical change in a lab value because of a manual system for monitoring results over time. **From** a manual route and transfer system of the paper result and the paper medical record so that lab results are reviewed and a provider sign off occurs.	**To** quickly detecting trends by viewing graphed results over time providing key clinical information for clinical decision making. **To** system-generated patient summary reports and daily orders sent to the physician's inbox for review and signature.
Continuity of Care	**From** limited or no information provided to an individual at the time of release related to the treatment they have received or recommendations for follow-up once released.	**To** a client-specific discharge instructions and a clinical summary for the referral source can be printed and provided to the individual at time of release.

Conclusion

Envisioning this change from results reporting in JHS current environment to an integrated results reporting function within an electronic health record the Steering Committee expects that implementing an electronic health record will result in:

4.1 Improved diagnosis and treatment as providers have timely access to test results.

4.2 A reduction in the number of duplicate tests ordered by providers.

4.3 Improved compliance for medical record compliance with notification to providers of unsigned notes and orders.

4.4 Improved continuity of care and referral management by providing inmates with discharge information related to their care while incarcerated.

Problem Area #5: Staff Assessment of Importance and Satisfaction

Overview

In an online survey[37] conducted between February 9th and February 18th, 2005, clinical and non-clinical staff were asked to assess the importance of particular medical records-related issues as well as their satisfaction with the current system in place at JHS. There were 65 total respondents, 47 clinical and 18 non-clinical. This survey represents a pre-implementation measure and is intended to provide a baseline measure on staff satisfaction.

From staff satisfaction with the current system for managing health care information to the satisfaction of staff in an environment where an electronic health record is being used to support clinical care.

Results of Questions asked of Clinical and Non-Clinical Staff –
Satisfaction with the Current Environment

	Clinical Staff		Non-Clinical Staff	
Question	**Importance of Issue Avg. Rating**	**Satisfaction with Current Practice Avg. Rating**	**Importance of Issue Avg. Rating**	**Satisfaction with Current Practice Avg. Rating**
Organization of patient records.	Very important	Dissatisfied	Very important	Somewhat satisfied

Ease of accessing a patient's MR.	Very important	Dissatisfied	Very important	Dissatisfied
Confidentiality and security of patient records.	Very important	Somewhat satisfied	Very important	Somewhat satisfied
The efficiency with which you can communicate patient info.	Very important	Dissatisfied	Very important	Dissatisfied
The medical records system contributes to the quality of care provided.	Very important	Dissatisfied	Very important	Dissatisfied
Degree of confidence in the current Route and Transfer system.	N/A	Dissatisfied	N/A	Dissatisfied
Effectiveness of Route and Transfer system.	N/A	Dissatisfied	N/A	Dissatisfied

Beyond the questions asked of both clinical and non-clinical staff, there were some questions that were specifically asked of each group, based on their area of expertise and knowledge of the current system.

Results of Questions Asked of Clinical Staff Only-
Satisfaction with the Current Environment

Question	Clinical Importance of Issue Avg. Rating	Clinical Satisfaction with Current Practice Avg. Rating
Ease of finding specific information within a patient's medical record.	Very important	Dissatisfied

Ease of tracking results of clinical operations.	Very important	Dissatisfied
Ease with which medical records help prevent overlooked patient information	Very important	Dissatisfied
Medical records as a tool to help deliver preventive care.	Very important	Dissatisfied
Systems are in place to prevent prescriptions for medications that might result in allergic drug reactions or drug-drug interactions.	Very important	Dissatisfied

Results of Questions Asked of Non-Clinical Staff Only-
Satisfaction with the Current Environment

Question	Non-Clinical Importance of Issue Avg. Rating	Non-Clinical Satisfaction with Current Practice Avg. Rating
Accessibility of medical record information.	Very important	Dissatisfied
Information is accurately and clearly documented by clinical staff into the medical record.	Very important	Dissatisfied
Contribution of medical records to the overall efficiency of business operations.	Very important	Dissatisfied
Minimal time spent accessing medical records.	Very important	Dissatisfied

The medical records system contributes to the overall quality of work life.	Very important	Dissatisfied

"Describe the ways you feel an Electronic Health Record would benefit our current practice."

A question was included in the Assessment Survey designed to gain a preliminary measurement of staff's attitudes about the implementation of an electronic health record. An open-ended statement was posed. Below is a sampling of staff's response:

- "We will eliminate the need to find charts all the time and to send records back and forth between sites and archives."
- ". . . Very beneficial in terms of instant access for both sites to patient medical information."
- "It will greatly reduce medical errors while providing us a favorable return on investment over time."
- "Instant, up to date information on patients, which is crucial for providers."
- "Better organization of information; easier access to information; more effective patient care; better communication among staff; less care overlooked."
- "EHR would greatly assist in a higher efficacy of health care delivery in JHS. Ease in accessing information, increased speed in obtaining information, less time spent physically searching for charts and patient information would be more cost effective for the department and allow for better time management of staff."
- "It would allow timely communication between all providers, from prescription writer to pharmacy to prescription deliverer."

Conclusion

Envisioning the change in the level of staff satisfaction with the current system for managing health care information to the satisfaction of staff in an environment where an electronic health record is being used to support clinical care the Steering Committee expects that implementing an electronic health record will result in:

5.1 Improved staff satisfaction with the ease of accessing the health record.

5.2 Improvements in non-clinical staff's satisfaction with their overall quality of work life.

5.3 Improvements in the level of satisfaction that staff report in the efficiency of communication related to a patient's care.

SECTION III: SUMMARY OF OBJECTIVES

Based on a review of the literature and on conversations about what is achievable as JHS moves from the current paper-based medical record to an electronic health record the Steering Committee established a set of objectives. These objectives constitute one component of the evaluation model the Steering Committee established to decide on a preferred solution as well as the foundation for the measurement plan which will be established during the implementation planning stage along with the selected vendor. The measurement plan will include a measurement definition, an expected target, and reporting timeframes.

Below is a summary of the objectives that Jail Health Services expects to achieve with the implementation of an electronic health record:

1.1 Pertinent health care data being readily available to health care staff in a timely manner to optimize patient care and improve patient safety.

1.2 A reduction in the amount of time to locate health care information resulting in more efficient use of staff resources.

1.3 Improved efficiency in health care operations through decreased number of paper record chart pulls and a decrease in the time required to get information into the medical record.

1.4 Modify risk of litigation through improved health care documentation and chart legibility.

2.1 Improved legibility of orders and assurances that renewals/refills are exactly duplicated.

2.2 Improved patient safety with alerts immediately displayed for providers of sensitivities and drug-drug and food-drug interactions so that modifications can be made.

2.3 Improved compliance to the approved pharmacy formulary leading to a reduction in the cost of pharmaceuticals.

2.4 Direct receipt of electronic orders changing work flow in pharmacy eliminating the need for pharmacy staff to do direct entry of the order.

2.5 Increase in the accuracy of medication administration and a decrease in staff time needed to prepare for medication pass.

3.1 Pertinent health care data being readily available to nursing staff and ease of data entry post patient encounter requiring less nursing time working with the patient's record.

3.2 Improved clinical decision making through critical clinical data displayed graphically and reported over time.

3.3 Improved continuity of care through improved communication between providers.

4.1 Improved diagnosis and treatment as providers have timely access to test results.

4.2 A reduction in the number of duplicate tests ordered by providers.

4.3 Improved compliance for medical record compliance with notification to providers of unsigned notes and orders.

4.4 Improved continuity of care and referral management by providing inmates with discharge information related to their care while incarcerated.

5.1 Improved staff satisfaction with the ease of accessing the health record.

5.2 Improvements in non-clinical staff's satisfaction with their overall quality of work life.

5.3 Improvements in the level of satisfaction that staff report in the efficiency of communication related to a patient's care.

In addition to these objectives, Jail Health Services expects specific and measurable improvements related to the business process re-engineering that will take place through implementation of the Electronic Health Record. There will be a three-way partnership between Jail Health Services, the selected vendor and the Department of Adult and Juvenile Detention (DAJD) to not just make existing paper processes more efficient but to use the system of choice to improve the overall business practice while ensuring optimum quality of care. DAJD and Jail Health Services has convened a group and begun a collaborative process[38] to identify the interdependencies and opportunities through the EHR implementation. A detail metrics and measurement plan will be developed along with appropriate measurement intervals for selected indicators.

SECTION IV: ASSUMPTIONS

Below is a summary of the key assumptions made by the Steering Committee as it relates to the selection, implementation and operation of an Electronic Health Record within the Jail Health setting:

1. The Electronic Health Record is a critical tool for Jail Health Services which needs to be in place before many of the cost savings and risk reducing changes recommended in the Wellcon Report can be implemented and expected benefits realized.
2. There is a software solution with a robust and tested electronic health record application that can meet at least 80% of Jail Health Services business requirements; assist in achieving JHS objectives; meet company viability threshold; meet King County and Public Health Information System Technical requirements; and provide a sufficient return on investment within 7 years.
3. The four key interfaces required to assure that the goals outlined in the project are met, are feasible. These include DAJD; FSI (Pharmacy); Dynacare Lab; and Signature.
4. The Integrated Security Project (ISP) will fund the necessary upgrades to the network infrastructure at both Jail Health Services sites.
5. The network will be robust and reliable enough to support the use of the electronic health record at the point of care (versus a retrospective data entry model). This requires that the system selected will have the ability to meet the performance and reliability requirements as stated in the RFP. These requirements are:

    - The system must run 7x24x365 environment.
    - Response times: in 2 seconds or less 99 percent of the time.
    - Available 99.99 percent of the time.
    - The system must capable of handling thousands of concurrent users.
    - The system must be scalable enough to handle future increases in volumes.
    - Ability to perform backups without taking any portion of the system down.

SECTION V: REVIEW OF OPTIONS

This section of the Business Case describes the steps taken to identify viable software solutions with a robust and tested Electronic Health Record application for use throughout Jail Health Services. In addition this section reports the results of the first level review of the options[39]. This first level review compares and contrasts the information provided to Jail Health through the responses to the Request for Proposal against six evaluation criteria established by the Electronic Health Record Executive Steering Committee.

Evaluation Criteria	Description
Meets the Technical Requirements Threshold	Must adhere, or be technically acceptable, to Public Health IT with no fatal flaw being identified. Given the level of support these types of applications require, preference is given to vendors who offer an Application Service Provider (ASP) model, a remotely hosted model.
Meets Business Requirements Threshold	The Steering Committee acknowledged the Business Requirements were set with very high expectations and as stated in the RFP "we do not expect any vendor's system will satisfy all our requirements". Therefore, the Steering Committee adopted an 80% minimum threshold for this portion of the evaluation process.
Company Viability & Reliability Threshold	Preference is given to a vendor who has been in business for seven years or more and has Correctional Healthcare Industry expertise in a site similar in size and complexity as JHS".

Ability to Meet Stated Objectives	The initial review of the attributes of the application should provide some confidence that the system can support Jail Health Services in meeting its objectives
Cost/Benefit Threshold	Must be within budget and able to return an ROI within 7 years.

The Executive Steering Committee is committed to managing a series of evaluation steps beginning with preparation of a detailed business requirements document and concluding with the contracting with the selected vendor representing the Preferred Solution. The steps include:

1. Prepare a comprehensive Business Requirement document.
2. Prepare and release a Request for Proposal.
3. Conduct a First Level Review[40] of Electronic Health Record System Options applying the selected evaluation criteria.
4. Identify preferred vendor(s).
5. Develop and receive approval of the recommendations supported by the JHS Electronic Health Record Business Case at the close of the First Level Review.
6. Conduct Second Level Review of preferred vendor(s).
7. Conduct Contract Negotiations with selected vendor

Comprehensive Business Requirement Document

In the fall of 2004, the EHR Steering Committee commissioned the development of a comprehensive EHR Requirements Document. Several key sources were considered in the

development of the requirements including: JHS Policy and Procedure Manuals; JHS Forms currently being used in the paper Medical Record; results of shadowing JHS staff as they perform day-to-day tasks; standards from National Commission on Correctional Health Care; HIPAA; Public Health IT standards; the WELLCON Report; Community Partners who have or are in the process of implementing an Electronic Health Record; and, Internet Research.

The intent was that the Requirements Document be of sufficient detail to clearly define the business functions of Jail Health Services and provide the basis for an unbiased Request for Proposal scoring methodology.

The Requirements Document[41] was divided into five major sections:

1) Requirements for Clinical Operations including: Intake, Transfer, Release; Master Problem List; Encounters; Treatment Plans; Clinical Notes and Documentation; Flow Sheets; Orders and Results Reporting; Consents, Release of Information Requests, Refusals; Patient Education; Referrals; Admission, Discharge, Transfers, Reversal; and, Population Based Clinical Areas (Registries).
2) Requirements for Clinical Specialties including: Pharmacy; Psychiatric; Dental; Obstetrics; and, Communicable Disease.
3) Requirements for Staff Management.
4) Requirements for the General System Functions including: Multi-Entity; Master Patient Index (MPI); Tables and Master Files; Clinical Access View (CAV); Clinical Decision Support (CDS); Controlled Medical Vocabulary (CMV); Clinical Pathways and Guidelines; Cost Measuring and Quality Assurance; Integrated E-Mail (Secure Clinical

Messaging); Access (Log-On); Screen Displays; Data Entry; Screen Builder; Report Generator; and, Standard Reports.

5) Requirements for the Technical Environment including: Server Architecture; Desktop Architecture; Peripheral Architecture; WEB Architecture; Network Architecture; Third Party Software; Database Architecture; Interface Engine/Building Interfaces; and Performance and Reliability.

The EHR Project Team developed a draft EHR Requirements Document that was distributed to the Stakeholders and the Steering Committee. A joint review of the requirements was conducted. The EHR Steering Committee approved the final version of the EHR Requirements Document in October 2004.

Prepare and Release a Request for Proposal

In preparation for the distribution of an EHR Request for Proposal (RFP), the EHR Project Team conducted market research using the Internet, Correctional Health magazines, Community Partners, and the NCCHC National Convention to identify potential EHR vendors[42]. This list was approved by the Steering Committee in November 2004.

During this same time period, the EHR Steering Committee developed a scoring methodology preparing for review of the RFP responses. This methodology relies on the self-scoring of the responders product against the requirements. The responder awarded themselves points on each EHR Requirement according to the following scheme:

EHR SYSTEM REQUIREMENT	CURRENTLY AVAILABLE, fully meets requirement	CURRENTLY AVAILABLE, partially meets requirement	IN DEVELOPMENT, available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	2	1	1	0	

When a responder could not meet all of the requirements for specific criteria they were directed to score a (1), and then to elaborate on the deficiency in the corresponding comments area. In addition responders were asked to complete a series of attachments providing additional detail required for the evaluation. The attachments included: Peripheral Architecture specifications; WEB Architecture specifications; Network Architecture specifications; Application and Third Party Software Architecture specifications; Company Profile; References; Vendor Project Team; Preliminary Project Plan; and Pricing Proposal.

In December of 2004, Jail Health Services coordinated with King County Procurement to distribute, to the list of potential vendors as well as on the King County Website, a Request for Proposal (RFP)[43] for and Electronic Health Record Management System.

King County Procurement conducted a Pre-Proposal Conference to discuss questions related to the RFP in the early part of January 2004. By the close of the sealed proposal timeline Jail Health Services received four responses to the Request for Proposal. Jail Health Services, for the purpose of this Business Case, labeled the responders Option 1 through Option 4. A brief description of the Options is shown as an attachment[44].

Conduct a First Level Review of Electronic Health Record System Options

Three teams were assigned to conduct the first level review evaluating the Technical Architecture, Business Requirement/Company Viability & Reliability, and the Cost/Benefit Analysis.

Technical Architecture Team Review and Findings

The objective of the first level review was to evaluate the technical architecture of proposed by the four vendors in response to the Request for Proposal. The Technology Team, comprised of King County Public Health Information Technology staff, conducted a technical assessment[45]. Each of the four options was screened against the requirements set forth in the RFP evaluating the degree to which the Technical Architecture in the proposal is in line with the King County and Public Health Information Technology standards and meets the threshold established by the Steering Committee. One important aspect of this review was the strengths and weaknesses of the technical model used by the vendor. During this analysis the team generated a list of follow-up questions[46] for each vendor. The EHR Project Manager, in coordination with Procurement, solicited answers to these questions. Based on the detailed information provided by the vendors and the clarifying information that came from the vendors in response to the questions, the Technology Team appraised the Options as follows:

Summary of Technical Review Findings for Option 1:

Option 1 utilizes an Application Service Provider (ASP) model also known as a remotely hosted model. This model requires fewer hardware components on-site in Public Health or Jail Health Services; and does not require additional internal IT staff to support the

maintenance, day-to-day operations, and disaster recovery of the system. The architecture is technically acceptable with no fatal flaw being identified.

Conclusion:

Option 1 passes the first level Technical Review and should move forward to the Business Requirement Review.

Summary of Technical Review Findings for Option 2:

Concerns were raised that Option 2 did not have an ASP model but proposed an in-house technically supported model. Option 2 would require hiring an estimated 6 new internal IT staff with unique skills and training as well as a level of expertise for maintenance, day-to-day operations and disaster recovery. The concern was two fold: can the Public Health infrastructure support an application with this complexity and the expense of maintaining that infrastructure. The architecture is technically acceptable with no fatal flaw being identified.

Conclusion:

Option 2 passes the first level Technical Review and should move forward to the Business Requirement Review, but with a caveat that the additional FTE's are incorporated into the cost analysis.

Summary of Technical Review Findings for Option 3:

Option 3 utilizes an Application Service Provider (ASP) model. The architecture is technically acceptable with no fatal flaw being identified.

Conclusion:

Option 3 passes the first level Technical Review and should move forward to the Business Requirement Review.

Summary of Technical Review Findings for Option 4:

Due to a fatal flaw in its underlying technical architecture, the use of Access™ as its database, Option 4 is not technically acceptable.

Conclusion:

Drop Option 4 from further evaluation.

The EHR Steering Committee approved this recommendation. Option 1, Option 2, and Option 3 were moved forward to the Business Requirement Review and Option 4 was eliminated from further deliberation.

Business Requirement/Company Viability & Reliability Team Review and Findings

Following the technical review and based on the action taken by the Steering Committee the Business Review Team conducted an analysis[47] on the three remaining Options. This analysis was based on the responses provided by each responder in the Request for Proposal. The self-scoring in the Clinical Operations, Clinical Specialties, and the General System Functions sections of the business requirements were transferred into the Multi-Attribute Utility (MAU) model[48]. No vendor proposed a Staff Management module, therefore this set of requirements was not considered in the overall scoring. The objective of the Multi-Attribute Utility (MAU) Model is to provide a means for Business Review Team to understand the capabilities and weaknesses

of each of the Options as well as to provide an objective scoring methodology to determine if the Option met or exceeded the Steering Committee threshold. Under the MAU a vendor had the possibility of scoring a perfect score of 474 points. Below are the results of the MAU analysis:

Vendor Self Scoring Results			
	Option 1	**Option 2**	**Option 3**
Score	**395**	**423**	**292**
% Of Requirements met	**83.33%**	**89.24%**	**61.60%**
Meets Steering Committee Criteria?	**Yes**	**Yes**	**No**

In addition to assessing which Options meet the 80% threshold, the information related to weaknesses was summarized for the Stakeholders group who were asked to assess the importance that this requirement be met. Option 3 indicated in their response they had planned release of modules for Spring 2005. The Business Review Team agreed that if this release timeline was met the vendor would possibly be able to bring their score to the 80% threshold. As a result, the team agreed to not eliminate any of the 3 options before the Stakeholders Meeting.

In advance of the Stakeholders Meeting each stakeholder was provided with a copy of the three RFP responses and they were asked to review them prior to the meeting. The purpose of the Stakeholders Meeting was to analyze each of the three remaining vendor Options from a variety of different viewpoints including the viability and reliability of the company. A SWOT (strengths, weaknesses, opportunities and threats) Analysis provided the framework to help the

stakeholders answer the question, "what are the prospects for success under each of the options?" This interactive process provided the Stakeholders with an opportunity to express their views about the different options and discuss the implications.

Based on the SWOT Analysis stakeholders raised a series of questions[49] and made a tentative recommendation for each Option. As a part of the first level review a selected subset[50] of the questions were researched by the EHR Project Manager, in coordination with King County office of Procurement. This information was factored into the final recommendations from the Business Review Team.

The last activity within the Business Review was a review of the supportive materials the vendors submitted with their responses to the RFP against the Steering Committee approved objectives. The Review Team incorporated into the final recommendations a statement reflecting the degree of confidence that the business team had in each of the Options being able to assist JHS in meeting the objectives. The second level review will, through the scripts that will be written for vendor presentation, do a more rigorous review of the product's capability in meeting and exceeding the objectives.

Based on the results of the MAU model; the stakeholder SWOT; the follow-up questions, and the first level review of the ability of the Option to address JHS objectives, the Options were appraised as follows:

Summary of Business Review Findings for Option 1: Option 1 meets the minimum 80% business requirements threshold. The company offers a proven EHR product, has an ASP model, and has a solid customer base with correctional health care clients similar in size to JHS. Option 1 describes features and functionality within it currently operating application that provides confidence that JHS objectives can be met through implementation of this system. Of particular note is the experience that the Option apparently has with integrating and interfacing with other healthcare and medical information system products. Finally, this company has what appears to be a tested structured implementation methodology.

Conclusion: Option 1 passes both the Business Requirements and Company Viability & Reliability thresholds and appears to have the features and functionality to assist Jail Health Services in meeting the objectives. In addition this vendor indicated experience in business practice reengineering, which would add a level of expertise to the implementation team.

Summary of Business Team Findings for Option 2: Option 2 meets the minimum 80% business requirements threshold. However, the company is small and does not have a large customer base. It has no experience with a large multi-site correctional facility like Jail Health Services; the company's largest client has only about thirty users. The company does not offer an ASP model which will require Public Health to provide the infrastructure support and the day-to-day technical management of the system. Based on the information provided in the Application Architecture attachment this vendor has

methods and features that would support achievement of the JHS objectives. There remain some concerns around the use of templates and the flexibility of the system.

Conclusion: Passes the Business Requirements threshold with a guarded confidence that the objectives can be readily met through the use of the application. Also of concern is the company's ability to implement and provide acceptable levels of on-going support. Since the company does not offer an ASP model the deciding factor whether this option should be included in the second phase of the evaluation will be the results of the Cost/Benefit analysis.

Summary of Business Team Review for Option 3: Option 3 does not currently meet the 80% business requirement threshold. However, the next phase of their EHR product is currently in development and is due to be released in Spring 2005. It appears with this additional functionality the 80% threshold would be meet. The company currently has only two EHR clients but has a solid customer base in the Corrections Management software field. Albeit, there are considerable risks associated with an unproven product, but the company does offer an ASP model. Materials provided by the vendor related to the product's functionality did not provide enough information to assess a degree of confidence around achieving JHS objectives, however seeing details around the upcoming releases may provide the needed information

Conclusion: Place this option on hold, and possibly re-evaluate in summer 2005 if the other Options falter.

Cost Benefit Team Review and Findings

Jail Health conducted a Cost Benefit Analysis reviewing the estimated costs of the three electronic health record options compared to the projected savings. The structure this analysis is the development of a proforma financial plan for implementation of EHR system for Jail Health Services. It includes the quantifiable financial benefits and costs of implementing such a system.

The structure of the financial plan includes:

- Initial costs and ongoing costs and benefits of an EHR for up to 7 years of operation, with specific focus on 3, 5, and 7 with 5 as a likely baseline.
- Net present value calculation looks at baseline of 8% nominal discount rate which using the baseline of 3% inflation is 5% real rate of return on investment.

Quantifiable benefits[51] would include projected operating savings expected from an EHR to include:

1. Savings in the operation of medical records through reduction in FTE as a result of a reduction in the number of chart pulls and time in managing paper-based records.
2. Nursing time spent in record keeping and preparation for medication administration resulting in a reduction in FTE.
3. Pharmacy staffing FTE reduction as a result of direct order entry through an interface.

4. Reducing Pharmaceutical expenditures by 20% (using a baseline 2005 expenditure of $1,828,151) as a result of managing a facility formulary through a structured order entry in combination with a Medical Director approval process.
5. Reducing the number of duplicative lab tests as a result of results reporting through an interface.
6. Overhead associated with reduction in FTE.

The costs of implementation include direct vendor costs, JHS incremental hardware and equipment costs, JHS staff training, implementation and 'cross-over costs', JHS Phase I & II EHR budgeted sunk costs-$235,000, implementation costs and ongoing costs to maintain a new EHR system.

Each alternative was evaluated on a Net Present Value (NPV) basis to bring future costs and benefits back to current 2005 investment $'s. Each was evaluated over 3, 5, and 7 years of operation. The benefits of each alternative were assumed to be equivalent with only the estimated vendor and JHS costs varying with each proposal. Values were expressed both with annual dollar equivalent savings for each period as well as lump sum NPV values.

The results of this review among all three options indicate that Option 1 provides the most favorable economics: lowest initial cost, low ongoing cost, and earliest breakeven (year 5), and highest net present value.

Relative Option Economics

	Benefits	Initial Cost	Ongoing Cost	Break-even year (approx)	NPV of project	Overall Ranking
Option 1	Same	Lowest	Low/mid	5	Highest	1
Option 2	Same	Mid range	Much higher	Well beyond 7	Lowest	3
Option 3	Same	Highest	Lowest	6	Slightly less than high	2

NPV breakeven for Option 1, as currently estimated, would occur by end of year 5. Over 7 years of operation the Option 1 proposal is estimated to derive a net total savings of approximately $1,030,000, equivalent to an annual savings of about $213,000 per year.

Summary statistics for each of the options is as follows:

Summary of Option Economics

	5 year		7 year	
	NPV	IRR	NPV	IRR
Option 1	$159,005	10.6%	$1,029,402	19.6%
Option 2	($1,685,476)	n/a	($1,338,868)	-9.5%
Option 3	($41,881)	7.5%	$985,040	16.8%

NPV calculated at an 8% discount rate

These summary statistics allow for evaluation of the sensitivity of the Option 1 baseline case to investment periods, allowance for additional costs or reduced savings, and even higher discount rates than the 8% used:

- For example, while a 7 year period is reasonable, breakeven can occur by the end of year 5

- While estimates of costs include 20% contingencies and projected savings are intended to be reasonably conservative, breakeven could occur even if annual net benefits were less (e.g., benefits lower and/or costs higher) to an annual amount of $213,000 in the 7 year analysis.
- While 8% is the discount rate in NPV calculations, the 5 and 7-year scenarios provide returns of 10.6% and 19.6% respectively.

Of course, these costs and benefits and their respective timing will continue to be evaluated and updated as the project progresses. This analytical framework will ensure that minimum economic criteria are achieved and that results can be measured against this plan.

The appendix contains several exhibits:

- Summary of Expected Cost Benefit of Jail Health EHR[52]
- OIRM Form 1/Summary, Cost Benefit and Cash Flow Analysis[53]

SECTION VI: PREFERRED SOLUTION

The Steering Committee reviewed the findings and conclusions from the Technical Review, the Business Review and the Cost/Benefit Analysis and assessed the Options as follows:

Evaluation Criteria	Option 1	Option 2	Option 3
Meets the Technical Requirements Threshold	Yes	Yes	Yes
Meets Business Requirements Threshold	Yes	Yes	Maybe

Company Viability & Reliability Threshold	Yes	No	No
Ability to Meet Stated Objectives	Yes	Yes	Maybe
Cost/Benefit Threshold	Yes	No	Yes

The Steering Committee's recommendations are:

Option 1: A viable candidate, continue into the second level review of the vendor.

Option 2: Drop from further evaluation.

Option 3: Place on hold until late spring of 2005. Potentially resume this evaluation if our preferred option falters.

The second level review will be a strenuous and in-depth analysis Option 1. The first step in the second level review is to host on-site vendor presentations. During these visits, vendors will have the chance to exhibit their product to Jail Health Services and Public Health Management, the Steering Committee, and Public Health MIS.

Five expert teams will be charged with conducting in-depth analysis within their areas of expertise along with the preferred vendor. The teams include an executive team, technical team, functionality team, interface team, and financial team. These teams will conduct their analysis by conference call and in-person meetings held in conjunction with the produce presentations.

The vendor will be invited provide the scripted clinical scenario(s) in advance of a 2-day more structured presentation. The request is that they fulfill the requirements of the scenario(s) using their current commercial products (i.e. what they have proposed to JHS). The scenario(s) will be multi-disciplinary and include critical requirements.

In addition to the ratings of technical teams the audience invited to participate will be asked to provide feedback to the Executive Steering Committee.

The final phase of the second level review is customer visits and a visit to the vendor's Corporate Office and Operation Center. These structured visits will be conducted by the cross functional team.

SECTION VII: RISKS AND STRATEGIES TO REDUCE RISKS

Risk mitigation will be managed in coordination with the preferred vendor and JHS' other critical partners. The following checklist is a start and will assist in the transition from a paper to an electronic health record (EHR) as the legal medical record.

Risks in Implementation	Strategies to Reduce Risks	Status
Executive, management, and staff level support is critical to the successful implementation of an EHR.	• Form a Project Governance Structure. • Create Roles & Responsibilities document. • Create Communications Plan.	• Activated • Activated • Activated
Solid project management and	• Form an experienced EHR Project	• Activated

Risks in Implementation	Strategies to Reduce Risks	Status
utilizing a standard project methodology is critical to the successful implementation of an EHR.	Team. • Embrace proven IT project methodology. • Develop a comprehensive plan of action and milestones that details each step involved in moving to a fully electronic system that routinely gets reported to the governance structure. • Develop a migration strategy.	• Activated • Activated for Phase I & II. Phase III detail project plan will be developed with EHR vendor during contract negotiations. • Will be developed as part of Phase III project plan.
Once the decision to move to an EHR is made, organizations must address the paradigm change in culture for going paperless. PH/JHS embraces using technology to the full extent possible, that is, point of care entry.	• Develop a comprehensive data map of all JHS workflows and processes that may be affected by the transition to an EHR. The mapping will address both administrative and clinical workflows. • Identify appropriate steps to re-engineer and redevelop the workflows within the functionality of the EHR. • Develop comprehensive processes and procedures that address the conversion of paper-based documents to electronic form. • Develop a communications plan that provides the organization with a clear	• Work to support the Business Case ROI Cost/Benefits has been completed. Detail analysis will be scheduled as part of Phase III. • Will be developed as part of Phase III project plan. • Will be developed as part of Phase III project plan. • Will be developed as part of Phase III project plan.

Risks in Implementation	Strategies to Reduce Risks	Status
	understanding of the change process involved in moving toward a fully electronic system. • Develop a robust training and education plan. • Implement, in coordination with the vendor, a responsive Help Desk. • Implement Service Level Agreements with key parties including escalation procedures.	 • Will be developed as part of Phase III project plan. • Will be developed as part of Phase III project plan. • Will be developed as part of Phase III project plan.
.Developing a clear understanding of the scope, content, and format of the EHR is critical.	• Create a project charter (Project Plan Summary document) • Develop a comprehensive Requirements Document that reflects the organizations vision for a paperless EHR.	• Activated • Activated
Selecting the "right" vendor.	• Use the Stakeholder and Steering Committee throughout the process. • Conduct a thorough market analysis. • Publish a comprehensive RFP. • Conduct a thorough analysis of the Responders using MAU models, SWOT, gap analysis, ROI, etc. Review the responses from several perspectives: Technical, Business	• Activated • Activated • Activated • Activated

Risks in Implementation	Strategies to Reduce Risks	Status
	Requirements, Cost and Benefits Realization, and Company Profile and Viability. • Get written answers to questions formulated during the analysis. • Conduct product demonstrations using scripting. • Conduct reference checks and site visits.	 • Activated • Scheduled in Phase II • Scheduled in Phase II
Understand the impacts to Patient Confidentiality as a result of going paperless.	• Ensure the system is HIPAA compliant via the contract and a thorough review. • Ensure the system has adequate security mechanisms to restrict access, authenticate orders. • Review and update Policies and Procedures.	• Scheduled in Phase II and as part of the contract as stated in the RFP. • Scheduled in Phase II and as part of the contract as stated in the RFP. • Will be scheduled as part of Phase III project plan.
Unauthorized use, alteration, loss, or destruction of data.	• Reasonable cost-effective measures will be implemented to protect data, hardware, and software from inappropriate or unauthorized use, alteration, loss, or destruction.	• Will be scheduled as part of Phase III project plan.
Breach of security.	• Adherence to HIPPA, NCCHC, and other regulatory bodies as required, including county privacy and security	• Scheduled in Phase II and as part of the contract as stated in the RFP.

Risks in Implementation	Strategies to Reduce Risks	Status
	standards will be adopted.	
System Response and Reliability is essential in a 7x24x365 paperless environment. System down time and interruptions must be very minimal.	• Build a reliable and secure communication and computer infrastructure will be provided to ensure 99.9% system availability and seamless self-service access in a 7x24x365 environment. • Ensure the Network Infrastructure will support the requirement. • Build the technical infrastructure as dual redundant. • Ensure no single point of failure. • Implement only standard off the shelf products, no customization. • Stress test the system prior to go-live.	• Activated, part of the ISP remodel project. • Activated, part of the ISP remodel project. • Activated, part of the ISP remodel project and Phase III. • Phase III. • Activated in the RFP, part of Phase III. • Will be scheduled as part of Phase III.
Loss of Power / Connectivity to Service Provider or Servers.	• Business Continuation and IT Disaster Recovery plans will be developed prior to go-live. Annual tests will be conducted.	• Will be scheduled as part of Phase III.
Dependence on individual vendors	• Hardware and software will adhere to open (vendor independent) standards to promote flexibility, inter-operability, cost effectiveness, and mitigate the risk of dependence on individual vendors	• Activated via the RFP, and will be scheduled as part of Phase III.

SECTION VIII: WORK PLAN AND TIMELINES

Below is the preliminary project schedule, which accounts for the scope and complexity of this project. Jail Health Services will work along with the preferred vendor and DAJD to finalize the work plan, timelines and to further define the deliverables.

DATES	SYSTEM IMPLEMENTATION	NOTES
April 05	PHASE 2 VENDOR SELECTION	Preferred vendor will be invited to meet with technical and business teams to talk about the product and its ability to meet JHS requirements. This would include a structured presentation build around some scenarios to demonstrate the capability of the product.
May 05 – June 05	PHASE 2 VENDOR SELECTION – VISIT CUSTOMERS	JHS team to visit production center for preferred vendor and also make customer visits with a structured set of questions. Vendor will be asked to match its customers as close as possible to how JHS intends to use the product – point of care entry.
August 05	CONTRACT WITH VENDOR	Contract negotiation finalized after JHS satisfies the Council Proviso and receives approval of funding request to OIRM
September 05-October 05	SYSTEM IMPLEMENTATION PLANNING	JHS team, the vendor, and where applicable DAJD will identify our implementation strategies with an understanding of the costs, benefits, and risks associated with each approach. Goal: look for opportunities to implement in phases to minimize the

		risks and obtain earlier benefits.
September 05-October 05	SYSTEM ARCHITECTURE PLANNING	JHS team and the vendor will plan for all the technical components of the system in coordination with the Implementation Plan.
September 05-October 05	SYSTEM MIGRATION PLANNING	JHS team, the vendor, and where applicable DAJD will identify our data migration strategies with an understanding of the costs, benefits, and risks associated with each approach.
September 05-October 05	PROCESS RE-ENGINEERING PLAN	JHS team and the vendor will identify which business processes will be re-engineered in coordination with the EHR system implementation.
September 05 – October 05	BUSINESS CONTINUATION and DISASTER RECOVER PLANNING	JHS team with the vendor will ensure adequate plans are in place when system down time occurs. This will include Service Level Agreements and escalation procedures.
November 05-December 05	TRAINING[54]	JHS team and the vendor will develop a comprehensive training and on-going support plan. Key JHS personnel will be trained early in this process.
January 06-June 06	APPLICATION BUILD	JHS team with the vendor will build the application according to the vendor methodology.
July 06-September 06	APPLICATION UNIT TESTING	Using predefined test scripts, a thorough unit test will be performed after a portion of the EHR system has been built.
January 06 – June 06	INTERFACE BUILD	This is the design, programming, and testing of the agreed upon interfaces.
July 06-September 06	INTERFACE UNIT TESTING	Using predefined test scripts, a thorough interface test will be performed.
September 06	INTEGRATION TESTING	Once a application unit test has been completed and the

– November 06		associated interface(s) have been unit tested, a thorough integration test will be performed to ensure the application and the interface are functioning correctly together. An example is I/T/R.
November 06	SYSTEM TESTING	A comprehensive system test will be conducted once the entire application and interfaces have been tested.
January 06- June 06	CONVERSION BUILD	Actual design and programming of the data migration.
July 06 – September 06	CONVERSION TESTING	The processing of data to be converted (possibly FSI data) and/or the EHR populated by some other means (e.g. scanning, data entry) will tested.
December 06	SYSTEM STRESS TEST	This test will mimic the maximum number of users, data, processes, etc. occurring simultaneously to ensure minimal system derogation.
December 06	MODEL OFFICE	This is a mock complete walk through of the system to ensure "readiness" in a "real life" life situation.
December 06	CONVERSION AND/OR EHR DATA POPULATION	Actual conversion or data population of the EHR in preparation of go-live.
December 06	STAFF TRAINING	End-User classroom Training
January 07	GO LIVE	System start-up On-site support available during go live
June 07	POST IMPLEMENTATION REVIEW	Evaluation of implementation and early review of key success indicators and achievement of targets.

SECTION VIX: PROJECT MANAGEMENT AND STAFFING

Jail Health Services has an organization and management plan[55] which places authority for this project under a Steering Committee made up of leaders from Public Health and Jail Health Services and a representative from DAJD. This group provides the oversight and holds the project team accountable for completing its work plan on time and within budget. In addition the preferred vendor brings an experienced project team and other key resources. Finally, JHS and DAJD have a workgroup that will examine interdependent business processes impacted by the Electronic Health Record and report to the project team.

The preferred vendor and Jail Health Services will work collaboratively through a series of planning sessions to determine the most efficient and cost effective transition from Jail Health Services paper-based record to an electronic health record.

SECTION X: COST ESTIMATES AND FUNDING

The estimated implementation cost of $1,965,000 (including a 20% contingency) is slightly less than the existing appropriation of $2.0 million. This implementation budget would be financed from savings beginning in 2007 over a period of 5 to 7 years, depending on the financing structure. Since the discount rate is below the likely cost of borrowing (borrowing cost approximately 5% vs. the 8% discount rate assumed in the NPV analysis, we are confident that

the savings will be more than adequate to service the implementation cost loan even with a 5 year repayment structure. Thereafter the reoccurring annual cost will be approximately $504,000.

In 2003 King County Council set aside $2,000,000 for the Electronic Health Record Project. This figure was based on the advice of the County's chosen independent consultant; "Wellcon" and Wellcon's experience with a facility the County's size. The budget supports a Project Manager, two consultants, and an approved vendor from which JHS plans to purchase software and hardware. These costs are one-time only and will be borne beginning in 2004 and continuing through the early part of 2007.

The PRB released $250,000 in October 2004 to cover the development of the Electronic Health Record Business Case and the work required to prepare and release a Request for Proposal.

JHS requested $1,750,000 for implementation costs in the 2005 proposed budget requests. Since Jail Health Services advised the Council that the Business Case would not be completed until the first quarter 2005, the Council placed $1,675,000 under a proviso. The proviso indicated that this money should not be expended or encumbered until after the Council has approved by motion a Business Case that has been reviewed and approved by the Project Review Board.

SECTION XI: ALTERNATIVES CONSIDERED

JHS considered three point solutions and one process improvement as an alternative to implementing and E H R. Our analysis showed that none of these solutions, no matter how powerful, would generate the significant improvements needed to fully address the underlying problems and risk in record management or business practices in Jail Health Services.

Options Point Solutions:	Description of Options
Bar Coding	Software programs are available that electronically track the check out of medical records, including out guide information, generate reminders when a record has been checked out for too long, and can create pull lists which can be sorted in a predetermined order, such as terminal digit order, to make it easier to pull records. Jail Health expected benefits: • Reduce instances of "missing" records • Reduce time spent searching for "missing" records • Reports for auditing and QI • Help to eliminate redundant procedures • Help staff to perform their duties uniformly and in compliance with state, federal (HIPAA) or organizational guidelines • Improve customer service and care to clients by accessing information faster • Track check out of paper charts within and between multiple sites • Track check out multiple charts at multiple locations with one medical record number

	This plan is designed to decrease the number of charts that are not found while decreasing the time it takes to locate other charts. By decreasing the number of charts that are "not found" , a recent study[56] reported 4%, by 80%, the overall time spent looking for charts would reduce by 30%. This is a savings of approximately $36,000 annually.

Options Point Solutions:	**Description of Options**
Pharmacy – Inmate Locator	Jail Health Services is currently working with DAJD, Public Health's MIS section, and Foundation Systems, Inc. (FSI -- the current pharmacy software vendor) to develop an inmate location interface. This enhancement will create a record in FSI indicating the inmate's current housing location, based on the most current information available in the DAJD information system. When the inmate is released that information will also be relayed to FSI. Jail Health expected benefits: • Reduce time for Pharmacy Tech spent looking locations up in the DAJD system • Help to eliminate redundant procedures • Help staff to perform their duties The cost of this solution for Jail Health Services is currently estimated at $3,600. This is the cost to pay FSI for programming support. Approximately 116 hours of Public Health and King County planning and programming time will be needed, but that support is paid through previously budgeted internal overhead. The "savings" is a reduction in the number of steps and time spent looking up inmates at the front end of the prescription process. This time savings would allow more prescriptions to be processed.

Options Point Solutions:	Description of Options
Transcription	Transcription services are used by health care providers to transcribe dictated notes into a printed form to be included in the paper medical record. With the implementation of this option Jail Health expected benefits: • Improve legibility of notes in medical record • Reports for auditing and QI • Help to eliminate redundant procedures, transcription can be cc'd and placed in appropriate location in chart • Save provider time, able to see more inmates The risks of transcription: 1. Must have equipment or pay a contractor to maintain it for you. 2. Need clerical support to oversee/manage report distribution. 3. Transcriptionists are hard to find and not many people tend to be going into this field. That means your best choice is to find a vendor who is willing to assume the risk of finding vacation and sick coverage and to maintain the turn-around times you want/need. Costs: Volumes have not yet been calculated. Assume that providers dictate 3/4 page of transcribed notes per dictation, the cost would be $3.00/report for the vendor.

Process Improvements:	Description of Improvement
Route and Transfer	Currently, a Route & Transfer form is used not only for routing charts to multiple locations but for all types of communication and general requests. The form includes: name, DOB, AKA's, Number of Location, Location, and Date. Under a process improvement plan, this form will be used when charts need to be routed to multiple locations and omit other types of communications and general requests. Additions to the form would include a "Paperwork Only" check box to aid medical records staff identify what is being routed, a "Completed" check box to indicate when chart is ready to be routed to the next location and detailed instructions on how to complete the form as a reminder on how to use the form correctly. Refresher training to be provide to all staff prior to implementation. This plan is designed to decrease the number of charts that are not found while decreasing the time it takes to locate other charts. By decreasing the number of charts that are "not found" , a recent study[57] reported 4%, by 80%, the overall time spent looking for charts would reduce by 30%. It would also allow a decrease in the overall average time to find a chart to 3 minutes. This is a savings of approximately $36,000 annually.

SECTION XII: ARGUMENTS AND RESPONSES

During the development of this Business Case both the Steering Committee and the Stakeholders raised a number of questions. These questions have been included below with a response.

1) How do the business requirements for Jail Health Services align with those in Public Health?

During the development of JHS Business Requirements a group of stakeholders from Public Health were convened to evaluate the requirements from a Public Health perspective. Findings from this meeting were that while there were a few unique requirements for a system that would service public health clinics both public health and jail health shared the same requirements.

2) How does this project fit within King County Strategic Technology Plan?

Response: This project supports and meets virtually all the strategies outlined in the Strategic Plan. Specifically, strategy B Information Technology as Enabling More Effective and Efficient delivery system; strategy C Information Technology Standards; strategy D Access to information & Services; strategy E Business Process Improvement; strategy F Privacy and Security are all met with this project.

3) How does this project meet the Strategic Investment Criteria outlined in the 2005 Budget Process?

Response:

Investment Criteria: Provide for critical and essential health or life-saving services to citizens

King County is required by federal law to ensure healthcare services are provided to the inmates of its correctional facilities. Implementation of the Wellcon recommendations including an EHR solution results in significant cost savings while improving the quality and quantity of care provided by Public Health to the inmate population of King County.

Investment Criteria: Streamline business operations using cost-effective technology

Jail health services will undergo a complete business operations re-engineering in conjunction with an EHR solution. This is based upon the use of an EHR solution to the paper based medical chart, upon which operational changes identified in the Wellcon Proviso report will be implemented.

Investment Criteria: Achieve direct cost savings over the cost of current operations

Seattle-King County jail health services are expensive and currently struggle with tremendous inefficiencies. Utilization of an EHR will JHS to significantly improve quality of care, reduce time spent in locating, reviewing, updating, and filing the paper medical chart. The physician's time spent on manual chart notes and their ability to easily and quickly read the chart will be significantly enhanced by the use on an EHR. This all translates into higher quality of care, more patients being seen by current healthcare staff, and

a reduction in human errors and misplaced/misfiled medical record charts. This also reduces the risk exposure to the County and Public Health.

4) What is your contingency plan if there are cost overruns in this project?

Response: The project team has estimated the entire cost of this project using the best available information. A contingency has been built into the cost estimates used in the Cost Benefit Analysis. As the contract is established with the vendor and JHS builds Phase III budgets for approval by the OIRM we will have an operating budget and in that process will make choices about project scope (Number of interfaces, etc.) that can be funded within the envelope presented in the CBA.

5) Staff are not ready for this kind of change.

Response: Information from the recent staff survey indicates that many of our staff have experience with an EHR. Additionally, the survey indicates staff are PC literate which is a huge benefit and will allow us concentrate on the EHR application training which will be planned in coordination with the vendor.

SECTION XIII: REFERENCES AND ATTACHMENTS

The items below marked with ** can be found in The Business Case Appendix Binder

[1] **Wellcon Report, during the 2003 Budget process the County Council issued a proviso to review the Department of Adult and Juvenile Detention's (DAJD) provision of health care services through an independent assessment of the scope and necessity of healthcare services being delivered and the manner in which those services are delivered to jail inmates. Dr. Todd Wilcox, principle of Wellcon and a nationally known leader in jail health business process re-engineering, was selected to do the assessment. Report issued June 10, 2003 to the Proviso WorkGroup.
[2] **Jail Health Services Strategic Business Plan – Positioning for the Future, approved February 2004.
[3] ** Application Description
[4] Other potential partners include: FSI, Signature team, Dynacare, Harborview
[5] *The Computer-Based Patient Record: Essential Technology for Healthcare,* Institute of Medicine, 1991
[6] **Description of an Electronic Health Record
[7] ** Understanding the Jail Health Services Delivery System, A summary of the Continuum of Care
[8] Two facilities, the Seattle Correctional Facility and at the Kent Regional Justice Center.
[9] Average of medical provider, psychiatric provider, nursing and dental encounters over a three year period between 2002-2004.
[10] See #1 Wellcon Report, Report issued June 10, 2003 to the Proviso Work Group.
[11] **Evaluation of the degree to which improvements recommended in the Wellcon Report would be enabled or supported through the implementation of the Electronic Health Record.
[12] See # 2 Jail Health Services Strategic Business Plan – Positioning for the Future, approved February 2004.
[13] **Definition of Electronic Health Records Management, American Health Information Management Association e-HIM Task Force. "The Strategic Importance of Electronic Health Records Management." Journal AHIMA 75, no. 9 (October 2004): 80A-B
[14] HIPAA, Health Insurance Portability Accountability Act, This regulation imposes extensive requirements on every area within healthcare. It governs the use, transmission, maintenance, security and privacy of health care information.
[15] **Standard J-H-04 Availability and Use of Health Records, NCCHC Standards for Health Services in Jails, 2003
[16] **Missing Clinical Information During Primary Care Visits, JAMA, February 2, 2005 Vol 293 no. 5
[17] **JHS Process Analysis - Time to Locate a Chart, February 2005, Shawna Harris
[18] **Electronic Medical Records: How Can You Afford (Not) to Have One???, Wellcon Electronic Medical Record Lecture Slideset.
[19] **Standard J-E-03 Transfer Screening , NCCHC Standards for Health Services in Jails, 2003
[20] See # 18 Electronic Medical Records: How Can You Afford (No) to Have One???, Wellcon Electronic Medical Record Lecture Slideset.
[21] **JHS Medical Records Work Processes Analysis, February 2005, Shawna Harris
[22] **Ambulatory Electronic Records Implementation Cost Benefit: An Enterprise Case Study, Zdon; Director, Information Services, Allina System, Minneapolis, MN and Middleton, Vice President for Clinical Informatics, MedicaLogic
[23] Active charts are those charts that have a chart note within the last two years.
[24].See # 1 Wellcon Report
[25] ** Medical Records and Malpractice Risk Management, White Paper, MedicaLogic, September, 1998
[26] **JHS Process Analysis – Rx Order, January 2005, Judy MacCully
[27] See # 27 JHS Process Analysis – Rx Order, January 2005, Judy MacCully
[28] **Wang, S.J., Middleton, B, and others. "A Cost –Benefit Analysis of Electronic Medical Records in Primary Care." *American Journal of Medicine,* April 1, 2003
[29] **Nursing Post Order Analysis, February 2005, Shawna Harris
[30] See # 25 Electronic Medical Records and Malpractice Risk Management, White Paper, MedicaLogic, September, 1998
[31] See # 28 Wang, S.J., Middleton, B, and others. "A Cost –Benefit Analysis of Electronic Medical Records in Primary Care." *American Journal of Medicine,* April 1, 2003 see #22

[32] See # 29 Nursing Post Order Analysis, February 2005, Shawna Harris
[33]** The Economic Effect of Implementing An EMR in an Outpatient Clinical Setting, Health Care Information and Management Systems Society, Volume 18, Number 1, Winter 2004.
[34]See # 25 Medical Records and Malpractice Risk Management, White Paper, MedicaLogic, September, 1998
[35] Interview with JHS Medical Director
[36] JHS 2005 budget includes $72,000 to Dynacare Laboratories and $48,000 for PH lab tests, bringing the total amount budgeted on lab tests in 2005 to $120,000. Under the assumption that 20% of these tests are unnecessary due to repeat testing, Jail Health will spend $20,000 ($120,000 ÷ 1.2 = $100,000. $120,000 - $100,000 = $20,000) annually on repeat lab tests.
[37] **Medical Records Assessment Survey for Clinical and Non-Clinical Staff conducted February 2005
[38] **JHS and DAJD Interface Grid and Description of Analysis
[39] The options considered in the Review of Options section of the Business Case are those Responders to the JHS King County Request for Proposal for an Electronic Health Record issued in December 2004.
[40] **Description of First and Second Level Review Process
[41] ** Jail Health Services Detail Requirements Document Electronic Health Record System, October 2004
[42] **Seattle-King County Department of Public Health- Jail Health Services Vendor List
[43] ** RFP Title: Electronic Health Record Management System; Date Advertised: December 23, 2004.
[44] **Description of the four companies responding to the JHS RFP along with the Option number assigned by JHS for the purpose of the Business Case.
[45] **Technical Assessment First Level Review
[46] ** Follow up technical questions for the Technical review process
[47] **Multi-attribute Utility (MAU) Model conducted on EHR Options, January 2005, Lee Pollock
[48] See # 47 Multi-attribute utility (MUA) conducted on E H R options, January 2005, Lee Pollock
[49] ** Stakeholder SWOT analysis conducted on February 4, 2005
[50] **Selected Q&A to vendor from SWOT for first level review
[51] **Cost Savings contributing to the Cost Benefit Analysis
[52]** Jail Summary of Expected Cost Benefit of Jail Health EHR, Bob Williams, Financial Analyst Lead
[53]** OIRM Form 1/Summary, Cost Benefit and Cash Flow Analysis, Bob Williams, Financial Analyst Lead
[54] **Example of Training Approach, will be modified in conjunction with selected vendor
[55] **JHS Electronic Health Record Project Organization and Management Plan
[56]See #17 JHS Process Analysis - Time to Locate a Chart, February 2005, Shawna Harris
[57] See #17 JHS Process Analysis - Time to Locate a Chart, February 2005, Shawna Harris

Final Report To Proviso Work Group
Jail Health Services
Seattle-King County
June 10, 2003

Section 1:

Development of a definition of "constitutional minimum" as applied to the King County jail system and based on current federal regulations and law.

The Constitutional mandate for governmental officials to provide for the healthcare needs of prisoners is delineated in the 1976 ruling by the Supreme Court in *Estelle v. Gamble*[1]. In that interpretation, the Supreme Court found that prisoners have a Constitutional right to be free of "deliberate indifference to their serious healthcare needs." The ruling has subsequently been tested on numerous occasions and it has proven to be an extremely durable legal construct that still serves as the controlling piece of litigation with respect to correctional healthcare. One of the primary reasons for this ruling's endurance has been its generality. Unfortunately, that generality affords no easy answers to correctional healthcare professionals and requires individuals working in this field to rely heavily on interpretations of case law to help in determining systems and care guidelines that meet the standards that the Supreme Court had in mind.

Features That Describe Constitutional Correctional Healthcare Systems

The case law based on *Estelle v. Gamble* has served to establish the general construct that prisoners have three rights for correctional healthcare:

1. The right to access medical, dental, and mental health care
2. The right to receive professional medical judgment
3. The right to care that is ordered by a licensed professional practitioner

It is from these basic rights that the Courts have been able to define those features necessary in a healthcare delivery system to meet the Constitutional minimum[2].

1. Functioning sick call system
2. Properly trained and licensed personnel
3. Means of addressing emergencies
4. Methodology to assign priority to care
5. Development and maintenance of adequate medical records
6. Liaison with outside resources for specialty care / hospital care
7. System for staff development and training
8. Ongoing effort at quality control
9. Policies and procedures addressing special healthcare needs like disabled, geriatric, mentally ill, and HIV populations
10. Preservation of patient confidentiality

In the years after these features were promulgated, correctional healthcare administrators struggled with implementing the specific details outlined by the general principles. To that end, various methodologies and "standards" were published in the late 1970's, but it wasn't until the formation of the National Commission on Correctional Health Care in 1984 that a comprehensive set of specific healthcare standards was developed. These standards were major advances in correctional healthcare because they not only allowed administrators to measure their systems against the fully-defined Constitutional minimum for healthcare systems and they also provided some enforcement in terms of compliance.

Over the last twenty years, case law and NCCHC standards have evolved simultaneously and at this point in the history of correctional healthcare, a cogent argument can be made that the definition of a SYSTEM that meets the Constitutional minimums is a SYSTEM that is capable of passing NCCHC's accreditation process.

Constitutional minimums as they pertain to individuals

The discussion above focuses on systems only, and any discussion of Constitutional minimum would be incomplete without considering the status of individual patients who are treated within large systems. Unfortunately, having a system that meets Constitutional minimums affords only modest protection at the level of the individual patient from bad outcomes that can be successfully litigated as violations of the Constitutional mandate to provide care to prisoners. An analogy of this duality could be drawn from restaurants: While a restaurant may be a 5-star, highly-acclaimed restaurant from Zagat's, it is still entirely possible to contract a case of hepatitis A from eating there if one employee makes a mistake and does not wash his hands appropriately.

Unfortunately, an assessment of Constitutional minimums at the level of the individual is not as easily itemized as the foregoing list of features that define adequate Systems. In fact, an appropriate assessment of Constitutional minimums at the individual level is more easily conceived of as an analysis of "risk management" rather than as a "definition." To that end, further discussion about this will be deferred to Section 4 of the Proviso Report where a complete set of risk management suggestions is offered to assist Seattle-King County Jails in minimizing their risk profile to individual claims of deliberate indifference.

Section 2:

Development of a definition of "medical necessity" for correctional healthcare, based on "constitutional minimum" requirements, National Commission on Correctional Healthcare (NCCHC) accreditation requirements, and practices and definitions from similar correctional health services operations.

Medical Necessity is a subjective assessment of need based on objective findings. While this determination is not clear-cut in many cases, Wellcon recommends using the following philosophical construct to provide guidance in making this decision:

Primary Assumption: Jail is a short term environment and the mandate for healthcare in jail is to handle emergency situations, to diagnose and to treat serious medical needs, to prevent deterioration in preexisting conditions, to treat legitimate pain, and to prevent communication of disease or loss of function.

The decision points that should be taken into consideration when determining "Medical Necessity" include[3]:

1. Nature of the problem
2. How long the problem has existed
3. What the prisoner has done about the problem before
4. Nature of the proposed procedure or treatment and whether accepted medical standards support the proposed care
5. Urgency of procedure or treatment
6. Necessity of procedure or treatment
7. Potential complications for failing to treat
8. Availability of alternative treatment options
9. Expected remaining duration of incarceration
10. Probability of successful outcome of treatment including risk of adverse side effects
11. Expected functional improvement as a result of the intervention
12. Degree of compliance expected from the prisoner
13. Whether the intervention is for a pre-existing condition
14. Whether the intervention is a continuation of previous treatment or is the initiation of a new course of long-term treatment

The best methodology is to set up a committee that meets regularly to include the medical director, the health administrator, a representative from risk management, and any other

clinical staff as necessary to review patients in light of the above criteria. The medical director should solicit input from the individuals in attendance as well as any outside medical experts who it is felt are necessary in order to arrive at a collective decision for the facility with regard to care. If there is disagreement, the medical director retains full and final decision-making authority with respect to medical care issues. A summary of the meeting and the final disposition should be included in the patient's medical record as part of their healthcare treatment.

Section 3:

Development of a model describing an appropriate scope of services for jail inmates. This model should be developed in electronic format and should be capable of determining scope and levels of adult jail services based on: 1)"constitutional minimum" requirements for adult correctional healthcare; 2) NCCHC requirements; and 3) practices and definitions from similar correctional health service operations.

What this question calls for is the development of a Utilization Review Model similar to what is used in insurance companies. Development of such a model for Seattle-King County is not possible at this time for the following reasons:

1. It is beyond the scope of this project in terms of timeline
2. It is beyond the scope of this project in terms of financial underwriting
3. Development of such a model presumes a baseline level of healthcare data that is nonexistent in the Seattle-King County Jail Health Services Unit

However, I will demonstrate such a model for you during the Proviso Meeting so that you can ask questions and see that a model similar to what you are asking for is indeed possible if the County invests the proper development time, energy, and financial backing.

Section 4:

An assessment of how the "Constitutional minimum" compares to NCCHC accreditation requirements, and how current adult jail health services compare to the "constitutional minimum" and NCCHC requirements.

Discussion of the relationship between "Constitutional minimum" and "NCCHC standards" has already been covered in Section 1 of this Proviso Report. To state the assessment again, at the level of Correctional Health Care Systems, the NCCHC standards were developed to enable Systems to assess themselves against what is considered to be the characteristics that define the Constitutional minimum as we know it at this point in time. In the sense that Seattle-King County Correctional Jail Health Services is accredited by NCCHC, a cogent argument can be made that the practices of your system meet the Constitutional minimum for systems. However, this assessment must come with the caveat that the accreditation process is subjective by its very nature and that a pattern of consistent accreditation over multiple surveys / surveyors represents the ideal scenario.

Section 1 of this report also discussed the fact that it is possible for individual patients to experience violations of their Civil Rights with respect to deliberate indifference to their serious healthcare needs even within systems that meet Constitutional minimums. To complete the discussion of Constitutional liability and NCCHC requirements at the level of the individual, it is most helpful to reframe the question into a more workable construct of "Risk Management." What follows is a breakout of risk management recommendations separated by major functional category within your health services system. It is my assessment of your system that you have many areas of potential liability but that they exist more at the individual patient level instead of the System level. Any restructuring of Jail Health Services should take these recommendations into consideration as effective ways of limiting your liability profile.

It is of critical importance to any reader of this report to understand the context in which the following recommendations are made. Jail Health Services runs a quality program that meets Constitutional requirements for delivery of healthcare to prisoners, and none of the following should be interpreted to suggest otherwise. While the comments that follow are expansive in their scope, the real value of this type of assessment is that it specifically addresses a relatively small zone of liability that can be further minimized by following the recommendations.

Risk Management Recommendations
Seattle-King County Jail Health Services
June 3, 2003

Medical Records

1. Install an EMR. There is no practical or economical way to fix your paper chart library. Your medical record system is the single greatest liability that you have and if you took your current medical record to court the current state of your medical record would assist the plaintiff's case far more than it would assist in your defense.
2. Create a position for a medical records administrator (RHIT) and hire one for the jail. Your volume of medical records more than justifies a position.
3. You have no usable medical management data. Without that data, there is no way to monitor the system for quality while you are changing the system to achieve the desired cost-savings.
4. Until you have an EMR in place
   - Utilize chart dividers better to organize the charts that are in use
   - Create / implement physician order sheets and demand that all orders must be on those instead of in the progress notes
5. Hire transcriptionists and convert providers from hand-written notes to dictated notes
6. Schedule providers and hold them accountable for seeing what is on their schedule and account for anybody who was scheduled but not seen.

Nurse Staffing

1. Install an electronic medical record—documentation will improve dramatically.
2. Create high-level PHN Clinical Educator position to write training modules, certify new staff, complete orientation training
3. Dedicate training time within schedule for all new hires to cover orientation, skills pass off, and participating in mentoring with current employees.
4. Dedicate training time in schedule for monthly Continuous Nursing Education classes to be conducted under supervision of Clinical Educator.
5. Create high-level PHN Continuous Quality Improvement position to monitor the facilities and implement new initiatives.
6. Create high-level PHN Infectious Disease Nurse to implement and monitor infectious disease / lab issues. The first task should be to implement a comprehensive TB screening program.

7. Task nurses only to do all accept/reject and intake screenings instead of correctional officers.
8. Increase nursing treatments to be more consistent with community care standards.

Mental Health Nursing

1. Eliminate task-specific and site-specific nurse assignments and cross-train all nurses to work all areas of the jail.
2. Insist on appropriate inpatient documentation from Mental Health RN's
3. Redesign and implement appropriate documentation for Intensive Medical Management situations (forced meds, restraint, seclusion).

Psychological Evaluation Specialists

1. PES should cover the jails 24 hours a day, 7 days a week with one person in ITR / receiving unit and on person in inpatient mental health unit.
2. PES should serve as diagnostic consultants to include greatly expanded use of psychometrics within the inpatient units.
3. Stop the participation of PES in forensic procedures. They should serve a clinical role only to the prisoners of the jail, not a forensic role to the courts and to custody. That function should be contracted separately by the courts to maintain objectivity and professional distance.

Mental Health Inpatient Unit

1. Redefine what is considered to be inpatient-level care for mentally ill offenders within the jail. Many patients in the inpatient psych unit do not qualify for inpatient status and what you define as "inpatient mental health" is much bigger and more expensive than necessary. You need to concentrate your resources on the truly sick and minimize your resources allocated to the chronically low functioning (i.e., long-term stable resident in inpatient mental health still on 15-minute checks). Said another way, you undertreat the seriously ill and overtreat the chronically low functioning patients. Without management data and chart review data, it is impossible to focus on this problem with any more specificity than this general observation.
2. Patients to be admitted and discharged from unit only on provider order
3. Develop utilization review to make determinations on appropriateness of continued admission to inpatient status
4. Intensive medical management (restraint, forced meds, seclusion) deviates substantially from the current community standard and needs to be redesigned.
5. Develop process whereby medication can be compelled in the jail in cases that warrant it (with all due consideration to autonomy and the legal constraints that are created for patient safety). With the new classes of medications that have very minimal side effects, it is inhumane to allow someone to continue in a florid psychotic state indefinitely without pursuing this avenue.

6. Establish separate inpatient charts to include MD orders, MD progress notes, RN progress notes, social work progress notes, and treatment plans.
7. Psychiatrist / ARNP to perform admission history and physical exam within 24 hours
8. Psychiatrist / ARNP to round and chart on inpatients daily
9. Multi-disciplinary treatment plans to be completed
10. Psychiatrist / ARNP to complete discharge summary at time of discharge
11. Delegation of RN tasks to Correctional Officers needs to be done appropriately and with adequate documentation. In nursing, delegation of any care tasks (feeding, toileting, etc.) must be overtly done on each patient on each shift with documentation indicating who the task was delegated to and how they will be supervised.

Inpatient Medical Unit

1. Redefine what is considered to be inpatient-level care for medical offenders within the jail. Many patients in the inpatient medical unit do not qualify for inpatient status, but without management data and chart reviews it is not possible to quantify or characterize the extent of this impression any further at this time.
2. Patients to be admitted and discharged from unit only on provider order
3. Develop utilization review to make determinations on appropriateness of continued admission to inpatient status
4. Expand use of IV therapy on site.
5. Establish separate inpatient charts to include MD orders, MD progress notes, RN progress notes social work progress notes, and treatment plans.
6. Physician / ARNP to perform admission history and physical exam within 24 hours
7. Providers to round and chart on inpatients daily
8. Multi-disciplinary treatment plans to be completed
9. Providers to complete discharge summary at time of discharge
10. Providers in the inpatient medical unit to take care of all withdrawal patients housed there as part of their patient load.

Restraint / Seclusion of Prisoners

1. Rewrite policy and procedure to separate custody restraints and medical restraints completely. Jail Health Services should have no participation in "custody restraints" with respect to watching, checking, etc.
2. Eliminate use of restraint chairs completely in the facility. They are extraordinarily dangerous and their use is very commonly litigated.
3. Initiate dialogue between Jail Health Services, Risk Management, and Division of Professional Licensing about what levels of care are considered to be "community standard" with respect to intensive medical management and then write policy to reflect those standards.
4. Create documentation flowcharts that meet the above standards

5. Delineate clearly a forced medication / competency protocol and demand adherence for all situations
6. Cross-train medical and mental health nurses to ease staffing difficulties for this level of acuity.

Pharmaceutical Issues

1. Change practice of nurses so that every medication administered is reflected on the MAR.
2. Eliminate use of professional samples inside the jail and switch to using "vouchers" for medications so that you receive your credit without incurring the legal risks of managing the pills themselves.
3. Change packaging techniques so that every pill is unit-dosed and that no loose pills are sent out from the pharmacy.
4. Implement policy controls that all meds with narrow toxicity windows are "Direct Observe Therapy" by definition.
5. Institute random compliance surveys and report the results through Continuous Quality Improvement.
6. Improve training of nurses in proper medication management and discipline those who do not comply. Switching to all-unit-dose packaging will eliminate nurse repackaging completely.

Withdrawal Management

1. Consolidate process into a coherent treatment plan that focuses on objective measurements of patient condition and formalize the treatment protocols for this.
2. Apply assessment protocols over entire jail population who is at risk for withdrawal instead of just a few infirmary patients.
3. All withdrawal patients in the infirmary should be cared for in place by the clinician who is covering the infirmary.
4. If you want to manage this type of patient on-site, invest in appropriate lab diagnostic equipment to do it safely. At a minimum you should have complete blood counts and electrolytes available on site.
5. Expand care spectrum in infirmary to include IV fluid and medication therapy in order to manage these patients in a medically appropriate way.

Laboratory Services

1. Invest in a complete blood count machine (Coulter or Abbott) and electrolyte testing at a minimum if you want to continue to do inpatient care.

Disease Management

1. Expand role of medical director in committees, lines of supervision, utilization review, and approval of any nonstandard therapy.
2. Update all medical protocols for common conditions and publish those to the providers
3. Develop internal practices for disease management. For example, all insulin-dependent diabetics should have blood sugars 3-4 times per day instead of the current two.
4. Develop a utilization review process at the level of the medical director for all elective outside referrals (explained in detail in Section 2 of this Proviso Response)
5. Develop peer review process for mental health, dental, nursing, and medical providers, all of whom should answer to the medical director with summaries of findings.
6. Develop a process for reviewing / approving non-formulary medication requests at the level of the medical director.

Intake Screening

1. ONLY nurses trained in triage should do intake assessments. Officers are not properly trained for this assessment and will miss more pathology than they will catch.
2. Develop more intensive screening form to include vital signs and an appropriate screening physical exam.

Tuberculosis

1. Implement an Electronic Medical Record to track the hundreds of patients enrolled in this screening program at any given time.
2. Implement a true TB surveillance program that meets CDC guidelines ASAP. Failure to do so puts the County in a very precarious situation from a risk management standpoint as well as a public health standpoint
3. Place PPD's on every prisoner who enters the jail and read them all
4. Increase radiology services to meet the demand for Chest Xrays.

Policy and Procedure

1. Continue to re-write outdated policies and procedures
2. Combine Medical, Mental Health and Dental policies and procedures into a Jail Health Services Unit Policy and Procedure manual for all facilities.
3. Incorporate standards of practice for most common situations in P/P
4. Train all employees on new P/P and test to show comprehension
5. Design new P/P as new services (inpatient medical, comprehensive RN screening, computerized records, etc.) are developed and brought on-line.

Continuity of Care

1. Install an electronic medical record system
2. Design discharge sheet for all prisoners to receive upon rollup (best done with an EMR to minimize labor)
3. Make the medical discharge part of the rollup process
4. Improve process for prisoners taking medication with them at the time of release from jail. This will require improving the interface between DAJD and JHS and working out appropriate procedures to enable this program to succeed.
5. Increase productivity of physicians and mid-level providers to open up clinical appointments for the chronically ill.

Access to Care

1. Credential RN's to perform triage appropriately
2. Limit triage to once per day by RN's
3. Forbid any paper triage by providers. They are responsible to see or disposition all patients on their schedules for the day.

Suicide Screening

1. Nurses exceeding scope of professional licensure by independently dispositioning mental health patients, particularly on 3rd shift.
2. Staff PES over all 3 shifts and use them as resources for final disposition on all mental health issues.
3. Implement suicide screening tool after appropriate staff training has been accomplished on how to use the tool
4. Do serial examinations on at-risk prisoners using the assessment tool
5. Eliminate screeners from the evaluation and intervention process and demand that psychiatrists / psych ARNP's see patients who are placed in acute management in a timely fashion.
6. Implement a suicide step-down process that is controlled by psychiatrist / ARNP order only.

Prisoner Workers

1. Hire Janitors for Health Services because prisoners are not allowed to clean or access patient care areas or to handle patient care equipment. In addition, prisoners do not have adequate training to clean biohazard contamination.
2. Make sure officers train workers outside of HSU to perform the tasks that are required and document that training
3. Purchase and provide adequate protective equipment for prisoner workers to meet OSHA guidelines.

Employee Health

1. Contract for an occupational nurse service or a separate contract with Public Health using a nurse not staffed through JHS for Sheriff's Office employees to handle all employee-related health issues including flu shots, hepatitis shots, TB tracking, yearly pulmonary function testing of all employees who might use SCBA's, significant exposure testing and documentation, etc. It is an unacceptable breach of confidentiality for anyone who works in the jail (JHS nurses) to be handling employee health issues outside of an emergency situation.

Blood Borne Pathogens

1. Contract with an approved cosmetology provider for all haircuts and shift the liability of proper decontamination onto their professional license.

Medical Equipment

1. Set up a contract for Biomedical Engineering service on all medical devices that contact a patient.
2. Consider hiring an equipment / computer specialist to handle the volume of repairs, servicing, supplies at the jails.
3. Purchase more AED's of the variety that produce a rhythm strip and have them more readily available throughout the facility. At a minimum, there should be an AED in all inpatient units, ITR, the clinic, and on each floor.

Dental Care

1. Develop more definitive dental guidelines for treatment
2. Involve dentist more fully in ongoing quality assessment practices
3. Look at outcomes of his care vs. more aggressive care for certain disease processes.
4. Train all nurses who perform triage in dental triage

Continuous Quality Improvement

1. Hire a dedicated CQI nurse to run this process.
2. Install an Electronic Medical Record system to assist in collection of appropriate clinical data upon which to base CQI investigations.
3. Base CQI on systematic investigations of charts, patients, data, environmental conditions, etc., not just on "putting out fires."

Medical Isolation Procedures

1. Admission and discharge from isolation status done only by provider order.
2. Any prisoner in isolation must have labels on door as to type of isolation: "Respiratory," "Body Fluid," as well as the type of isolation gear needed by anyone entering the room.

Radiology

1. Increase radiology to meet the needs of the facility

Section 5:

Recommend actions for reducing health care costs in the King County Jail based on best practices and current NCCHC accreditation requirements. All analysis will consider the size and complexity of King County Jail Health population.

The following recommendations are mandatory requirements for any successful restructuring project to have any chance of succeeding:

- Establish Clinical Leadership Team
    1. Hire a Administrative Assistant / Confidential Secretary to share between Health Administrator, Medical Director, and Director of Nursing.
    2. Create a Director of Nursing position to cover all nurses between both facilities.
    3. Hire to a total of 3 PHSS nurses and turn them into true house supervisors covering both facilities when on shift / on call.
    4. Eliminate APHSS positions since their functions will be subsumed into the Director of Nursing, PHSS, and high-level Clinical Nurses.
    5. Create high-level PHN Clinical Educator position to write training modules, certify new staff, and complete orientation training.
    6. Create high-level PHN Continuous Quality Improvement Nurse to monitor the facilities and implement new initiatives.
    7. Create high-level PHN Infectious Disease Nurse to implement and monitor infectious disease / lab issues. Her first task should be to implement a reasonable TB program.
    8. Do not separate facilities administratively, staffing, or functionally. They should function was one facility with one administration just separated into two buildings.

The items that follow are a combination of recommendations and possible options for restructuring. Many of these items require choices to be made by the Clinical Leadership Team identified above and priorities can be assigned to the items after those choices have been made. It is important to note that some of the items listed below may be mutually exclusive depending on the choices made, but all of them are viable options to consider in reducing cost. Additionally, many of the items below require coordination with the changes occurring on the custody side and it is imperative that the Clinical Leadership Team have frequent and comprehensive contact with those individuals participating in the formulation of the Operational Master Plan for the jail so that each group can benefit from economies of scale.

- Invest in an Electronic Medical Record System
    1. Provides pertinent healthcare management data.
    2. Improves efficiency of multitudes of internal processes.
    3. Automates many healthcare functions thereby reducing staffing needs
    4. Increases productivity of all staff.
    5. Eliminates duplication of effort.

- Renegotiate Contracts with Unions
    1. Eliminate extensive lunchbreaks that limit productivity.
    2. Move nurses to 12-hour shifts.
    3. Redefine supervision rules to match with medical model of care.
    4. Create explicit language regarding management's ability to have employees to float according to needs of facility.
    5. Reconfigure the benefits ratio for 0.5 FTE vs. 1.0 FTE and steps in between so that it is a sliding scale, not an absolute full benefits at 0.5 FTE.

- Reconfigure Nursing Staffing
    1. Implement an EMR to perform many of the tasks automatically that are now done manually by nurses—tracking, documenting, etc.
    2. In conjunction with changing methodology of medication packaging, retask / hire sufficient Pharmacy Tech positions to free up RN's from medication passing duties.
    3. Retask freed up positions to perform intake assessments in ITR.
    4. Cross-train all nurses to work in all areas of the jail and eliminate task-specific and site-specific nursing assignments. This is most evident in mental health but it should be eliminated facility-wide.
    5. Change nursing shifts to 12-hour shifts throughout facility.
    6. Eliminate self-scheduling of RN's with respect to daily duties. They should all have discrete task lists that are monitored for productivity.
    7. In conjunction with redefining the inpatient mental health unit, decrease nursing staffing in that unit accordingly.
    8. Conceptually, JHS would be best served to move away from LPN's and hire RN's selectively because of their ability to function independently without additional supervision.
    9. Hire unit clerks for clinic, ITR, and inpatient units to free nurses up from clerical duties.
    10. Limit nursing triage to once per day.
    11. Reclassify medical unit at RJC and treat it as merely prisoner housing for staffing needs.
    12. In conjunction with custody functions, develop policy and procedure to enable medical to place a "medical hold" on all prisoners requiring high level medical interventions such that they could not be transferred to RJC.
    13. Consider operating RJC as a jail for ambulatory and healthy prisoners only and adjust nursing staffing accordingly. This is a policy decision and if it is felt to be inconsistent with how the County wants to operate RJC then accept

the increased costs of operating higher acuity units at both KCCF and RJC as a tradeoff.

14. Eliminate concept of "unrelieved posts" except in the acute care units. To be effective in staffing healthcare facilities, administrators must have the ability to float nurses to other areas to meet demands.
15. After above issues are implemented, it is reasonable to think that JHS could significantly reduce its nursing staffing overall.
16. Work to eliminate overtime and agency nurses.
17. Eliminate 0.5 FTE nurses with full benefits. This is a very costly luxury that far exceeds community standards.

- Reconfigure Psychological Evaluation Specialist staffing
    1. PES should cover the jails 24/7/365 for the purposes of performing crisis intervention and serving as a resource for the mentally ill.
    2. PES should serve as diagnostic consultants in the inpatient mental health unit.
    3. PES coverage of RJC should be by phone if you successfully convert RJC into a healthy ambulatory facility that does not do intake assessments.
    4. Eliminate routine use of PES in ITR—they should consult on patients only if referred by nursing during the intake assessment.
    5. Minimize number of psychologists on PES staff in favor of clinically-licensed mental health workers.

- Change physical plant
    1. All changes in this section need to be coordinated with the Operational Master Plan of the jail.
    2. Redesign West Wing to be a true medical unit. This would increase efficiency to some degree.
    3. I do not see the current physical plant as impossibly limiting although improvements could be made.
    4. Decrease physical size of inpatient mental health and turn one of the areas into a mental health stepdown unit with an appropriate treatment milieu.
    5. Turn RJC medical unit into regular prisoner housing with no medical component and consolidate as much of the medical enterprise at KCCF as possible.

- Physician Staffing
    1. Investigate ability to contract with part-time physicians in specialty areas of high utilization to perform clinics on-site.
    2. Provide differential pay to physicians but demand productivity.
    3. Eliminate 3rd level of triage performed by providers (first two provided by nurses).
    4. Schedule all providers with an actual daily schedule instead of allowing them to self-schedule their days.
    5. Staff a nurse in clinic to provide healthcare support for medical providers
    6. Staff a unit clerk in clinic to provide secretarial, scheduling, paperwork support for medical providers

- Change Inpatient Mental Health Unit Practices
    1. Redefine what is considered to be inpatient-level care for mentally ill offenders within the jail. Many patients in the inpatient psych unit do not qualify for inpatient status and what you define as "inpatient mental health" is much bigger and more expensive than necessary. You need to concentrate your resources on the truly sick and minimize your resources allocated to the chronically low-functioning. Without either an EMR to provide cogent management data or detailed chart reviews it is not possible to characterize this problem further at this point.
    2. Develop utilization review to make determinations on appropriateness of continued admission to inpatient status.
    3. Develop process whereby medication can be compelled in the jail in cases that warrant it (with all due consideration to autonomy and the legal constraints that are created for patient safety).
    4. Reduce nursing staffing in inpatient mental health unit in accordance with reorganized levels of care.
    5. Turn part of inpatient mental health into a therapeutic milieu stepdown unit.
    6. Reduce officer staffing in inpatient mental health in accordance with reorganized levels of care.

- Change Inpatient Medical Unit Practices
    1. Redefine what is considered to be inpatient level care for medical offenders within the jail. Many patients in the inpatient medical unit do not qualify for inpatient status.
    2. Develop utilization review to make determinations on appropriateness of continued admission to inpatient status.

- Modify Pharmacy Practices
    1. After analysis of your pharmacy situation I do not advocate for privatizing your pharmacy as an isolated carve-out. Your pharmacy acquisition costs are competitive, you wish to run a methadone clinic on site which requires a pharmacist and you have the space available to consolidate services, and you have to repackage a lot of sample medications.
    2. Carefully consider the implications for continuing to rely on physician samples from pharmaceutical companies. In the least, account for the value of these medications in all assessments of pharmacy costs so that decision-makers have a complete picture of your pharmaceutical practice.
    3. Consolidate pharmacy into one site.
    4. Change pharmacy practices so that every pill dispensed within the jails is in unit-dose format.
    5. Purchase equipment necessary to blister-package all medications into unit doses.
    6. Expand your Keep-On-Person medication program.

7. Reduce nurse pill pass to include only direct-observe meds and injections only. Regular pill pass can be reduced to twice-a-day instead of the currently 3 to 4 times per day.
8. Eliminate Over-the-counter medications from nursing and pharmacy responsibilities and place them all on commissary.
9. Provide discharge medications to mentally-ill prisoners of at least 7 days to help with recidivism issues.
10. Implement and enforce a facility formulary in conjunction with Medical Director / Chief of Pharmacy

- Consider privatizing all or parts of healthcare enterprise
    1. From purely a cost analysis perspective this is a reasonable recommendation.
    2. This is not a magic solution as there are many potential problems that go along with any potential gains
    3. The County still retains all of its civil liability under this option and it may lose some control over its ability to limit that liability
    4. Politically this may not be possible and I won't expand on it unless requested.

- Medical Director Oversight
    1. Empower medical director appropriately to monitor all care in the facility.
    2. Bring all mental health, dental, pharmaceutical, and laboratory functions under supervision of medical director.
    3. Establish a Utilization Review Committee chaired by the Medical Director as described earlier in this document.
    4. Expand role of medical director in JHS committees, lines of supervision and treatment decisions.
    5. Develop a peer review process for all areas of practice but supervised by the medical director.
    6. Develop a prescription profile for all providers to help delineate prescription habits. The sheer number of prescriptions ordered in this facility is staggering and needs to be brought into some semblance of control.

- Laboratory practices
    1. Eliminate Gram staining of samples on site. It is wasteful of time and medically it is far below the standard of care for assessing sexually transmitted diseases.
    2. Invest in the ability to run common labs on-site: complete blood count, electrolytes, etc.

- Substance Abuse Counselors
    1. Eliminate them from the JHS budget.
    2. Seriously reconsider their efficacy in a jail setting with a very limited length of stay.
    3. Move their services into the community and open up ample opportunities for enrollment of prisoners referred from mental health / medical staff within the jail.

Section 6:

Recommend performance indicators in a contract between Department of Adult and Juvenile Detention (DAJD) and Jail Health Services (JHS) for correctional health care.

Report Given to DAJD from JHS About Medical Care

- Number of officer transports and distribution by specialty / emergency
- Number of suicide attempts
- Number of medical bad outcomes
- Number of medication errors
- Number of medical grievances, categorization, and disposition
- Aggregate infectious disease data about surveillance and actual interventions
- Average census in inpatient psych, inpatient medical, negative air, on suicide watch, and number on q 15 min watch
- Distribution of diagnoses for all patients admitted to inpatient status
- Clinic visits for nursing, providers, dental, mental health
- Number / type of nonformulary meds used
- CXR's done
- Number of medical appointments not kept and reason why
- Number and type of staff vacancies
- Budget information broken out in a variety of ways
- Compliance with meetings, cooperative efforts, etc. to include minutes
- Documentation of compliance with the contract items listed in the last section of this report. Usually this is done in report format either once or twice a year as part of the audit.

Report Given to JHS by DAJD Regarding Interface with Medical

- Number of intakes
- Population statistics—average length of stay, distribution of security classification, etc.
- Number of hospital days requiring guarding
- Number of ambulance transports
- Number of overtime hours for officers doing medical guarding
- Critical incidents from watch command
- Copies of completed environmental surveys to include checking negative air, water temperatures, SCBA pressure checks, first aid kit checks, and anything else agreed upon in the contract.

Section 7:

A recommended mechanism for overseeing performance on the contract between DAJD and JHS.

The only way to oversee performance on a contract is to perform audits on the terms of the contract on a set frequency and to generate reports summarizing the findings of those audits. My recommendation would be to establish an internal committee to perform these audits using agreed-upon audit criteria and to develop reports regarding the results of that audit process. The audit criteria should be developed as part of the contract so that the content and format are spelled out and contractually established.

If the contract is well written and accurately reflects the understanding of both sides, then monitoring the contract using internal committees should be easy to accomplish since compliance should be very high. Routine monitoring would be accomplished using internal committees comprised of JHS and DAJD members with sign-off from each group on the final report to include comments if necessary. That report would be given to the executives who supervise JHS and DAJD and if everything is working well, then no further action would be necessary. If things are not working well, then it would be up to the supervising agencies to decide what steps are necessary.

Section 8:

A definition of the minimum health services information available (data requirements) for contract performance monitoring based on implementation of current department information systems.

The Health Services information that is available is rudimentary at best. Jail Health Services has virtually no usable healthcare management data. To the extent that it is available, the data requirements from Jail Health Services are delineated in Section 6 of this report.

Ideally Jail Health Services would have a much richer statistical picture of their services more along the lines of what is listed below:

- ***System Performance Measurements***
    1. Number of prisoners seen medical outpatient sick call per day
    2. Number of prisoners seen on medical inpatient rounds per day
    3. Number of prisoners seen on mental health outpatient sick call per day
    4. Number of prisoners seen on medical inpatient rounds per day
    5. Number of prisoners seen on dental sick call per day
    6. Time between submission of health care request and provider visit
    7. Percentage of missed followups for scheduled appointments
    8. Readmission rate to inpatient status within 30 days by ICD-9 code
    9. Readmission rate to inpatient status within 90 days by ICD-9 code

- ***Health Provider Profiling***
    1. Number of prisoners seen per day
    2. Chart completion
    3. Cost per provider per prisoner visit
    4. Percentage deviation from formulary
    5. Percentage deviation from ideal clinical note writing
    6. Number of in-house referrals per provider per month
    7. Number of outside referrals per provider per month

- ***Nursing Profiling***
    1. Number of treatments per day
    2. Number of medication / treatment errors per month
    3. Number of assessments per day
    4. Percentage of noncompliance to MD orders
    5. Percentage deviation from nursing treatment protocols per month

- ***Disease Monitoring***

1. Number of Reportable Diseases (as defined by CDC / Utah State Department of Health) identified, date, and documentation of reporting
2. Number of PPD skin tests placed
3. Number of PPD skin tests read
4. Number of PPD skin tests that are positive
5. Number of active tuberculosis cases managed per month and per year
6. Number of HIV+ patients in-house per month
7. Average CD4 counts of HIV+ patients per month
8. Average viral load of HIV+ patients under treatment tracked over time
9. Number and diagnosis of AIDS-related complications per month
10. Number of culture-positive STD diagnoses per month and documentation of treatment
11. Number of Hepatitis A cases and monitoring of liver function tests per patient
12. Number of Hepatitis B cases
13. Number of Hepatitis C cases
14. List of Type I diabetics per week with blood sugar data retroactive for the last week, Blood Pressure Data, weight, latest Hemoglobin A1C level, insulin doses, and caloric level of diets.
15. List of Type II diabetics with blood sugar data retroactive for the last week, Blood Pressure Data, weight, latest Hemoglobin A1C level, insulin doses, and caloric level of diets.
16. List of seizure patients per week with latest medication levels and Complete Blood Counts and/or Liver Function Tests
17. List of hypertensive patients with medications and most recent BP data
18. Number of suicide gestures vs. serious attempts per month
19. Number of forced-restraint or forced-medication patients per month
20. Baseline ICD-9 diagnosis breakout and statistical comparison of deviation from the norm for any diagnosis code

- ***Individual Patient Profiling***

1. Identification of high risk patients by ICD-9 code diagnosis or pharmacy information
2. Identification of high utilization patients for behavioral staffing
3. Identification of patient refusals
4. Identification of special needs patients for ADA assistance, religious – medical conflicts, or special consideration
5. Calculation of cost-equivalent care in the private sector per prisoner

Section 9:

Development of a contract between DAJD and JHS based on definitions and findings from items 1-8.

The items listed below are those items in a contract between DAJD and JHS that would focus on the functional components of the delivery of healthcare and maintenance of the custody/healthcare interface. All of these need to be considered and appropriate language needs to be developed by attorneys to assign responsibilities as appropriate. I have divided the responsibilities along lines that are traditionally seen in correctional facilities, but deviation from these assignments is possible. There are several items at the end that could be handled by either group and they need to be investigated and assigned as appropriate at the time of writing this contract.

Jail Health Services (JHS) Responsibilities

- Attendance at DAJD chief's meeting by health administrator and medical director
- Medical director job defined better with oversight over all clinical care
- Send representative from JHS to policy committee for DAJD
- Notification to officers of isolation precautions
- JHS has separate policies and procedures that DAJD signs off on
- Train officers in privacy of care / HIPAA
- Train officers in suicide / mental health issues / blood borne pathogens
- JHS will not participate in any employee health care except emergencies
- JHS will set aside training time for new employees to be trained in safety and security measures by DAJD
- JHS will contract separately or by agreement with other county agencies to manage refills on medical-grade oxygen as well as appropriate testing and storage of cylinders
- Define staffing, frequency and times of clinics, pill lines, and other healthcare items that impact custody staffing or flow of prisoners
- Review JHS policies and procedures at least yearly and send to DAJD for their review
- Establish utilization review committee to evaluate appropriateness of sendouts for external care and the appropriateness for transfer back to the facility from the hospital to minimize impact on DAJD staffing and transports
- Biohazard waste disposal methods and who is responsible
- Sharps waste disposal methods and who is responsible

Joint Responsibilities

- Develop joint policy on orthoses, prostheses, and other assistive devices
- Develop joint policy on forensic information (PES!)
- Formalize disaster drill training coordinated between both agencies
- Develop joint policy on use of restraints

DAJD Responsibilities

- DAJD will contract separately with Public Health for all employee PPD testing, Hepatitis shots, significant exposures and any employee health issues
- DAJD will contract separately or within County to service and recharge SCBA's after use
- DAJD will send a representative to JHS CQI and ID meetings
- DAJD will agree that only JHS licensed independent practitioners can admit/discharge from inpatient status / negative air (i.e., not correctional officers)
- DAJD will set aside training time for officers to receive health-related training
- Environmental control inspections presented to JHS personnel at scheduled times
- DAJD will present kitchen inspections presented to JHS personnel at predefined intervals
- DAJD will provide orientation to security for new JHS staff
- JHS will become part of discharge process from jail—summary, meds, appointments, etc—provide mechanism to put items in prisoner's property bag for his discharge
- DAJD officers will participate in multispecialty treatment team meetings for inpatient units
- DAJD will provide space for AED's / crash carts / gurneys
- Establish a formal liaison from DAJD for JHS and that person attends JHS administrative meeting q month
- DAJD will provide appropriate physical space, phones, copiers, etc as necessary for the mission of correctional healthcare
- DAJD will define for JHS those times and situations were patients must be locked down, unavailable, etc.
- DAJD will assist in meeting compliance standards for NCCHC for all things in DAJD control
- DAJD will provide appropriate guarding for all prisoners and will ensure that no employee of JHS is ever inappropriately unattended with a prisoner
- DAJD will provide all medical diets ordered by JHS providers
- DAJD will make provisions for all ordered healthcare including prostheses, medical beds, wound care, isolation, etc.
- DAJD will include JHS in the planning and implementation of the new technology communication infrastructure to make sure that it meets JHS needs for the future
- Housekeeping responsibilities for all medical areas
- Maintenance of first aid kits throughout facility
- Monitoring of negative pressure cells, water temperatures, environmental issues

REFERENCES

[1] *Estelle v. Gamble* 429 US 97, 97 SCt 285 (1976)
[2] Rold WJ. Legal considerations in the delivery of health care services in prisons and jails. In: Puisis M, ed., Clinical Practice In Correctional Medicine. St. Louis, MO: Mosby; 1998:344-54.
[3] Faiver KL. Health Care Management Issues In Corrections. Baltimore, MD: American Correctional Association; 1998:69-82.

Jail Health Services
Positioning Ourselves for the Future

Contents:

Attachments:

Background

In the spring of 2002, Council staff recommended to the King County Council that due to the increasing percentage of CX being spent on Criminal Justice and Corrections, the County Auditor should audit the Department of Adult and Juvenile Detention ("DAJD"), to identify the major cost drivers. The review concluded that the cost of jail health services provided by Public Health – Seattle & King County ("PHSKC") has grown 50% faster than the cost of Secure Detention – Adult ("SDA") operations and accounts for nearly 40% of the increase in the total DAJD budget over the last three years. Jail Health's costs now represent roughly 20% of the total SDA budget.

The Council responded to the Auditor's findings and recommendations by reducing DAJD's 2003 budget and placing several provisos on the funds, including two affecting Jail Health Services ("JHS"):

Proviso #1: This proviso called for a consultant review of the provision of jail health services and recommendations for the development of levels of service/contract for adult jail health services, to include: (a) appropriate definitions of "medical necessity" used in similar detention health service operations, (b) help in crafting model scope of services for jail inmates, (c) needed contract provisions that meet federal court criteria and best practices, (d) best practices for correctional health cost containment, and (e) a definition of minimum health service information needed to establish a base contract and then effectively monitor the provision and costs of jail health services. In addition, the consultant should address the health care related recommendations of the King County Council Auditor.

DAJD and JHS engaged the services of Wellcon, LLC to fulfill the consultant's charge. Wellcon presented its findings to the Council in June, 2003 and continues to work with JHS to refine its recommendations and create the list of projects which will improve the effectiveness and efficiency of health care services provided. (Attachment A)

Proviso #2: This proviso required DAJD to submit a "service level" agreement for the provision of health services to inmates of the department's adult detention facilities. The department will negotiate into the service level agreement the recommendations of its jail health care consultant (see above) that will ensure minimum inmate health care needs are met and that monitoring and cost containment provisions for both operational and health care related costs are included. In addition, the department shall also identify how the contract for services will incorporate the recommendations of the King County Council Auditor. At a minimum, the contract should contain the specific identification of the responsibilities of the department and the entity providing inmate health services. These responsibilities include the incorporation of definition of medical necessity, scope of services, and development of utilization /cost / management data for adult jail health care. In addition, the contract should identify how the department will monitor the provision of contracted services and provide for the containment of inmate medical costs and departmental health related operational costs.

On August 25, DAJD and JHS entered into a Memorandum of Understanding containing the requisite conditions (Attachment B).

Jail Health Services - Mission

The mission of JHS is ***to provide quality health services, which meet community and professional standards of care, to the detained population of the King County Department of Adult and Juvenile Detention; and to do so by hiring, training, and supporting a diverse staff of health service professionals in a multidisciplinary team.***

A Vision For the Future

Ultimately, JHS is a public health entity. We derive our purpose from the role and function of Public Health - Seattle & King County***: to achieve and sustain healthy people and healthy communities throughout King County by providing public health services which promote health and prevent disease.*** The factors that will influence changes in our public health system overall in the next 3-5 years will drive change in JHS as well: the aging of our population; the emergence of new disease entities; increased community standard for the delivery of care which results in more costly procedures and medicines; and the competition for the dollars to provide care. To ensure that we are well positioned to fulfill our mission over the next 3-5 years, four broad goals will guide our work:

1. ***We are recognized for the quality of care we deliver***
   - The quality of care we deliver is consistent with contemporary correctional and community standards.
   - We pursue continuity of care for released prisoners using linkages to programs that operate in the King County community in order to minimize treatment disruptions and enhance risk reduction in this fragile population.

2. ***We are cost-effective in our clinical and business operations***
   - We use technology and innovation to the fullest extent to maximize quality and minimize cost of care.
   - Our cost of care initiatives are designed to produce tangible and sustainable changes, and they are managed and accounted for so that meaningful comparisons can be made to other correctional and community providers.

3. ***We are a desirable place to work***
   - Staff have the opportunity to practice in an invigorating and collegial atmosphere that is designed to allow them to work to the fullest extent of their training and licensure.
   - Our value of staff is acknowledged through the provision of different types of assignments, schedules, and employment packages, through the provision of trainings in modern correctional healthcare topics, and through the provision of modern medical equipment.

4. We serve our inmate population in full partnership with DAJD

- JHS and DAJD coordinate efforts to produce maximum efficiency of patient access and care and to further each other's mission as much as possible through communication and cooperation.

- JHS and DAJD administrators have entered into an MOU to create a framework for supporting the delivery of quality and cost effective health care services to inmates whose detention is managed in a safe, secure, humane, and cost-effective manner.

Strategies To Realize our Vision

1. Four key strategies position us to achieve these broad goals:

I. Design and implement clinical and operational practice improvements which result in high quality, cost effective delivery of health care.

A. Practice Redesign Initiatives – Apply conservative risk management practices and best practices for delivering correctional health services to redesign our clinical and clinical support practices for quality and cost efficiency.

- Pharmacy/Medicine Administration Program Redesign
- Psych, Infirmary, & Clinic Redesigns
- Triage Process Redesign
- Evidence Based Guidelines, including Disease Management Protocols
- ITR Screening Project
- Utilization Review Program

B. Maintain NCHHC Accreditation under 2003 Standards

King County operates under several constraints in providing health care to the incarcerated population, one of which is the Hammer Settlement Agreement. This agreement established the need for National Commission on Correctional Health Care ("NCCHC") accreditation, which has been attained and recently renewed. NCCHC is dedicated to improving health services in jails, prisons, and juvenile confinement facilities. Incorporated in 1983, its roots are in the early 1970s as a project of the American Medical Association. The 2003 *Standards for Health Services in Jails* represents a revision of standards first published by the AMA in 1977. This is the seventh revision.

The *Standards* represent NCCHC's recommended requirements for the management of a correctional health services system. The *Standards* have helped correctional facilities improve the health of their inmates and the communities to which they return; increase the efficiency of their health services delivery; strengthen their organizational effectiveness; and reduce their risk of adverse legal judgments.

2. Implement infrastructure improvements to support changes in clinical and operational practices.

A. Modernize JHS' Medical Equipment

Diagnostic and monitoring medical equipment is essential to the delivery of high quality healthcare in an efficient manner. Unfortunately, the jail's medical equipment is substantially antiquated. A complete list of durable medical products has been produced and is scheduled for acquisition within the normal budgets of JHS. This list has been prioritized and the equipment will be purchased serially over the life of this project so that by the end JHS will have a full complement of modern equipment with which to carry out its mission.

B. Acquire and Implement an Electronic Health Record

The projected sustainable cost savings and the measurable improvement in quality that is necessary for JHS will not be possible without the acquisition and use of cost effective technology. An electronic health record ("EHR") is the cornerstone strategy of the entire Strategic Business Plan ("SBP"); and is its number one priority. Ready access to clinical lab results, access to provider notes, and access to pharmacy prescription profiles are all necessary to provide cost effective care. In addition, linking this EHR with real time DAJD data indicating updated inmate location will save providers staff time now spent in locating inmates for med passes, for example. Coordination of care across sites will also be possible, thereby decreasing the chances of errors, avoiding duplication of service, and ensuring timely care delivery.

C. Implement the ISP/JHS Remodel Project

The Integrated Security Project ("ISP") is a capital improvement project for the King County Correctional Facility ("KCCF") located in Seattle. This major initiative will modernize the security electronic systems of the jail, upgrade the elevators, and make improvements to jail health services. The ISP is a formidable project that must succeed for the JHS strategies to succeed. A project of this magnitude is vulnerable to funding shortages and work delays and many of the efficiency initiatives in this SBP have been designed around the improvements anticipated in the ISP. Any delay or alteration of that plan will necessarily require significant reworking of this plan.

3. Develop and implement human resources practices which attract and retain qualified staff.

In a healthcare enterprise such as JHS, staff are the most valuable asset. It is imperative to foster a work culture that both furthers the mission of the institution through optimum deployment of the staff throughout the facility and meets the personal and professional development needs of the employees. Achieving our key strategies requires that we provide significantly more opportunities for professional staff to function at the higher end of their scope of licensure as well as to opt for different types of assignments, schedules, and employment packages. Examples include:

[1] Appropriate licensure for task: The various healthcare and administrative tasks in JHS require differing levels of licensure and experience—some mandated by law, some by the robust tradition of medicine. Staffing design in support of our strategies will take both of these into account as well as the goal of providing diversity in work assignments within the boundaries of licensure established by the State of Washington.

[2] Appropriate training: Correctional healthcare is a field that is typically learned through apprenticeship rather than through academic training. So many of the tasks required of licensed professionals are unrepresented in the curriculums of professional schools that it is incumbent on management to recognize the need for specialized training of staff once they hire on to JHS. Our human resources strategy includes hiring a nurse trainer position dedicated to providing not only high level training of staff both in specialized correctional health topics but also in generalized nursing / healthcare continuing educational topics to ensure that the staff are well trained in modern correctional healthcare topics.

[3] Appropriate work load: Job satisfaction is the key to attracting and retaining employees as well as to furthering the mission of the institution. Management's role is to ensure that employees have adequate work to keep them engaged and to assist them in feeling like they make a difference in the healthcare of the prisoners they attend to without overwhelming them with an insurmountable task list that requires them to make compromises in their professional care. Significant attention will be given to this duality throughout the process by completing serial staffing analyses based on observational and performance data.

[4] Appropriate supervision: Supervision is an integral attribute of high functioning groups. This is particularly true in healthcare because of the need to take many different employees of differing experience levels and backgrounds and meld them into a consistent healthcare delivery team. Implementation of this level of supervision is necessary not only from a professional development standpoint, but also to meet the needs of the administration and the public to ensure the delivery of consistently-high-quality health care that protects the health of the prisoners as well as the liability of the County.

[5] Recruiting practices: JHS is a large enterprise that is necessarily dependent upon healthcare professionals that are unfortunately in relatively short supply. JHS must be flexible with hiring packages to maximize the opportunities to acquire and retain qualified staff. The nursing profession, in particular, is accustomed to employer flexibility. Our strategy includes JHS partnering with Human Resources to develop hiring and working packages that are custom-tailored to this high-demand profession. Similarly, the complexity of healthcare in the jail requires the participation of multiple medical specialists. The volumes of outside referrals in some specialty areas (e.g., orthopedics, otolaryngology, internal medicine, etc) justify initiating those same types of clinics on-site and recruitment of doctors who specialize in those areas.

[6] Optimum labor relations: The implementation of all of the above items must involve labor representation. In order for our strategies to be efficiently implemented, a strong partnership between labor and management needs to be forged. To the extent that collective bargaining agreements need to be amended to implement the changes, the negotiations should be undertaken as soon as possible.

4. Build a solid partnership with DAJD.

No correctional health project can succeed without recognizing the primacy of safety and security concerns. Our strategies depend to varying degrees on coordination, cooperation, and implementation on the custody side of the equation. To assist with this, several steps have been taken to facilitate coordinated planning and operations: Inclusion of DAJD members on the Change Implementation Team; Carry out the provisions of the Memo of Understanding between JHS and DAJD; and Continued involvement of JHS administration in the remodel (ISP) planning meetings to ensure that the upcoming physical renovation of the jail meets the operational needs of JHS.

Change Management Approach

JHS has been in a constant state of change for the past several years. One might argue that change has been the only constant. Our strategies require more change. Effective implementation of our strategies and achieving our goals is dependent on staff understanding our goals and what is expected of them, as well as feeling that they have the opportunity for meaningful participation and input. Our change management strategy must reflect that change means staff letting go of how things have been, accepting that our work environment will feel ambiguous and chaotic while the changes are being implemented, and taking the risk of believing that the future will be better. We plan on designing our change management approach to support staff as they transition to our new practices.

Stakeholders

The oversight of this change process is by the JHS Advisory Work Group, chaired by Alonzo Plough, Director, PHSKC. This group, which meets quarterly, brings together representatives of the various entities that have a stake in how JHS addressed the requirements of the provisos and will meet the goals of the Strategic Business Plan. See Attachment C for a listing of the members.

Implementatiom Team

Creation of a Change Implementation Team is critical to the success of this entire project. The charter for this team is to ensure the changes are done in a manner consistent with the mission, vision, and values of JHS.

Change Process Model

A standard collaborative model (see Attachment D) will be used for all substantive changes called for in this plan. It will consist of a sponsor, usually from the Implementation Team, who will present, to a selected committee, a draft plan with identified change drivers (why are we doing this?), expected outcomes and improvements, and an implementation workplan. The committee will revise/edit and create a draft plan that will be presented to staff for input and feedback that then is used to create the final draft for implementation. Once the plan is

implemented, a continuous quality improvement process allows for rapid cycle improvements to be made.

Internal Communication

In recognition of the wealth of experience that current JHS staff have acquired, communication forums will be held utilizing multiple formats to solicit opinions regarding current recommendations and proposed changes. Additionally, several methods of communication have been instituted to inform staff about the elements, timeline, and status of the Strategic Business Plan.

- Communication Board
- Staff newsletter
- Proactive communication with labor unions
- Jail Health Staff forums
- Jail Health focus groups on identified problems
- Solicitation of opinions and questions with subsequent answers in staff newsletter
- Facility wide communication as appropriate
- County stakeholder communication as appropriate

Timeline Summary

A GANTT chart is provided in Attachment E

Measuring Outcomes

Outcomes are the key to determining the ongoing effect and eventual success of our strategies. This is particularly true in this case since the entire system will remain in operation throughout the change period and quality must not be compromised during the change. Many of the more sophisticated outcomes measures will not be possible until the Electronic Health Management System is in place, but it will be essential to begin collecting outcomes data as systems come online to enable us to see a statistical picture of change over time. A much more detailed breakdown of the types of outcomes that can be measured in each of the above categories is in Attachment F.

Financial Overview

Financial Investments

- Hiring the remaining key Leadership Team positions
- Hiring the Electronic Health Record Manager
- Hiring the ISP JHS Remodel Project Manager
- Hiring the staff necessary to prepare for NCCHC Accreditation review
- Funding the Electronic Medical Management System

Reallocation of Resources

Many of the staffing initiatives in this Strategic Business Plan have been formulated through reallocation of resources and reclassification of unfilled positions. As such, the Jail Health Staff has been able to achieve significant progress while working entirely within the current budgets through creativity and ingenuity. This will continue to be a deciding factor in the timing of the various projects.

Cost Savings

The majority of our costs are incurred in staffing and the only way to achieve significant financial savings is to reduce staffing through improved efficiency and technology. Before these savings can be realized, the efficiency measures must be put into place. For example:

- Redesign of pharmacy packaging system and medication delivery methodology
- Redesign of triage methodology
- Redesign of clinic operations
- Redesign of Psych services

Initially, the savings in staff time that are realized from these initiatives will be utilized to backfill current open nursing positions so that JHS can come into full compliance with NCCHC standards. Therefore, we will not realize savings initially but will see significantly improved quality of operations. This course is necessary to ensure that the quality of care does not dip below the constitutional minimum during this change phase.

The final goal is to create a cost-effective program that is sustainable and that will incrementally over time, cost less as efficiency improves and appropriate staffing levels are achieved. It is anticipated that with the current level of vacancies, normal staff attrition, and possible reassignment of duties as necessary, that the redesign of staffing will not involve loss of jobs.

Attachment A

Wellcon Report
June 2003
See Reference #1 in Business Case

ATTACHMENT B

Memorandum of Understanding

between
Department of Adult and Juvenile Detention and
Public Health – Seattle and King County

Department of Adult and Juvenile Detention (DAJD) and Public Health – Seattle and King County (Public Health) mutually agree to enter into this Memorandum of Understanding (MOU) as requested by proviso language included in Ordinance 14517, Section 40. Jail Health Services (JHS), a section of Public Health, is the provider of adult jail health services at two facilities operated by DAJD:

- King County Correctional Facility (KCCF), 500 5th Avenue, Seattle, WA 98104 and
- Regional Justice Center Detention Facility (RJC), 620 West James Street, Kent, WA 98032.

DAJD and Public Health have entered into this agreement to define and formalize the business relationship by which both entities meet their primary objectives with respect to adult jail health services. This MOU results from recommendations by the King County Auditor, the King County Council's subsequent proviso included in Ordinance 14517, ongoing dialogue between DAJD and JHS, and Wellcon LLC (an outside jail health consultant) to set forth the terms and conditions of the working business relationship between the two organizations. The overall goal of developing this MOU is to create a framework for supporting the delivery of quality and cost-effective health care services to inmates whose detention is managed in a safe, secure, humane, and cost-effective manner. The health care provided to inmates is based on evidence-based clinical practices, cost-effective use of resources, and current NCCHC accreditation requirements.

I. Purpose

The purpose of this MOU is to provide the framework for a long-term investment in joint planning, operations, and collaboration between DAJD and Public Health to provide mandated

health care in a cost-effective manner. This MOU is also intended to provide the framework and structure for implementing the JHS Strategic Business Plan due October 2003.

II. Effective Date, Duration, Amendment, Renewal, and Termination

This MOU is effective as of the date both parties sign and will continue to be in effect until December 31, 2004, unless specifically extended. This MOU is intended to be a document which provides a framework to create and monitor policies which will be jointly adhered to by both departments. It is the intent of both parties to renew this MOU effective January 1, 2005. When conditions no longer require an ongoing business relationship, either party may terminate this MOU by providing 30 days' advance written notice.

III. Definition

"Medical Necessity" is determined by considering:

- Nature of the problem
- How long the problem has existed
- What the prisoner has done about the problem before
- Nature of the proposed procedure or treatment and whether accepted medical standards support the proposed care
- Urgency of procedure or treatment
- Necessity of procedure or treatment
- Potential complication for failing to treat
- Availability of alternative treatment options
- Expected remaining duration of incarceration
- Probability of successful outcome of treatment including risk of adverse side effects
- Expected functional improvement as a result of the intervention
- Degree of compliance expected from the prisoner
- Whether the intervention is for a pre-existing condition
- Whether the intervention is a continuation of previous treatment or is the initiation of a new course of long-term treatment

IV. Scope of Services

Under the terms and conditions of this MOU:

DAJD is responsible for:

- Providing appropriate levels of DAJD staff to support the cost-effective provision of medical services by JHS
- Orienting all new JHS staff in safety and security issues specific to the jail
- Ensuring inmate and staff security
- Working with Facilities Management Division to provide and maintain adequate and appropriate physical space to accommodate health care delivery (janitorial, environmental issues, etc.)

Public Health is responsible for:

- Providing appropriate clinical care staff, with consideration of numbers of staff with particular licensure, type, and frequency of clinics and services provided
- Training corrections officers on privacy, confidentiality, and other health care issues including suicide prevention, mental health, and blood borne pathogens
- Ensuring availability and appropriate disposal of all sharps and biohazardous waste
- Incorporating in its utilization review an evaluation of appropriateness of "send-outs" for external care and "transfers-back" from hospital

DAJD and Public Health are jointly responsible for:

- Attending monthly meetings to review and discuss progress on joint planning, operational issues, and performance gaps identified through performance indicators, with explicit reference to the Strategic Business Plan.
- Building an environment of mutual respect
- Developing an agenda template and monitoring tool to be used at the monthly meetings
- Agreeing to meet NCCHC standards in order to maintain accreditation
- Developing joint policies on assistive devices, forensic information, and use of restraints
- Formalizing emergency and disaster drill training coordinated between both agencies

V. Structure for Policy/Performance Oversight

The members of the Oversight Team will be made up of, at a minimum, two members of DAJD's Senior Management team and two members of JHS's Senior Leadership team. Additional ad hoc members will be invited to attend as is indicated by specific agenda items.

The meetings will occur monthly and the agenda will be jointly developed by the Oversight Team members and finalized the day before each meeting. Minutes of these meetings will be recorded and maintained by the administrative offices of both DAJD and JHS.

VI. Problem Resolution

DAJD and Public Health mutually agree to resolve problems at the organizational level where they occur. If problems are not resolved at this level, staff from each organization will use the appropriate chain of command to notify supervisors and/or managers who will seek expeditious resolution. If problems persist, they will be reviewed and resolved at the monthly meetings of the Oversight Team. As a last resort, the directors of the respective departments will review and resolved outstanding issues. Both organizations agree to address problems of an emergency nature quickly and cooperatively at the appropriate level.

VII. Reporting Requirements

Reporting requirements are described in Exhibit A. These requirements are subject to the availability of data. As business practices change and information systems improve, these reporting requirements will be refined and expanded. Exhibit A will be amended accordingly.

VIII. Performance Audit Process

An internal review committee will be established to oversee and evaluate adherence to the terms of this MOU. Comprised of representatives from DAJD and JHS, this committee will perform audits using agreed-upon audit criteria and report the results of the audit process to the Oversight Team at its monthly meetings. The Oversight Team will be responsible for taking the necessary steps to resolve problems raised through the performance audit process.

IX. Other

This MOU does not contain language concerning liability, indemnification, and insurance since both parties are organizations within King County government.

For DAJD:		For Public Health:	
_____		_____	
Signature	Date	Signature	Date

_____	_____
Printed Name	Printed Name
_____	_____
Title	Title

Exhibit A – Reporting Requirements for MOU

DAJD reporting requirements

- Number of bookings
- Population statistics—average length of stay, distribution of security classification, etc.
- Number of hospital days requiring guarding
- Number of interfacility transfers
- Number of ambulance transports
- Number of overtime hours for officers doing medical guarding
- Critical incidents from watch command – medical status -- # of 1, 2, and 3's
- Copies of completed environmental surveys
- Average census in inpatient psych, inpatient medical, on suicide watch, and number on 15-minute watch

JHS reporting requirements

- Monthly # provider encounters
- Number of psych assessments
- Number of Health assessments
- Number of medical X-rays done
- Number of suicide attempts
- Number of critical incident reviews
- Number and type of specialty referral visits by location
- Number of medical grievances
- Average census in negative air
- Number of interfacility medical chart transfers
- Number of deaths and cause of death

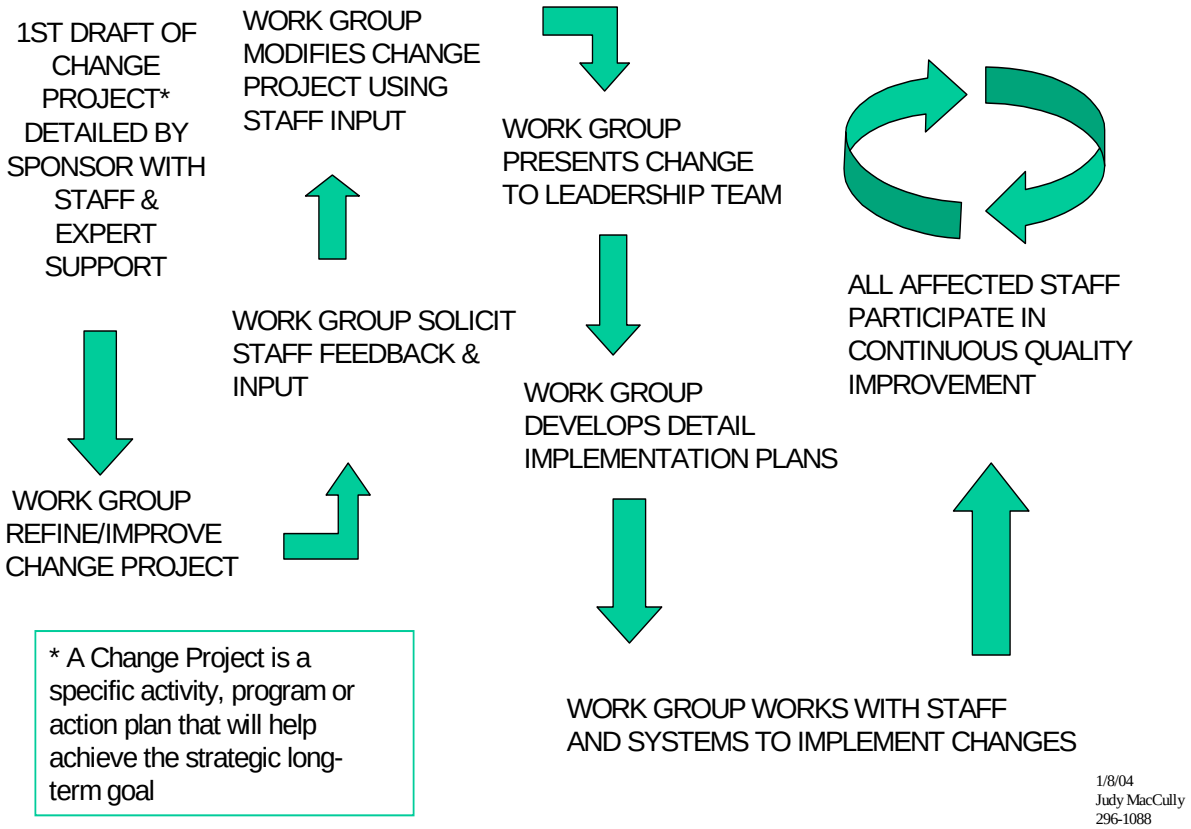
ATTACHMENT C

Jail Health Services Advisory Work Group

Dr. Alonzo Plough, Director and Health Officer, PHSKC
Dorothy Teeter, Chief of Health Operations, PHSKC
Greg Kipp, Chief Administrative Officer, PHSKC
The Honorable Norm Maleng, Prosecuting Attorney, King County
Sheryl Whitney, Assistant County Executive, King County
Larry Mayes, Interim Director, King County Adult & Juvenile Detention
Cheryle Broom, Auditor, King County Council
Michael Gedeon, Interim Chief of Administration, King County DAJD
Bette Pine, Director, Jail Health Services, PHSKC
Richard Eadie, Superior Court Judge, King County Superior Court
Dean Webb, Chief of Pharmacy, PHSKC
Dr. Kerri Ashling, Jail Health Medical Director, PHSKC
Kelli Carroll, Budget Supervisor, Budget Office, King County
David Randall, Legislative Analyst II, Committee Staff, King County Council
Clifton Curry, Senior Legislative Analyst, Committee Staff, King County Council
Doug Stevenson, Legislative Lead Analyst, Committee Staff, King County Council
Ron Perry, Principal Management Auditor, King County Council
Judy MacCully, Jail Health Services Supervisor, PHSKC

ATTACHMENT D

JAIL HEALTH SERVICES STRATEGIC BUSINESS PLAN THE CHANGE MODEL: CLINICAL IMPROVEMENT INITIATIVES



* A Change Project is a specific activity, program or action plan that will help achieve the strategic long-term goal

1/8/04
Judy MacCully
296-1088

ATTACHMENT E

Workplan Timeline – Gantt Chart

Appendix F

Outcomes Measures

Administrative Profiling

- Number of prisoners seen per day
- Chart completion
- Cost per provider per prisoner visit
- Percentage deviation from formulary
- Percentage deviation from ideal clinical note writing
- Number of in-house referrals per provider per month
- Number of outside referrals per provider per month
- Number of treatments per day
- Number of medication / treatment errors per month
- Number of assessments per day
- Percentage of noncompliance to MD orders
- Percentage deviation from nursing treatment protocols per month
- Identification of high risk patients by ICD-9 code diagnosis or pharmacy information
- Identification of high utilization patients for behavioral staffing
- Identification of patient refusals
- Identification of special needs patients for ADA assistance, religious – medical conflicts, or special consideration

Clinical Profiling

- Number of Reportable Diseases (as defined by CDC / Washington State Department of Health) identified, date, and documentation of reporting
- Number of PPD skin tests placed
- Number of PPD skin tests read
- Number of PPD skin tests that are positive
- Number of active tuberculosis cases managed per month and per year
- Number of HIV+ patients in-house per month
- Average CD4 counts of HIV+ patients per month
- Average viral load of HIV+ patients under treatment tracked over time
- Number and diagnosis of AIDS-related complications per month
- Number of culture-positive STD diagnoses per month and documentation of treatment
- Number of Hepatitis A cases and monitoring of liver function tests per patient
- Number of Hepatitis B cases
- Number of Hepatitis C cases
- List of Type I diabetics per week with blood sugar data retroactive for the last week, Blood Pressure Data, weight, latest Hemoglobin A1C level, insulin doses, and caloric level of diets.

- List of Type II diabetics with blood sugar data retroactive for the last week, Blood Pressure Data, weight, latest Hemoglobin A1C level, insulin doses, and caloric level of diets.
- List of seizure patients per week with latest medication levels and Complete Blood Counts and/or Liver Function Tests
- List of hypertensive patients with medications and most recent BP data
- Number of suicide gestures vs. serious attempts per month
- Number of forced-restraint or forced-medication patients per month
- Baseline ICD-9 diagnosis breakout and statistical comparison of deviation from the norm for any diagnosis code
- Number of admissions and diagnoses for inpatient psych unit
- Number of admissions and diagnoses for inpatient medical unit
- Number of prisoners refused at ITR and diagnoses
- Number of deaths
- Number of bad medical outcomes
- Number of adverse reactions

Accreditation / Legal

- Successful completion of NCCHC site survey and accreditation process
- Successful completion of CLIA accreditation process
- Tracking of lawsuits

Financial Profiling

- Total allocated budget
- Total yearly expenditures
- Breakdown of budget categories allocated vs. expended
- Total FTE's allocated
- Total FTE's filled
- Salary comparisons to equivalent community positions
- Total cost per disease
- Unit cost per disease managed
- Cost of outsourced healthcare
- Cost of laboratory studies
- Cost of radiological studies
- Transportation costs for outside care
- Cost per provider
- Cost of each medication class
- Cost of individual drugs
- Cost of formulary vs. nonformulary medications
- Cost-per-prisoner for equivalent community care

Application Description

[redacted] leading-edge medical software application integrates all components of a comprehensive, computerized medical record for physician group practices, institutions, hospitals, and other healthcare organizations.

Designed for a client-server computing environment, [redacted] can operate as a stand-alone system. Alternatively, it can operate within a healthcare alliance as a primary database, or as a feeder system to an enterprise data repository. [redacted] patient-oriented medical record gives physicians, nurses, healthcare providers, and other authorized personnel the ability to better organize and use a patient's medical information, including the documentation and analysis of outcomes.

[redacted] electronic medical record was created to be truly longitudinal – that is, a life-long patient record -- and was designed for universal use (i.e., by any of a patient's healthcare providers) through online access. Our philosophy is "One Patient, One Record;" our mission is to provide a medical record that can be used internationally, and which includes all medical information for the patient. Multiple system users can easily access a record simultaneously and in real-time. This design accommodates complex consultations and provides all users with a patient's entire medical history. [redacted] thus facilitates the healthcare industry's prevailing need for connectivity and standardization.

[redacted] KEY DIFFERENTIATING CHARACTERISTICS

Normalized Database

One of [redacted] key competitive advantages is the Oracle™-based *Centralized Information Repository* (CIR), a section of [redacted] Electronic Online Medical Record. Many electronic medical record systems collect patient information -- but most fail to gather it in a manner conducive to clinical analyses. The [redacted] database was designed specifically to facilitate better analysis of clinical information. [redacted] uses a unique indexing strategy that stores and maintains patient data from multiple facilities for an indefinite period of time, which is necessary to perform clinical analyses such as epidemiology studies and drug efficacy. [redacted] indexing strategy creates logical databases within a database to make available all the data (current and historic) on a particular patient or population of patients. Virtually any parameter in the database may be selected, alone or in combination with any others, and analyzed with respect to virtually any other parameter or combination of parameters.

For example, patient databases can be examined by demographic criteria, diagnoses, treatments, name of physician, insurer, frequency of use, lifetime appointment cancellation pattern, etc. Treatment options can be compared by outcomes, costs, side effects, patient demographics, physician utilization, and so on. Advantages and attributes of the CIR are as follows:

[redacted]

[redacted]

[redacted] **Key Differentiating Characteristics**

- Clinical and patient data are totally integrated
- The patient record is longitudinal (lifelong)
- Information input and workflow are based on customized business rules
- Data is stored centrally
- Complete statistical information is available from complex multi-variable analyses
- All authorized users in multiple facilities access a complete medical record/history
- Extensive patient demographic information can be captured
- Patient Lookup can search by last name, first name, social security number, registration number, or MRN

The [redacted] database has been designed so that authorized users can access the [redacted] computerized patient record, no matter where that record resides. Patient files are stored in multiple locations on the network, allowing real-time access by critical care specialists and other time-sensitive healthcare givers. This comprehensive design allows critical patient record data and files to be immediately available to *simultaneous users*. Additional related features include:

- Full multi-level security (e.g., by Facility, Department, Section, Document, User, and User Type)
- Customer-driven reporting
- Ad hoc reporting
- Audits for Quality Assurance and Utilization Review
- Central informational control point
- Facilitates system Evaluation & Management
- [redacted] electronic mail (secured)
- Secure Internet access to the patient record
- Supported emerging technologies include bar coded electronic forms, and hand held devices, such as Personal Digital Assistants (PDA's)
- Intelligent distribution of “Know How” documents
- Centralized “Fax Gateway” with logs which enables convenient faxing of patient records, patient forms, and patient prescriptions. Requires third party software and hardware.
- User-designed data-gathering forms are bar-coded for later scan recognition and automated attachment to the proper record
- MRN (Medical Record Number) customization
  - Allows user input and numbering scheme preferences
  - Creates numbering automatically or manually (based on facility preference)

[redacted] medical record offers free text entry fields that can easily be customized to accommodate client-specific identifying information. [redacted] includes a “wild card search” on all lookup fields; a user may enter as few as one or two letters of a name to promote investigation and preclude multiple patient records due to misspellings.

[redacted] **Key Differentiating Characteristics**

Intelligent Document Imaging

About 85% of the documents in a patient's chart are generated outside of a physician's office -- so the [redacted] system features industrial quality document imaging, designed "from the ground up" to fit into a medical environment. Although [redacted] users are not required to implement document imaging, it is the *only way* to achieve a paperless medical record in the near term. [redacted] Intelligent Document Imaging technology enables the system to capture and store information from many sources, including:

- Nurse's notes
- Patient history and physical
- Family/medical history
- Demographics
- Immunizations
- Progress notes
- Vital signs (may be displayed graphically)
- Time and date stamp of patient flow
- Disease flow sheets
- Growth flow sheets
- Lab flow sheets
- Photographs and images (including DICOM capability): x-rays, ultrasound, CT, MRI and EKG's

The benefits of [redacted] imaging and forms management include:

- Enhanced paper work flow and chart organization
- Controlled confidentiality and information access
- Fast and accurate record retrieval from anywhere on/off campus
- Tools for completing charts (including search for unsigned documents)
- Forms printing module eliminates need for preprinted forms
- Remote access facilitates early completion of physician attestation statements
- In-house generated forms are automatically indexed using barcode recognition
- Outside correspondence and miscellaneous forms are easily indexed into the patient record
- Backfile conversion allows legacy records to be scanned into [redacted]
- Facility-specific forms are intelligently recognized and automatically processed
- Unsigned documents are noted for further attention
- Workflow can be custom-automated based on document type
- Charts may be printed, on demand, on laser-generated forms
- Forms data (when printed, etc.) may be statistically monitored

[redacted] **Key Differentiating Characteristics**

[redacted] scanning capability enables very simple input and storage of handwritten notes.

Intuitive Interaction

The [redacted] system contains many qualities to assist in "user-friendliness." With the familiar Windows Graphical User Interface (GUI) screen layout, flat menu structure, and the use of mouse, or keyboard - manipulation of [redacted] is simple, fast and easy.

Each provider can customize the way progress notes and physical findings are detailed in the chart -- in order to best reflect a physician's individual style. When a physician logs into the system, that physician's most frequently occurring diagnoses, problems, and medications are listed atop the choice lists. These factors, combined with the customizable Chart Lookup and Clinical Summary reporting features, help make the [redacted] system one of the most intuitively appealing applications on the market.

Flexible Data Collection

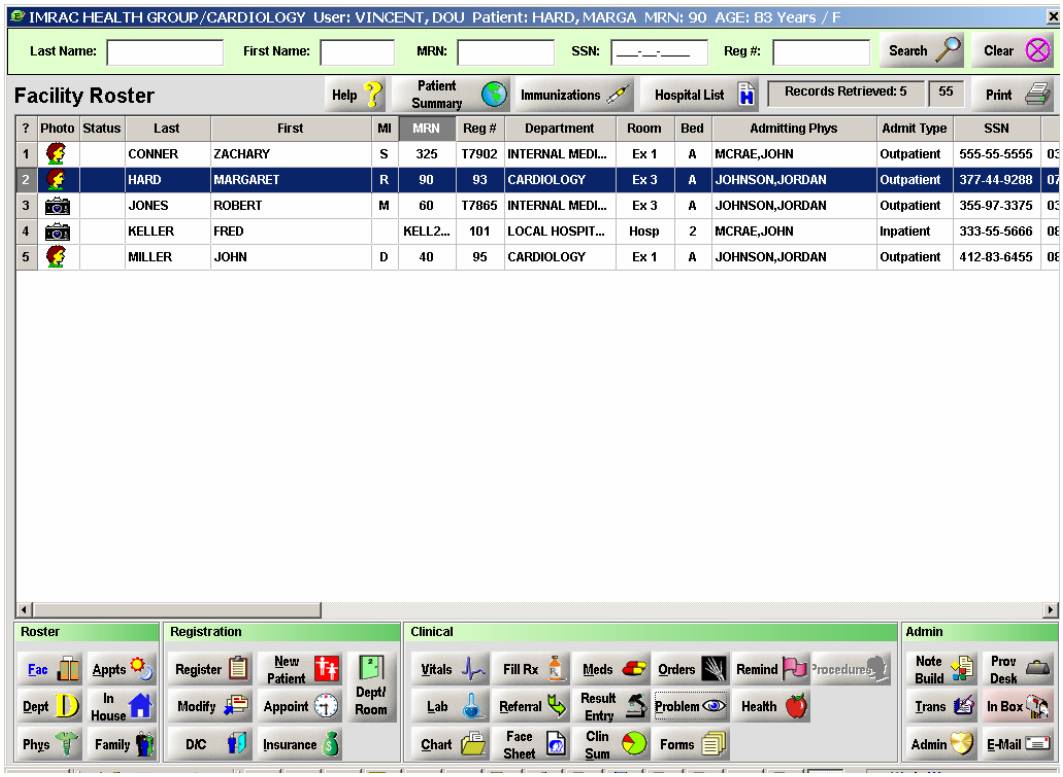
The [redacted] system features a full array of data collection technologies, all designed to make data automation and manipulation as effortless and intuitive as possible:

- Uni-directional and bi-directional interfaces exchange data with…
  - Laboratory systems
  - Radiology systems
  - Hospital systems
  - Pharmacy systems
  - Financials systems
- Point-and-click selection from menus or tables
- Keyboard
- Templates
- Scanning
- Portable wireless devices (Palm)

[redacted] can be customized to suit the needs of the organization, facility, division, department, and the individual physician or user. Customizable templates can reflect the data that the client finds most relevant in the best possible format.

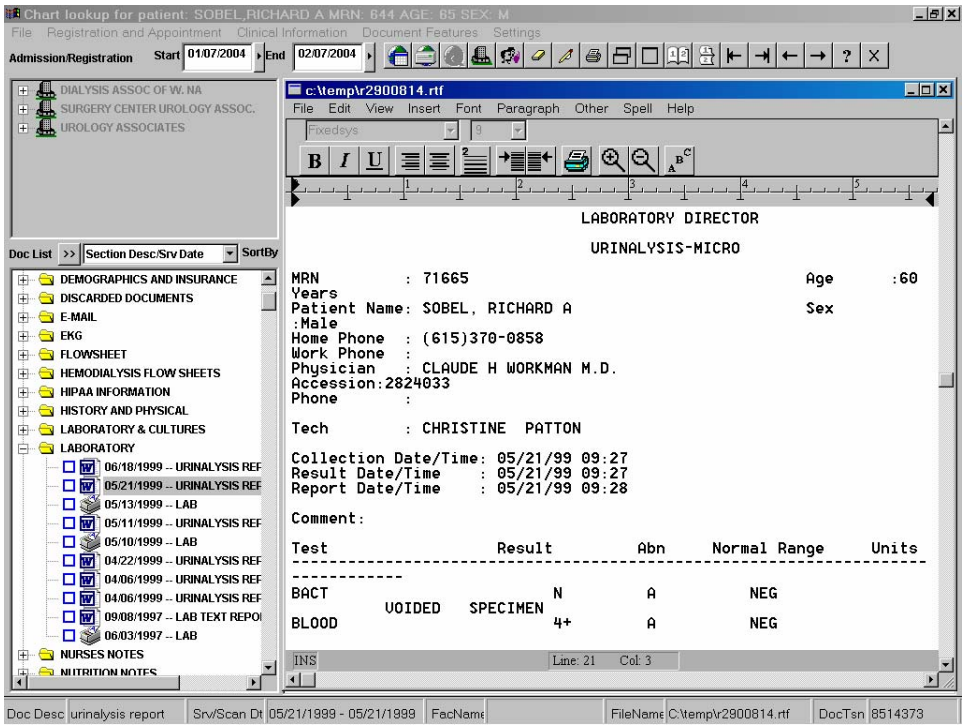
A. Roster/Chart Lookup

[redacted] main screen is the Roster screen shown below. It shows the patients that are currently admitted to the facility, department, physician, etc, depending on the roster option chosen. Alternatively, it can be used to search for a particular patient. From this screen, the user can register/discharge the patient, book an appointment, assign the patient to a room, and update insurance information. Additionally, from this screen, the user can go directly to any of the clinical modules – Patient Summary, Immunization History, Chart, Meds, Labs, Lab Result Entry, Problems, Health Maintenance evaluation, Dialysis, Vital signs, etc. The user can also go directly to his/her mailbox to check his/her emails or to send an email.



If the user presses the Chart button, the chart view is displayed, shown below. It is displayed in tree format. Each branch can be easily expanded or collapsed. Any document in the chart can be easily viewed and signed.

[redacted] Supporting Functionality



[redacted] Chart Lookup Module is a powerful tool for researching and reporting clinical data. Each provider can maintain customized chart sections to be incorporated in clinical summaries; the facility as a whole also can maintain chart sections and documents to go within each section, based on table-driven parameters.

- Authorized users can immediately review or print any section of the patient chart
- Images and documents (including faxes) can be e-mailed to other system users
- Chart sections can be viewed in single-screen or dual-screen format
- Authorized users can view…
  - Patient records
  - Laboratory results
  - Culture results
  - Medications
  - Allergies
  - Problem list
  - Procedures/diagnoses
  - Vital signs (which can be displayed graphically)
  - Referral information
  - Intake/output data, including ICU-style spreadsheets
  - Internet chart updates
  - Physician daily orders

- Customized summaries facilitate transfer of patient information

B. Clinical Summary

The most expensive resources in the healthcare environment are physicians and nurses. [redacted] is designed to increase their efficiency, sometimes by as much as 50%, by relegating clerical work to lesser-paid staff and delivering timely, organized, meaningful information to the key providers. A conventional patient chart can take a caregiver up to thirty minutes to review in detail; [redacted] *Clinical Summary***,** which includes trend analyses, can be reviewed in under two minutes. Instead of employees shuffling through accumulated stacks of paper "to be filed," the [redacted] system's relational database and document imaging allows paperless workflow to all those who need access to the patient's chart.

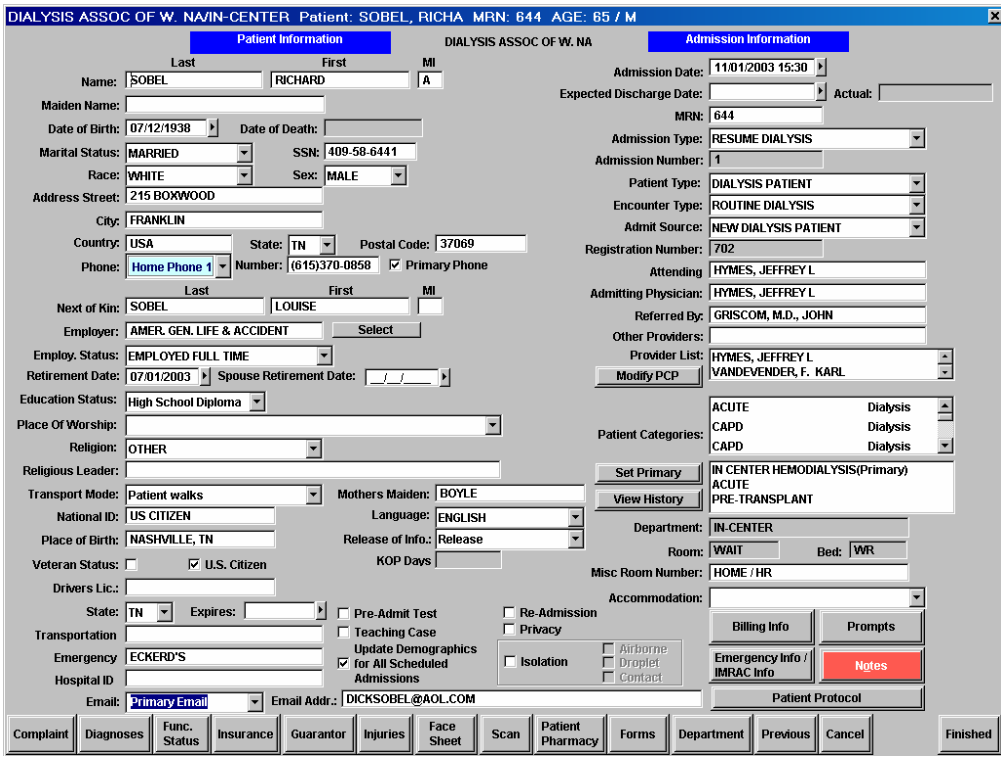
The Clinical Summary Report is customized by the provider and/or facility to include any or all of the following chart sections, ranked in the desired order:

- Reminders
- Problem list
- Current medications
- Inactive medications
- Vital signs routine and graph (horizontal/vertical)
- Allergies
- Recent procedures/studies
- Major procedures
- Past admissions
- Lab results graph (horizontal/vertical)
- Insurance information
- Functional Status
- Documents and images
- Referrals
- Cultures
- Registration input/output
- Physical exam
- Dialysis Specific Info
- Health Maintenance
- Hemodialysis Summary
- Hospitalization Record

C. [redacted] Registration Module

[redacted] features a complete registration module that includes room status and occupancy information; physicians can admit their patients remotely from their offices. The module monitors the exact time and location of patients in full compliance with observation status and 23-hour admission patients.

[redacted] Supporting Functionality



[redacted] can track a patient's admissions longitudinally by provider and frequency. During the patient's stay, provider and diagnosis/procedure can monitor costs at the patient level. At discharge, [redacted] can print discharge instructions, as well as walkout billing statements.

- Records a patient's number of encounters and admissions per facility and department
- Records a facility's total number of encounters and admissions
- Records type of admission, admission date, and anticipated discharge date
- Tracks admitting department, patient type, functional status, encounter type and patient category assignment
- Tracks admit source, such as ambulance, clinic referral, emergency room, etc., with complete database capability
- Tracks attending, admitting, and referring physicians
- ICD9/CPT lookup for coding diagnoses and procedures
- Automatically assigns a unique registration number for each patient admission
- Allows user-defined required registration information to be assigned
- Allows the assigning of patient room type, room number and bed
- Contains alpha/numeric chief complaint field for each admission
- Access to problems/procedures (all, current admission, and past admission) from Registration screen

- Tracks registration billing information including courtesy discounts, dunning messages, direct billing to patient, patient insurance fee schedule acceptance, and SSI (Supplemental Security Income) status
- Maintains patient insurance coverage, including deductibles, co-pay and pre-certification rules
- Tracks guarantor information including payment method and credit card information
- Tracks emergency information including Internet Medical Record Access Card (IMRAC) and PIN
- Print or view a system-generated Face Sheet
- Maintains patient injuries with workers' compensation, claim and attorney information
- Electronic imaging of photographs, DICOM images (ultrasounds, etc.), dental images, x-ray images, identification cards, paper medical charts, etc.
- Allows pre-defined registration questionnaires to be assigned
- Automatically transmits an e-mail notifying the attending physician of a patient's admission to another [redacted] facility
- Supports complete admission diagnosis functionality
- At discharge, client-specific discharge instructions and a clinical summary for the referral source can be printed

Chart location tracking, waiting lists, chart request slips, chart deficiencies, etc. are attributes of the paper chart. The [redacted] system allows access to all patient information, simultaneously and in real-time, to any authorized user at any participating location.

D. Appointment Scheduling

[redacted] allows the user to segregate clinical and non-clinical appointments for providers, equipment and rooms and organize them by:

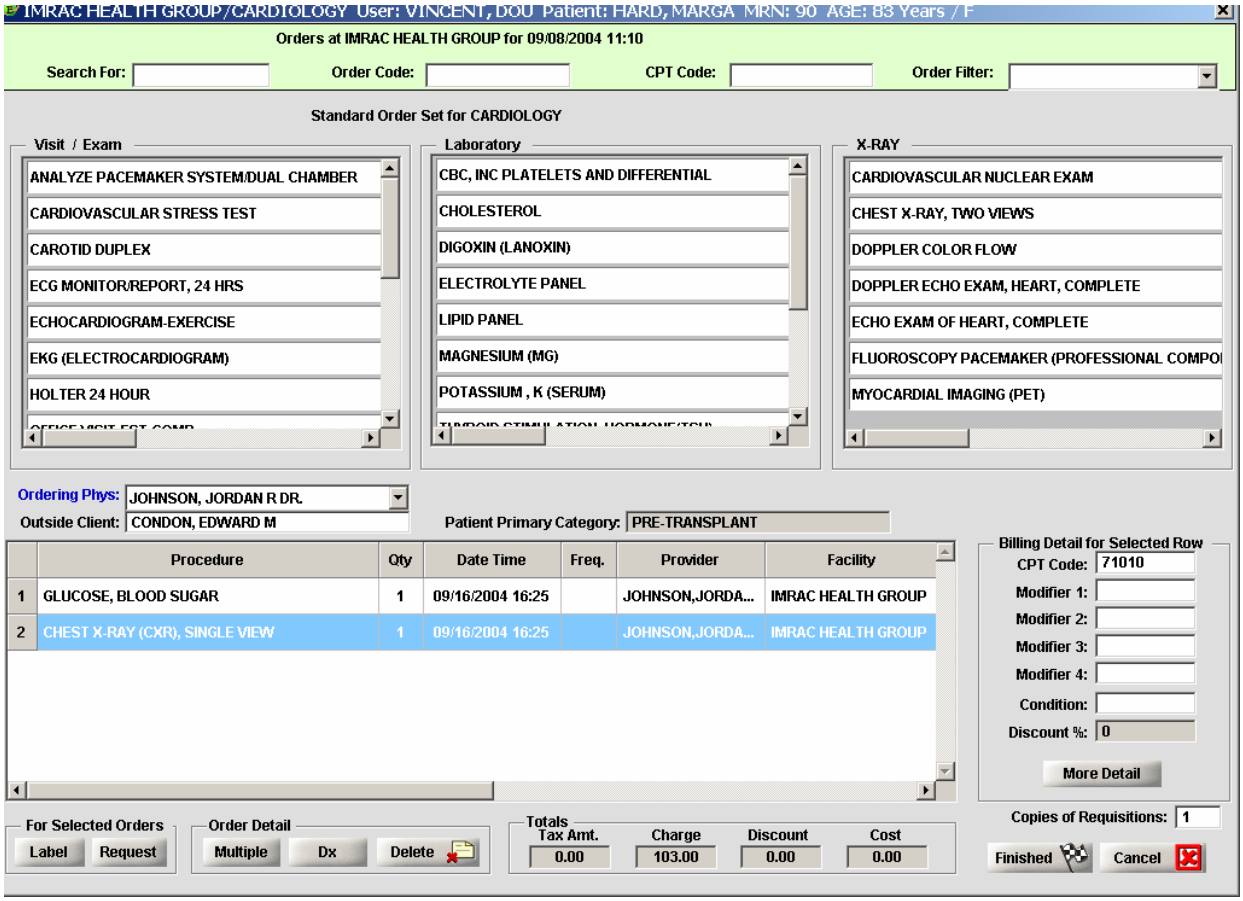
- Facility
- Department
- Physician
- Type of appointment

Thus, a facility in one department at one location can enter appointments for a given patient at other locations. A comprehensive view of all appointments for the patient spanning all locations can also be viewed.

- A scheduler can view the appointment calendar of an individual physician or department; the calendar includes the following features:
  - Full day at a glance by physician or department in one screen
  - View includes physician specialty
  - Displays any overbooking
- Physician schedule templates enable a scheduler to easily create monthly master

schedules
  - Appointment templates can be individualized by physician indicating preferred types, times and restrictions
  - Appointment segments can be adjusted individually to allow for extended physician schedules
- Unlimited number of users have access to a given schedule at the same time
- Automatically flags attempted overbooking
- Allows various time increments for any appointment type
- Assigns a return time based upon patient-preferred intervals
- Allows appointment reminders to be generated via the Patient Reminder Module
- Supports unlimited split screen capability so multiple providers can be scheduled at the same time
- Displays original operator that booked appointment, as well as operator that modifies appointment
- Stores patient preferences for day of the week, and morning or afternoon
- Allows advance scheduling for any future date
- Supports unlimited multiple resource scheduling whereby all associated resources (e.g., physician, anesthesiologist, surgery room, education room, attending nurse) are coordinated and scheduled when a procedure is scheduled
- Allows searching for available appointment times by the following criteria:
  - Next available appointment for a given physician and appointment type
  - Next available appointment within a user-defined number of days
  - Next available appointment for a specific date and/or time
- Allows scheduling of repeating appointments
- Allows overlapping appointments
- Allows multiple scheduling of appointment times
- Provides on-line inquiry to a daily schedule before an appointment is scheduled; appointment types for all scheduled appointments are displayed along with the schedule
- Appointments can be cancelled and re-scheduled from a physician's schedule without re-keying information
- Allows printing of day's expected appointments for physician or department by date range
- Works with [redacted] Insurance Authorization module to ensure that patient is scheduled with an authorized provider
- Features a "super user" concept to allow specified users to override provider's schedule regardless of appointment template setup

E. Order Entry and Results Reporting

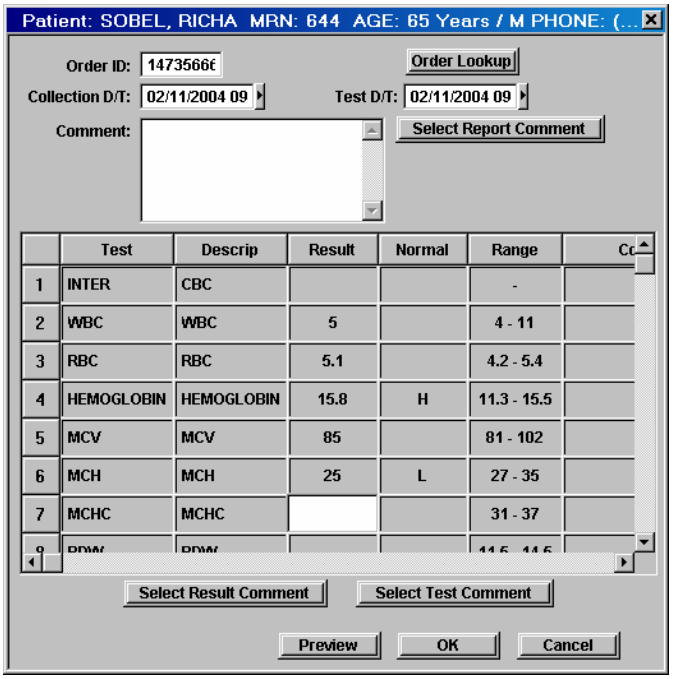


[redacted] features a complete order-entry module. Users can access relevant modules (such as medications, order history, problems and supplies) directly from the order-entry screen. Order sets can be entered by facility, division, department, provider, and diagnosis, with user-defined links between diagnoses and procedures (allowing for modifiers, conditions, and discount percentages). [redacted] monitors diagnoses, procedures, and Global Care Days for reimbursement validity, and initiates real time insurance eligibility. In addition, the order-entry module can specify orders by facility and department based on the procedure and/or the insurance plan; charges, discounts and pricing totals are automatically tabulated. [redacted] Online Order Entry system allows a user to interface electronically with Laboratories (in-house or off-site) and Radiology Departments. [redacted] also allows online results reporting, which is directed to the prescribing physician and to the patient's chart.

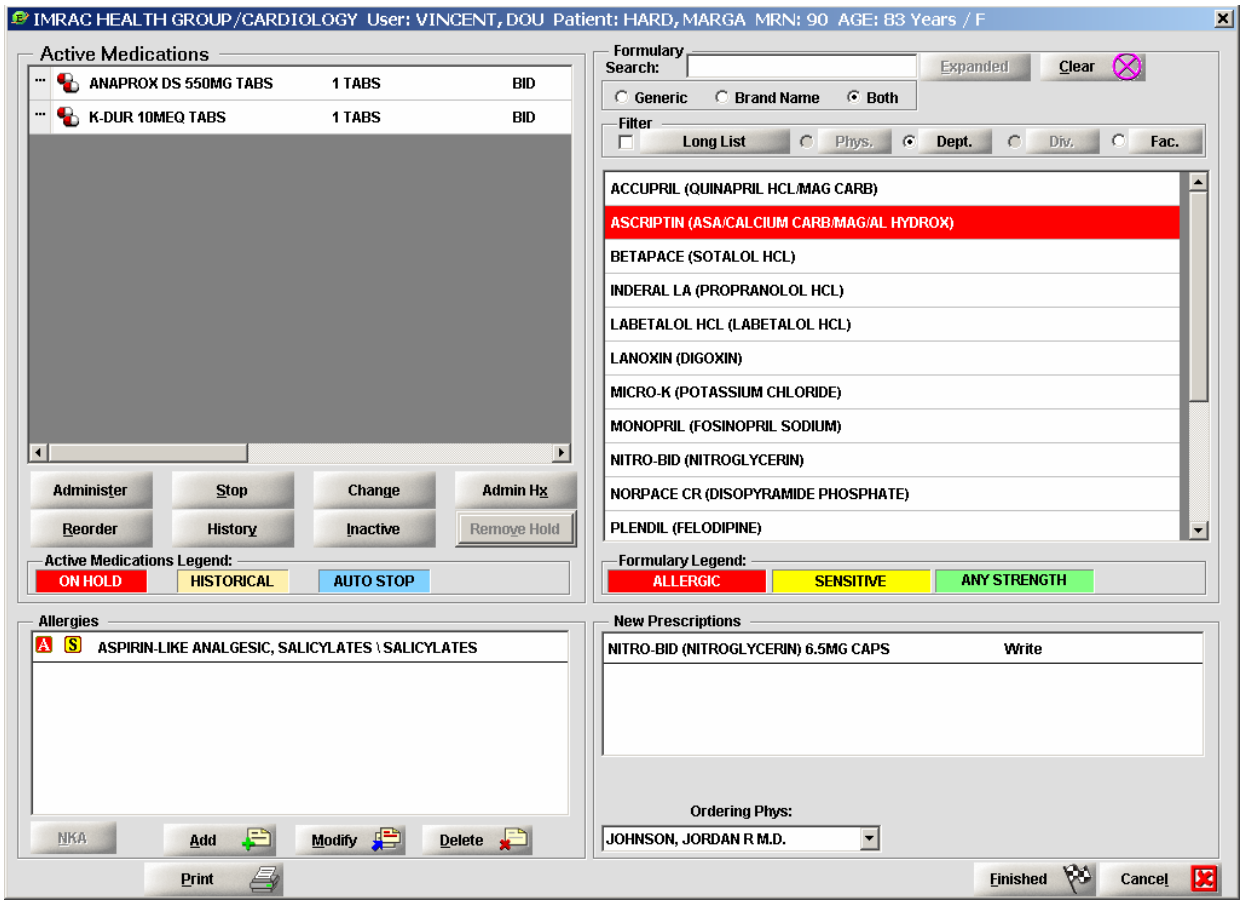
- Patient identifiers include date of birth, social security number, MRN, registration number and other identification options
- Stored Care Paths allow a provider to choose a procedure from a user-defined list of the most common procedures ordered for a particular diagnosis. [redacted] can also accommodate a list of diagnoses for a given procedure.

[redacted] Supporting Functionality

- Tests and procedures can be selected from user-defined databases of CPT codes and order codes
- Physicians can specify a standard set of Tests/Procedures or an “at random” selection
- Procedures may be selected by procedure name, CPT code, or local code
- Online interface to labs & radiology departments facilitates one-step order entry
- Links to Problems/Procedures for reference and ordering purposes
- Links to Medications/Allergies for reference and ordering purposes
- Orders are checked for duplication and/or conflicts
- Alerts are generated for contraindications based on age, gender, procedure and time interval
- Rules in [redacted] Insurance Module are cross-referenced for required diagnosis and pre-certifications
- Print requisitions and specimen labels
- Vital signs can be graphed over time to more quickly detect trends
- Results can be printed in multiple numeric or graphical formats
- Result reporting
  - [redacted] handles lab results in any or all of the following three ways:
    1) automatically route all lab results to the physician’s inbox for review and electronic signature,
    2) highlight abnormal lab results in red on the lab results matrix, or
    3) alert a specific end-user of an abnormal lab result.



F. Medications/Allergies



[redacted] Medications/Allergies Module uses the First DataBank Drug database for formularies and monographs. First Databank allows detailed comparisons of average wholesale cost; therapeutic class analysis according to multiple national standards with respect to drugs; and therapeutic substitutions based on the formulary recommendations. These relational tables are built into [redacted] medication entry system, and are regularly updated on the central server; they are provided to the customer as part of software maintenance and support. Drugs may be chosen from 1) a patient's prescription history, 2) a list of the physician's most frequently prescribed drugs, or 3) a long list of all available drugs. Coupled with the ability to e-mail or fax prescriptions with electronic signature, [redacted] prescription process with is one of the easiest and most intuitively appealing on the market.

[redacted] Medications/Allergies Module also includes...

- The National Drug Code (NDC) drug formulary
- The Generic Drug Code (GDC) drug formulary
- Drug Monographs (English and Spanish versions available)
- At the user's request, the formulary will equate branded drugs to generic versions

[redacted] Supporting Functionality

- A formulary display is based upon user preferences to display by
  - Facility
  - Department
  - Physician
    - Normal list (most frequently used medications)
    - Long list (all medications in the preferred list)
- Patient medication therapy may include (as needed):
  - PRN
  - Sliding scale orders
  - Special instructions
- [redacted] regulates the dispensing number for each medication
- Medications are coded with a Generic Code Sequence (GCS) that contains therapeutic class and cost per unit
- Refills are recorded
- Medication start date is cited
- An automatic stop date may be specified
- Ability to track number of Keep On Person days (for correctional institutions)
- A note section is available specific to the patient and individual medication being prescribed
- All medications ever prescribed through the [redacted] system are recorded in the patient's record
- Patient allergies are listed in alphabetical sequence
- Medications appear in red if contraindicated due to an allergic reaction to a medication and in yellow for a sensitivity to a medication
- Inactive medications are moved to an inactive file, but never deleted
- [redacted] maintains a history of all drugs prescribed, with supporting detail including:
  - Dosage and frequency
  - Start and stop dates/Duration
  - Dispense mode, method and amount
  - Cost per prescription
  - Cost per unit dose
  - Miscellaneous criteria (class of drug, drug strength, unit of administration, ordering physician, date of order, pharmacy where prescription was filled, start reason, and number of refills used)
- Dosages calculated based on a sliding scale, body weight, or body surface area
  - Contains a cumulative dose calculator
  - Dispense amounts can be expressed in metric or standard units
- Users may print a list of medications that includes:
  - Dosage
  - Times due per your facility dialysis shift schedule
- [redacted] notes drug/drug interactions, drug/allergy interactions, and drug/age

contraindications

- Patient's preferred pharmacy will automatically populate when printing or faxing the prescription(s)

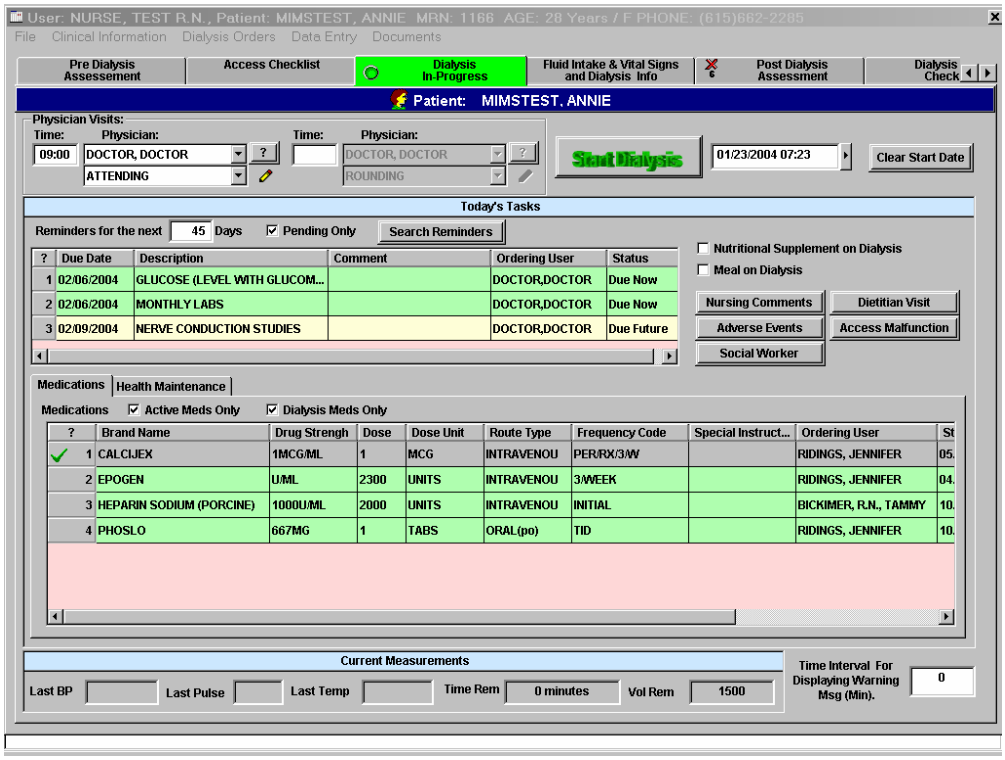
G. Transcription

[redacted] Transcription Module is used as a word processing system for entering transcription. [redacted] basic word processing functionality may be used to input all types of patient-related information, as well as inter-office memos.

- Extremely user-friendly and easy to use
- Microsoft Word capability
- Patients can be searched by name, DOB, SSN, registration number or MRN
- Originator and receiver of transcription may be selected from [redacted] user database
- Transcription can be merged with patient demographic information
- [redacted] e-mail can send consultation notes to any other system user
- Transcribed notes may be faxed to non-system users (with cover note)
- Non-patient-related documents may be processed
- A "save without signature" option is available for documents that don't require a physician's signature
- Document distribution lists may be indicated
- Storage file holds any unfinished/corrected documents
- Transcribed documents are automatically forwarded to physician's inbox for review and approval
- Physician/user can correct any type of document online
- User may specify automatic document handling for all document types
- Images/documents may be attached from patient's medical record
- System facilitates user-specific forms (with your letterhead)
- Allows document printing from screen (WYSIWYG)

[redacted] Supporting Functionality

H. Dialysis Module



The [redacted] Dialysis Bedside Module is customized for the Nephrology environment, with primary functionality involving Dialysis Flow Sheet Processing. The [redacted] Bedside module was designed to integrate computerized documentation into the Dialysis setting and eliminate paper documentation currently used by the NNA facilities. Four dynamic features of the Dialysis Module are unique to [redacted]: Bedside module, tracking vascular and peritoneal access, dialysis alert levels (pre-determined by the Physician), and tracking of adverse events.

- Bedside Module for real-time entry of treatment data at the patient's bedside
- Utilizes patient prescription parameters
- Supports vascular and peritoneal access tracking by type and by site
- Performs user-definable tracking of adverse events and trends
  - Out-of-range variables are highlighted
  - Adverse event report is automatically forwarded to attending physician
- Tracks physician visiting times
- Provides a note tool for Physicians, Nurses, Dieticians, and Social Workers
- Access Malfunctions and Adverse Events can be well documented
- Records dialyzer number and alerts if dialyzer I.D. is incorrect
- Supports in-house dialysis or acute hospital dialysis
- Produces a completed system-generated Flowsheet that is automatically stored in

the patient's chart
- Calculates Kt/V and URR %
- Supports personnel shift list
- Facilitates Continuous Quality Improvement across multiple facilities, with roll-up and drill-down functionality
- Tracks reuse performance by brand and lot number
- Assigns proper billing codes automatically
- Supports UB92 billing preparation
  - Condition Code Tracking
  - Matches for Billing

I. Obstetrics Module

The [redacted] Obstetrics Module is customized for the Obstetrics/Gynecology environment. The Obstetrics Module supports links to other [redacted] modules including Registration, Vital Signs, Patient Problems and Laboratory Results.

J. Administrative Documents

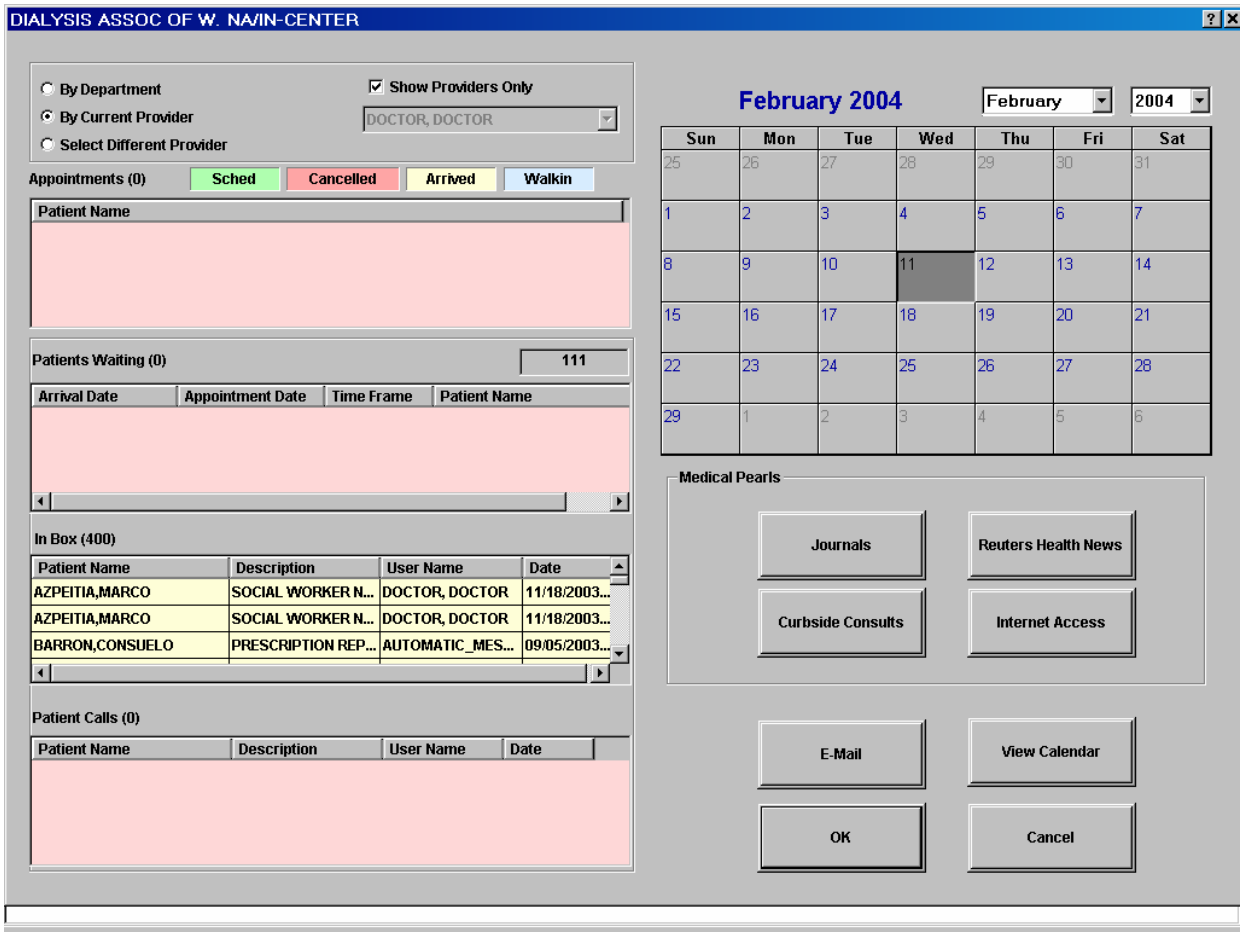
[redacted] Administrative Document module allows facilities to set up and maintain various types of administrative documents such as contracts, agreements, employee files, etc. These documents can be scanned into the system or imported (documents and spreadsheets) from your hard drive or network. Prior to indexing, the user will have the ability to change a document's file format. Once the documents are indexed, the user can add further security based on specific User, User Types, Insurance, etc. and can attach key words and descriptions that will assist in the Document Look-up process.

K. Equipment Maintenance

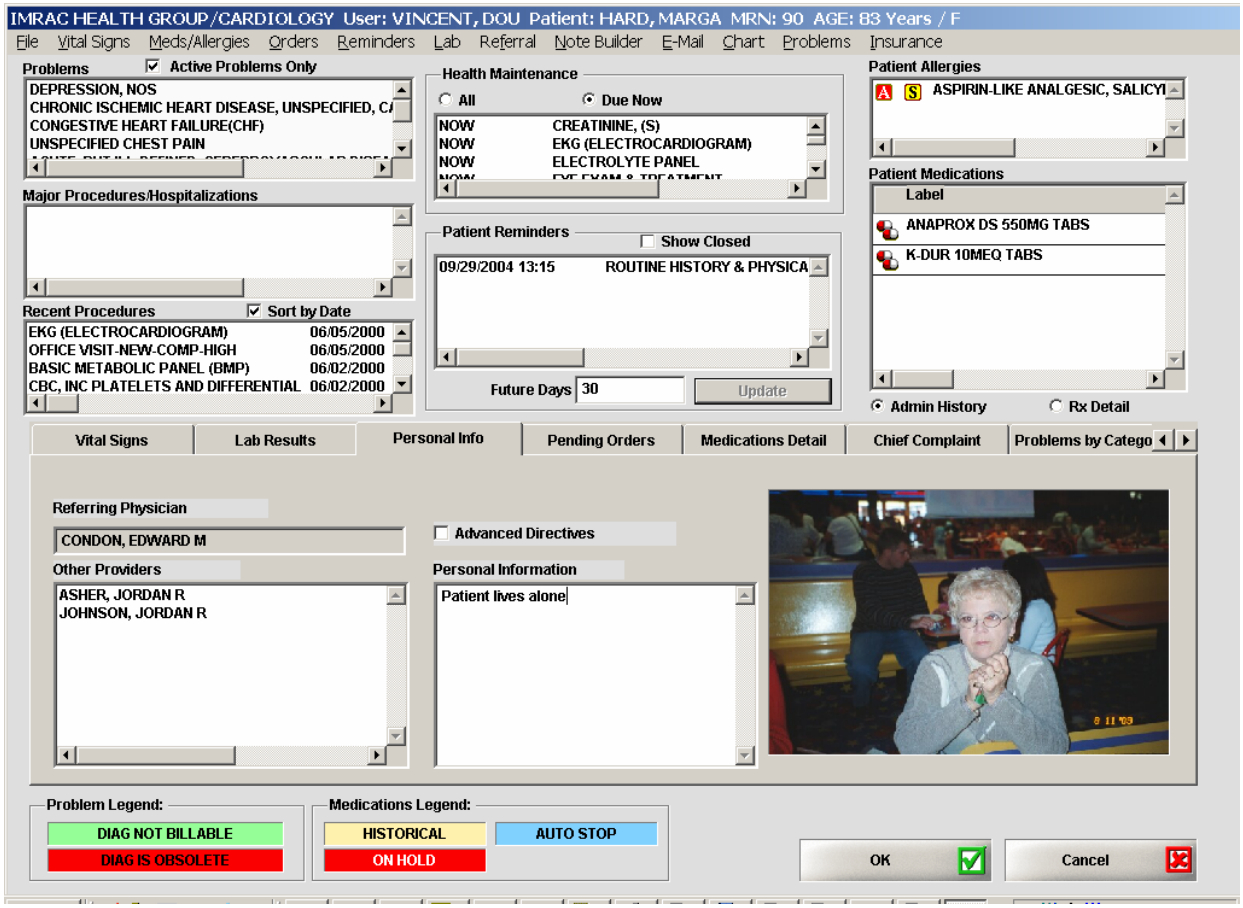
Equipment Maintenance allows tracking and maintenance of fixed assets (various types of furniture, machines, equipment, etc.). Equipment needs to be periodically tested. Equipment maintenance records are tracked on the equipment including routine preventive maintenance and unscheduled repairs. The equipment maintenance program provides a mechanism for ordering and storing laboratory tests, indicates when preventive maintenance and unscheduled repairs were made (including notes related to such repairs and cost of such repairs, parts used, and the person or entity performing the repair). A reminder list must be created to keep track of when a repair is next due.

L. Provider Desktop

[redacted] Provider Desktop is a powerful organizational tool designed specifically for the clinician to coordinate patient care from one module. The initial screen displays lists of appointments for the selected day, patients currently waiting, documents in the providers In Box, and patient calls awaiting review. Double clicking on any patient listing will bring up the [redacted] *Patient Summary*, an access screen dynamically linked to the relevant data resident within the system for that particular patient. With the Provider Desktop, clinicians can optimize their time by quickly accessing and manipulating the data most relevant to their daily activities.



M. Patient Summary

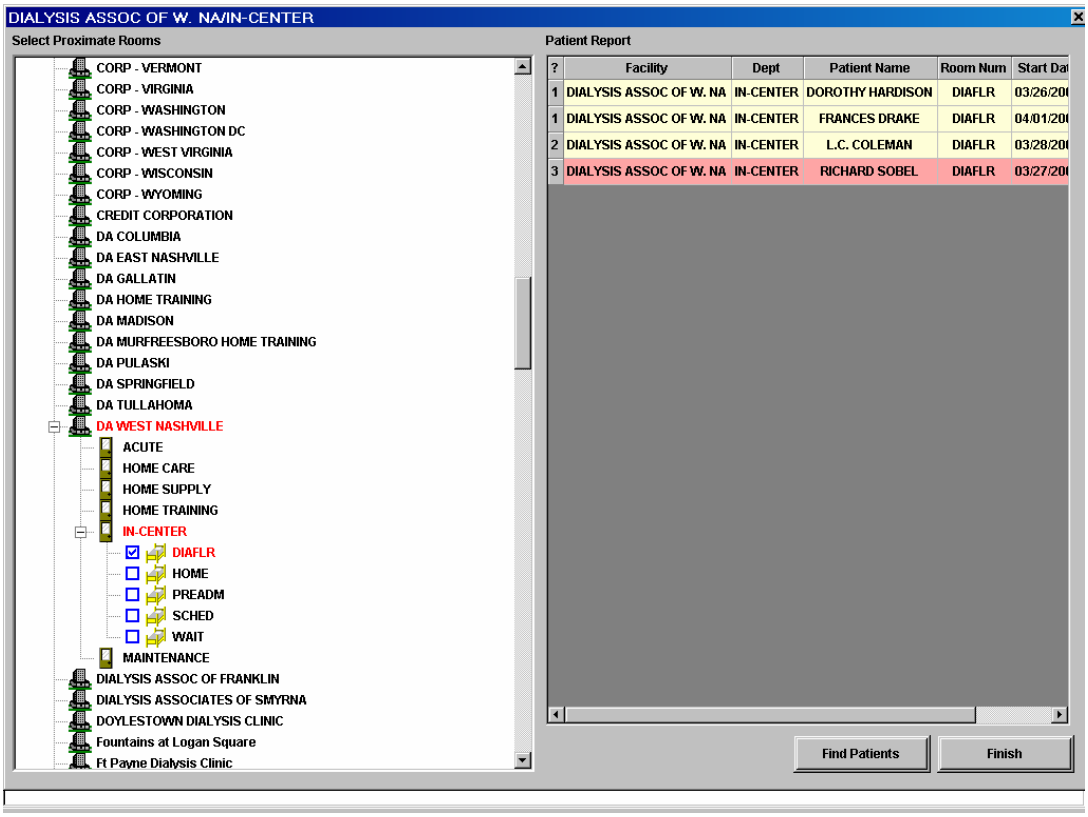


[redacted] Patient Summary is another powerful organizational tool designed specifically to view a patient's clinical data from one screen. In essence, the Patient Summary tool displays the electronic chart "at a glance." The Patient Summary is designed to interface with the Clinician at the point-of-care. The Clinician can choose any clinical item for additional detail. With the Patient Summary, clinicians can optimize their time by quickly accessing and updating all relevant patient clinical data, including...

- Recent Procedures, and Major Procedures/Hospitalizations
- Personal Information, Vital Signs
- Lab Results, Pending Orders
- Chief Complaint, Patient Problems, Problems by Category – [redacted] also gives the ability to detail problems through a facility defined "branch" listing detail such as severity levels, specific areas of the body, symptoms, treatment plan, etc
- Health Maintenance
- Patient Reminders
- Allergies, Medications, Medications Detail
- Patient Proximity Report

N. Patient Proximity Report

- From within the Patient Summary module, [redacted] features the Patient Proximity Report. The purpose of this report is to provide clinics with the ability to see a list of all patients that were near a particular patient, during a particular time frame if that patient was later found to have a contagious illness. From the "Room History" tab section, [redacted] gives the full room history of the selected patient. A tree will display with all of the rooms in the departments of the selected entries from the prior screen. The selected patient's actual departments/rooms are displayed in red. This report can be saved to Excel and then printed from Excel, if desired.



O. Tracking Physician Referrals

[redacted] has a unique feature of tracking both incoming and outgoing referrals. This is the basis of the [redacted] MSO Claims Adjudication Module. Referrals can be selected by subspecialty and insurance plan acceptance. [redacted] captures a record of every referral from your facility, including urgency status and the diagnosis(es) and procedure(s) to be performed.

- Maintains a complete database of referral sources
- Referral is noted at registration

- Multiple referrals may be recorded for each patient
- Referrals may be noted from multiple sources
  - Insurance Plans, Groups, Companies
  - Business, Companies, Industry
  - Other Physicians, Groups
  - Individuals

P. [redacted] Inventory Management

[redacted] allows the facility to track supplies, supply carts, suppliers, and wholesale/resale prices for supplies and drugs dispensed in-house. Inventories on hand are maintained in the system by facility and department.

Q. Health Maintenance

[redacted] Health Maintenance module reviews all data about the patient's diagnoses, procedures, medications, and lab results. Based upon these indicators -- and taking into account the patient's age and sex -- a list is produced showing:

- procedures recommended for this patient,
- the interval at which procedures should be performed,
- the place and time of last performance, and
- the next due date for the procedure.

Each facility specifically establishes the rules for determining procedures to propose based on these indicators.

R. Patient Reminders

One of the many significant features of the [redacted] system is the Patient Reminder Module. Its primary function is to serve as an electronic "to-do" list. This module can store patient reminders at the facility and department level. Thus, a user in one location can enter reminders for a given patient at other locations. Interfaced data, such as lab results and x-rays, are directed to the physician's inbox for review and entry into the patient record. Reminders can be linked to procedures in a patient's chart for activation at pre-selected times.

When entering a reminder, the user may specify the user type (or a particular user) to complete the required action. A report can be run showing detailed information on all reminders for a specific facility, department, user type and/or user. A comprehensive view of all reminders and prompts for a particular patient, spanning all locations and systems, can be viewed and printed simultaneously and in real-time. Also, a reminder list can be reviewed and generated for all reminders or groups of reminders (lab, x-ray, meds, misc, etc.) for patients by specific departments, providers, users, user types, or facility.

S. [redacted] Patient Education

[redacted] Supporting Functionality

[redacted] medication module includes a full spectrum of drug monograph sheets that are generated based on medication(s) prescribed by the provider. These monographs are available in either English or Spanish versions. Patient education material also can be stored as "forms" in [redacted] forms printing module and can be stored by facility.

T. Forms Printing

[redacted] Forms Printing Module eliminates the need for preprinted forms. Standard forms can be entered into the system and stored by facility. These forms can be automatically generated upon patient registration or according to the dates/times specified within the appointment scheduling system. Forms can be bar-coded to automate indexing into the patient's record later on when they are scanned back into the system.

U. System Administration

[redacted] Administrative Module relates personnel to the overall system. Your facility's System Administrator is responsible for inputting the following data for each employee: Name, title, degree, user class, social security number, date of birth, user type, security level, phone numbers, password assignment, PIN number, address, education, license, and facility access.

V. [redacted] Interface Router

[redacted] Interface Router automatically distributes orders, billing information, and requisitions for lab reports or x-rays. The interface router also accepts results from outside systems. This capability requires a running interface.

W. Interfaces

[redacted] integrates into existing or new healthcare information systems with ease. The system is designed to allow tailoring of many functions to meet individual facility requirements, and to allow interfaces with a variety of other systems. Many [redacted] features can accommodate not only variations by facility, but also variations by individual department within the facility - or by individual physician. Certain data can thus be presented differently for each physician, as identified by his or her sign-on identification.

Direct interfaces have been established with several reference labs, permitting electronic transfer of test orders and test results. [redacted] also provides master files of procedure codes and other medical coding; these enable specific variations in coding to accommodate the customer's current codes and descriptive names.

Interfacing with existing systems will be handled on a case by case basis, due to wide variations from site to site in such requirements as:

- Which functions are to be retained in the current system or transferred to [redacted]
- What data will be sent or received from [redacted] to the existing system

- Translations of data formats between the two systems
- Conformance of files when both systems maintain master files containing the same or similar data

[redacted] also offers interfaces with existing lab, pharmacy, ADT, suppliers, order/entry and billing systems, inventory, G/L, and other financial sub-systems.

- Data can be exchanged with ADT, pharmacy, lab, and other information systems
- [redacted] is HL7 compliant, and utilizes industry standard data tables to interface with other HL7 -compliant applications
- [redacted] allows multiple data repositories to be normalized to a uniform dataset
- [redacted] is designed to integrate with both existing networking topologies and emerging high speed data networks (i.e. “Future Data Highways”)

X. Physician Inbox

Documents that have been scanned, transcribed, or emailed for placement in the patient’s chart can be placed in a physician’s Inbox for review and signature. [redacted] maintenance function specifies which documents are to be submitted for signature. Physicians can define their own folders and can email to non-[redacted] users. The main roster screen alerts the physician when he/she has ‘mail’ to be reviewed and/or signed. Any patient related emails that are sent between users are automatically stored in the patient's chart.

Y. Intra-office Messaging

[redacted] offers electronic mail, with which a user can communicate with any other system user or send a message to an Internet recipient. Scanned document(s), image(s), or items from your local pc may be used as attachments to internal mail messages. Senders may immediately notify the recipients that a message carries an important or priority status. Users may print messages. A Message Log registers (and allows access to) all messages you have sent and received.

Call-in Message templates can be created by the System Administrator to reflect the needs of a particular organization, facility, department or physician. This way if a particular patient calls in with a standard request (e.g. to refill a prescription or schedule an appointment), this information can be entered directly into the patient’s chart and accessed in real-time by the physician. The system can also contain personalized standard response templates to facilitate electronic authorization.

Z. Imaging

[redacted] supports both TIFF and JPEG images. [redacted] accepts DICOM compliant x-ray images as well as VHS “snapshots” and color photos from digital cameras.

[redacted] Supporting Functionality

AA. Report Tool

[redacted] Report Tool allows standard reports to be loaded into [redacted]. This feature must be loaded by [redacted] Staff but does not require a programmer.

BB. Graphs and Reports

[redacted] comes complete with an array of pre-defined reports, developed by IMRAC to perform commonly used queries. User-defined parameters for a given report are accessible by pop-up windows, and will vary based on the type of information the report generates. [redacted] offers the following standard graphs and reports:

- Admissions Graph
- Patient Demographics Graph
- Administrative Patient Audit
- Office Visits Graphs
- Most Prescribed Medications Graph
- Most Prescribed Medications
- Most Frequent Diagnosis Graph
- Most Frequent Diagnosis
- Patient List by Diagnosis
- Open Dialysis Sessions
- Overdue Labs
- Medication Costs per Physician
- Medications by Therapeutic Classes Graph
- Medications Orders Graph
- Top Prescribing Doctors Graph
- Patient Listing (Selected Medications/Diagnoses) Report
- Lab/Procedure Log
- Medication Cost per Physician
- Medication On/Off Hold
- Census
- Midnight Census
- Payor Mix Analysis
- Vital Signs Graph
- Diagnosis - Vital Signs Graph
- Laboratory Test Graph
- Laboratory Tests - Medications Graph/Report
- Laboratory Tests - Vital Signs Graph/Report
- Laboratory / Procedure Log Report
- Overdue Labs Report

[redacted] Supporting Functionality

- Procedure Costs of Diagnosis Report
- Procedure Orders Ranking Report
- Frequency of Adverse Events for a Selected Procedure Graph
- Frequency of Selected Adverse Event/Procedure All Facilities Graph
- Dialysis / Transplant Reports
- Patient Active HD Access Report
- Patient Average Dialysis Values Report
- Dialysum Report
- Epogen Dosage Change
- Facility Average Values Report
- Dialysis Patient HCT Tracking
- RenTran Report
- Coordinator Current Patient Load Report
- Facility Deaths Report
- Active Dialysis Patients
- Patient Insurance Detail
- Hemo Payor Analysis
- Dialysis Session Exception
- Financial Reports
- General Ledger
- Productivity
- Procedure Type Cost
- Procedure Period Analysis
- Procedure Revenue
- GL Reconciliation
- Inventory Productivity
- Payroll Productivity
- Procedure Distribution
- Patient Charges
- Ledger Transactions
- Account Balance
- Ledger Balance
- Weekly Charges
- Patient Category Summary
- RBRVS Procedure Analysis
- MCP Billing
- Rentran Billing
- Eligible Receivables
- Borrowing Base

For non-standard reports, all data elements within [redacted] can be queried through a third-party report writer that is compliant with Oracle and the Structured Query

Language, or SQL (e.g. Crystal Reports, Cognos Reports or Platinum Reports).

CC. Chart Completion

Most healthcare facilities must keep complete records and comply with Federal standards of chart completion. This involves manually checking each chart to find documents that are missing (e.g. History and Physical Exams, Operative Notes, Discharge Summaries) or documents that are not signed by the attending physician. [redacted] can be adapted to do automated chart review by establishing certain standard parameters within the system. Some documents must be completed within a specific time frame, including availability in the record and signature by the physician.

[redacted] Chart Completion tool allows users to define certain events occurring within the facility and track them to ensure that the events are completed in the patient's chart according to the facility's protocol. An example is: A patient admission (based on Encounter Type, Admission Type, and Patient Type) is tied to a document (office visit note, release of information, etc.). The document must be sent to the chart within X hours and signed by the provider within X hours.

DD. Billing Exception Review

Billing Exception Review lists charges, patients, claims and medical information that do not meet the expected standards, or are missing required information. The disputed data can possibly cause reduced payment for services provided, denied claims and/or inaccurate clinical documentation if not corrected, or indicates that a company standard is not being met. This program enables users to review, research, and in most cases the ability to correct these 'exceptions.' Each Exception Type has specified conditions that will cause the event to be created. Each Exception Event has 'Actions' assigned for use in documenting research and corrective measures taken to resolve and close the exception.

EE. Physician Daily Orders

Physician Daily Orders are system-generated patient summary reports that are sent to the physician's inbox for review and signature. These reports are intended to provide a recap to the supervising physician for that day's orders by patient. Examples of this include new medication orders, changes to medication orders, dialysis order changes, etc.

FF. Prompts And Alerts

[redacted] Prompts and Alerts functionality starts with a trigger event (ex. - the addition of a new medication to the patient's record, the addition of a new order/procedure, etc.). It then processes an algorithm that includes an analysis of the patient's diagnoses, existing medications, procedures previously performed, demographic data, vital signs, and laboratory values. Facilities are able to define these trigger events with specified details (medications, diagnosis, etc.).

[redacted] Supporting Functionality

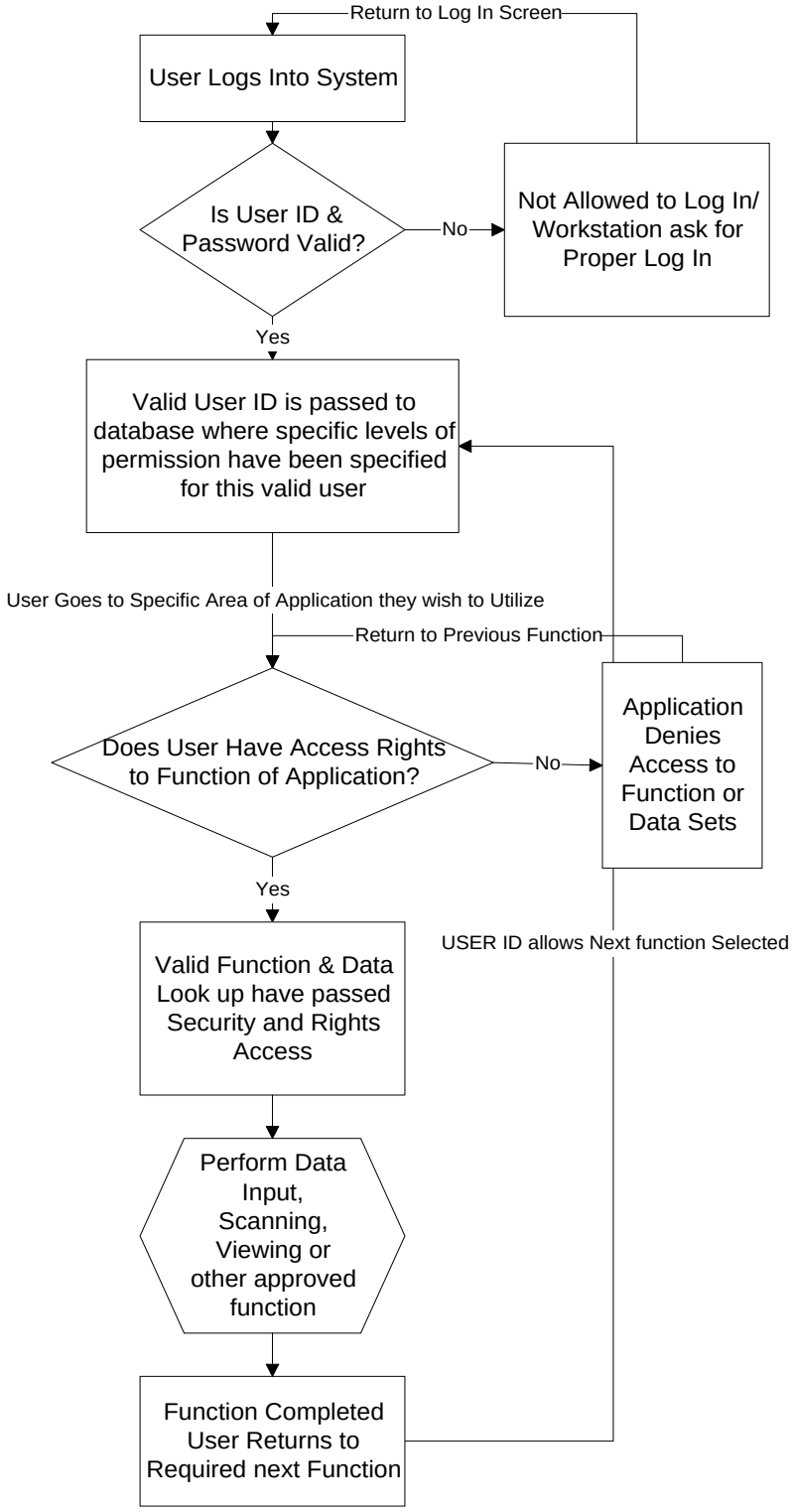
GG. Notebuilder

[redacted] functionality allows users to create patient-related documents within the system. This functionality is similar to transcription – it allows the user to select from a list of a facility's predefined templates and define a document specifically for a patient. [redacted] will automatically pull predefined items into the document based on the facility's preferences (ex. – medications, problems, allergies, any registration information, etc.). Once documented, the user may "sign" the document and [redacted] will automatically attach it to the patient's chart. If the user is not a physician, the document will be forwarded to the physician's inbox for review and signature.

HH. Security/Confidentiality

[redacted] security is effective, efficient and uniquely tailored to the healthcare environment. Several levels of information access must be attained before any user can access data, images or records within [redacted]. During installation and configuration by the [redacted] team, each user will be identified by a unique User ID and Password. The Customer will determine which levels of access are appropriate for each system user. [redacted] tracks and logs most transactions, registering who made them and when. Data acquired through system interfaces also are logged; a separate section of the system notes all relative data, where and which systems it came from, time the data was transferred, and all-important input information. These levels of tracking and monitoring provide an extremely high level of data integrity and security. The system also contains facility-definable "time out" features, so that users are automatically logged-off from the roster screen after a predetermined time period of inactivity. The flow chart below illustrates the security system within the [redacted] environment:

[redacted] Supporting Functionality



What An EMR Should Do

Taken from: Key Capabilities of an Electronic Health Record System: Letter Report (2003) http://books.nap.edu/books/NI000427/html/index.html.

The Institute of Medicine (IOM), which recommends Electronic Medical Records (EMR) as a way to improve patient safety, recently put together a list of what an EMR should be able to do. The IOM suggests that EMRs used in outpatient settings have these general features:

1. Health information and data -- Ability to capture key data, including a problem list, procedures, diagnoses, a medication list, allergies, test results, and demographics.

2. Results reporting -- Details from pathology, radiology, and consults, plus results notification and multimedia support, such as images and sounds.

3. Order entry -- Capability to do electronic prescribing and send electronic orders to the lab, imaging facility, pharmacy, and so on.

4. Decision support -- Access to clinical knowledge bases, alerts for drug interactions, drug allergies, drug-diet issues, or drug-condition red flags, as well as reminders for preventive services.

5. Electronic communication and connectivity -- Secure use of e-mail or other electronic communication between physicians, patients and physicians, and labs and physicians.

6. Patient support -- Access to patient education materials and tracking.

7. Administrative processes -- Scheduling management and eligibility determination. An existing practice management system may already have these functions, but integrating with an EMR could make these processes run smoother when procedures, consults, ancillaries, and so forth are requested.

8. Reporting and population health management -- External accountability and public health reporting.

Different Levels Of EMR Functionality

http://www.aafp.org/fpm/20041100/43whyi.html

Different levels of functionality exist with each EMR system. The American Academy of Family Physicians issued a statement on electronic medical records and their functionality for Family medicine, and published a list of electronic medical records features, that can be used as a guide when selecting and implementing medical electronic document imaging and management systems. That list is excerpted below and is a good general guide for most practices and specialties.

Basic EMR Features/Components

1. Offers structured data entry for medication diagnoses and orders.
2. Allows integration of the EMR system with scheduling and billing systems.
3. Provides adequate system availability (around-the-clock access, if necessary).
4. Allows adequate response time.

5. Allows user to identify and manage implementation costs.
6. Supports incremental implementation of additional, more advanced components.
7. Supports multiple office locations, including connectivity between practice sites.
8. Supports multiple users simultaneously.
9. Supports working with multiple patients quickly and safely (sequentially or concurrently).
10. Supports multiple user access to a single patient record with appropriate security.
11. Offers online user support and technical support.
12. Offers adequate data protection and backups.
13. Offers customizable fields in various locations of the EMR to support local workflow/templates.
14. Allows the user to assess the vendor's commitment and viability.
15. Affords a workable "exit strategy," should the need arise to export the data to a new system.

Advanced Features/Components

1. Allows multiple encounter records on the same patient to be open simultaneously (e.g., phone call plus office visit).
2. Offers evaluation and management coding and documentation support.
3. Offers remote access capabilities (e.g., from home, emergency department, hospital).
4. Offers interface options (e.g., lab, transcription, and radiology), with costs and requirements for these options clear from the outset.
5. Supports midlevel providers and residents in collaborative practice with physicians.

Optional Features/Components

1. Offers patients "patient-view," read-only Internet access to their records and the ability to request appointments, advice and refills and to learn about lab results, overdue health maintenance procedures, etc. online.
2. Allows a patient to enter data.
3. Offers the scalability necessary to accommodate practice growth, additional locations, and mergers.
4. Offers ability to exchange information between products.
5. Allows multiple patient records to be open simultaneously.
6. Supports encrypted e-mail.
7. Provides online access to health information.
8. Offers e-mail links to Internet.
9. Provides dial-up support.

Other Modules/ Functions Available

1. Clinical Data Repository Features

Basic Features/Components

a. Uniquely identifies all patients by name, date of birth, medical record number, Social Security number, gender, address, etc.
b. Merges charts if a patient has more than one record.
c. Creates clinical data repository (CDR) from all discrete EMR events (e.g., diagnoses, pharmacological and nonpharmacologic treatments, orders, results, charting, vital signs).

d. Allows users to query the CDR and create reports, especially for routine items such as medications, diagnoses, age, and procedures. (Ask the vendor how this works with the specific product.)

Medication Management

Basic Features

a. Offers online prescription writing with match to an integrated medication database such as MediSpan/First Databank
b. Updates patient allergies with match of allergens to same integrated medication database
c. Indicates date of last allergy update
d. Provides drug-allergen and drug-drug interactions, automatically and on demand
e. Disguises current from previous historical medications
f. Prints medications list for the patient in lay-terms

Order Management

Basic Features

a. Offers access to integrated database for online ordering lab, radiology, procedures, immunizations, supplies
b. Offers order cancellation
c. Supports generation of super bill directly from EMR-placed orders, procedures, level of service, E/M coding

Charting/Documentation Management

Basic Features

a. Supports entry of vital signs as discrete data (e.g., pulse, blood pressure, respiration, temperature, height, head circumference, last menstrual period) with error checking
b. Creates automatic pediatric growth charts (printable for parent)
c. Supports a variety of charting tools such as mouse, keyboard, dictation, pen handheld devices (mouse, keyboard, and dictation are required; others are optional)
d. Comes preloaded existing templates for clinical use
e. Creates/modifies templates for all encounter types
f. Creates shortcuts unique to each user (e.g., user may overwrite another user’s unique shortcuts and save as his or her own)
g. Eliminates redundancy (e.g., writing diagnoses, prescriptions, or orders online need not be re-documented within that visit)
h. Marks and signs a visit as "closed" or "final/complete"
i. Corrects, tracks and creates audit trail for corrections to closed visit

Results Management

Basic Features

a. Supports interfaces from labs, standard data transfer, HL7, captures discrete data
b. Has a well-organized electronic "in-basket" of incoming lab, radiology, pathology results
c. Is able to trend/graph/tabulate results

d. Is able to scan results into patient record
e. Supports and documents physician response to incoming results via telephone conversations and/or letters

Office Work Flow Management

Basic Features

a. Supports documentation of patient care and communication
b. Has a well-organized electronic "in-basket" or "to-do" list that includes work flow (e.g., telephone calls and lab results, the ability to route messages to sequential office staff, etc.). The EMR provides a logical integrated communication work flow among office staff for work flows
c. Supports patient education materials
d. Training is manageable within scope of project including training for upgrades
e. User friendly system with more advanced features implemented over time
f. Offers data from prior users to support that this EMR system can increase productivity, decrease medical errors, improve outcomes and increase patient satisfaction
g. Improves medical outcomes and quality of care
h. Decrease redundant data entry
i. Supports critical nursing work flows, such as to-do lists, immunization documentation, back-office lab documentation and manual resulting, nursing notes

Jail Health Services
Public Health Seattle & King County

Description of JHS Healthcare Functions and Services

UNDERSTANDING JAIL HEALTH SERVICES DELIVERY SYSTEM

The Delivery System Continuum

Jail Health Services provides health care services for inmates, which includes assessment, diagnosis, treatment, and follow-up. The key business processes include:

Identifying inmates that need to be seen by a provider	**Scheduling for clinic appointment**	**Inmate visit with provider resulting in treatment plan and orders**	**Execution of Orders**	**Medical management programs/ units**	**Reporting of results of Orders**	**Creating, updating, storing, and accessing patient information**

Under each of these processes there are a series of activities and products.

Intake	Creates and prints daily list	Take history	Prescription/drug	OB Clinic	Lab or X-Ray results	Chart creation
Health Assessment	Modify list with provider input	Perform exam	Prescription/non-drug	Psych Clinic	Outside referral results	Provider documentation
Kite/Triage	Publish final schedule	Conduct assessment	Monitoring	Chronic Care Clinics	Release of information	Storage
Referral	Notify Corrections of clinic list	Perform procedures as indicated	Lab or X-Ray testing	7th floor med unit (KCCF)	Request for Information	Retrieval
Follow-up	Locate inmates and coordinate visit times	Develop plan	HMC referral & Specialty referrals	M Unit (RJC)		Tracking
Provider chart review	Pull charts for visit	Write Orders	Procedure referral	Acute Psych unit		
Court order		Create SOAP note	Internal referral	Sub-aucte Psych Unit		
Medical event		Update flows	Release of information	Infirmary		
Psychiatric assessment		Oral health care	Treatments			

Jail Health Services
Public Health Seattle & King County

Description of JHS Healthcare Functions and Services

Health Status

This list of the ten top conditions for which medications are prescribed provides a snapshot of the health status of the inmate population.

- Psychosis
- Diabetes
- Ulcers/GI
- Depression
- Detoxification
- Asthma
- Hypertension
- HIV
- Seizures
- Infections

Mental Health and chemical dependency needs are endemic in the program challenges.

Staffing

Staffing is inclusive of the following provider types: Physician, Advanced Registered Nurse Practitioner (ARNP), Psychiatrist, Dentist, Dental Assistant, Pharmacist, Pharmacist Assistant, Psychiatric Evaluation Specialist, Nursing Supervisor, Charge Nurse, Public Health Nurse, Registered Nurse, Licensed Practical Nurse, Social Worker, Disease Intervention Specialist, Medical Records staff, and Administrative staff.

Partnership with DAJD

The difficulty of providing care in a locked facility with security restricted access contributes to the challenges in the delivery of health services. To provide quality health care Jail Health Services works in tandem with the officers and administration of Department of Adult and Juvenile Detention (DAJD). In the last 15 years, the U.S. Supreme Court has determined in several landmark cases that detained populations have a constitutional right to health care and that it is the obligation of the custodial institution to ensure access to that health care. Thus, the two disciplines of health care and corrections have had to learn to operate side-by-side, supporting each other while delivering their services. Public Health, Jail Health Services and DAJD administrators and manager have developed a team to accomplish these goals effectively.

Care Linkages with Community Health Providers

Due to the short length of stay, Jail Health staff work with community health providers to ensure that care linkages are made for persons with acute, emergent, and specialty care needs.

It is a goal for JHS to practice as an integrated segment of the continuum of health services for this population. It is important that health care for a high-risk population be identified as a pathway to better community health status.

Demographics

- The population of the King County Correctional Facilities is 90% male and 10% female.
- The patient population of JHS is 77% male and 23% female.
- About 60% of the patient (and detained) population is in the 18-34 age group; 1.5% is 60 or older.

Jail Health Services
Public Health Seattle & King County

Description of JHS Healthcare Functions and Services

Summary of Services

A. Booking Screening

When a person is booked into jail they are screened by a correctional officer who uses a structured form that solicits information about medical and psychiatric conditions. When a problem is identified the officer then refers the inmate to Jail Health Services RN's who are available 24 hours to evaluate the individual and initiate a plan of care. The care plan may be developed independently or in consultation with a JHS provider. If a person is found to be medically unstable, the RN may defer admission to jail until a thorough evaluation is done at Harborview Medical Center (HMC) or Valley Medical Center (VMC), the JHS referral hospitals.

B. Special Housing

Patients who are identified as having health care needs that dictate special housing while in jail are moved on a priority basis to special locations.. In addition to psychiatric housing, a separate area is designated for medical housing that allows JHS staff easy access to inmates who require frequent monitoring. Another area houses patients with special needs such as diabetes, coagulopathies, need for frequent medications and people with casts, crutches or orthotics.

C. Infirmary

The infirmary is a housing unit at KCCF where 24-hour nursing care is provided to ambulatory inmates with acute, chronic and convalescent health problems, which do not require hospitalization.

D. Access to Health Care

RN's are on staff 24 hours a day at both the Seattle and the Kent facilities. Medical/psychiatric rounds and sick call activities occur at least once a day. Inmates can make written (through the use of a "kite") or verbal requests for care. Correctional officers and classification staff can also refer people for health care when it is appropriate. RNs triage requests and see patients according to a priority system. When the level of care required is beyond that of the RN, the inmate is referred to the clinic to be seen by a medical provider, psych provider, or dentist

The clinic operates most days and evenings in Seattle; and five days per week in Kent. When appropriate, Jail Health medical staff verifies medical information given by patients with their private, community providers. This information is given consideration in the plan of care decided upon by JHS staff. The plan of care while in jail may vary from what has been ordered outside of jail to allow for safe care within the limitations of institution security, and the effects of the environment upon the individual. In the case

where an inmate has need for specialized care, the person is transported by DAJD to the appropriate off site provider on an appointment or emergent basis.

E. Pharmacy

Licensed pharmacies in Seattle and Kent provide a system for medication preparation, dispensing services, and quality assurance to JHS patients. Providers prescribe drugs within the parameters of the SKCDPH formulary, and are dispensed by a licensed pharmacist or from floor stock by a licensed provider.

Medications are delivered to inmates according to procedures that allow self-administration (KEEP ON PERSON – KOP) or are delivered to inmates in single doses by nursing staff when drugs have the potential for abuse or special housing restrictions preclude self administration.

F. Special Diets

Special diets are evaluated by the medical staff, and when necessary an order is written.

G. Psychiatry

For those inmates housed on the psychiatric unit, the following services are provided:

- Systematic mental health screening
- Specialized housing with enhanced observation
- Confidential medical records
- Treatment planning
- Prescription of psychotropic medications
- Interface with legal system
- Discharge planning

The psychiatric services listed above are provided by a team of psychiatrists, psychiatric advanced registered nurse practitioners, psychiatric evaluation specialists, and nurses. Inmates with mental health issues are housed in one of the following types of housing: acute, sub-acute, psych receiving, sheltered housing, or general population.

Orders are written for civil commitment, competency evaluations, competency restorations, use of restraints, follow-up appointments, housing, release interviews, release medications, and group treatment.

H. Dental Care

Dental screening is offered through the 14 day Health Assessment done by the nurses.. Dental services are limited; they cover urgent and emergent dental

care. If the inmate resides in our facilities for a year or longer, additional dental services are required. Emergency care on off-hours is provided through the HMC or University of Washington (UW) emergency dental services.

I. OB/GYN and Maternity Services

Women's health services are provided in each jail clinic. Services include: diagnosis of pregnancy, prenatal care, abortion or adoption referrals, family planning and contraception, diagnosis and treatment of sexually transmitted diseases, pap smears, breast exams, hormone replacement therapy, and referrals for domestic violence victims. Jail Health Services does not provide evidence collection in the case of sexual assault. Jail Health Services is one of three sites within the Public Health Department that functions as a satellite clinic of the University of Washington's OB program. Pregnant incarcerated women are seen for both routine and high-risk OB care. Case management services through the MOM's Project, drug and alcohol treatment, and public health nursing services including home visit after release is available to pregnant women though the jail's OB program. Women incarcerated throughout the duration of their pregnancy deliver at the University of Washington Hospital.

J. HIV Services

The Jail Health HIV Program provides HIV/AIDS education for Jail inmates and staff, HIV counseling and testing for high-risk individuals and those legally mandated (court ordered) to receive testing and clinical services for the HIV infected.

Washington State law mandates HIV counseling and testing for persons convicted and sentenced for:

- A Sexual Offense under Chapter 9A.44 RCW
- Prostitution or offenses relating prostitution under Chapter 9A.88 RCW
- Drug offenses under Chapter 69.50 RCW if the offense is associated with the use of hypodermic needles.

In custody defendants will receive HIV counseling and testing at Jail Health or Department of Corrections. They should be given a copy of the information sheet *The Court has Ordered You to Have a Test for the AIDS Virus* by the appropriate court official.

The Jail Health HIV Program Coordinator manages court order originating from Superior Court for both in and out of custody defendants. After HIV counseling and testing has been completed, documentation is sent to the Superior Court Clerks.

If an offender test positive for HIV, there is a mechanism for the Health Department to notify partners, including persons who may have been substantially exposed during crime.

Training in universal precautions (now called standard precautions) for all DAJD and JHS staff is provided annually to comply with OSHA regulations about blood borne pathogens.

K. Services for Inmates with Alcohol and/or Substance Abuse Problems

Of the patient population seen by Jail Health staff, more than half experience problems associated with alcohol and/or substance abuse. The effects of substance abuse contribute to the medical and mental health problems that this population faces and in some cases causes those problems.

There are Alcoholics Anonymous and Narcotics Anonymous meetings that are available.

Alcohol withdrawal is monitored carefully during the 72-hour period of detoxification, but other substance addicts will experience withdrawal, if at the facility long enough, while they are housed in the general population.

L. Forensic Activities

For professional reasons and to comply with the National Commission on Correctional Health Care (NCCHC) the health staff of JHS does not participate in the collection of evidence for any reason. JHS does not provide "expert witness" testimony or psychiatric competency evaluations. Staff can only be compelled to appear via appropriate us of subpoena or other court order.

M. Administration

The JHS Leadership Team provides oversight and leadership for all programs at both sites: administration, service delivery, and quality review.

N. Medical Records/Release of Information

A record of all health encounters for a patient is maintained by JHS. Information from a client's medical record may be released upon written authorization from the client. Records are copied and sent to the authorized recipient within a specified time frame.

O. Communicable Disease Services

Preventing and treating communicable diseases is another one of the public health services that Jail Health Services provides to inmates.

Tuberculin tests are administered by nursing staff at the point of admission to individuals in the "at-risk" group. Basic health questions in multiple languages have been translated in written form to maximize the opportunity to

get accurate health history information for use in the TB surveillance program and their health history.

Access to a variety of languages is available through interpreters and language banks, as is sign interpretation for the hearing impaired.

Wellcon Report Recommendations for Improvement
Report Issued June 10, 2003

Category	Degree that the improvement is impated or enabled by Electronic Health Record		
	HIGH	Medium	Low
Mental Health Operations			
Redefine inpatient-level care guidelines			X
Limit size of mental health inpatient unit	X		
Admit/discharge on provider order	X		
Develop utilization review process	X		
Develop compelled medications procedure		X	
Develop inpatient charts	X		
Inpatient H&P	X		
Daily Rounds	X		
Multidisciplinary treatment plans	X		
Discharge summaries	X		
Delegation of nursing duties	X		
Inpatient Medical Unit			
Redefine inpatient-level care guidelines			X
Admit/discharge on provider order	X		
Develop utilization review process	X		
Expand use of IV therapy		X	
Establish inpatient charts	X		
Inpatient H&P	X		
Daily rounds	X		
Multidisciplinary treatment plans	X		
Discharge summaries	X		
Delegation of nursing duties	X		
Withdrawal management	X		
Pharmacy Operations			
Unified at one site		X	
Blister packing of all meds			X
BID med pass			X
Formulary written			X
OTC meds moved to commissary			
Inventory Established with par levels		X	
All meds administered on MAR	X		
DOT policy and procedure			
Random compliance surveys via CQI	X		
Blood borne pathogens			
Contract with outside cometology provider			X
Medical Isolation			
Admission / discharge per provider order	X		
Labels on doors as to type of isolation			

Dental			
Involve in CQI / ID		X	
Train nurses in dental traige			X
Policy and Procedures in General			
Combine medical, mental health, and dental policies and procedures in JHS P&P manual			X
Incorporate standards for most common situations			X
Train all employees on new P/P			
Test for comprehension for new P/P		X	
Review of NCCHC vs. Policies			
Install EMR	X		
Design Discharge Sheet for all prisoners	X		
Make discharge part of rollup process		X	
Provide medications at rollup		X	
Objective measurements	X		
Appropriate lab support		X	
Move withdrawal into outpatient setting		X	
Rewrite policy to coincide with Intensive Medical Management			X
Design appropriate forms	X		
Delinate custody vs. medical restraints			X
Eliminate medical participation in restraint chairs			
Receiving screening done by nurses	X		
Develop form	X		
Train assessment skills		X	
Post-screen done in booking	X		
Identify site			
Health Assessments done appropriately			
Redesign / implement Intensive Medical Management Documentation	X		
Jail Workers			
Hire Janitor position for healthcare areas			
Ensure training of prisoner workers by officers			
Purchase/provide protective equipment for prisoners			
Employee Health			X
Contract with public health nurse			
SCBA testing			X
Hepatitis shots	X		
TB testing	X		
Disease Management			
Medical protocols for common conditions		X	
Medical Director to establish internal practices and publish them		X	
Medical Director to develop peer review process		X	

Suicide Screening			X
Develop screening tool	X		
Serial Exams	X		
Stepdown process		X	
Eliminate nurses dispositioning suicidality			
Develop tuberculosis screening program	X		
Approval from Alonso			
PPD's Placed on all prisoners	X		
PPD's read	X		
Appropriately matched Xray services		X	
Mental Health Operations			
Psych Redesign			X
Open Psych Receiving Unit			
Readjust psych nursing coverage		X	
PES Operations		X	
Psychometrics identified		X	
24 hour a day coverage			X
Role in inpatient unit identified			X
Discontinue role in forensic procedures			X
Nursing Operations			
Eliminate 0.5 FTE with full time benefits			
RN's credentialed to perform triage			
Elimination of paper triage	X		
Move away from LPN model toward RN			
Unified staffing matrix medical / mental health			X
Eliminate extensive lunchbreaks			
Eliminate unrelieved posts			X
Nursing Uniforms			
Begin new recruiting to fill empty posts			
Unified Staffing Matrix between facilities			X
Cross-train nurses to work medical vs. MH			X
Reclassify RJC medical unit			
12 hour shifts			X
Eliminate self-scheduling of RN's			
Redefine supervision roles		X	
Hire unit clerks for inpatient units, clinic, ITR		X	
Nursing Continuing Education Curriculum			X
Eliminate agency nursing reliance / decrease overtime		X	
Laboratory Operations			
Discontinue gram staining			
Obtain CLIA certification			
Invest in CBC			
Invest in I-STAT			
Complete Leadership Change Group			

Reposition secretarial support			X
Restructure medical director			X
Rewrite job description			
Hire Nursing Clinical Educator			
Hire Continuous Quality Improvement Nurse			
Hire Infectious Disease Nurse			
Hire Director of Nursing			
Hire RHIT		X	
Eliminate APHSS Positions		X	
Restructure PHSS positions		X	
Project Communication			X
Medical equipment			
Purchase AED's			
Thermometers			
Blood Pressure Monitoring Devices			
Pulse Oximeters			
Establish biomedical contract			
Stryker guerneys			
Thomas Packs			
ResusciAnnie			
Hire equipment / computer specialist	X		
Medical Records Operations			
Chart Dividers			
Physician order sheets	X		
Schedule Providers	X		
Hire Transcriptionists		X	
Electronic Medical Record			X
Coordinate physical specs with OMP	X		
Hire Consultant for EMR Selection / Project Management	X		
Draft RFP for EMR	X		
Select vendor for EMR	X		
Pre-go-live planning and implementation	X		
Pre-go-live training of staff	X		
Take EMR live	X		
Provider Operations			
Nonformulary requests enforced	X		
Support providers with nurse or MA	X		
Staff unit clerk in clinic		X	
Set work schedules		X	
Set patient schedules		X	
Formulary		X	
Pharmacists enforcing nonformulary		X	
Create form for nonformulary requests	X		

Create process for nonformulary requests	X		
Psychiatry time increased	X		
Establish Medical Necessity Committee			X
Committee Members Identified			X
Schedule meeting			X
Develop approval form			X
Hire on-site specialists in part-time capacity		X	

Definition of Electronic Health Records Management

From: American Health Information Management Association
The Strategic Importance of Electronic Health Records Management

http://library.ahima.org/xpedio/groups/public/documents/ahima/pub_bok1_024670.html

Electronic health records management (EHRM) is the process by which electronic (e.g., digital) health records are created or received and preserved for evidentiary (e.g., legal or business) purposes.

An electronic record includes information that is:

- Recorded on any electronic medium (e.g., magnetic medium)
- Intended to provide documentation for long-term retention that has legal or business evidentiary value
- Potentially produced in response to a subpoena duces tecum

EHRM requires decision making and planning throughout the entire life cycle of the EHR—from planning, processing, distribution, maintenance, storage, and retrieval of the health record to its ultimate disposition, including archiving or destruction. Decision making includes, but is not limited to, what EHRs to keep and for how long, the assignments of authorities and responsibilities, the design and administration of the process, and the audit and review of the process's performance. In the early phases of EHRM system development, it is important to make critical decisions about the role and use of paper and film to avoid the dilemma of maintaining dual systems.

J-H-04
important

AVAILABILITY AND USE OF HEALTH RECORDS

Standard

The health record, in written or electronic format, is available to all health services staff. The record is used to document each patient care encounter.

Compliance Indicators

1. All aspects of the standard are addressed by written policy and defined procedures.
2. Evidence exists that the health record is available and used.

Discussion

The standard intends that the facility has a system to facilitate health record use.

Having the record available to clinicians for each patient encounter enhances continuity of care, facilitates early and correct diagnosis based on review of prior symptoms and findings, and permits coordination of treatment by multiple providers.

Recommendation

If the paper or electronic medical record is not available during the patient encounter, health care practitioners should so indicate on a temporary documenting form that is subsequently filed in the record.

ORIGINAL CONTRIBUTION

Missing Clinical Information During Primary Care Visits

Peter C. Smith, MD
Rodrigo Araya-Guerra, BA
Caroline Bublitz, MS
Bennett Parnes, MD
L. Miriam Dickinson, PhD
Rebecca Van Vorst, BA
John M. Westfall, MD, MPH
Wilson D. Pace, MD

Context The coordinating function of primary care is information-intensive and may be impeded by missing clinical information. However, missing clinical information has not been explicitly investigated in the primary care setting.

Objective To describe primary care clinicians' reports of missing clinical information.

Design, Setting, and Participants Cross-sectional survey conducted in 32 primary care clinics within State Networks of Colorado Ambulatory Practices and Partners (SNOCAP), a consortium of practice-based research networks participating in the Applied Strategies for Improving Patient Safety medical error reporting study. Two hundred fifty-three clinicians were surveyed about 1614 patient visits between May and December 2003. For every visit during 1 half-day session, each clinician completed a questionnaire about patient and visit characteristics and stated whether important clinical information had been missing. Clinician characteristics were also recorded.

Main Outcome Measures Reports of missing clinical information frequency, type, and presumed location; perceived likelihood of adverse effects, delays in care, and additional services; and time spent looking for missing information. Multivariate analysis was conducted to assess the relationship of missing information to patient, visit, or clinician characteristics, adjusting for potential confounders and effects of clustering.

Results Clinicians reported missing clinical information in 13.6% of visits; missing information included laboratory results (6.1% of all visits), letters/dictation (5.4%), radiology results (3.8%), history and physical examination (3.7%), and medications (3.2%). Missing clinical information was frequently reported to be located outside their clinical system but within the United States (52.3%), to be at least somewhat likely to adversely affect patients (44%), and to potentially result in delayed care or additional services (59.5%). Significant time was reportedly spent unsuccessfully searching for missing clinical information (5-10 minutes, 25.6%; >10 minutes, 10.4%). After adjustment, reported missing clinical information was more likely when patients were recent immigrants (odds ratio [OR], 1.78; 95% confidence interval [CI], 1.06-2.99), new patients (OR, 2.39; 95% CI, 1.70-3.35), or had multiple medical problems compared with no problems (1 problem: OR, 1.09; 95% CI, 0.69-1.73; 2-5 problems: OR, 1.87; 95% CI, 1.21-2.89; >5 problems: OR, 2.78; 95% CI, 1.61-4.80). Missing clinical information was less likely in rural practices (OR, 0.52; 95% CI, 0.29-0.92) and when individual clinicians reported having full electronic records (OR, 0.40; 95% CI, 0.17-0.94).

Conclusions Primary care clinicians report that missing clinical information is common, multifaceted, likely to consume time and other resources, and may adversely affect patients. Additional research on missing information is needed to focus on validating clinicians' perceptions and on conducting prospective studies of its causes and sequelae.

JAMA. 2005;293:565-571 www.jama.com

EFFECTIVELY MANAGING CLINICAL information (patient information such as demographics, medical history, medications, test results, and family structure)[1] is an essential part of all medical care; it is particularly crucial for primary care to be able to fulfill what the Institute of Medicine and others consider to be its defining task of coordinating comprehensive care across the health care system.[2-7] Unfortunately, multiple barriers complicate the collecting, synthesizing, recording, and sharing of clinical information, including privacy regulations, decentralized medical systems, inadequate interprofessional communication, the transfer of patients' care within and across care settings, and the rapid turnover of patients' insurance plans.[8-14] Accordingly, physicians may not have clinical information available when it is important for a patient's care.

Missing clinical information has been implicated in injurious adverse events.[9,11,15-21] Elder et al[9] reported that missing clinical information was associated with 15.6% of all reported errors in primary care, most of which were perceived by clinicians as likely to be harmful, and was implicated in every major category of medical error. In the only research studying missing clinical information directly,[22] Canadian emergency department physicians reported that 15.3% of visits had

For editorial comment see p 617.

Author Affiliations: Department of Family Medicine, University of Colorado Health Sciences Center, Denver.
Corresponding Author: Peter C. Smith, MD, Department of Family Medicine, University of Colorado Health Sciences Center at Fitzsimons, PO Box 6508, Mail Stop F496, 12474 E 19th Ave, Bldg 402, Aurora, CO 80045-0508 (peter.smith@uchsc.edu).

important information missing at the time of the encounter that was very likely to result in patient harm. Such harm could include otherwise avoidable drug interactions or duplications, missed or delayed diagnoses, missed immunizations, unnecessary testing and procedures, and the downstream effects of such events.[23]

Despite its potential impact on the essential coordination function of primary care, missing clinical information has not yet been explicitly investigated in this setting. To begin to describe this phenomenon, we surveyed primary care clinicians about clinical information reported as missing during patient care visits.

METHODS

Setting

This study was conducted within the State Networks of Colorado Ambulatory Practices and Partners (SNOCAP), a consortium of Colorado practices and practice-based research networks. These include practices from the Colorado Research Network (CaReNet) and the High Plains Research Network (HPRN). Although CaReNet focuses on the care of underserved patients,[24] it has a diverse membership including academic, private, and community practices and encompasses both private and publicly funded entities. HPRN settings are in rural and frontier communities across northeastern Colorado.[25] All 38 SNOCAP practices participating in the Applied Strategies for Improving Patient Safety error reporting project[26] were invited to participate. Six practices with only 1 clinician were excluded to protect anonymity, and first-year residents were excluded because they were unlikely to be familiar with practice information systems. Clinicians in CaReNet were surveyed between May and August 2003 and those in HPRN between August and December 2003.

Measurement

A 2-part cross-sectional survey of primary care clinicians was created using a modified Delphi technique.[27] For each visit, an anonymous study questionnaire asked the clinician about patient variables, including age and sex; whether the patient had moved to the United States within the last 5 years; and the number of active medical problems. The respondent was also asked whether this was the patient's first visit to the practice, if he or she was the patient's usual primary clinician, and "Do any communication barriers exist with this patient?" (a broad question intended to include such barriers as language discrepancy, severe dementia, and developmental delay). The clinician was asked to indicate patient race (all that apply: white, black, Asian, Native American, do not know) and ethnicity (Hispanic, non-Hispanic, do not know) to determine if these variables were associated with missing clinical information.

The respondent was then asked, "Was any existing information, important for the care of this patient, unavailable at the time of the visit?" The questionnaire explained that this referred only to information known to exist. The term "important for the care of this patient" was not further defined but was intended to capture essential but not necessarily urgent information. To study the entire scope of missing information, we included information that might not always be reasonably expected to be available at the visit. For example, we asked whether missing clinical information was located outside the practice (eg, in the hospital or in another state) or inside the practice (eg, a misplaced chart or malfunctioning electronic systems). Because we wanted to assess information missing at the time that most medical decisions are made, clinicians completed the questionnaire at the end of each visit. Thus, clinical information initially missing but found prior to the end of the visit was not classified as missing, whereas information found after the visit had ended was still classified as missing.

If clinical information was reported missing, clinicians answered additional questions pertaining to that information. They chose among nonmutually exclusive, fixed-response options that also had an "other" option accompanied by space for free text. These questions included (1) the type of information reported as missing; (2) whether they thought the missing information likely resided within or outside their clinical system (defined as their practice and any associated hospital, university, or community health system) or within or outside the United States; (3) whether, as a consequence of the information being missing, they thought the patient was likely to have a delay in care or require additional medical services; and (4) whether the clinician or a staff member had attempted to find the information, and if not, why not. If clinicians searched for the missing information but didn't find it during the visit, they were asked to estimate the time spent looking (<1, 1-4, 5-10, or >10 minutes). Finally, they recorded on a 5-point Likert scale their estimate of "How likely is this missing information to adversely affect the patient's well being?", with anchors ranging from "not at all likely" to "very likely." The questionnaire instructions asked only that this be considered in the context of the patient's medical care but did not define "adversely affect." These estimates of adverse effects were not confirmed or otherwise characterized.

A second clinician questionnaire asked for the clinicians' own demographic information and specialty, whether they were physicians or midlevel clinicians (nurse practitioner or physician assistant), and whether they were residents. The questionnaire also asked the respondents to choose the single best description of their practice's information system: paper charts, partial or hybrid electronic medical records (EMRs), or full (EMRs). Finally, clinicians reported whether or not they had electronic access in their office to patient data from their primary hospital. We did not assess the extent to which each respondent used any existing electronic systems.

The survey was reviewed by experts in medical error and communication to maximize face and content validity and was pilot tested by experienced clinicians.[28] The study questionnaire was limited to 1 page to maximize response rate; average completion time was less than 1 minute. No patient or

clinician identifying information was included on the questionnaires, and the study was approved as exempt by the Colorado Multiple Institutional Review Board and all necessary local institutional review boards.

Data Collection

Each participating clinician completed the study questionnaire at the end of every consecutive patient visit during 1 half-day clinic session. Each clinician also completed 1 anonymous clinician questionnaire. Recent preexisting network surveys provided data on practice size, estimated by the number of full-time equivalent clinicians at each practice. Network data were used to determine which of these were residency practices to assess whether their unique structure influenced missing clinical information independent of the behavior of resident vs nonresident physicians. Because residents are frequently away from the clinics, they were considered 0.3 full-time equivalents. The month of data collection for each practice was recorded.

Statistical Analysis

Missing clinical information rates, frequency distributions, and means (SDs) were calculated for all variables of interest. The intraclass correlation coefficient was computed to assess potential clustering effects. The intraclass correlation coefficient for patients within physicians was 0.076, indicating the need to use methods appropriate for clustered data. To determine whether missing clinical information was associated with patient demographics, visit characteristics, and practice or clinician factors, generalized linear mixed models (multilevel models) were used with missing clinical information (yes/no) as the outcome (logit link) to extend the traditional logistic regression model to accommodate the hierarchical structure of the data (SAS Proc MIXED with GLIMMIX macro).[29] Variance components at each level were examined to determine whether random effects should be retained (clinician, practice). After accounting for clinician-level variability, variability at the practice level was not significant ($P>.20$). Thus a 2-level model was used (patient, clinician). Sensitivity analyses were performed by strata when cell frequencies were adequate.

Significance from the generalized linear mixed models was determined using the F statistic, a joint significance test of global differences among any categories. Statistical significance was defined as $P<.05$ (2-tailed test). To study characteristics associated with reported missing clinical information, power calculations indicated that a sample of 340 events of missing information per group was necessary to detect a 10% absolute difference in rates of missing clinical information in a 2-group comparison with 80% power, assuming an intraclass correlation coefficient of 0.08 (variance inflation factor, 1.48) and a missing information rate of 13% in 1 group. All analyses were performed using SAS 8.2 (SAS Institute Inc, Cary, NC).

RESULTS

A total of 253 clinicians in 32 practices returned study questionnaires for 1614 visits. Eight of these practices were rural HPRN sites and 24 were urban/suburban CaReNet practices. Six invited practices, representing 34 clinicians, did not participate; reasons included extreme weather, an influenza outbreak, and being too busy with practice or concomitant surveys. Participating and nonparticipating practices did not differ significantly in size ($P=.26$), rurality ($P=.33$), or whether they were residency practices ($P=.64$). Although the number of clinicians within the networks is constantly changing, we estimated that the 253 participants represent 71% of all network clinician full-time equivalents. Of these 253 clinicians, 7 did not complete the clinician survey, leaving 51 patient visits without clinician information. As a result, clinician information was available for 1563 patient visits (96.8%).

The results of univariate analyses of patient, visit, clinician, and practice characteristics are shown in TABLE 1 and TABLE 2. Diverse age groups and both sexes were well-represented. Clinicians characterized most patients as white (74.6%) but one third of patients as Hispanic. Half of all patients had at least 2 active medical problems, while relatively few were characterized as first-time patients (13.0%) or recent immigrants (5.1%). Most respondents were family physicians. Most practices were nonrural and reported electronic access to inpatient data.

Table 1. Patient and Visit Characteristics*

Characteristic	Visits, No. (% of Total) (n = 1614)
Age, y	
≤17	422 (26.1)
18-39	473 (29.3)
40-64	469 (29.1)
≥65	235 (14.6)
Incomplete	15 (0.9)
Sex	
Male	554 (34.3)
Female	1051 (65.1)
Incomplete	9 (0.6)
Race	
White	1204 (74.6)
Nonwhite	227 (14.1)
Unknown or incomplete	183 (11.3)
Ethnicity	
Hispanic	538 (33.3)
Non-Hispanic	846 (52.4)
Unknown or incomplete	230 (14.3)
Moved to United States in last 5 y	
Yes	83 (5.1)
No	1399 (86.7)
Unknown or incomplete	132 (8.2)
Active medical problems	
0	259 (16.0)
1	503 (31.2)
2-5	654 (40.5)
>5	152 (9.4)
Incomplete	46 (2.9)
First visit to the practice	
Yes	210 (13.0)
No	1389 (86.1)
Unknown or incomplete	15 (0.9)
Usual care clinician	
Yes	1011 (62.6)
No	555 (34.4)
Unknown or incomplete	48 (3.0)
Communication barriers exist	
Yes	156 (9.7)
No	1424 (88.2)
Unknown or incomplete	34 (2.1)

*All data are by clinician report.

Clinical information considered important was reported to be missing at the time of the visit in 220 (13.6%) of 1614 visits, and many visits had more than 1 type of information missing (TABLE 3). Clinicians reported that the types of information missing included (as a percentage of total visits) laboratory results (6.1%), letters/dictation (5.4%), radiology results (3.8%), history and physical examination (3.7%), and medi-

Table 2. Clinician and Practice Characteristics*

Characteristic	Clinicians, No. (% of Total) (n = 253)
Clinician type	
Nurse practitioner	14 (5.5)
Physician assistant	23 (9.1)
Physician	209 (82.6)
Incomplete	7 (2.8)
Specialty	
Family physician	203 (80.2)
General internist	18 (7.1)
General pediatrician	19 (7.5)
Obstetrician	1 (0.4)
Incomplete	12 (4.8)
Resident	
Yes	106 (41.9)
No	132 (52.2)
Incomplete	15 (5.9)
Rural practice	
Yes	28 (11.1)
No	225 (88.9)
Medical records	
Paper	144 (56.9)
Partial/hybrid electronic	84 (33.2)
Full electronic	17 (6.7)
Incomplete	8 (3.2)
Electronic access to inpatient data	
Yes	214 (84.6)
No	29 (11.5)
Do not know/incomplete	10 (3.9)

*All data are by clinician report.

cations (3.2%). In 97 (44.0%) of these visits, clinicians reported that missing information was at least somewhat likely to adversely affect the patient (Table 3). Clinicians believed the missing information was outside their clinical system in 57.3% of visits with missing information. They also reported that someone attempted to find the missing information in 125 (56.8%) of these visits. For 45 (36.0%) of these 125 visits, clinicians reported spending at least 5 minutes looking for missing clinical information. They also reported that during 36 (28.8%) of the 125 visits, staff spent at least 5 minutes looking for missing information. Clinicians believed that missing information would likely result in either delayed care or at least 1 duplicative medical service in 59.5% of visits with missing information (Table 3).

Associations between missing clinical information and patient, visit, clinician, and practice characteristics, separately and in combination, were tested using multilevel models adjusted for clustering of patients within physicians (TABLE 4). Increased reporting of missing clinical information was significantly associated with first visit (odds ratio [OR], 2.39; 95% confidence interval [CI], 1.70-3.35), rural clinician (OR, 0.52; 95% CI, 0.29-0.92), immigration within 5 years (OR, 1.78; 95% CI, 1.06-2.99), and number of active medical problems (no problems vs 1 problem: OR, 1.09; 95% CI, 0.69-1.73; 2-5 problems: OR, 1.87; 95% CI, 1.21-2.89; >5 problems: OR, 2.78; 95% CI, 1.61-4.80). Clinical information was equally likely to be reported missing regardless of electronic access to information at one's primary hospital, the size of the practice, the month of data collection, whether physicians were residents, or whether the setting was a residency practice. Family physicians had rates of visits with missing information similar to those of other physicians (13.2% vs 14.4%; $P=.61$). While physicians had a smaller percentage of missing clinical information than did midlevel clinicians (13.4% vs 26.5%), the small numbers of visits for which midlevel clinicians reported missing information (n=9) precluded further analysis.

Within a given practice, there was only 81% agreement on average among clinicians on how to classify the practice's charting system. Accordingly, we assessed practices' charting systems using both individual clinician report and clinician concurrence, determined by taking the response most often reported by the clinicians within each practice. Only 17 clinicians indicated that their offices had full EMRs. When compared with respondents who reported having hybrid EMRs or paper records, clinicians who reported having full EMRs were significantly less likely to report missing clinical information (Table 4), while reporting a partial EMR did not confer a difference (OR, 0.88; 95% CI, 0.60-1.28). However, when using the practice-level variable of clinician concurrence rather than individual report, no benefit was seen for practices determined to have full EMRs (OR, 0.60; 95% CI, 0.25-1.40).

COMMENT

We studied primary care clinicians' reports about missing clinical information during patient visits and their beliefs about its potential consequences. In nearly 1 in 7 visits, they reported that clinical information important for the patient's care was missing. Although laboratory reports and dictations or letters predominated, clinicians reported that the missing information originated from a variety of sources and often included more than 1 type. In 44% of the visits with missing information, clinicians believed the patient would be at least somewhat likely to be adversely affected. If validated by future research, these results could have serious implications for the 220 million primary care visits that occur in the United States each year.[30]

Poon et al[31] found that 83% of surveyed physicians had reviewed at least 1 test result in the previous 2 months that they would have wanted to know about earlier, despite having fairly advanced electronic information systems. It is not surprising that in our study clinicians and staff spent significant amounts of time looking for missing information, especially when they believe it often leads to delayed care, duplicative services, or potential adverse effects for their patients. We did not validate these time estimates, and based on other research[32] clinicians may have overestimated the amount of time spent unsuccessfully looking for missing information. However, by excluding any time spent during the visit that resulted in finding the information (so that it was not classified as missing), or time spent looking for missing information after the visit was over, we may have underestimated the total lost time related to searching. This may represent less time available for direct patient care, a further reduction in a resource that is already under threat from other competing demands.

We found relatively few predictors of missing clinical information. Clinicians were more likely to report missing clinical information during visits in which the patient had recently moved to the United States, was new to a practice, or had multiple medical problems. These factors have been implicated in missing information–related medical errors and adverse events in other settings.[10,12,15,33]

Rural clinicians were less likely to report missing information than urban or suburban clinicians, perhaps because of simpler and more self-contained systems of care, with fewer clinicians and facilities compared with urban areas. It is possible that the influence of broader systemic factors on missing clinical information that could not be discerned in this study may overwhelm such patient, clinician, or practice factors.

Clinicians reporting a full EMR in their practice were significantly less likely to report missing clinical information, but this did not eliminate the problem. Missing information was believed more likely to be outside the clinical system than within it and therefore may be beyond the reach of an EMR. The lack of impact of partial EMRs and electronic access to hospital data on adverse events has been found in other settings.[11,18] We found no difference in reports of missing information when we used the concurrence among clinicians within a practice to determine the EMR variable. This difference from individual report may indicate that familiarity with or actual use of an EMR is a better predictor of effective information management than the mere presence of an EMR.

This study has several important limitations. The data are cross-sectional and based on clinician report, including patient race and ethnicity, which may be less accurate than patient self-identification. Several network practices reported being too busy to participate. Although this number was small, had they participated the rate of reported missing clinical information may have been slightly higher. There was no independent verification that questionnaires were completed on every consecutive patient in each clinic session. The definition of information that was "important for the care of this patient" was open to broad interpretation by the respondent. Such information may be both important and urgent (eg, an allergy to a newly prescribed medication) or important but not urgent (eg, a written advance directive for a patient with dementia, or urinary microalbumin results for a patient with diabetes).

Table 3. Missing Clinical Information: Categories, Visit Characteristics, and Perceived Consequences

Variable	Visits, No. (%)
Categories of Missing Clinical Information (n = 220)*	
Laboratory results†	99 (45.0)
Letters/dictation	87 (39.5)
Radiology results	62 (28.2)
History and physical examination	59 (26.8)
Current and prior medications	51 (23.2)
Pathology results‡	33 (15.0)
Immunization records	27 (12.3)
Procedures	16 (7.3)
Other§	11 (5.0)
Visit Characteristics	
Perceived likelihood of missing clinical information to adversely affect the patient's well-being (n = 220)	
1 (Not at all likely)	52 (23.6)
2 (Not very likely)	68 (30.9)
3 (Somewhat likely)	52 (23.6)
4 (Likely)	30 (13.6)
5 (Very likely)	15 (6.8)
Incomplete	3 (1.4)
Where is information likely to reside? (n = 220)*‖	
Within own clinical system	92 (41.8)
Outside clinical system but in United States	115 (52.3)
Outside United States	11 (5.0)
Do not know	5 (2.3)
Attempted to obtain the information? (n = 220)	
No (clinician or staff)	95 (43.2)
Why not?* (n = 95)	
Not critical	55 (57.9)
Unlikely to succeed	32 (33.7)
Too busy	17 (17.9)
Other	14 (14.7)
Yes (clinician or staff)	125 (56.8)
Reported time clinician spent looking unsuccessfully, min (n = 125)	
<1	23 (18.4)
1-4	53 (42.4)
5-10	32 (25.6)
>10	13 (10.4)
Incomplete	4 (3.2)
Reported time staff spent looking unsuccessfully, min (n = 125)	
<1	39 (31.2)
1-4	23 (18.4)
5-10	20 (16.0)
>10	16 (12.8)
Incomplete	27 (21.6)
Perceived Consequences of Missing Clinical Information (n = 220)¶	
Delay(s) in care	56 (25.5)
Additional laboratory testing	49 (22.3)
Additional visit(s)	46 (20.9)
Additional imaging	24 (10.9)
Other#	18 (8.2)

*Percentages total more than 100% because questionnaire options were not mutually exclusive.
†Blood chemistry, urinalysis, and hematology.
‡Biopsy specimens and cytology, including Papanicolaou smears.
§Includes pediatric growth data, notes about telephone calls, and parts of charts or entire charts.
‖A visit may have had 2 or more pieces of missing information residing in different places.
¶Questionnaire items were not mutually exclusive. Either a delay in care or an additional medical service was reported as a likely outcome in 131 (59.5%) of 220 visits.
#Included additional time spent by patients and clinicians looking for the missing information and communicating it on the telephone with hospitals, specialists, pharmacies, and each other; additional time spent reconciling divergent information; problems with missing information that will not be resolved by the next visit; potentially missed diagnoses or improper therapeutics; and potentially duplicated vaccinations.

To explore the widest possible scope of the problem of missing clinical information, there was no requirement that having the information available during the visit was reasonable. Expecting prior medical records at a first visit may not yet be realistic in many practices, and primary efforts to remedy the problem may best focus on limiting missing information for existing patients. However, these findings suggest that robust, long-term solutions may need to include transfers of care across care settings, even across international borders.[34] One model for a solution is the Continuity of Care Record, a data standard that enables diverse information systems to share a minimal clinical data set whose components closely mirror the types of missing information reported in this study,[35] that has the potential to be disseminated via portable memory devices or secure e-mail or Web servers, and that can be printed and given directly to patients or new clinicians.

Table 4. Patient, Visit, Clinician, and Practice Characteristics Associated With Reported Missing Clinical Information

Variable	Visits With Missing Clinical Information, %	OR (95% CI)*	*P* Value†
Patient characteristics, y			
Age category			
≤17	11.4	0.67 (0.42-1.07)	.22
18-39	13.5	0.91 (0.59-1.38)	
40-64	14.7	1.00 (0.66-1.51)	
≥65	14.0	Reference	
Sex			
Male	15.0	1.20 (0.92-1.58)	.18
Female	12.7	Reference	
Race			
Nonwhite	14.5	1.09 (0.73-1.62)	.07
White	12.6	Reference	
Ethnicity			
Hispanic	13.0	0.82 (0.59-1.14)	.18
Unknown	17.0	1.23 (0.82-1.84)	
Non-Hispanic	13.1	Reference	
No. of active medical problems			
0	9.7	Reference	<.001
1	10.7	1.09 (0.69-1.73)	
2-5	15.9	1.87 (1.21-2.89)	
>5	19.1	2.78 (1.61-4.80)	
Moved to United States within last 5 y			
Yes	21.7	1.78 (1.06-2.99)	.03
No/unknown	12.9	Reference	
Visit characteristics			
First visit			
Yes	24.3	2.39 (1.70-3.35)	<.001
No/unknown	12.0	Reference	
Usual clinician			
Yes	12.6	0.81 (0.62-1.07)	.14
No/unknown	15.4	Reference	
Communication barriers			
Yes	16.7	1.30 (0.85-2.00)	.22
No/unknown	13.3	Reference	
Clinician and practice characteristics			
Resident physician			
Yes	12.7	0.93 (0.64-1.35)	.70
No	14.1	Reference	
Rural clinician			
Yes	8.2	0.52 (0.29-0.92)	.03
No	14.5	Reference	
Medical records‡			
Full electronic record	6.5	0.40 (0.17-0.94)	.04
Paper or partial electronic record	14.3	Reference	
Electronic access to inpatient data			
Yes	13.4	0.96 (0.61-1.52)	.87
No	15.1	Reference	

Abbreviations: CI, confidence interval; OR, odds ratio.
*Multilevel, univariate logistic regression adjusted for clustering of patients within physicians.
†*P* values represent significance of F statistic for all categories.
‡As reported by individual clinicians.

Because clinicians were not given a specific definition of an adverse effect from missing clinical information, their responses may have considered outcomes ranging from minor inconvenience to financial hardship to actual physical injury. We did not validate or characterize these estimates of potential adverse effects. Although other studies have demonstrated that errors related to missing clinical information are common and can adversely affect patients,[8,9,11,15,20,36-38] future research should focus on the actual impact of missing information on patients, clinicians, practices, and systems of care.

Although we did not validate the accuracy of clinician report of missing clinical information, a recent direct-observation study indicated that primary care physicians' reports of events during patient visits are highly accurate.[32] We did not confirm whether information reported as missing actually existed and, if it did, whether it was truly inaccessible to the clinician or was functionally missing (ie, actually available but not found when needed). Clinicians may have reported nonexistent information (such as a laboratory test ordered but never actually performed) as missing. Conversely, they may have reported information as missing that was actually at their fingertips but that they did not or could not access (such as results buried inside a thick paper record). We did not determine how well the practices' electronic systems were functioning or used during the study, which may have transiently altered the rate of missing information. However, busy clinicians making medical decisions during clinic

visits need information systems that are both effective and efficient. Because most medical decisions are made during patient visits, clinicians may not distinguish between actually missing and functionally missing information.

Although this is a state-level survey, our sample included diverse clinicians and patients from a variety of practices in multiple geographic, economic, and demographic settings. Although the racial and ethnic composition of our sample was different from national norms, we found no differential rates of missing clinical information based on race or ethnicity. We therefore believe that these results should be generalizable.

This is the first direct study of missing clinical information in primary care, in contrast to retrospective detection of missing information as the etiology of a medical error or adverse event. It demonstrates reports of a high frequency of missing important clinical information, with a wide array of potential impact on patient care. Additional research on missing clinical information should focus on validating clinicians' perceptions and conducting prospective studies of its actual causes and sequelae.

Author Contributions: Dr Smith had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analyses.
Study concept and design: Smith, Araya-Guerra, Parnes, Westfall, Pace.
Acquisition of data: Smith, Araya-Guerra, Dickinson, Van Vorst, Westfall, Pace.
Analysis and interpretation of data: Smith, Araya-Guerra, Bublitz, Parnes, Dickinson, Westfall, Pace.
Drafting of the manuscript; critical revision of the manuscript for important intellectual content: Smith, Araya-Guerra, Bublitz, Parnes, Dickinson, Van Vorst, Westfall, Pace.
Statistical analysis: Araya-Guerra, Bublitz, Parnes, Dickinson, Van Vorst.
Obtained funding: Smith, Pace.
Administrative, technical, or material support: Araya-Guerra, Westfall, Pace.
Study supervision: Smith, Araya-Guerra, Dickinson, Westfall, Pace.
Financial Dislosure: None reported.
Funding/Support: This study was funded by the American Academy of Family Physicians Foundation and the Joint AAFP/F-AAFP Grant Awards Council (MIA Care: the Missing Information in Ambulatory Care Study, grant G0307RS) (Dr Smith) and in part by the Agency for Healthcare Research and Quality (Applied Strategies for Improving Patient Safety, grant U18 HS11878) (Dr Pace).
Role of the Sponsors: None of the funding sources had any role in the design and conduct of the study; the collection, preparation, or interpretation of the data; or the preparation or approval of the manuscript.
Previous Presentations: An earlier draft of this article was presented as a distinguished paper at the North American Primary Care Research Group annual meeting; October 10-13, 2004; Orlando, Fla.
Acknowledgment: We thank Tillman Farley, MD, and Marc Ringel, MD, for their early conception and support of this study and Linda Niebauer, Elizabeth Staton, and especially Sherry Holcomb for their invaluable assistance. We thank all the participating SNOCAP practices for their dedicated participation: AF Williams Family Medicine, Colorado Springs Osteopathic Foundation and Family Medicine Center, Comprehensive Family Care Center, PC, Denver Health Medical Plan Clinic, Exempla St Joseph Family Practice, Generations Health Care, High Street Internal Medicine, Internal Medicine–AOP, Kids Care Clinic, La Casa-Quigg Newton Health Center, Lowry Family Health, Mariposa Family Health, Park Hill Family Health, People's Clinic, Plains Medical Center Limon and Strasburg Clinics, Rose Family Medicine, Saint Mary's Family Practice, Salud Family Health Centers (Brighton Family Health, Commerce City, Ft Lupton, Ft Morgan, and Sterling), Southern Colorado Family Practice, St Anthony's Family Medicine Center West, Swedish Family Medicine, University Family Medicine (Park Meadows and Westminster), Westside Family Health Center Pediatric and Teen Clinic, Wray Clinic, and Yuma Clinic.

REFERENCES

1. Smith R. What clinical information do doctors need? *BMJ*. 1996;313:1062-1068.
2. Gorman PN. Information needs of physicians. *J Am Soc Inf Sci*. 1995;46:729-736.
3. Ebell MH, Frame P. What can technology do to, and for, Family Medicine? *Fam Med*. 2001;33:311-319.
4. Martin JC, Avant RF, Bowman MA, et al; Future of Family Medicine Project Leadership Committee. The Future of Family Medicine: a collaborative project of the family medicine community. *Ann Fam Med*. 2004; 2(suppl 1):S3-S32.
5. Donaldson MS, Yordy KD, Lohr KN, Vanselow NA, eds. *Primary Care: America's Health in a New Era*. Washington, DC: Institute of Medicine; 1996.
6. Parkerton PH, Smith DG, Straley HL. Primary care practice coordination versus physician continuity. *Fam Med*. 2004;36:15-21.
7. Aspden P, Corrigan JM, Wolcott J, Erickson SM, eds. *Patient Safety: Achieving a New Standard for Care*. Washington, DC: Institute of Medicine; 2004.
8. Committee on Quality Health Care in America. *Crossing the Quality Chasm: A New Health System for the 21st Century*. Washington, DC: Institute of Medicine; 2001.
9. Elder NC, Vonder Meulen M, Cassedy A. The identification of medical errors by family physicians during outpatient visits. *Ann Fam Med*. 2004;2:125-129.
10. Gandhi TK, Sittig DF, Franklin M, Sussman AJ, Fairchild DG, Bates DW. Communication breakdown in the outpatient referral process. *J Gen Intern Med*. 2000;15:626-631.
11. Forster AJ, Murff HJ, Peterson JF, Gandhi TK, Bates DW. The incidence and severity of adverse events affecting patients after discharge from the hospital. *Ann Intern Med*. 2003;138:161-167.
12. Poon EG, Haas JS, Louise Puopolo A, et al. Communication factors in the follow-up of abnormal mammograms. *J Gen Intern Med*. 2004;19:316-323.
13. Bourguet C, Gilchrist V, McCord G; Northeastern Ohio Network Research Group. The consultation and referral process. *J Fam Pract*. 1998;46:47-53.
14. Roulidis ZC, Schulman KA. Physician communication in managed care organizations: opinions of primary care physicians. *J Fam Pract*. 1994;39:446-451.
15. Wilson RM, Harrison BT, Gibberd RW, Hamilton JD. An analysis of the causes of adverse events from the Quality in Australian Health Care Study. *Med J Aust*. 1999;170:411-415.
16. Cook RI, Render M, Woods DD. Gaps in the continuity of care and progress on patient safety. *BMJ*. 2000;320:791-794.
17. Bhasale AL, Miller GC, Reid SE, Britt HC. Analysing potential harm in Australian general practice: an incident monitoring study. *Med J Aust*. 1998;169:73-76.
18. Gandhi TK, Weingart SN, Borus J, et al. Adverse drug events in ambulatory care. *N Engl J Med*. 2003; 348:1556-1564.
19. Lesar TS, Briceland L, Stein DS. Identification of medication prescribing errors. *JAMA*. 1997;277:312-317.
20. Holden J, O'Donnell S, Brindley J, Miles L. Analysis of 1263 deaths in four general practices. *Br J Gen Pract*. 1998;48:1409-1412.
21. Dovey SM, Phillips RL, Green LA, Fryer GE. Consequences of medical errors observed by family physicians. *Am Fam Physician*. 2003;67:915.
22. Stiell A, Forster AJ, Stiell IG, van Walraven C. Prevalence of information gaps in the emergency department and the effect on patient outcomes. *CMAJ*. 2003; 169:1023-1028.
23. Toxic cascades: a comprehensive way to think about medical errors. *Am Fam Physician*. 2001;63:847.
24. Parnes B, Main DS, Holcomb S, Pace WD. Tobacco cessation counseling among underserved patients: a report from CaReNet. *J Fam Pract*. 2002;51:65-69.
25. Van Vorst R, Westfall JM; High Plains Research Network, University of Colorado Health Sciences Center Department of Family Medicine. Assessment and Evaluation of Hispanic Access to Health Care Services in Western Yuma County. 2001. Available at: http://fammed.uchsc.edu/carenet/HPRN/default.asp. Accessed December 20, 2004.
26. Fernald DH, Pace WD, Harris DM, et al. Event reporting to a primary care patient safety reporting system. *Ann Fam Med*. 2004;2:327-332.
27. Hasson F, Keeney S, McKenna H. Research guidelines for the Delphi survey technique. *J Adv Nurs*. 2000; 32:1008-1015.
28. Fink A, ed. *How to Measure Survey Reliability and Validity*. Vol 7. Thousand Oaks, Calif: Sage; 1995.
29. Littell R, Milliken GA, Stroup WW, Wolfinger RD. *SAS System for Mixed Models*. Cary, NC: SAS Institute Inc; 1996.
30. Cherry DK, Burt CW, Woodwell DA. *National Ambulatory Medical Care Survey: 2001 Summary: Advance Data From Vital and Health Statistics No. 337*. Hyattsville, Md: National Center for Health Statistics; 2003.
31. Poon EG, Gandhi TK, Sequist TD, Murff HJ, Karson AS, Bates DW. "I wish I had seen this test result earlier!": dissatisfaction with test result management systems in primary care. *Arch Intern Med*. 2004;164:2223-2228.
32. Gilchrist VJ, Stange KC, Flocke SA, McCord G, Bourguet CC. A comparison of the National Ambulatory Medical Care Survey (NAMCS) measurement approach with direct observation of outpatient visits. *Med Care*. 2004;42:276-280.
33. Leape LL, Bates DW, Cullen DJ, et al; ADE Prevention Study Group. Systems analysis of adverse drug events. *JAMA*. 1995;274:35-43.
34. Burton LC, Anderson GF, Kues IW. Using electronic health records to help coordinate care. *Milbank Q*. 2004;82:457-481.
35. Kibbe DC, Phillips RL Jr, Green LA. The continuity of care record. *Am Fam Physician*. 2004;70:1220, 1222-1223.
36. Brennan TA, Leape LL, Laird NM, et al. Incidence of adverse events and negligence in hospitalized patients. *N Engl J Med*. 1991;324:370-376.
37. Kohn LT, Corrigan JM, Donaldson MS; Committee on Quality of Health Care in America. *To Err Is Human: Building a Safer Health System*. Washington, DC: Institute of Medicine; 2000.
38. Woolf SH, Kuzel AJ, Dovey SM, Phillips RL Jr. A string of mistakes: the importance of cascade analysis in describing, counting, and preventing medical errors. *Ann Fam Med*. 2004;2:317-326.

JHS Process Analysis
Time to Locate Chart

Documentation of all medical care provided by Jail Health Services is maintained in the medical record/chart. The ability to obtain charts quickly and easily is essential in delivering quality care to inmates. The current system at JHS has many challenges in meeting the needs of providers and nurses in the delivery of charts.

Current Practice
A chart request is received in medical records and the process begins by checking for an existing chart. The process is complete when it is determined that a new chart needs to be made or once the existing chart is located.

Based on our current workflow, there are approximately 54,795 active charts on site that can be intermittently housed in 130 locations between both sites. There is also 6,200 active charts stored at an off site facility (US Archives), due to space limitations. On site locations include the active, re-file, and out of jail racks; provider, nursing, and floor boxes; individual offices, Clinic, Dental, Psych, Infirmary/M-Unit, Booking, and triage rooms on the units. Charts often travel to a number of these locations and are held until they are picked up for the next step in providing active care. They are often re-routed and locations are not documented in an efficient manner. These challenges result in multiple searches, delays in delivery of care, increase the risk of medical staff missing critical information, and providing duplicative medical services.

The process for locating a chart starts with a search in the computer for an existing chart in Signature, GUI, and SWIM. There is also a search conducted in KC-ITS Mainframe to determine if the inmate has any aliases that would result in multiple searches in Signature. Signature, GUI, and SWIM are the current systems used to store patient information and track chart locations within Public Health (PH). They are integrated systems. KC-ITS Mainframe is the Department of Adult & Juvenile Detention (DAJD) system that stores inmate information and it is not integrated with the PH systems. It is necessary to toggle between these systems in order to gather all information needed. This search can result in the following outcomes and actions:

- Existing chart and the chart is on site
    - Physical chart search begins (see above for locations and study below for length of time to locate)
- Existing chart and the chart is located at the other JHS site
    - Order chart from other JHS site (delivery within 24 hours)
- Existing chart and the chart is located at US Archives
    - Order chart from US Archives (delivery within 24 hours but can be delivered within 2 hours in urgent situations)
- Existing chart is purged out of the PH
    - New chart created using existing number
- No chart exists
    - New chart is created with a new number

A study was conducted in February of 2005 where staff reported on the number of chart requests, the time to locate, and the place the chart was located. In a 24 hour period, the staff conducted a total of 337 chart requests, taking just over 14 hours to complete; averaging 2 1/2 minutes to locate charts but taking up to 57 minutes. The cost to complete chart searches is approximately $117,350.00 annually.

The best case scenario is when a chart is in the active rack which occurred 31% of the time. The worse case scenario is when an inmate has multiple aliases, the computer indicates that the chart is on site, a check of all

possible locations is completed, and no chart is located. This occurred 4% of the time. In cases that charts are not found, multiple searches are conducted for 5 days and then a new chart is created using the same number. A note is created in GUI or SWIM to advise that a new chart was created in addition to the existing chart but the risk of missing information remains high.

Study of Chart Requests in a 24 Hour Period

Number of Chart Requests
Daily – 337
Annualized – 123,005

Results of Chart Search – Current Practice

Daily

Location	# of Charts	% of Total	Total Hours	Average min. per Chart
Active	104	31%	1	1
OOJ	116	34%	4	2
Boxes	67	20%	4	4
Other*	38	11%	3	5
Not Found	12	4%	2	8
Total	337	100	14	2.5

Annualized

Location	# of Charts	% of Total	Total Hours	Average min. per Chart
Active	37,960	31%	499	1
OOJ	42,340	34%	1484	2
Boxes	24,455	20%	1424	4
Other*	13,870	11%	1138	5
Not Found	4,380	4%	584	8
Total	123,005	100	5129	2.5

* Individual offices, Clinic, Dental, Psych, Infirmary/M-Unit, Booking, and triage rooms on the units. "Other" category was not able to capture the amount of time for retrieving charts in all areas listed as "Other"; data on named areas was not available. Assumption is being made for Psych, M-Unit, Booking, and triage rooms on units.
**Times rounded to the nearest minute.

Improved Process

Under a process improvement plan, the routing of charts would be the focus. Currently, a Route & Transfer form is placed on the outside of the chart and used for routing charts to multiple locations, communication and general requests. The form includes: name, DOB, AKA's, Number of Location, Location, and Date. Under a process improvement plan, this form will be used for routing charts to multiple locations only; omitting other types of communications and general requests. Additions to the form would include a "Paperwork Only" check box to aid medical records staff in identifying what is being routed; a "Completed" check box to indicate when chart is ready to be routed to the next location; detailed instructions printed on form as a reminder on how to use it correctly. Training would be provided to staff prior to implementation.

This plan is designed to decrease the number of charts that are not found while decreasing the time it takes to locate other charts. By decreasing the number of charts that are "not found" by 80%, you are able to decrease medical records time spent looking for charts by 30%. It would also allow a decrease in the overall average time to find a chart to under 2 minutes. This is a savings of approximately $36,000 annually.

Number of Chart Requests

Daily – 337

Annualized – 123,005

Results of Chart Search – Improved Process

Daily

Location	# of Charts	% of Total	Total Hours	Average min. per Chart
Active	104	31%	1	1
OOJ	116	34%	4	2
Boxes	72	21%	2	2
Other*	43	13%	2	3
Not Found	2	1%	0	5
Total	337	100	9	<2

Annualized

Location	# of Charts	% of Total	Total Hours	Average min. per Chart
Active	37,960	31%	499	1
OOJ	42,340	34%	1484	2
Boxes	26,280	21%	815	2
Other*	15,695	13%	694	3
Not Found	730	1%	61	5
Total	123,005	100	3553	<2

* Individual offices, Clinic, Dental, Psych, Infirmary/M-Unit, Booking, and triage rooms on the units. "Other" category was not able to capture the amount of time for retrieving charts in all areas listed as "Other"; data on named areas was not available. Assumption is being made for Psych, M-Unit, Booking, and triage rooms on units.

**Times rounded to the nearest minute.

Use of and Electronic Health Record

Under the scenario of using and Electronic Health Record, this time would be eliminated from the job duties of the medical records staff. The charts would be available to the requestor in 30 to 45 seconds, assuming that there is a computer terminal at the location. All of the locations listed in the study above have the capability to have computer terminals available, for JHS staff members only, to access patient information. The challenges of multiple searches, delays in the delivery of care, increase of risk of medical staff missing critical information, and providing duplicative medical services are eliminated. This would save $117,350.00 annually.

Combined Daily Totals for Chart Request

RJC - Data gathered from staff 02/05

Total # of Chart Searches	140
Total Amt of Time	338
Average Per Chart	2

KCCF - Data gathered from staff 02/05

Total # of Chart Searches	197
Total Amt of Time	516
Average Per Chart	3

JHS Data	
Total # of Chart Searches	337
Total Amt of Time	854
Average Per Chart	3

Totals using only KCCF & RJC gathered data from staff					
Daily	Charts	%	Time - Min.	Time - Hrs	Avg Time
Active	104	31%	82	1.37	0.79
OOJ	116	34%	244	4.07	2.10
Boxes	67	20%	234	3.90	3.49
Other* (**)	38	11%	187	3.12	4.92
Not Found	12	4%	96	1.60	8.00
Total	337	100%	843	14.05	2.5

* Individual offices, Clinic, Dental, Psych, Infirmary/M-Unit, Booking, and triage rooms on untis. Other category was not able to capture the amount of time for retrieving charts completely. Data on all named areas was not available. Assumption is being made for Psych, M-Unit, Booking, and triage rooms.

Annual	Charts	%	Time - Min.	Time - Hrs	Avg Time
Active	37960	31%	29930	498.83	0.79
OOJ	42340	34%	89060	1484.33	2.10
Boxes	24455	20%	85410	1423.50	3.49
Other*(**)	13870	11%	68255	1137.58	4.92
Not Found	4380	4%	35040	584.00	8.00
Total	123,005	100%	307,695	5,128.25	2.5

* Individual offices, Clinic, Dental, Psych, Infirmary/M-Unit, Booking, and triage rooms on untis. Other category was not able to capture the amount of time for retrieving charts completely. Data on all named areas was not available. Assumption is being made for Psych, M-Unit, Booking, and triage rooms.

Reduction with Process Improvement

Daily	Charts	%	Time - Min.	Time - Hrs	Avg Time	
Active	104	31%	82	1.37	0.79	
OOJ	116	34%	244	4.07	2.10	
Boxes	72	21%	134	2.23	2.00	added 5 to for NF reduction
Other* (**)	43	13%	114	1.90	3.00	added 5 for NF reduction
Not Found	2	1%	10	0.17	5.00	
Total	337	100%	584	9.73	1.82	
Annually	Charts	31	Time-Min	Time - Hrs	Avg Time	
Active	37960	31%	29930	498.83	0.79	
OOJ	42340	34%	89060	1484.33	2.10	
Boxes	26280	21%	48910	815.17	2.00	
Other* (**)	15695	13%	41610	693.50	3.00	
Not Found	730	1%	3650	60.83	5.00	Reduction of 83% in NF
Total	123005	100%	213160	3552.67	1.82	Reduction of 27% in time

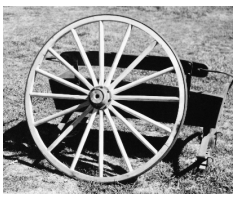
Electronic Medical Records

How Can You Afford (Not) To Have One???

Electronic Medical Record lecture slideset is available at:

wellcon.net

Some Things Just Change How We Work



The Need

- Correctional Healthcare
  - Large numbers of patients
  - Required documentation on each
  - Acute care generates a disproportionate amount of paper compared to other encounters
  - Defense of budget and staffing requires good data

Our Crisis

- Only 40% of paper charts available at physician encounter
- Filing backed up for months
- Ran out of storage space for paper
- Non-existent nursing documentation because they couldn't find charts
- Nurses would create multiple charts as path of least resistance

The Political Hurdles

- Money
- "Need vs. Want"
- Technological
- Information Services

Salt Lake County Setup

- Client-server model with data-center in Nashville hooked by T-1 line
- 65 terminals
- 2 high-speed paper scanners
- 2 FTE Transcriptionists
- Digital Dictation System for providers
- Digital Xray scanner
- Interfaces with custody and lab

Efficiency Study

- Before-and-After study to assess impact of an electronic medical record
- 2 observers collected all data
- 962 patient encounters
- Study design was direct observation of staff as they performed work tasks

Booking Data

- Total time in booking
- Total time for medical screening
- Backlog of patients waiting for medical screening
- Number of data points collected

Medical Records Data

- Time to access each chart for any healthcare function
- Percentage of charts located
- Time required to create new chart
- Lag time for filing booking screening

Physician Productivity

- Time required to complete note (handwritten vs. dictated)
- Number of words in note
- Percentage of charts available at visit
- Lag time for filing labs, notes
- Time from verification of medications to order written

14-day Evaluations

- Timeliness of evaluation
- Number of clinical data points per evaluation

Other Data

- Percentage of PPD's placed that were actually read
- Percentage of patients receiving nursing treatment with clinical documentation

Booking Results

Parameter	Before EMR	After EMR
Time in booking	190.2 min	187.3 min
Medical screen	6.91 min	6.71 min
# data points	24 items	56 items
Bullpen	1.48 people	1.73 people

Medical Records Results

Parameter	Before EMR	After EMR
Time to find	21.3 min	2 seconds
% located	56%	100%
Time for new chart	7.4 min	None
Filing lag time	13 days	< 24 hrs

Physician Results

Parameter	Before EMR	After EMR
Time for note	9.6 minutes	2.1 minutes
# lines / note	14	29
% chart available	56%	99+%
Verified Rx lag time	2.4 days	<16 hours

14-Day Eval Results

Parameter	Before EMR	After EMR
% completed on time	43%	99 + %
# data points	23	70

Other Data

Parameter	Before EMR	After EMR
% of PPD's read on time	47%	98%
% patients receiving nursing treatment with documentation	6%	96%

Arguing for Success

Quality Demonstration

Arguing for Success

The Money

Staff Shifting

- Medical Records staff on paper = 20 FTE to maintain same functionality
- Medical Records staff on computer = 7 FTE
- Wage of medical records clerk = $9.78 / hr + 34% benefits = $13.11 / hr

Staff Savings

- 13 FTE's not needed with EMR
- Yearly savings = 13 * 2080 * $13.11 = $354,494

Cost of System

Initial Software Licensing	$375,000
Training	40,000
Hardware (1500 * 65)	97,500
TOTAL	$512,500

Return on Investment

Cost of System	$512,500
Staff Savings	$354,494

Simple Return On Investment = 1.45 years

Summary From Our Experience

- EMR can revolutionize your facility
- No significant reverse engineering identified
- Gains in efficiency are well beyond what we had hoped
- Gains in quality are remarkable
- Documentation has been helpful in several lawsuits already
- System paid for itself in 1.45 years

The Take Home Message

- Financially you CAN afford an Electronic Medical Record system
- Quality-wise, you CANNOT afford NOT to have an EMR
- Go Forth and Conquer

Electronic Medical Record lecture slideset is available at:

wellcon.net

J-E-03
essential

TRANSFER SCREENING

Standard

A transfer screening is performed by qualified health care professionals on all *intrasystem transfers*.

Compliance Indicators

1. All aspects of the standard are addressed by written policy and defined procedures.
2. Qualified health care professionals review each incoming inmate's health record or summary within 12 hours of arrival to ensure continuity of care.

Definitions

Intrasystem transfers include inmates being transferred from one facility to another, or other individuals brought to the facility with an already established health record for their current incarceration.

Discussion

This standard is intended to ensure that inmates continue to receive appropriate health services for health needs already identified, and unnecessary repetitive tests are avoided when inmates are transferred between separate facilities that are part of the same correctional system.

Seven Year Cost Savings

The overall savings reflection in the cost/benefit analysis 7 years out from implementation is projected to be $1,495.273. This number was arrived at by adding the projected savings in six major areas: medical records staff, nursing staff, pharmacy staff, pharmaceuticals, lab and tests, medical records supplies, and overhead.

	Savings	Reference	Comment	Resultant Savings (7 years)	FTE Impact
Medical Records Staff	10% per year for 3 years – cumulative 30%	Based on the analysis of the Medical Records work processes, it is estimated that Medical Records Staff over a seven year period would spend at least 13,154 hours in functions related to managing the paper record. See Attachment 21.	There is a possibility that the savings would be greater if the Electronic Health Record replaces more medical record functions than anticipated.	$374,024	(6.3)
Nursing Staff	RN Current base 26,000 hours 10% reduction; LPN at 80% reduction of 5,600 hours	Jail Health Services' nurses spend over 26,400 hours annually doing paperwork, charting, and writing in logs and in treatment mgmt. See Attachment 29.	26,400 hours is the sum of JHS RN hours A and D in the attachment.	$397,196	(3.4)
Pharmacy Staff	1 FTE ongoing	A study of the process for writing and filling a non-narcotic prescription (See Attachment 26), which is just a subset of the Jail Health Services Medication Administration process, revealed that there are over 27 key steps involved in filing a new prescription. This activity involves the provider, nurse, pharmacy assistant, and pharmacist.	A review by a cross functional team revealed that the steps removed would reduce the amount of Pharmacy Technician time required on a daily basis.	$57,045	(1.0)
Pharmaceuticals	20% immediate	In a study conducted by Wang (See Attachment 28), an expert panel estimated that alternative drug suggestion reminders would save 15% (range of 5% to 25%) of total drug costs per year.	JHS Medical Director and Sr. Pharmacist confirmed the potential 20% reduction.	$582,759	None
Lab and Tests	20% reduction of Public Health lab budget of $48,000. Could be greater with outside lab impact.	It is estimated that 20% of the lab tests paid for by Jail Health are unnecessarily repeated due to lack of medical information available or inaccurate and incomplete information in the patient's medical	JHS Medical Director confirmed the potential 20%reduction.	$12,161	None

		record.			
Medical Records Supplies		Roughly $18,000 dollars is currently spent annually on materials to make medical records. Computer-generated forms and charts eliminate the need to purchase pre-printed forms.	Source = 2004 cost and quantities as reported by Admin Service Warehouse.	$22,802	None
JHS Overhead	Per FTE – assume 25% of amount budgeted per FTE basis			$49,286	None
Total				**$1,495,273**	

Methadology for the data collection:

KCCF - Job duties were given to medical records staff to self evaluate the % of time spent on each daily task. The assumption below is that job duties A - N would be removed by the use of an EHR

RJC - PHASS evaluated the % of time spent on each daily task. The assumption below is that job duties A - N would be removed by the use of an EHR.

ASII Salary - average salary of $17.09 + 34% benefits = $22.88.

Location	Totals	Chart Pulls - A	HA Database - B	CompletingChart Request Forms - C	Daily Filing/Re-File Charts - D	Purge Sections - E	Chart Registration/New Sig. #s - F	Updating Locations/Tank lists - G	Double Chart Reconciliation - H	HMC/Outside Appt. Calendar - I	Encounter Tracking/Entry - J	Record Copying -K	Maintaining Chart Supplies - L	Delivery Of Charts -M	Clinic Support - N	Other Tasks*
KCCF FTE's Hours	25,056.00	6,191	940	104	6,316	1,148	1,002	104	209	1,044	418	313	42	313	1,712	5,199
RJC FTE's Hours	13,050.00	2,495	861	0	2,245	496	705	0	78	418	1,044	0	0	0	0	4,708
JHS Total FTE's Hours	38,106.00	8,686	1,801	104	8,561	1,644	1,707	104	287	1,462	1,462	313	42	313	1,712	9,908
KCCF % of Total FTE	100%	25%	4%	0.4%	25%	5%	4%	0.4%	1%	4%	2%	1%	0.2%	1%	7%	21%
RJC % of Total FTE's	100%	19%	7%	0.0%	17%	4%	5%	0.0%	1%	3%	8%	0%	0.0%	0%	0%	36%
JHS % of TotalFTE's	100%	23%	5%	0.3%	22%	4%	4%	0.3%	1%	4%	4%	1%	0.1%	1%	4%	26%
KCCF Total $ based $22.88/hr	$573,281.28	$137,314.61	$20,840.33	$2,315.59	$140,093.32	$25,471.51	$22,229.68	$2,315.59	$4,631.18	$23,155.92	$9,262.37	$6,946.78	$926.24	$6,946.78	$37,975.71	$115,316.48
RJC Total $ based $22.88/hr	$298,584.00	$55,342.65	$19,103.63	$0.00	$49,785.23	$10,999.06	$15,630.25	$0.00	$1,736.69	$9,262.37	$23,155.92	$0.00	$0.00	$0.00	$0.00	$104,433.20
JHS Total $ based on $22.88/hr	$871,865.28	$192,657.25	$39,943.96	$2,315.59	$189,878.54	$36,470.57	$37,859.93	$2,315.59	$6,367.88	$32,418.29	$32,418.29	$6,946.78	$926.24	$6,946.78	$37,975.71	$219,749.68

* - Other task to include: Phones, customer service, returning grievance forms, HA database maintain, clerical in box, lab coats, pick ups, deliveries, commisary slips, encounter entry, faxing, provide escorts, faxing, provide escorts,psych office support office support, maintain office equipment, copies, and monthly statistics

Methadology for the data collection:

KCCF - Job duties were given to medical records staff to self evaluate the % of time spent on each daily task. The assumption below is that job duties A - N would be removed by the use of an EHR.
RJC - PHASS evaluated the % of time spent on each daily task. The assumption below is that job duties A - N would be removed by the use of an EHR.

Total Hours Yearly

Assumption: all tasks

Location	Hours	Chart Pulls - A	HA Database - B	CompletingChart Request Forms - C	Daily Filing/Re-File Charts - D	Purge Sections - E	Chart Registration/New Sig. #s - F	Updating Locations/Tank lists - G	Double Chart Reconciliation - H	HMC/Outside Appt. Calendar - I	Encounter Tracking/Entry - J	Record Copying -K	Maintaining Chart Supplies - L	Delivery Of Charts - M	Clinic Support - N	Other Tasks	Total
KCCF	**2088**	856	209	-	271	104	104	-	209	-	-	-	-	-	-	334	**2,088**
KCCF	**2088**	689	-	104	355	209	-	-	-	-	-	-	-	-	-	731	**2,088**
KCCF	**2088**	-	-	-	104	104	-	-	-	1,044	209	313	42	-	-	271	**2,088**
KCCF	**2088**	418	-	-	418	-	104	-	-	-	-	-	-	-	418	731	**2,088**
KCCF	**2088**	261	-	-	177	-	63	-	-	-	-	-	-	-	1,295	292	**2,088**
KCCF	**2088**	397	626	-	438	104	63	-	-	-	104	-	-	-	-	355	**2,088**
KCCF	**2088**	334	104	-	1,023	-	418	-	-	-	104	-	-	-	-	104	**2,088**
KCCF	**2088**	418	-	-	940	313	104	-	-	-	-	-	-	-	-	313	**2,088**
KCCF	**2088**	835	-	-	731	-	-	-	-	-	-	-	-	104	-	418	**2,088**
KCCF	**2088**	940	-	-	835	209	-	-	-	-	-	-	-	-	-	104	**2,088**
KCCF	**2088**	835	-	-	835	104	104	-	-	-	-	-	-	-	-	209	**2,088**
KCCF	**2088**	209	-	-	188	-	42	104	-	-	-	-	-	209	-	1,336	**2,088**
Total KCCF	**25056**	**6,191**	**940**	**104**	**6,316**	**1,148**	**1,002**	**104**	**209**	**1,044**	**418**	**313**	**42**	**313**	**1,712**	**5,199**	**25,056**
RJC	**1566**	-	-	-	-	-	78	-	78	-	313	-	-	-	-	1,096	**1,566**
RJC	**2088**	104	-	-	-	104	-	-	-	418	-	-	-	-	-	1,462	**2,088**
RJC	**2088**	564	-	-	209	104	-	-	-	-	104	-	-	-	-	1,107	**2,088**
RJC	**2088**	418	-	-	1,253	209	-	-	-	-	-	-	-	-	-	209	**2,088**
RJC	**2088**	-	626	-	-	-	626	-	-	-	626	-	-	-	-	209	**2,088**
RJC	**1566**	861	-	-	392	78	-	-	-	-	-	-	-	-	-	235	**1,566**
RJC	**1566**	548	235	-	392	-	-	-	-	-	-	-	-	-	-	392	**1,566**
Total RJC	**13050**	2,495	861	-	2,245	496	705	-	78	418	1,044	-	-	-	-	4,708	**13,050**
Total JHS	**38106**	8,686	1,801	104	8,561	1,644	1,707	104	287	1,462	1,462	313	42	313	1,712	9,908	**38,106**

* - Other task to include: Phones, customer service, returning grievance forms, HA database maintain, clerical in box, lab coats, pick ups, deliveries, commisary slips, encounter entry, faxing, provide escorts, faxing, provide escorts,psych office support office support, maintain office equipment, copies, and monthly statistics

Methadology for the data collection: `

KCCF - Job duties were given to medical records staff to self evaluate the % of time spent on each daily task. The assumption below is that job duties A - N would be removed by the use of an EHR.
RJC - PHASS evaluated the % of time spent on each daily task. The assumption below is that job duties A - N would be removed by the use of an EHR.

Total % of Time Spent

Location	FTE	Chart Pulls - A	HA Database - B	CompletingChart Request Forms - C	Daily Filing/Re-File Charts - D	Purge Sections - E	Chart Registration/New Sig. #s - F	Updating Locations/Tank lists - G	Double Chart Reconciliation - H	HMC/Outside Appt. Calendar - I	Encounter Tracking/Entry - J	Record Copying -K	Maintaining Chart Supplies - L	Delivery Of Charts - M	Clinic Support - N	Other TasksN	% of time spent on tasks A - N
KCCF	**1.00**	41%	10%	0%	13%	5%	5%	0%	10%	0%	0%	0%	0%	0%	0%	16%	84%
KCCF	**1.00**	33%	0%	5%	17%	10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	35%	65%
KCCF	**1.00**	0%	0%	0%	5%	5%	0%	0%	0%	50%	10%	15%	2%	0%	0%	13%	87%
KCCF	**1.00**	20%	0%	0%	20%	0%	5%	0%	0%	0%	0%	0%	0%	0%	20%	35%	65%
KCCF	**1.00**	13%	0%	0%	9%	0%	3%	0%	0%	0%	0%	0%	0%	0%	62%	14%	86%
KCCF	**1.00**	19%	30%	0%	21%	5%	3%	0%	0%	0%	5%	0%	0%	0%	0%	17%	83%
KCCF	**1.00**	16%	5%	0%	49%	0%	20%	0%	0%	0%	5%	0%	0%	0%	0%	5%	95%
KCCF	**1.00**	20%	0%	0%	45%	15%	5%	0%	0%	0%	0%	0%	0%	0%	0%	15%	85%
KCCF	**1.00**	40%	0%	0%	35%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%	20%	80%
KCCF	**1.00**	45%	0%	0%	40%	10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	95%
KCCF	**1.00**	40%	0%	0%	40%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%	10%	90%
KCCF	**1.00**	10%	0%	0%	9%	0%	2%	5%	0%	0%	0%	0%	0%	10%	0%	64%	36%
Total KCCF	**12.00**	25%	4%	0.4%	25%	5%	4%	0.4%	1%	4%	2%	1%	0.2%	1%	7%	21%	79%
RJC	**0.75**	0%	0%	0%	0%	0%	5%	0%	5%	0%	20%	0%	0%	0%	0%	70%	30%
RJC	**1.00**	5%	0%	0%	0%	5%	0%	0%	0%	20%	0%	0%	0%	0%	0%	70%	30%
RJC	**1.00**	27%	0%	0%	10%	5%	0%	0%	0%	0%	5%	0%	0%	0%	0%	53%	47%
RJC	**1.00**	20%	0%	0%	60%	10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	90%
RJC	**1.00**	0%	30%	0%	0%	0%	30%	0%	0%	0%	30%	0%	0%	0%	0%	10%	90%
RJC	**0.75**	55%	0%	0%	25%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	15%	85%
RJC	**0.75**	35%	15%	0%	25%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	75%
Total RJC	**6.25**	19%	7%	0.0%	17%	4%	5%	0.0%	1%	3%	8%	0%	0.0%	0%	0%	36%	64%
Total JHS	**18.25**	23%	5%	0.3%	22%	4%	4%	0.3%	1%	4%	4%	1%	0.1%	1%	4%	26%	74%

* - Other task to include: Phones, customer service, returning grievance forms, HA database maintain, clerical in box, lab coats, pick ups, deliveries, commisary slips, encounter entry, faxing, provide escorts, faxing, provide escorts,psych office support office support, maintain office equipment, copies, and monthly statistics

Title: Ambulatory Electronic Records Implementation Cost Benefit: An Enterprise Case Study

Authors:

Linda Zdon; Director, Information Services, Allina Health System, Minneapolis, MN
Blackford Middleton, M.D. M.P.H, M.Sc., FACP, Vice President for Clinical Informatics, MedicaLogic, Hillsboro, OR

Presenter:

Linda Zdon; Director, Information Services, Allina Health System, Minneapolis, MN

Title: Ambulatory Electronic Records Implementation Cost Benefit: An Enterprise Case Study

•Authors:

➤ Linda Zdon; Director, Information Services, Allina Health System, Minneapolis, MN
➤ Blackford Middleton, M.D. M.P.H, M.Sc., F.ACP.; Vice President for Clinical Informatics, MedicaLogic, Beaverton, OR

•Presenter:

➤ Linda Zdon; Director, Information Services, Allina Health System, Minneapolis, MN

•Abstract:

➤ The implementation approach for the electronic ambulatory record, with special focus on the cost benefit segment is examined via review of the enterprise cost benefit parameters developed and reporting of the actual results experienced and of the model developed for use in on-going implementation.

•Background:

➤ The electronic ambulatory record 'toolkit' provides the opportunity to fundamentally re-design the provider-patient encounter to better meet the needs of the multiple stakeholders in todays healthcare industry. The cost of implementation is significant, and because providers need to make significant changes, it is critical that the cost benefit be analyzed and documented on an on-going basis. The multiple stakeholders within the Allina Health System were identified and tasked with developing the cost benefit parameters to be measured as part of pre and post implementation of Logician, the ambulatory records tool from MedicaLogic. The results from these measures were used as signposts for success of the implementation, and to aid in developing implementation timelines. In addition, a modeling tool was developed to allow us to project potential cost benefit values based on a particular clinic's characteristics. This tool is being used as further implementations are planned.

•Approach:

➤ An Allina-wide enterprise team with representation from all functional areas was created. Several sub-groups were formed from this large group, one of which was the Metrics Task Force.
➤ The Metrics task force included physician, clinic manager, health plan quality and case management staff representation.
➤ The task force identified 50-60 measures that were felt to be important; ultimately approximately 20 measures were chosen in 4 major categories; Physician/staff /patient satisfaction, Financial indicators, Productivity indicators, and Clinical Quality indicators

•Results/Recommendations:

➤ The joint development of measures ensured ‘buy-in’ within the organization of the validity of the chosen measures.
➤ Performing both actual and projected allowed both the ‘show-me the money’ contingent and the ‘I just know it’s the best thing since sliced bread’ groups to see cost benefit data
➤ The pre measures done are absolutely critical to a project of this type and will continue to be done for future implementations.
➤ The post-live measures gave immediate feedback and demonstration of some savings (transcription costs, prescription refill turnaround time) as well as issues that needed additional work (physician satisfaction); this has allowed us to continue to improve the pilot implementation as well as modify future implementation planning.

•Session Objectives and Benefits to Attendees

➤ Will be able to articulate key stakeholders (in an enterprise implementation strategy) and key indicators as identified by them for determining the cost benefit of implementing an AMR.
➤ Will be able to identify appropriate measurement intervals for the indicators selected as well as possible tools for doing measurement.
➤ Will be able to discuss the validity of actual and projected benefits within the cost benefit model developed.

ABSTRACT

An implementation of an electronic ambulatory record is examined through review of an enterprise ROI model based upon value assessment metrics. This paper reports results experienced in a pilot implementation, and revision of the ROI model for use in on-going implementation.

BACKGROUND

Assessment of value in information technology investments in healthcare is difficult. First, one perspective is that performing value assessment, or return on investment analysis, for information management and technology in healthcare is a needless exercise. When the technology is viewed as part of the infrastructure required for the essential core business, it is impossible to distinguish an ROI for this investment versus the ROI on the business processes themselves. Alternatively, others view information management technology investments as optional for healthcare delivery and thus they must be subjected to an ROI analysis. When subjected to more formal analysis, determination of value from various components of healthcare information technology systems, or their functions, may be difficult.

Traditionally, value assessment for information technology projects is usually based only on cost. This is the method of choice most often used for infrastructural projects. A benefit predication may be made for strategic investments but only in half of all cases. Traditional cost benefit analysis is infrequently used for healthcare IT investments, and no value assessment was made in system upgrades decision making. Nevertheless, when one reviews the business challenges driving increased reliance on information technology in healthcare it is discovered that deriving more value from existing data is the number one business challenge for many enterprises. In this paper, we describe an EMR benefits hierarchy, and return on investment (ROI) model, that may be used to characterize the benefits of healthcare information technology investment.

DESCRIPTION OF AMBULATORY EMR

The ambulatory EMR system studied in this research was the Logician™ EMR from MedicaLogic, Inc. Logician is a Microsoft Windows-based ambulatory electronic medical record (EMR) solution that automates patient records and clinical workflow in the ambulatory practice environment. The Logician EMR gives clinicians access to patients' demographic information, active medical problems, complete medical history, detailed laboratory results, medications, allergies, and other information vital for informed decision making. The product is designed to support efficiency in clinical decision-making, thoroughness in clinical documentation, and accuracy in identifying treatment protocols and preventive measures through the decision support. EMR templates and encounter forms may be designed and stored to efficiently capture pertinent patient encounter information. Clinical workflow includes clinical information access and documentation of healthcare as described, but also importantly support for patient scheduling, order management, clinical communications both within department or office and between care settings (such as referral), document routing and work-queue support.

METHODS

A Framework for Assessing EMR Benefits

In an effort to characterize and measure the benefits, which may arise from EMR system investments, we propose a four-stage hierarchy of EMR benefits (Figure 1). We propose the hierarchy to delineate potential benefits arising at various stages from EMR technology, and to guide the development, use, and interpretation of performance metrics in this evaluation.

The first stage describes benefits arising from improved information management, process re-engineering, and workflow automation. These benefits typically occur early in an EMR implementation and are related to operational efficiencies arising largely through improved communication and workflow management through the use of email-like capabilities, and schedule management. Another early gain is improved clinical efficiency through simple information access to the electronic record from all points of care and clinical decision-making (office, home, etc.). The second stage describes benefits arising from clinical decision support, improved productivity, and improved professional and patient satisfaction. These benefits arise when increasing amounts of codified information are entered into the electronic record. Once the record has more codified information, this data may be used to support alerts and reminders, order management, care protocols and outcomes analysis.

The third stage describes benefits arising from true quality improvement, improved risk management, revenue improvement, cost reduction, and malpractice rate reduction and liability reduction. These benefits arise as the electronic record becomes the focal point for care in the healthcare enterprise. Now, it is fully supporting communications among all members of the healthcare team, care pathways may be in place for multidisciplinary care, expert guidance systems may be used for formulary and referral management in the clinical workflow, and patients and providers experience first-hand improvements in care and clinical efficiency. The fourth stage includes benefits arising from improved competitive positioning, strategic marketing advantages, and the "buzz factor". In this stage, the benefits are much more subjective but permit an enterprise to attract patients and providers more effectively, and compete and survive in a competitive healthcare marketplace. In this analysis, quantitative measures were developed to assess benefits realization principally in stages I and II. Assessment of benefits in stages III and IV will be reported when available.

Identification of Stakeholders

A key implementation strategy for this project is the formation of an Enterprise team. This team is comprised of individuals representing all areas of Allina Health System, including physicians (both employed and contracted), clinic management, clinical staff, business office staff, medical records coding and management (from clinic, hospital and health plan areas), quality review (clinic, hospital and health plan areas) as well as staff from Finance and Information Services. From this large group of 30-35 people, 4 working committees were formed (see Figure 2), including a group dedicated to the development of metrics for Allina Health System.

Development of Metrics

The Metrics Team identified 42 general measurements that would be possible indicators of the value/benefit of implementing an EMR. The team used external literature sources, information from the vendor and currently used measures of clinic 'success' within Allina as references. They then developed specific measurement parameters for each one of these, including the status of current collection, preferred method of collection, source of specific data elements needed, tool(s) needed to support collection, and appropriate collection intervals for both pre and post live data collection. These 42 indicators were rated against the following criteria: meaningfulness (relevance, validity), support of meeting AMR goals, ease of measurement and cost of measurement. Of the 42 initial indicators, 16 were selected to be measured as part of the pilot, 8 were deferred, and 18 not recommended for various reasons. These 16 indicators were grouped into 3 major categories; Productivity/Financial; Clinical Quality; and Physician/Staff/Patient Satisfaction. See Tables 1-4, which show the indicators defined in the Allina implementation for all of these areas.

Data Collection Methods

Primary data were collected using personal interviews, experience surveys, and structured questionnaires, as well as existing financial and productivity reports and short term (pre and post-live) manual and automated tallies. Standard PC tools were used to collate information and perform and needed calculations. Samples of data parameter definitions (describing required data gathering) and survey instruments are added as appendices to this paper.

RESULTS

Environment and Descriptive Statistics

Allina Health System is one of the largest integrated delivery systems in the country and is based in Minneapolis, Minnesota. It has 21,200 employees, geographic coverage including the states of Minnesota, western Wisconsin, Iowa and eastern North and South Dakota, and total yearly revenues of 2.6 billion dollars. It provides health plan coverage for 1.2 million members, with approximately 12,000 contracted providers in various plan networks. The care delivery portion of the system includes 19 hospitals, 7 nursing homes, 1730 staffed acute care beds, 87,000 inpatient admits per year, as well a large group practice with 55 sites, 600 employed providers and 2.6 million outpatient visits per year. The care delivery sites range from tertiary care metropolitan hospitals to outstate rural health care centers including both a clinic and hospital, and from hospital-based specialty clinics to family practice clinics to multi-specialty clinics, with wide variance in the size - anywhere from 2-50 providers at a site, in urban, suburban and rural settings. Allina is a private, non-profit, 'open' system; its care delivery units and providers provide care for its own health plan members as well as many other customers; likewise its health plan members are not restricted to providers practicing or on staff at owned care delivery sites. The variability and diversity of Allina allows it to offer a wide range of services and likewise creates a huge challenge for the successful implementation of any technology tools. The increasing importance of the ambulatory care setting has led Allina to focus in this area for improving the quality of service and patient care, customer, staff and physician satisfaction and financial performance.

Payor and Capitation Information

While 'managed care' has a high penetration in the Allina Health System market, the payor mix across care delivery sites varies considerably, depending on the location and service line. The same holds true for capitation rates, with variances from 5% to 75% of patient populations, depending on the care location. Because of these variations, it is important that any cost benefit analysis modeling tool include the ability to insert specific variables, particularly for capitation, for a given site that is interested in implementing an ambulatory electronic record. Also, since the system is an open environment, it is important to be able to work both with owned clinics and employed providers as well as with affiliated clinics and contracted providers. The modeling tool developed allows for the inclusion or exclusion of various costs and/or benefits, based on the specific characteristics of each site.

Clinic Profile

Candidates for the pilot implementation site were narrowed to the owned non-hospital based clinics, known as the Allina Medical Group, to ensure optimum ability to develop the tools and processes needed for wide-spread implementation, as well as to develop a re-usable, relevant and valid cost benefit analysis model. The specific environment to be discussed in this paper is the Wright Medical Clinic, a multi-specialty clinic located in Buffalo, Minnesota, about 45 minutes from the Twin Cities metropolitan core. This location has a rural history, but is rapidly growing to become a suburb of the metropolitan area. At the time of implementation in 2nd quarter, 1997, the clinic staffed 10 family practice physicians plus 3 more providers based on the services of about 30 rotating specialists. In the 3 years prior to implementation, this clinic had undergone significant change, including the formation of the group from 4 smaller private practices, the acquisition of this group by the Allina Medical Group, the move into a newly expanded hospital-clinic facility and the conversion to a new practice management system. In spite of these changes, the clinic management, staff and physicians were very interested in implementation of the ambulatory computer-based patient record and became the pilot site for Allina for the implementation of Logician, from MedicaLogic. This pilot clinic site has been live since May 1, 1997. The site has 75 PC workstations and 8 printers, installed in (all) 37 exam rooms, nursing stations and support areas. The electronic records system has 4 real-time interfaces in place; 2 with the practice management system for scheduling and registration, 1 for lab results and 1 for transcription documents. Additional functionality implemented includes external document scanning, auto-faxing of prescriptions and the use of photo IDs for patients. As of this writing, 15 months post-live, 50% of physicians use use the EMR exclusively, while the remaining physicians enter 'basic' information (problems, allergies, medications) and dictate additional data.

PRINCIPLE FINDINGS

Productivity and Financial Indicators

Highlights of pre and post live measures in this area include the decrease of transcription costs by 51% (a savings of $40,000 per year), 10% decrease in the average FTEs per provider (from .8 pre-live to .72 post-live), a 65% decrease in the number of charts pulls and a 15% increase in the (annualized) visit volumes per provider, based on first quarter comparisons between 1997 and 1998. Analysis of formulary compliance changes has not yet been

completed. The overall clinic budgets are at or above targets for 1998 and in comparisons of this clinic with other clinics in the Allina Medical Group (pre- and post-live), this clinic retained its relative position of costs per visit (2nd lowest of 9), while demonstrating a 7% decrease in costs per visit between Q1 1997 and 1998 (3rd highest of 9). It is important to note that the only clinic with lower costs per visit is a rural site, 2 hours from the metropolitan core. Also, clinics demonstrating higher percent decreases in costs per visit have undergone significant re-structuring due to performance concerns, while the Wright Medical Clinic has substantially retained its pre-live profile.

Clinical Quality indicators

This area has the most indicators with measures still incomplete, in part due to dependence on the quality review schedules chosen to be used to collect data. Anecdotes support care quality improvements, for example, the ability to identify all phen-fen patients and send them letters regarding the need to visit the clinic for an examination, with very little effort and time needed by clinic staff (less than 10 minutes). Coding quality has been improved from a 3% denial rate to a 1% denial rate for claims. Post-live measures for immunization rates, mammography rates, HbA1C rates and others are still being completed. Actual use of the data in the EMR, however, includes the quarterly reporting of HbA1C levels for diabetic patients by provider, so that physicians can see how they and their patients compare with other patients/physicians in the same clinic.

Physician, Staff and Patient Satisfaction

Post-live surveys have been completed for all groups that completed them pre-live, all groups have shown either no significant change or improvement in satisfaction levels (see charts 1-3). In addition, prescription refill request turn-around times have improved from 40% complete within 6 hours to 85% complete within 6 hours. Improved access to patient information was measured both with a survey and with quantitative instrument; the volume of patient documents waiting to be placed in charts decreased by 86% (from 6500 to 900 documents), and the time required to get the information into the charts decreased by 83% (from 6 week backlog to 5 day backlog).

Other Findings

The Wright Medical Clinic has shortest 'service to charge entry' timeline of any AMG clinic (3 days on average, compared to 6 days as AMG-wide average). The clinic has been able to demonstrate increased ease of recovering 'lost' charges, with the total in first year being $15,000. Increased ability to accurately bill for services has also been shown, resulting in increased reimbursement, a specific example is immunizations. Previously, $20-25,000 per year were either not billed or not billed correctly so no reimbursement was received. Nursing staff estimated anywhere from a 20% to 80% decrease in their time required to find patient information; the 20% figure was using in assigning cost savings for the ROI. A concern of physicians is often what their patients will think; at this clinic there has been NO negative feedback from any patients, in fact, many have commented favorably.

ROI

Model Description and Assumptions

The ROI model developed includes the following characteristics/capabilities; it is applicable to the pilot clinic site as well as to other AMG clinics and other contracted provider clinics. Its multiple versions allow for the calculation of an ROI for multiple combinations of: actual (hard) benefits, as experienced at the pilot clinic; projected benefits, based on other information sources; and variable capitation and discount rates. It allows the loading of costs to be variable, either complete or incremental. The model was developed for a 10-year period, with full hardware replacement scheduled for year 5. In all cases, when projected benefits were applied, the most conservative estimates from other studies were used. No attempts were made to assign dollar values to 'intangible' benefits. For purposes of the information in this paper, the capitation rate is assumed to be 35% and the discount rate 25%.

Principle Components

Cost categories included were external consulting, internal IS support (labor + other), temporary labor for clinic backfill, physician/clinic lost revenues, initial and 5 year hardware investments, interface costs, initial and ongoing software costs and hardware maintenance costs.

The table below lists the **benefit type**, its category, the original (working) assumption and the updated assumption based on the pilot experience.

Description	Category (Proj. or Hard)	Working Assumption	Updated Assumption
Increased Revenues - New Appointments	P	1/wk/MD starting Y2	2/wk/MD starting Y2
Increased Revenues - Std Protocols	P	0.25%	same
Increased Revenues - Improved Coding	P	up 1% beg. '99	same beg. '99
Reduce Costs - HIM Labor	H	2.5FTEs	same
Reduced Costs - Transcription	H	42%	51%
Reduced Cost - Nurse Time Savings	H	20% savings	same
Reduced Costs - DSS/Medical Audits	P	$2000/yr	same
Reduced Costs - Decrease Duplicate Tests*	P	10%	same
Reduced Costs - Recover Lost Billings	H	$15,000	$35,000
Reduced Costs - Record Storage Expenses	P	0	same
Reduced Costs - Record Supplies Expenses	P	$1000	same
Reduced Costs - Days in A/R, Collections	P	$1000/yr1	same
Reduced Costs - Malpractice Premiums	P	0	same

Sensitivity Analysis

No significant time was spent prior to EMR project implementation attempting to estimate benefits. Rather, time was dedicated to identifying the expected costs, so that we ensured the capture of as many of these as possible. As the implementation progressed, actual costs were updated, so that numbers used in the ROI are actual costs based on the pilot experience. In ROI models for additional clinics, incremental costs have been estimated, based on the

implementation team members' experience and knowledge of the work required as well as the state of the EMR tool/application. The impact of any cost or benefit variable can be determined, but the most significant impacts are, as expected, between the 'hard benefits only, fully loaded costs' and the 'hard and projected benefits, incremental costs' versions. The table below shows the progression of the ROI statistics across multiple iterations.

Site	Cost Allocation	Benefits Inclusion	ROI Timeframe	Cash Payback (years)	IRR (%)
WMC	full	hard only	initial	9	1.9
WMC	full	hard only	updated	9	3.6
WMC	ptl	hard only	initial	8	8.2
WMC	ptl	hard only	updated	7	6.4
WMC	full	all	initial	6	13.6
WMC	full	all	updated	5	19.7
WMC	ptl	all	initial	5	19.5
WMC	ptl	all	updated	5	26.6
10Doc	ptl	hard only	initial	6	15.3
10Doc	ptl	hard only	updated	6	17.7
10Doc	ptl	all	initial	3	30.6
10Doc	ptl	all	updated	3	39.3

As can be seen by reviewing the above data, ROI projections are very sensitive to both the loading of costs and of benefit inclusion categories. By modifying the load that the pilot clinic carries, the cash payback years move from not implemenable to reasonably implementable (from a financial perspective). When benefit inclusions are also varied, an even bigger movement is shown. These variances demonstrate the importance of achieving widespread support for measures and indicators, so that when the results are formulated, issues of validity and relevance have already been addressed.

Discussion

It is important to note that the numbers do not tell the whole story; placing value on the ability of clinical providers and staff to access more complete and accurate patient information more quickly is almost impossible. In addition, the value of being able to analyze true clinical data continues to be discovered. What is clear, however, is that even with 'only' hard financial benefits and costs quantified, the implementation of EMRs is definitely justified.

There a 2 key issues that should be discussed openly prior to any site implementing an EMR. The first is that of staff positions and the expectation that jobs will change and in fact may disappear. Each organization must determine its approach to re-training and to job reductions, so that clinic staff know what likely scenarios could be. The second issue is that of physician involvement and support of the implementation effort. Physicians must be intimately involved every step of the way. This tool dramatically changes their work flow and the way they provide patient care. It also requires them to learn a tool that is not mastered in 2 weeks or 2 months, but more likely in 6 months. The impact of these changes on physicians is likely to be the most significant change they have ever experienced in how they perform their jobs and attention must be paid to training, retraining and modifying processes to ensure physician acceptance and use, as well as measuring their satisfaction levels.

At Allina Health System, based on the experience of the pilot clinic implementation and on the sharing of the ROI information presented here, the challenge moving forward is now to implement the EMR quickly enough to meet the

demands and desires of our clinicians and clinic management. The environment has shifted from one of skepticism to acceptance and excitement over the possibilities in using an EMR.

Future plans include the installation of the EMR Logician tool from MedicaLogic in all owned clinics over the next 3 years, as well as implementation in contracted clinics. In addition, the EMR tool is being used in a modified implementation approach, as a data collection and reporting vehicle for focused clinical care improvement activities n the areas of diabetes and colon cancer. This alternate model allows clinicians and information services staff to gain experience with a significantly different application and set of work processes.

The measures, indicators and processes described in this paper continue to be refined and updated as more is learned from the pilot site and from other implementations. Perhaps at some time in the future this tool will be viewed as a base requirement for any ambulatory care facility, just as exam tables, stethoscopes or electricity are today; until that time the continued clarification of costs and benefits should help to hasten the acceptance of the EMR into the 'essential infrastructure' category.

Figures

Figure 1: EMR Benefits Hierarchy

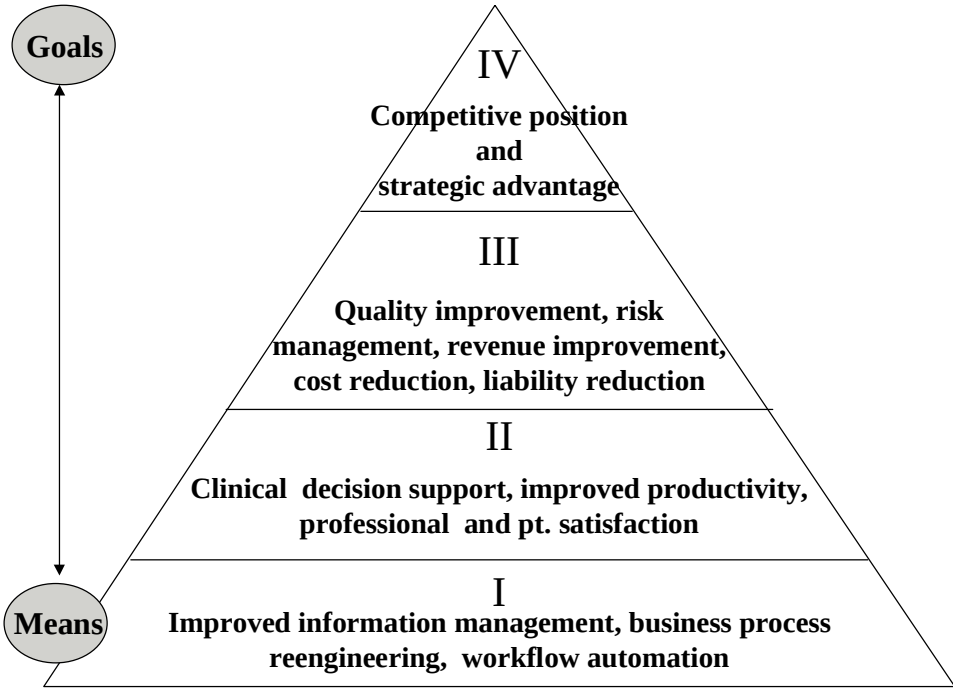
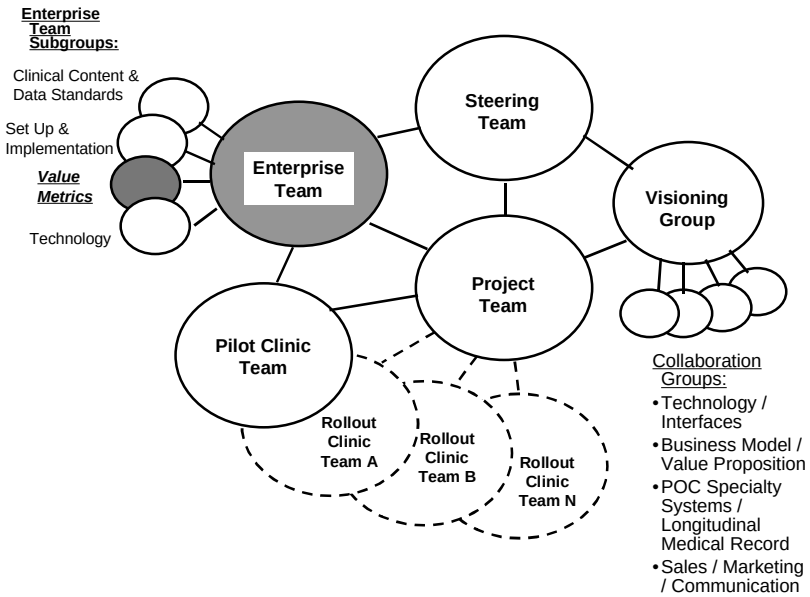


Figure 2: Metrics Subgroup – Enterprise Team



Appendices:

Appendix A: Sample Metrics Analysis Form

Wright Medical Clinic
Metrics Analysis Form

Metric Category: Financial / Productivity **Date:** 12/10/96

Metric #: 3 **Currently Measured:** Yes

Metric Description: Reduced transcription costs.

Specific Measure(s): Number of lines/day.

BASELINE DATA COLLECTION

Responsible Person:

Collection Target Date / Duration:
Obtain data for February from the February invoice which is received in March.

Collection Method:
Use the monthly invoice from the Buffalo Hospital transcription service to calculate the number of lines/day and cost/day.

Comments:

POST-LIVE DATA COLLECTION

Responsible Person:
Collection Target Date / Duration:
Obtain data for May from the May invoice which is received in June. This will continue to be reviewed on a monthly basis.

Collection Method:
Use the monthly invoice from the Buffalo Hospital transcription service to calculate the number of lines/day and cost/day.

Comments:

Appendix B: Sample Metrics Analysis Form -#2

Wright Medical Clinic
Metrics Analysis Form

Metric Category: Quality **Date:** 12/10/96

Metric #: 3 **Currently Measured:** Yes

Metric Description: Improved quality of coding.

Specific Measure(s): Percentage of claims denied (denied claims/total patient visits) for ICD9 and CPT coding variances.

BASELINE DATA COLLECTION

Responsible Person:

Collection Target Date / Duration:
Measure in March 1997 for January - February 1997 service dates.

Collection Method:
The following denial codes will be used to manually compile the # of denied claims for the three areas. The results from the three areas will then be tallied up to produce an overall baseline.
.

Medica
701- Invalid Diagnosis/Procedure Combination
67- Incorrect Procedure Code
641- Incorrect Modifier or Modifier Missing
35- Included in Global Package

Medical Assistance
56/110- Procedure code conflict/invalid
335- Procedure/modifier invalid
136- Procedure not compatible with diagnosis
439- Procedure not allowed for date of service billed

Medicare
COB11- Diagnosis is inconsistent with procedure
COB15- Procedure/service not paid separate
COB18- Code/modifier invalid for DOS

Comments:
- The denial codes selected are similar across payer lines.
- The # of codes selected are a reasonable number to collect manually, yet sufficient enough to provide a representative sample.

POST-LIVE DATA COLLECTION

Responsible Person:

Collection Target Date / Duration:
Measure in August 1997 for June - July 1997 service dates.

Collection Method:
Same as baseline.

Comments:

Appendix C: Satisfaction Survey Instrument – Clinical Staff

Clinical Staff Survey Name:_____
March 1997

Thank you for taking the time to complete this survey for the Automated Medical Record Pilot. Your answers are very important to us. Return completed surveys to xxxxxxx by March xx. **Please rate each item according to its importance and your satisfaction.**

	.....Importance..... very low very high	.....Satisfaction..... very low very high
1. The organization of patient records	1....2....3....4....5....6....7	1.....2.....3.....4.....5.....6.....7
2. Ease of accessing a patient's medical record	1....2....3...4....5....6....7	1.....2.....3.....4.....5.....6.....7
3. Ease of finding specific information within a patient's medical record	1....2....3...4....5....6....7	1.....2.....3.....4.....5.....6.....7
4. Confidentiality and security of patient records	1....2....3...4....5....6....7	1.....2.....3.....4.....5.....6.....7
5. Ease of tracking results	1....2....3...4....5....6....7	1.....2.....3.....4.....5.....6.....7
6. Overall efficiency of your clinic's business operations	1....2....3...4....5....6....7	1.....2.....3.....4.....5.....6.....7
7. Overall quality of care your clinic delivers to its patients	1....2....3...4....5....6....7	1.....2.....3.....4.....5.....6.....7
	.....Importance..... very low very high	.....Satisfaction..... very low very high

8. The ease with which your medical records help prevent overlooked patient information 1....2....3...4....5....6....7 1.....2.....3.....4.....5.....6.....7

9. The efficiency with which you can communicate patient information 1....2....3...4....5....6....7 1.....2.....3.....4.....5.....6.....7

10. The overall quality of your work life at this clinic 1....2....3...4....5....6....7 1.....2.....3.....4.....5.....6.....7

Appendix D: Satisfaction Survey Instrument – Non-Clinical Staff

Staff Survey
March 1997

Name: _____

Thank you for taking the time to complete this survey for the Automated Medical Record Pilot. Your answers are very important to us. Return completed surveys to xxxxxxxx by March xx. **Please rate each item according to its importance and your satisfaction.**

	.....Importance..... very low very high	.....Satisfaction..... very low very high
1. Accessibility of medical record information in your clinic.	1....2....3....4....5....6....7	1.....2.....3.....4.....5.....6.....7
2. Accuracy of coding of diagnosis and procedures that allow your clinic to be fully reimbursed	1....2....3...4....5....6....7	1.....2.....3.....4.....5.....6.....7
3. Quality of care your clinic delivers	1....2....3...4....5....6....7	1.....2.....3.....4.....5.....6.....7
4. The overall integrity of information that flows from your providers to your medical records and billing system	1....2....3...4....5....6....7	1.....2.....3.....4.....5.....6.....7
5. The organization of patient records	1....2....3...4....5....6....7	1.....2.....3.....4.....5.....6.....7

	.....Importance..... very low very high	.....Satisfaction..... very low very high
6. Ease of accessing a patient's medical record	1....2....3...4....5....6....7	1.....2.....3.....4.....5.....6.....7
7. Confidentiality and security of patient records	1....2....3...4....5....6....7	1.....2.....3.....4.....5.....6.....7
8. Overall efficiency of your clinic's business operations	1....2....3...4....5....6....7	1.....2.....3.....4.....5.....6.....7
9. The efficiency with which you can communicate patient information to and from the nursing staff	1....2....3...4....5....6....7	1.....2.....3.....4.....5.....6.....7
10. The overall quality of your work life at this clinic	1....2....3...4....5....6....7	1.....2.....3.....4.....5.....6.....7

Appendix E: Satisfaction Survey Instrument – Physicians

Provider Survey Name: _____
March 1997

Thank you for taking the time to complete this survey for the Automated Medical Record Pilot. Your answers are very important to us. Return completed surveys to xxxxxxx by March xx. **Please rate each item according to its importance and your satisfaction.**

	.....Importance..... very low very high	.....Satisfaction..... very low very high
1. Medical records that add value in helping to deliver preventive care.	1....2....3....4....5....6....7	1.....2.....3.....4.....5.....6.....7
2. Ease of accessing a patient's medical record	1....2....3...4....5....6....7	1.....2.....3.....4.....5.....6.....7
3. Ease of finding specific information within a patient's medical record	1....2....3...4....5....6....7	1.....2.....3.....4.....5.....6.....7
4. Confidentiality and security of patient records	1....2....3...4....5....6....7	1.....2.....3.....4.....5.....6.....7
5. Ease of tracking results	1....2....3...4....5....6....7	1.....2.....3.....4.....5.....6.....7
6. Systems in place to prevent prescribing medications that might result in drug allergy or drug-drug interactions	1....2....3...4....5....6....7	1.....2.....3.....4.....5.....6.....7

	.....Importance..... very low very high	.....Satisfaction..... very low very high
7. Overall efficiency of your clinic's business operations	1....2....3...4....5....6....7	1.....2.....3.....4.....5.....6.....7
8. Overall quality of care your clinic delivers to its patients	1....2....3...4....5....6....7	1.....2.....3.....4.....5.....6.....7
9. The ease with which your medical records help prevent overlooked patient information	1....2....3...4....5....6....7	1.....2.....3.....4.....5.....6.....7
10. The efficiency with which you can communicate patient information to and from the nursing staff	1....2....3...4....5....6....7	1.....2.....3.....4.....5.....6.....7
11. The efficiency with which you can communicate patient information with the administrative staff	1....2....3...4....5....6....7	1.....2.....3.....4.....5.....6.....7
12. The overall quality of your work life at this clinic	1....2....3...4....5....6....7	1.....2.....3.....4.....5.....6.....7
13. The amount of time you spend on direct patient care	1....2....3...4....5....6....7	1.....2.....3.....4.....5.....6.....7

Tables:

Table 1: Productivity/Financial Indicators

AMR Metrics - Productivity / Financial			
	MEASUREMENT AREA	SPECIFIC MEASURES	CURRENTLY MEASURED?
Recommended:			
1	Fewer chart pulls.	Number of chart requests / day.	No
2	Monitor Responsibility Report indicators.	1) Patient visits. 2) Gross revenue. 3) Total income / loss. 4) FTEs/provider	Yes
3	Reduced transcription costs.	Number of lines / day.	Yes
4	Increased formulary compliance.	Drug utilization rate / payor.	Yes
Not Recommended at this time:			
5	Reduced nurse intake time.	Time to complete intake.	
6	Reduced cost of copying records.	Average time to copy a medical record.	
7	Reduced cost to access outcome data.	Time to access outcome data.	
8	Less time spent on referrals between providers.	Not applicable until specialty providers on AMR.	
9	Reduced malpractice claims.	Possible long term measure. Difficult to measure as claims are big when they come in, but very sporadic.	
10	Reduction in the number of duplicate lab tests.	Too difficult to get a baseline measure. Might be able to use a random chart sample.	
Not Recommended:			
11	Less dictation time.	Measuring transcription will eliminate the need for this.	
12	Reduced documentation time.	Addressed through other measures.	
13	Reduction in total time per patient encounter.	Covered in #2 above - patient visits.	

Table 2: Quality Indicators

AMR Metrics - Quality			
	MEASUREMENT AREA	SPECIFIC MEASURES	CURRENTLY MEASURED?
Recommended:			
1	Improved primary and preventive care.	Rate of patients up to date on key preventitive services (immunizations, mammography, etc.).	Yes/No (some providers)
2	Improved service quality.	Picker survey measures.	Yes
3	Improved quality of coding.	Number of (% if possible): 1) Denied claims. 2) Resubmitted claims. 3) Claims using unspecified codes.	Yes
4	Improved documentation quality.	ACE review measures: 1) General chart. 2) Periodic health. 3) Specific diagnoses.	Yes
5	Improved patient outcomes.	To be determined (e.g. BP, INR, HDL ratio, HgbA1c, etc.)	??
Not Recommended:			
6	Reduced ER visit rate.	Too broad. Too difficult to relate solely to AMR implementation.	
7	Reduced IP hospital visit rate.	Too broad. Too difficult to relate solely to AMR implementation.	
8	Diagnostic and periodic health assessment-ACE .	Covered in #4 above.	
9	Reduction in medication errors.	Too difficult to measure and relate specifically to implementation of an AMR.	
10	Improved outcomes reporting.	Covered in Productivity / Financial #7.	
11	Less complications as result of improved monitoring.	Too subjective and difficult to measure.	
12	Reduction in the number of overlooked medical problems.	Covered by #1 above. Too difficult and subjective to measure.	

Table 3: Customer Satisfaction Indicators

AMR Metrics - Customer Satisfaction			
	MEASUREMENT AREA	SPECIFIC MEASURES	CURRENTLY MEASURED?
Recommended:			
1	Patient education material.	Picker survey measures.	Yes
2	Improved phone message turnaround time.	Time from call log in to resolution.	No
3	Improved patient access to physicians.	Average length of time to obtain: 1) Preventive care appointment. 2) Chronic care appointment. 3) Acute care appointment.	Yes
4	Improved turnaround time on medication refills.	Time from refill request to call in.	No
Not Recommended at this time:			
5	Improved continuity of care.	1) # of times patient seen without a medical record. 2) Selected Picker survey measures.	1) No 2) Yes
6	Reduction in patient complaints.	Number of complaints.	
Not Recommended:			
7	Less time spent on paperwork.	Covered in other measures.	
8	Improved response time from clinic staff.	Covered by #2 above.	

Table 4: Provider/Staff Satisfaction Indicators

AMR Metrics - Professional Satisfaction			
	MEASUREMENT AREA	SPECIFIC MEASURES	CURRENTLY MEASURED?
Recommended:			
1	Increase in direct patient care time.	Provider/staff survey.	No
2	Improved access to patient information.	1) Number of outstanding documents to be filed (transcription, lab, etc.) 2) Provider/staff Survey (see Benefits Assessment Outline)	No
Not Recommended at this time:			
3	Reduced time to locate chart.	Time to pull charts for visits.	
4	Improved access to patient information.	Number of complete Health Maintenance flow sheets.	
Not Recommended:			
5	Improved patient tracking.	Provider survey.	
6	Less time spent locating results.	Covered in #2 above.	
7	Less time spent searching for relevant patient information.	Covered in #2 above.	
8	Less time spent on paperwork.	Covered by other measures.	
9	Improved efficiency of work flow.	Too difficult to measure. Covered in other areas.	
10	Improved communication among staff members.	Too difficult to measure. Needs further and narrower definition.	

Diagrams:

Diagram 1: Clinical Staff Satisfaction Survey Results

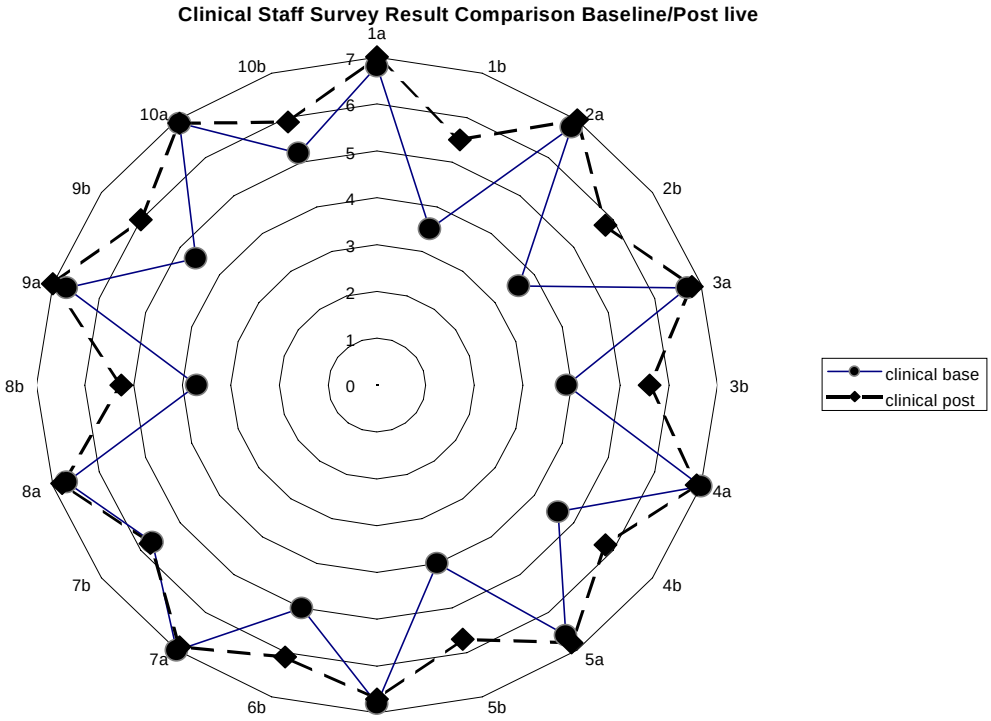


Diagram 2: Office Staff Satisfaction Survey Results

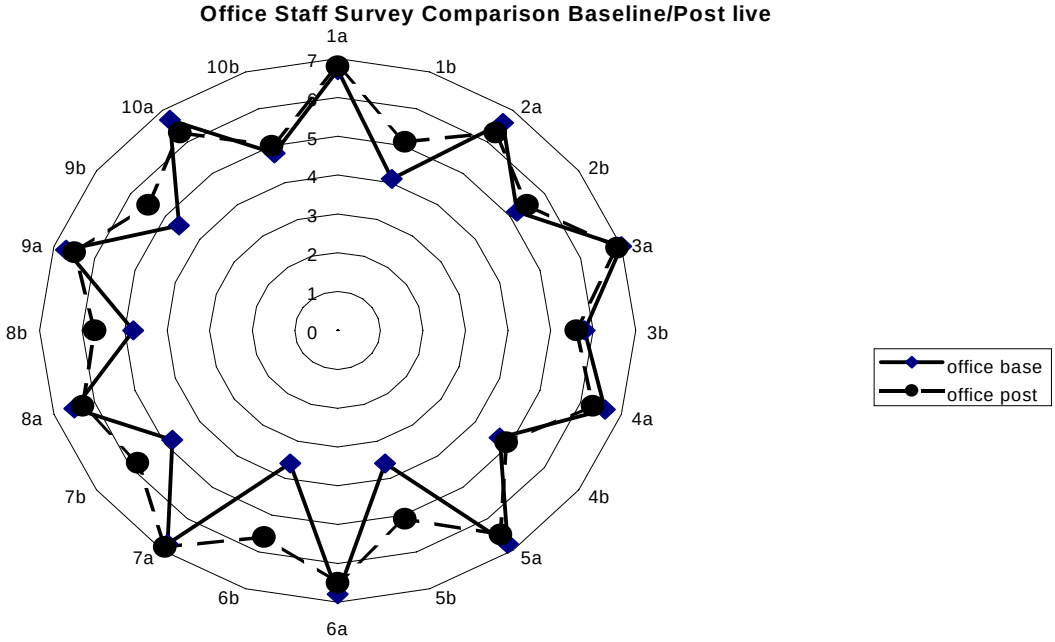
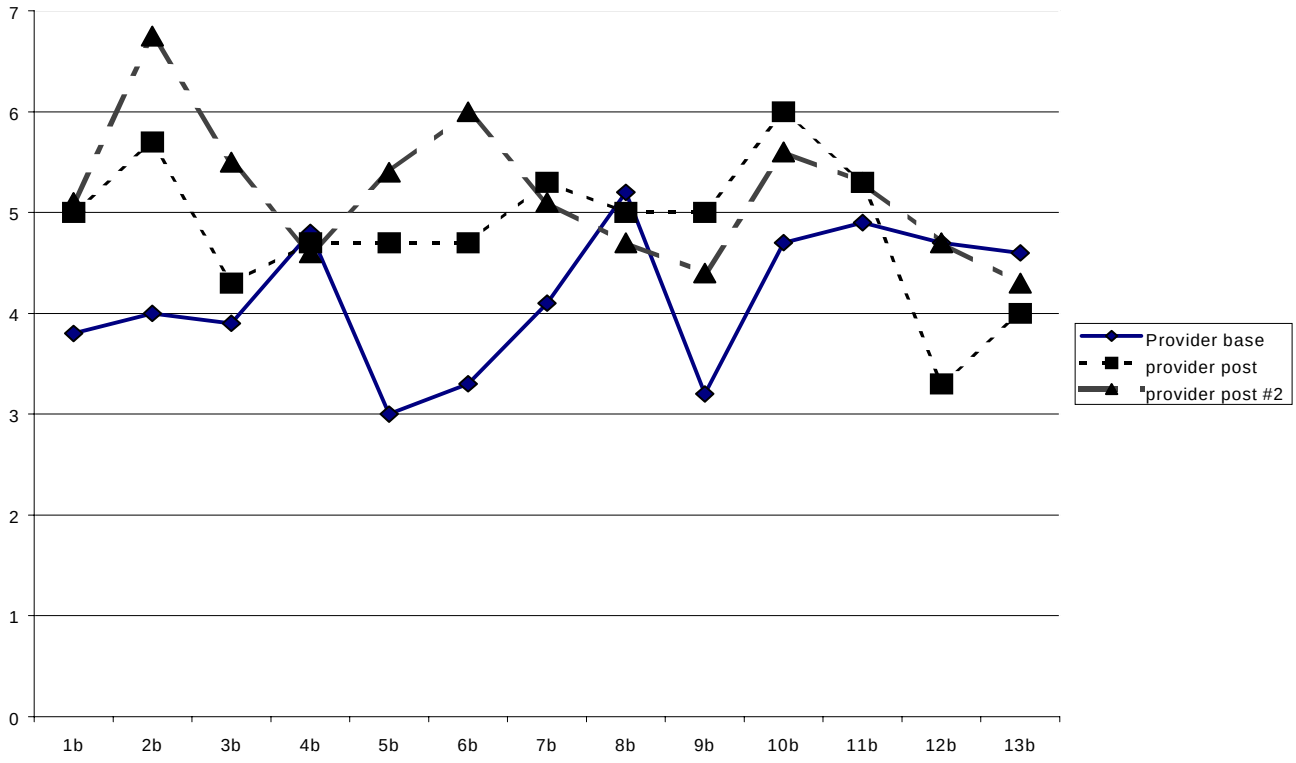


Diagram 3: Physician Satisfaction Survey Results



Bibliography

Critical Issues for Implementing Computer-Based Patient Records, 1995; Jeffrey S. Blair, Market Manager, Clinical Information Systems, IBM Healthcare Industry, Atlanta, Georgia

Clinical Information Systems – Return on Investment white paper, 1996; Tom Heines, IBM Healthcare Solutions, Clinical Solutions, Atlanta Georgia

Computerized Patient Records Benefit Physician Offices, Author, Alan Bingham; Healthcare Financial Management, September, 1997

White Paper

Technical

MedicaLogic
www.medicalogic.com
20500 NW Evergreen Parkway
Hillsboro, Oregon 97124
503.531.7000 telephone
503.531.7001 fax

Electronic Medical Records and Malpractice Risk Management

Introduction

Medical practice is fraught with risks. These risks are costly, both in human and financial terms.

To minimize these risks, and improve their own competitive positions, physicians, health systems, malpractice insurers and managed care organizations are looking for new risk management tools.

Many malpractice suits are won or lost because of the quality and content of a patient's medical record. Because of this, the electronic medical record (and associated knowledge bases) offer enormous possibility as a risk management tool. Electronic medical record (EMR) systems such as MedicaLogic's Logician® give physicians better access to medical records and easier access to relevant information. EMR improves documentation for future reference, which helps deter and defend malpractice litigation. EMR can help with regular preventive care and avoidance of mishaps in prescribing medications. The risk management benefits are considerable.

MedicaLogic
September, 1998

The patient's medical record is a means of documenting quality patient care and provides the best defense against claims and malpractice lawsuits.

Tommi Ursich, RN, JD
Risk Manager, Northwest Hospital, Seattle WA

Malpractice litigation and expense is an ongoing and growing concern for physicians, hospitals and managed care plans. The 75,000 medical malpractice lawsuits filed each year in the U.S.[1] may cost as much as $5 billion to settle.[2]

What is driving these tens of thousands of suite? A number of factors.

Illnesses and treatments are becoming increasingly complex, creating greater potential for drug interactions and other mishaps. There are an estimated 9 million adverse drug interactions each year *among the elderly alone*, and 200,000 of those are serious enough to cause hospitalization. Lee Strandberg, a pharmacy professor at Oregon State University, noted recently: "I've seen more drug therapy and potential interactions in the last two years than in the last 23."

Other reasons for the growing liability problem include patient expectations and demands that rise with the growth of medical technology, and a knowledge explosion within medicine. This is particularly acute for primary care physicians in managed care plans, who are incented to maximize treatment in their own offices and minimize specialty referrals.

Principal Sources of Litigation

Research conducted by the U.S. Government Accounting Office and malpractice insurers shows the trends and patterns in malpractice litigation. Many of these can be addressed with EMR systems, which will be noted in the section following this one.

One-fourth to one-half of all claims (depending whose data you review) result from a **failure to diagnose or other diagnostic errors.** Most of these errors involve cancers, specifically breast, colon and lung cancer. Diagnostic errors and failures represent the largest category of malpractice claims against physicians in general and primary care physicians in particular.

Surgical mishaps account for about one-fourth of all medical malpractice suits.

Medical treatment--inappropriate, delayed, or not delivered--constitutes another major cause for lawsuits. These suits are triggered by numerous failures, such as failure to follow up on patient conditions, missed appointments, failure of the primary care physician to refer the patient to a specialist, or breakdowns in the clinic's appointment system.

Medication errors. An Oklahoma woman was taking 22 different medications prescribed by five doctors. Three of the medications were the same, and four were contraindicated in the presence of each other. When the woman was asked why she never discussed this with her physicians, she replied, "Nobody ever asked me." All five doctors admitted she was right.[3]

"Probably nowhere in the field of medicine is there a greater chance for error than in prescribing and dispensing medications," according to Aris Sophocles, M.D., J.D.[4]

Wrong medications get prescribed by doctors. Incorrect dosage levels are given. Adverse drug reactions occur, most commonly in patients taking multiple medications. Numerous "sound-alike" medications get confused or misinterpreted. Poor handwriting is misinterpreted by pharmacists and patients.

Obstetrical mishaps are prevalent for a number of reasons. Prenatal care requires collecting, tracking and analyzing a complex series of clinical data gathered over several visits. These data pertain to about 15 clinical parameters such as fetal heart tones, urine protein and glucose, etc. These data must be interpreted in light of the patient's personal health history, genetic screening factors and findings of the physical examination.

Incomplete medical history. A large class of claims result from physicians not taking a patient's complete medical history.

Physician-Patient Communication. A breakdown in doctor-patient communication is a common predisposing factor in a patient's decision to file a lawsuit. Insurance claim administrators and malpractice defense attorneys estimate that communication failure is a contributing factor in 80 percent of all professional claims or lawsuits. In 20 percent of cases it is the reason for the filing of the lawsuit.[5]

Informed Consent. Physicians have a legal responsibility to obtain their patients' informed consent before performing any invasive procedure or treatment. As part of obtaining this informed consent, a physician is required to discuss six elements: 1) diagnosis or suspected diagnosis, 2) nature and purpose of proposed treatment or procedure, with its anticipated benefits, 3) risks, consequences or side effects, 4) the probability of success based on this patient's condition, 5) reasonable available alternatives and 6) possible consequences if advice is not followed.

A large number of malpractice suits result from patients disputing that the physician adequately gave them information sufficient to elicit their informed consent. To defend themselves, physicians rely on the quality and thoroughness of their documented conversation, which resides in the patient record.

How EMR Can Help Reduce Malpractice Risk

Many of the benefits of EMR systems are readily apparent from the above discussion. In fact, many of the problems suggest EMR as a solution. The following is a short list of the most obvious benefits of computerized patient records as a risk management tool.

- Access. A recent study found that in 30 percent of patient visits, the physician did not have access to the patient's chart, which was either missing or misplaced.[6] Electronic medical records aren't misplaced; they're available when needed, even by more than one party at a time. With its electronic database storage and access capabilities, Logician eliminates the numerous times patients are seen by a specialist who has an incomplete medical record. And remote access via modem allows physicians quick access to their patient records, even from their homes or the emergency department, and reduces the communication gaps when physicians are on call covering for each other.

- Use of information. Seeing any patient--especially one you don't know--is made safer with Logician's one-screen summary of current diagnoses, medications, allergies, patient demographics and summary of chart notes. Paper charts are typically kept in chronological order, with no one-page summary for quick reference. With electronic patient records, mis-read notes because of illegible writing are eliminated. Research has shown that clinicians' use of recorded patient data is significantly better for computerized records.[7]

- Documentation. Bad outcomes happen even when good doctors give good care. But if a physician doesn't document his or her prudence, he or she has no defense. Most suits are tried or settled years after the patient's treatment, when memory has faded and some principal participants may no longer be available. As one doctor who lost a lawsuit said, "Records are everything. If you didn't write it down, it didn't happen."[8] Strong, complete clinical documentation *by itself* has been shown to reduce the likelihood that a suit will be filed, because attorneys know that forcing a settlement or winning in court will be very difficult.[9] One report noted that in malpractice cases, damages were paid in two-thirds of the cases in which record keeping was judged to be inadequate, compared with payment to one-third when record keeping was considered adequate.[10]

  Research confirms that computer-based patient records improve documentation over hand-written records, both in volume and accuracy.[11] Charting with EMR programs streamlines and automates the documentation required for a strong defense, and provides what risk management consultants advise: Medical records within a clinic that are comprehensive, accurate and consistent.

- Logician’s ticklers, flags, and color indicators alert physicians to allergies, missed appointments, out-of-range labs, and more. These reduce the possibility of vital information falling between the cracks.

- Electronic encounter forms and templates. These provide for consistency in delivery care according to accepted practice standards and in documentation. Use of MedicaLogic’s E&M Advisor within Logician assists physicians in complying with HCFA’s guidelines for evaluation and management of federally insured patients and assigning the appropriate claims levels. Electronic forms can also be easily developed to streamline the documentation of informed consent. Many physicians do this documentation poorly with their paper records.

- Logician's protocols can generate reminders for preventive screenings, for special care of patients with chronic disease or on special medication. That, and support for patient letters and notifications, can help prevent diagnostic errors and omissions.

- Integration with hospital information systems similarly reduces the chances that information will get lost throughout the continuum of care. This may reduce the likelihood of diagnostic and treatment errors.

- Patient communication is greatly enhanced when a physician uses Logician properly. Patient correspondence is far easier, and educational handouts can both improve communication and patient compliance with a treatment regimen. (Studies have shown that the average patient retains 35 percent of what he or she has been told by the physician.[12] Patient handouts and summaries reinforce key points.) Clinical Reference Systems™, a patient education module embedded within Logician, with its OB/Gyn library, appears particularly suited to this. "...In the field of obstetrics...if there is one area that should be emphasized, it is that of patient education," notes attorney/doctor Aris Sophocles.[13] Furthermore, the fact that this educational material was printed for the patient *is documented* in the patient's record when it is printed.

- Medispan™, Logician's embedded drug reference database, can play a major role in preventing medication errors by providing drug interaction checking and alerts at the point of care. Patient informational handouts on their medications, instantly available as a prescription is written electronically, improves patient understanding and compliance. And with legible prescriptions and patient instructions, there is far less chance of error. (One example: consider how similar in sound 15 is to 50.) Academic research has shown that computerized patient records reduce medication errors.[14]

- Logician's Referral Guides help primary care physicians manage the increasingly complex issues of specialty consultation and referral. The Guides supplement the physician's clinical expertise with information on "best practice" patterns. The Guides outline the latest, most effective treatment plans and include: recommended tests before referral, information on when to make a referral, recommended goals for follow-up visits, and supporting literature citations.

Because of these, and other, benefits, a number of malpractice insurers are offering premium discounts or credits to their insured physicians who use MedicaLogic software. While malpractice premiums vary widely by specialty and region, internists pay from $4,000 to $26,000 per year, while neurosurgeons and OB/Gyn specialists pay anywhere from $16,000 to $150,000.[15] Clearly, the savings to physicians who use computerized patient records can be significant.

In summary, the risk management benefits of leading EMR systems are considerable. We expect to see even more interest from risk managers and others interested in containing the $5 billion malpractice liability.

---

[1] Risk Management: Safeguarding Your Career, Developed by TIV Inc. and St. Louis University School of Medicine, 1992, pg. 11.

[2] Source:U.S. General Accounting Office, Institute of Medicine and Journal of the American Medical Association, summarized in The Wall Street Journal, April 6, 1992.

[3] Garrett L.E. Jr., Hammond W.E., Stead W.W. **The Effects of Computerized Medical Records on Provider Efficiency and Quality of Care.** Methods of Information In Medicine 1986; 25:151-157

[4]Aris Sophocles, J.D., M.D., Associate Clinical Professor of Family Medicine, University of Colorado Health Sciences Center, Medical Director of Lincoln National Health Plan of Denver.

[5]**Risk Management: Safeguarding Your Career**, Developed by TIV Inc. and St. Louis University School of Medicine, 1992, pg. 11.

[6]Source:U.S. General Accounting Office, Institute of Medicine and Journal of the American Medical Association, summarized in The Wall Street Journal, April 6, 1992.

[7]Garrett L.E. Jr., Hammond W.E., Stead W.W. **The Effects of Computerized Medical Records on Provider Efficiency and Quality of Care.** Methods of Information In Medicine 1986; 25:151-157

[8]Interviewed in the "One Minute Risk Manager," educational video, Medical Professional Liability Agency, Ltd.

[9]ibid.

[10]Kelsay, E., J.D., **Loss Prevention Guide for Physicians**, 1989, pg. 18.

[11]Hammond J., Johnson H.M., Varas R., Ward C.G. **A Qualitative Comparison of Paper Flowsheets vs. a Computer-based Clinical Information system.** University of Miami School of Medicine. chest 1991; 99:155-157.

[12]Risk Management Handbook, The Doctors Co., Napa, Calif.

[13]One Minute Risk Manager video.

---

[14]Garrett L.E. Jr., Hammond W.E., Stead W.W. **The Effects of Computerized Medical Records on Provider Efficiency and Quality of Care.** Methods of Information In Medicine 1986; 25:151-157

[15]**The Malpractice Dragon wasn't Dead--Just Asleep.** Medical Economics, Oct. 24, 1994, pg. 53-59.

Seven Year Cost Savings

The overall savings reflection in the cost/benefit analysis 7 years out from implementation is projected to be $1,495.273. This number was arrived at by adding the projected savings in six major areas: medical records staff, nursing staff, pharmacy staff, pharmaceuticals, lab and tests, medical records supplies, and overhead.

	Savings	Reference	Comment	Resultant Savings (7 years)	FTE Impact
Medical Records Staff	10% per year for 3 years – cumulative 30%	Based on the analysis of the Medical Records work processes, it is estimated that Medical Records Staff over a seven year period would spend at least 13,154 hours in functions related to managing the paper record. See Attachment 21.	There is a possibility that the savings would be greater if the Electronic Health Record replaces more medical record functions than anticipated.	$374,024	(6.3)
Nursing Staff	RN Current base 26,000 hours 10% reduction; LPN at 80% reduction of 5,600 hours	Jail Health Services' nurses spend over 26,400 hours annually doing paperwork, charting, and writing in logs and in treatment mgmt. See Attachment 29.	26,400 hours is the sum of JHS RN hours A and D in the attachment.	$397,196	(3.4)
Pharmacy Staff	1 FTE ongoing	A study of the process for writing and filling a non-narcotic prescription (See Attachment 26), which is just a subset of the Jail Health Services Medication Administration process, revealed that there are over 27 key steps involved in filing a new prescription. This activity involves the provider, nurse, pharmacy assistant, and pharmacist.	A review by a cross functional team revealed that the steps removed would reduce the amount of Pharmacy Technician time required on a daily basis.	$57,045	(1.0)
Pharmaceuticals	20% immediate	In a study conducted by Wang (See Attachment 28), an expert panel estimated that alternative drug suggestion reminders would save 15% (range of 5% to 25%) of total drug costs per year.	JHS Medical Director and Sr. Pharmacist confirmed the potential 20% reduction.	$582,759	None
Lab and Tests	20% reduction of Public Health lab budget of $48,000. Could be greater with outside lab impact.	It is estimated that 20% of the lab tests paid for by Jail Health are unnecessarily repeated due to lack of medical information available or inaccurate and incomplete information in the patient's medical	JHS Medical Director confirmed the potential 20%reduction.	$12,161	None

		record.			
Medical Records Supplies		Roughly $18,000 dollars is currently spent annually on materials to make medical records. Computer-generated forms and charts eliminate the need to purchase pre-printed forms.	Source = 2004 cost and quantities as reported by Admin Service Warehouse.	$22,802	None
JHS Overhead	Per FTE – assume 25% of amount budgeted per FTE basis			$49,286	None
Total				**$1,495,273**	

Jail Health Services Electronic Health Record
Process Analysis - Rx Order

THREE SCENARIOS

Current Practice

Under the current process there are 27 key steps involved in the creating a filled prescription at KCCF. The process starts when a provider writes the medication order and ends when the filled prescription is placed in the floor box in the medication room.

There are four groups involved in the process including the Provider, LPN, Pharmacy Tech, and Pharmacist. There are five check points or verification points built into the process to catch and correct errors in the writing and filling of the prescription.

Under the current practice scenario, staff spends an average of 6 hours and 18 minutes per 50 orders from beginning to end of the 28 steps. The time for 50 Rx breaks down as follows:

Current Practice Scenario for 50 Rx

Function	Activity	Time	Hours
Provider	Write medication order	25 minutes	.42
Provider	Document in Progress Note	37 minutes	.62
LPN	Check for all elements of Rx	5 minutes	.08
Provider	Correct Order (5)	10 minutes	.16
Pharmacy Tech	Collect and Sort	15 minutes	.25
Pharmacist	Reconcile errors on order (6)	30 minutes	.5
Provider	Correct Order (6)	12 minutes	.2
Pharmacy Tech	Process Order in FSI and paperwork generated	140 minutes	2.3
Pharmacist	Reconcile drug interactions (3)	24 minutes	.4
Pharmacist	Check labels against order	37 minutes	.62
Pharmacy Tech	Re do Order in FSI correcting entry and labels (2)	6 minutes	.1
Pharmacist	Fill and final check	100 minutes	1.66
		441 minutes	7 hours 35min

Improved Practice

Under a process improvement scenario, the assumption is that Jail Health Services is able to reduce the errors and rework by 80%. This scenario also removes the LPN checking orders are sent directly to pharmacy. Under this scenario staff spend an average of 6 hours and 15 minutes per 50 orders from beginning to end of the 26 steps. The time for 50 Rx breaks down as follows:

Process Improvement Scenario for 50 Rx

Function	Activity	Time	Hours
Provider	Write medication order	25 minutes	.42
Provider	Document in Progress Note	37 minutes	.62
Pharmacy Tech	Collect and Sort	15 minutes	.25
Pharmacist	Reconcile errors on order (2.2)	11 minutes	.5
Provider	Correct Order (2.2)	4.4 minutes	.16
Pharmacy Tech	Process Order in FSI and paperwork generated	140 minutes	2.3
Pharmacist	Reconcile drug interactions (.6)	4.8 minutes	.4
Pharmacist	Check labels against order	37 minutes	.62
Pharmacy Tech	Re do Order in FSI correcting entry and labels (.4)	1.2 minutes	.1
Pharmacist	Fill and final check	100 minutes	1.66
		375.4 minutes	6 hours 15min

Use of an Electronic Health Record

Under a scenario where Jail Health Services is using the Electronic Health Record to manage the ordering process for prescriptions staff spend a total of 3 hours and 37 minutes producing 50 prescriptions. Steps are reduced from 27 to 12 steps. In addition to reduced cycle time the EHR affords the following benefits:
[1] Provider order is instantaneous to pharmacy
[2] Order types are flagged so pharmacy does not have to sort
[3] Completeness and potential clinical errors are detected and prevented by the system

Electronic Health Record Scenario for 50 Rx

Function	Activity	Time	Hours
Provider	Input the medication order (assume 1.5 X as long)	37.5 minutes	.625
Provider	**Remove** *Document in Progress Note*		
LPN	**Remove** *Check for all elements of Rx*		
Provider	**Remove** *Correct Order (5)*		
Pharmacy Tech	**Remove** *Collect and Sort*		
Pharmacist	**Remove** *Reconcile errors on order (6)*		
Provider	**Remove** *Correct Order (6)*		
Pharmacy Tech	Manage Orders in EHR and paperwork generated	37 minutes	.616
Pharmacist	Reconcile drug interactions (1.5)	3 minutes	.05

Pharmacist	Check labels against order	37 minutes	.62
Pharmacy Tech	Re do Order in EHR correcting entry and labels (1)	3 minutes	.05
Pharmacist	Fill and final check	100 minutes	1.66
		217.5 minutes	3 hours 37min

Volumes

Average of 150 prescription per day filled over 6 days per week equates to 900 prescriptions per week. Assuming the pharmacy operates 52 weeks per year the pharmacy fills 46,800 prescriptions per year. Under the Current Process scenario Jail Health services spends (936 X the total cost in the current process scenario) annually on filling prescriptions. Under the improved process scenario Jail Health Services spends (936 X the total cost in the improved process scenario) annually on filling prescriptions. Under the EHR scenario Jail Health Services spends (936 X total cost in the EHR scenario) annually on filling prescriptions.

A Cost-Benefit Analysis of Electronic Medical Records in Primary Care

Samuel J. Wang, MD, PhD, Blackford Middleton, MD, MPH, MSc, Lisa A. Prosser, PhD, Christiana G. Bardon, MD, Cynthia D. Spurr, RN, MBA, Patricia J. Carchidi, RN, MSN, Anne F. Kittler, Robert C. Goldszer, MD, MBA, David G. Fairchild, MD, MPH, Andrew J. Sussman, MD, MBA, Gilad J. Kuperman, MD, PhD, David W. Bates, MD, MSc

PURPOSE: Electronic medical record systems improve the quality of patient care and decrease medical errors, but their financial effects have not been as well documented. The purpose of this study was to estimate the net financial benefit or cost of implementing electronic medical record systems in primary care.

METHODS: We performed a cost-benefit study to analyze the financial effects of electronic medical record systems in ambulatory primary care settings from the perspective of the health care organization. Data were obtained from studies at our institution and from the published literature. The reference strategy for comparisons was the traditional paper-based medical record. The primary outcome measure was the net financial benefit or cost per primary care physician for a 5-year period.

RESULTS: The estimated net benefit from using an electronic medical record for a 5-year period was $86,400 per provider. Benefits accrue primarily from savings in drug expenditures, improved utilization of radiology tests, better capture of charges, and decreased billing errors. In one-way sensitivity analyses, the model was most sensitive to the proportion of patients whose care was capitated; the net benefit varied from a low of $8400 to a high of $140,100. A five-way sensitivity analysis with the most pessimistic and optimistic assumptions showed results ranging from a $2300 net cost to a $330,900 net benefit.

CONCLUSION: Implementation of an electronic medical record system in primary care can result in a positive financial return on investment to the health care organization. The magnitude of the return is sensitive to several key factors. **Am J Med. 2003;114:397–403.** ©2003 by Excerpta Medica Inc.

Electronic medical record systems have the potential to provide substantial benefits to physicians, clinic practices, and health care organizations. These systems can facilitate workflow and improve the quality of patient care and patient safety (1–4). Application of information technology has been identified by the Institute of Medicine as one of the principal ways to improve the quality of health care (5). Because of these benefits, the Leapfrog Group (6), a coalition of the nation's largest employers, is considering making use of outpatient electronic medical records its next standard for health care purchasing contracts.

In several other countries, use of electronic medical records ranges from 50% to 90% (7–9). In the United States, however, adoption of electronic medical records has been slow, and only about 7% of physicians use them (10). The cost of implementation is often cited as a barrier to their use. Although there are anecdotal reports suggesting that electronic medical records provide financial benefits by helping to reduce costs and improve revenues (11–26), few formal cost-benefit analyses have been done. Because their widespread adoption will depend in part on the ability to make a business case for financial benefits to the health care organization, we performed a formal cost-benefit analysis of implementing an electronic medical record system.

METHODS

Study Design

We performed a cost-benefit analysis of electronic medical record usage by primary care physicians in an ambulatory-care setting. The primary outcome measure was net financial costs or benefits per provider during a 5-year period. The model was framed from the perspective of the health care organization, and the reference strategy was the traditional paper-based medical record. All costs and benefits were converted to 2002 U.S. dollars (27).

Data on costs and benefits came from primary data collected from our electronic medical record system, from other published studies, and from expert opinion. When data were not available, expert opinion was obtained using a modified Delphi (28) technique to arrive at group consensus with a 7-member expert panel. Primary data were obtained from several internal medicine clinics using our internally developed electronic medical record

From the Department of Information Systems (SJW, BM, CDS, PJC, AFK, GJK, DWB), Partners HealthCare System, Boston, Massachusetts; Division of General Medicine and Primary Care (BM, CGB, RCG, DGF, AJS, GJK, DWB), Brigham and Women's Hospital, Boston, Massachusetts; and Department of Ambulatory Care and Prevention (LAP), Harvard Medical School and Harvard Pilgrim Health Care, Boston, Massachusetts.

Requests for reprints should be addressed to Samuel J. Wang, MD, PhD, Partners HealthCare System, 93 Worcester Street, Wellesley, Massachusetts 02481, or sjwang@partners.org.

Manuscript submitted May 13, 2002, and accepted in revised form December 3, 2002.

Table 1. Costs of Electronic Medical Record System Used in the Model (Per Provider in 2002 U.S. Dollars)

	Base Case	Sensitivity Analysis (Range)	Reference
System costs			
Software (annual license)	$1600	$ 800–$3200	*
Implementation	$3400		†
Support and maintenance	$1500	$ 750–$3000	*
Hardware (3 computers + network)	$6600	$3300–$9900	*
Induced costs			
Temporary productivity loss	$11,200	$5500–$16,500	*

* Data from Partners HealthCare System, Boston, Massachusetts.
† B. Middleton, MD, MPH, MSc, MedicaLogic, written communication, 1998.

system (29) at Partners HealthCare System, an integrated delivery network formed in 1994 by the Brigham and Women's Hospital and the Massachusetts General Hospital.

We constructed a hypothetical primary care provider patient panel using average statistics from our institution. This panel included 2500 patients, 75% of whom were under 65 years of age; 17% of patients under 65 years old belonged to capitated plans. In sensitivity analyses, panel size was varied from 2000 to 3000 patients, and the proportion of patients under the age of 65 years whose cases were capitated was varied from 0% to 28.7%. According to industry estimates, health maintenance organization enrollment was 28.7% of the U.S. population in 2000 (30,31).

Costs

There are two categories of costs associated with electronic medical record implementation: system costs and induced costs (Table 1). System costs include the cost of the software and hardware, training, implementation, and ongoing maintenance and support. Induced costs are those involved in the transition from a paper to electronic system, such as the temporary decrease in provider productivity after implementation.

The software costs of $1600 per provider per year were based on the costs for our electronic medical record system at Partners HealthCare on an annual per-provider basis (as an "application service provider" model); this figure includes the costs of the design and development of the system, interfaces to other systems (e.g., registration, scheduling, laboratory), periodic upgrades, and costs of user accounts for support staff. Although these software costs were based on our internally developed system, they are consistent with license fees for commercially available systems, which have been estimated at between $2500 and $3500 per provider for the initial software purchase, plus annual maintenance and support fees of 12% to 18% (K. MacDonald, First Consulting Group, Lexington, Massachusetts, written communication, 1999). In sensitivity analyses, software costs were varied from 50% to 200% of the base value.

Implementation costs, estimated at $3400 per provider in the first year, included workflow process redesign, training, and historical paper chart abstracting. Ongoing annual maintenance and support costs were estimated to be $1500 per provider per year and included the costs of additional technical support staff and system/network administration.

Hardware costs were calculated to be $6600 per provider for three desktop computers, a printer, and network installation. We assumed that hardware would be replaced every 3 years.

Based on our experience, we modeled the induced costs of temporary loss of productivity using a decreasing stepwise approach, assuming an initial productivity loss of 20% in the first month, 10% in the second month, and 5% in the third month, with a subsequent return to baseline productivity levels. Using the average annual provider revenues for our model patient panel, this amounted to a revenue loss of $11,200 in the first year.

Benefits

Financial benefits included averted costs and increased revenues. We obtained figures for average annual expenditures for a primary care provider at our institution before the implementation of an electronic medical record, and applied to this the estimated percentage cost savings after implementation (Table 2). For each item, the estimated savings was varied across the indicated range of values in the sensitivity analysis. Benefits were divided into three categories: payer-independent benefits, benefits under capitated reimbursement, and benefits under fee-for-service reimbursement (32–40).

Payer-independent benefits, which apply to both capitated and fee-for-service patients, come from reductions in paper chart pulls and transcription. The average cost of a chart pull at our institution is approximately $5, accounting for the time and cost of medical records personnel to retrieve and then re-file a paper chart. After con-

Table 2. Annual Expenditures Per Provider (in 2002 U.S. Dollars) before Electronic Medical Record System Implementation and Expected Savings after Implementation

	Annual Expenditures before Implementation		Expected Savings after Implementation		
	Amount	Reference	Base Case Estimated Savings	Sensitivity Analysis (Range)	Reference
Payer independent					
Chart pulls	$5 (per chart)	*	600 charts	300–1200	*
Transcription	$9600	*	28%	20%–100%	*,32
Capitated patients					
Adverse drug events	$6500	33–36	34%	10%–70%	‡
Drug utilization	$109,000	†	15%	5%–25%	‡
Laboratory utilization	$27,600	†	8.8%	0–13%	37–39
Radiology utilization	$59,100	†	14%	5%–20%	‡
Fee-for-service patients					
Charge capture	$383,100	†	2% (increase)	1.5%–5%	25,40
Billing errors	$9700	†	78%	35%–95%	‡

* Primary data from the Partners HealthCare Electronic Medical Record System, Boston, Massachusetts.
† From the Department of Finance, Brigham and Women's Hospital, Partners HealthCare System.
‡ Expert panel consensus.

version to the electronic medical record system, chart pulls can be reduced by 600 charts (range, 300 to 1200) per year, based on the experience at one Partners HealthCare clinic. Transcription costs were reduced by 28% from partial elimination of dictation. In the sensitivity analysis, we varied the savings from 20% to 100% based on the experiences from other implementations (32).

Benefits under capitated reimbursement accrue to the practice and health care organization primarily from averted costs as a result of decreased utilization. Clinical decision support alerts and reminders can decrease utilization by reducing adverse drug events, offering alternatives to expensive medications, and reducing the use of laboratory and radiology tests (37–39,41–44). The expert panel consensus was that adverse drug events would be reduced by approximately 34% (range, 10% to 70%) as a result of basic medication decision support. We used standard financial benchmarks (33–35) to assign baseline costs for adverse drug events, which took into account additional outpatient visits, prescriptions, and admissions due to adverse drug events (36).

The expert panel estimated that alternative drug suggestion reminders would save 15% (range, 5% to 25%) of total drug costs per year, and this was applied to the baseline annual drug expenditures for the capitated patients in the panel. We estimated that laboratory charges could be reduced by 8.8% (range, 0 to 13%) using decision support (37–39). Based on information from other studies, the expert panel estimated that decision support for radiology ordering would achieve average savings of 14% (range, 5% to 20%).

Benefits under fee-for-service reimbursement included increased revenue and reduced losses. Computerizing the encounter form process can improve the capture of in-office procedures that were performed but not documented. Based on other studies (25,40), we projected a 2% improvement in billing capture (range, 1.5% to 5%). By using an electronic medical record system that either supplies or prompts for certain required fields, billing error losses can be reduced. The expert panel estimated that computerizing the encounter form could decrease these errors by 78% (range, 35% to 95%).

Statistical Analysis

We assumed that initial costs would be paid at the beginning of year 1 and that benefits would accrue at the end of each year (Table 3). We assumed a phased implementation, in which only basic electronic medical record features were available in the first years (e.g., medication-related decision support), and more advanced features were added in subsequent years (e.g., laboratory, radiology, and billing benefits). The primary outcome measure was net benefit or cost per primary care provider. A discount rate of 5% was used in the base case and varied from 0% to 10% in the sensitivity analysis.

One-way and two-way sensitivity analyses were performed using the ranges shown in Tables 1 and 2. Two-way sensitivity analyses were performed using all combinations of the five most important variables identified in the one-way sensitivity analysis, and with pairwise combinations of one benefit variable with each of the three primary cost variables (software, hardware, and support). A five-way sensitivity analysis was performed using the most and least favorable conditions for the five variables. The time horizon was also varied from 2 to 10 years.

Table 3. 5-Year Return on Investment Per Provider for Electronic Medical Record Implementation

	Initial Cost	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Costs							
Software license (annual)	$1600	$1600	$1600	$1600	$1600	$1600	
Implementation	$3400						
Support	$1500	$1500	$1500	$1500	$1500	$1500	
Hardware (refresh every 3 years)	$6600			$6600			
Productivity loss		$11,200					
Annual costs	$13,100	$14,300	$3100	$9700	$3100	$3100	$46,400
Present value of annual costs*	$13,100	$13,619	$2812	$8379	$2550	$2429	$42,900
Benefits							
Chart pull savings		$3000	$3000	$3000	$3000	$3000	
Transcription savings		$2700	$2700	$2700	$2700	$2700	
Prevention of adverse drug events			$2200	$2200	$2200	$2200	
Drug savings			$16,400	$16,400	$16,400	$16,400	
Laboratory savings					$2400	$2400	
Radiology savings					$8300	$8300	
Charge capture improvement					$7700	$7700	
Billing error decrease					$7600	$7600	
Annual benefits		$5700	$24,300	$24,300	$50,300	$50,300	$154,900
Present value of annual benefits*		$5429	$22,041	$20,991	$41,382	$39,411	$129,300
Net benefit (cost)	$(13,100)	$(8600)	$21,200	$14,600	$47,200	$47,200	$108,500
Present value of net benefit (cost)*	$(13,100)	$(8190)	$19,229	$12,612	$38,832	$36,982	$86,400

* Assumes a 5% discount rate.

To account for variations in functionality among different systems, we constructed two additional models in which only subsets of the full functionality were included (Table 4). The "light" electronic medical record system included savings from chart pulls and transcriptions only, whereas the "medium" system also included benefits from electronic prescribing (adverse drug event prevention and drug expenditure savings).

RESULTS

In the 5-year cost-benefit model (Table 3), the net benefit of implementing a full electronic medical record system was $86,400 per provider. Of this amount, savings in drug expenditures made up the largest proportion of the benefits (33% of the total). Of the remaining categories, almost half of the total savings came from decreased radiology utilization (17%), decreased billing errors (15%), and improvements in charge capture (15%).

Sensitivity Analyses

The model was most sensitive to variations in the proportion of patients in capitated health plans; the net benefit varied from $8400 to $140,100 (Figure). The model was least sensitive to variations in laboratory savings, in which the net benefit ranged from $82,500 to $88,300.

In two-way sensitivity analyses, the pair of input variables that yielded the least favorable outcome was a low proportion of capitated patients and a high discount rate;

Table 4. Effect of Electronic Medical Record Feature Set Variations on Net Benefits

Feature	Benefit	Light EMR	Medium EMR	Full EMR
Online patient charts	Chart pull savings	+	+	+
	Transcription savings	+	+	+
Electronic prescribing	Adverse drug event prevention		+	+
	Alternative drug suggestions		+	+
Laboratory order entry	Appropriate testing guidance			+
Radiology order entry	Appropriate testing guidance			+
Electronic charge capture	Increased billing capture			+
	Decreased billing errors			+
Net benefits (costs):		($18,200)	$44,600	$86,400

EMR = Electronic Medical Record.

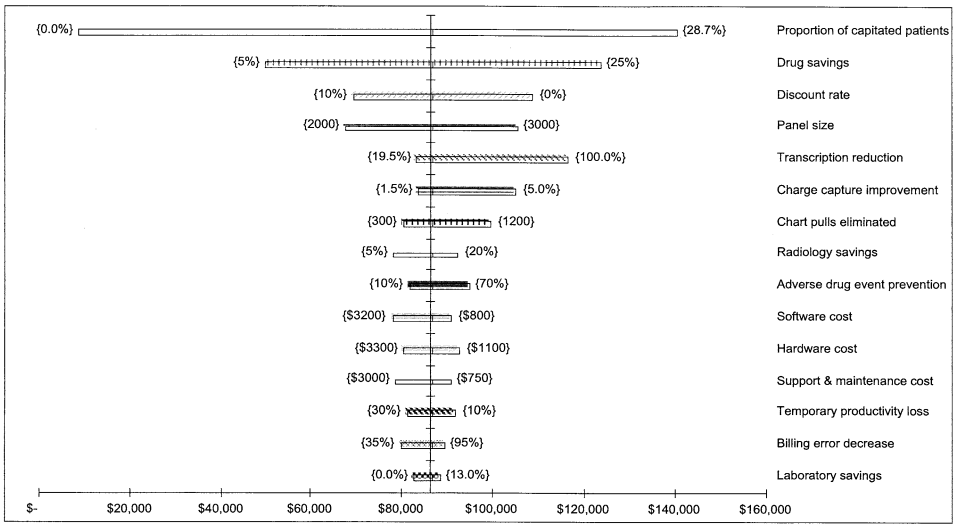


Figure. Tornado diagram showing the one-way sensitivity analysis of net 5-year benefits per provider. Each bar depicts the overall effect on net benefits as that input is varied across the indicated range of values, while other input variables are held constant. The vertical line indicates the base case.

the net benefit range was as low as $3000 per provider. The pair that had the most favorable outcome was a high proportion of capitated patients and greater savings from drug suggestions; the net benefit was as high as $202,200 per provider. For the two-way sensitivity analyses performed with the three primary cost variables, the pair of variables that yielded the least favorable outcome was a low proportion of capitated patients and a high annual software license (net cost of $200 per provider), and the pair with the most favorable outcome was a high proportion of capitated patients and a low hardware cost (net benefit of $146,200 per provider).

In the five-way sensitivity analyses, when the most pessimistic assumptions were made, the model showed a net cost of $2300 per provider. When the most optimistic assumptions were used, this analysis yielded a net benefit of $330,900 per provider.

When the time horizon was reduced to 2 years instead of 5 years, the net cost was $2100 per provider, and when the time horizon was lengthened to 10 years, the net benefit was $237,300 per provider.

For the "light" electronic medical record, in which the system is used only to reduce paper chart pulls and transcription costs, the net cost was $18,200 per provider (Table 4). For the "medium" electronic medical record, in which benefits from electronic prescribing are added, the net benefit was $44,600 per provider.

DISCUSSION

Our analysis indicates that the net financial return to a health care organization from using an ambulatory electronic medical record system is positive across a wide range of assumptions. The primary areas of benefit are from reductions in drug expenditures, improved utilization of radiology tests, improvements in charge capture, and decreased billing errors. Benefits increase as more features are used and as the time horizon is lengthened. In sensitivity analyses, the net return was positive except when the most pessimistic assumptions were used.

Savings to the health care organization are obtained under both capitated and fee-for-service reimbursement, but these savings depend on the reimbursement mix: the greater the proportion of capitated patients, the greater the total return. Among fee-for-service patients, a large portion of the savings from improved utilization may accrue to the payer instead of the provider organization. As a result, payers may be motivated to offer incentives to providers to use an electronic medical record to help control costs. In addition, although full capitation appears to be less prevalent now than several years ago, with the continued rise in health care expenditures, other types of risk-sharing arrangements are likely to become more common in the future (45), such as partial capitation, risk pools, and pharmacy withholds.

We used conservative estimates of cost savings from an electronic medical record. For example, one clinic was able to reduce chart pulls by 60% to 70% and its medical records staff by 50%, for an annual savings of about $4000 per provider (15). Others have identified even larger savings from the use of drug suggestions for certain classes of medications (46). In one outpatient clinic, display of formulary information at the time of ordering lowered drug costs by up to 26% (M. Overhage, MD, Regenstrief Institute, Indianapolis, Indiana, written communication, 2001). Savings due to prevention of adverse drug events

in the model did not include costs of malpractice settlements, injury to patients, or decreased quality of life for patients, so the actual savings may be higher. We may have also underestimated future cost savings because the model did not account for the annual growth rate of expenditures, which may outpace inflation in some categories, such as in drug and radiology costs.

Other potential areas of savings were not included in the model because adequate data were not available. These include savings in malpractice premium costs (40), storage and supply costs (47), generic drug substitutions (48), increased provider productivity (19,23,24), decreased staffing requirements (23,24,49), increased reimbursement from more accurate evaluation and management coding, and decreased claims denials from inadequate medical necessity documentation.

Although we accounted for a temporary (3-month) loss of productivity in our model, some providers may have a longer period of reduced productivity. To measure this effect, we performed a sensitivity analysis that included a prolonged 10% productivity loss for 12 months and found that there was still a 5-year net benefit of $57,500 per provider.

This study has several limitations. The cost-benefit model was based on primary data from our institution, estimates from published literature, and expert opinion. The effectiveness of some of these interventions has been demonstrated in the inpatient setting, but outpatient effectiveness is less certain. There may be other costs associated with implementation of an electronic medical record. For example, system integration costs may be greater at other institutions, depending on the number and complexity of system interfaces that are required. However, the majority of benefits in this model can be obtained even with a minimal number of interfaces (i.e., registration, scheduling, and transcription). In addition, there may be other unforeseen expenses associated with clinic workflow process redesign, reassignment of clinic staff, or productivity loss during unscheduled computer system or network outages.

In most cases, clinical decision support features will decrease utilization by suggesting more appropriate testing. This leads to cost savings among capitated patients, but it could also have an adverse effect on revenues from fee-for-service patients that may offset billing improvements. The overall net effect would depend on the mix of capitated versus fee-for-service patients.

Our cost-benefit model was geared toward primary care providers. Diagnostic test utilization may be higher for specialists, so there may be more opportunities for cost-saving interventions. On the other hand, specialists may be less likely to comply with computer reminders recommending alternative medications or tests.

This study was framed from the perspective of the health care organization to aid in making decisions about implementation of an electronic medical record. It may also be worthwhile to take the societal perspective, which would include benefits to payers and patients. For example, despite the trend away from global risk capitation, payers are moving toward patient cost-sharing approaches, such as differential co-payments, high deductible options, and health savings accounts. With these types of arrangements, patients may prefer to seek care with providers who use electronic medical records to control costs and improve quality of care.

Not all benefits of an electronic medical record are measurable in financial terms; other benefits include improved quality of care, reduced medical errors, and better access to information (2,3,50–54). A cost-benefit analysis is only one part of a complete analysis of the effects of implementing an electronic medical record system. At our institution, the electronic medical record is a key component of a strategic goal of clinical system integration to allow providers to move between sites in the network to deliver seamless care at the most appropriate primary, secondary, or tertiary care location.

Based on a combination of savings data from our institution and projections from other published studies, we conclude that implementing an ambulatory electronic medical record system can yield a positive return on investment to health care organizations. The magnitude and timing of this financial return varies, but is positive in the long run across a wide range of assumptions. Because of their quality and cost benefits, electronic medical records should be used in primary care, and incentives to accelerate their adoption should be considered at the national level.

ACKNOWLEDGMENT

We would like to thank Marc Overhage, MD, Homer Chin, MD, Barry Blumenfeld, MD, and Tejal Gandhi, MD, who joined three of the coinvestigators to serve on our expert panel.

REFERENCES

1. Elson RB, Connelly DP. Computerized patient records in primary care. Their role in mediating guideline-driven physician behavior change. *Arch Fam Med.* 1995;4:698–705.
2. Shea S, DuMouchel W, Bahamonde L. A meta-analysis of 16 randomized controlled trials to evaluate computer-based clinical reminder systems for preventive care in the ambulatory setting. *J Am Med Inform Assoc.* 1996;3:399–409.
3. Hunt DL, Haynes RB, Hanna SE, et al. Effects of computer-based clinical decision support systems on physician performance and patient outcomes: a systematic review. *JAMA.* 1998;280:1339–1346.
4. Bates DW. Medication errors. How common are they and what can be done to prevent them? *Drug Saf.* 1996;15:303–310.
5. Institute of Medicine Committee on Quality of Health Care in America. *Crossing the Quality Chasm: A New Health System for the 21st Century.* Washington, DC: National Academy Press; 2001.

6. The Leapfrog Group for Patient Safety; Rewarding Higher Standards. Available at: http://www.leapfroggroup.org. Accessed April 23, 2002.
7. Heard S, Grivel T, Schloeffel P, Doust J. The benefits and difficulties of introducing a national approach to electronic health records in Australia. Available at: http://www.health.gov.au/healthonline/ehr_apxb.pdf. Accessed May 6, 2002.
8. Jones N. Telematics systems in primary care. Available at: http://www.eihms.surrey.ac.uk/abbott/IT-EDUCTRA/html/p415_h.htm. Accessed April 23, 2002.
9. The Royal College of General Practitioners—information sheet, general practice computerisation. Available at: http://www.rcgp.org.uk/rcgp/information/publications/information/rcf0007/Rcf0007.asp. Accessed April 23, 2002.
10. *Taking the Pulse: Physicians and the Internet*. New York: Deloitte & Touche; 2000.
11. Hammond KW, Prather RJ, Date VV, et al. A provider-interactive medical record system can favorably influence costs and quality of medical care. *Comput Biol Med.* 1990;20:267–279.
12. Rawitz JG, Cowan WY, Paige BM. Justifying costs of computer software purchases. *Healthc Financ Manage.* 1990;44:46–51.
13. Davis MW. Reaping the benefits of electronic medical record systems. *Healthc Financ Manage.* 1993;47:60–62.
14. Renner K. Electronic medical records in the outpatient setting (part 1). *Med Group Manage J.* 1996;43:52–5754,56.
15. Renner K. Electronic medical records in the outpatient setting (part 2). *Med Group Manage J.* 1996;43:60–65.
16. Pliskin N, Glezerman M, Modai I, et al. Spreadsheet evaluation of computerized medical records: the impact on quality, time, and money. *J Med Syst.* 1996;20:85–100.
17. Khoury A. Finding value in EMRs (electronic medical records). *Health Manag Technol.* 1997;18:34–36.
18. Mohr DN. Benefits of an electronic clinical information system. *Healthc Inf Manage.* 1997;11:49–57.
19. Bingham A. Computerized patient records benefit physician offices. *Healthc Financ Manage.* 1997;51:68–70.
20. Nelson R. Computerized patient records improve practice efficiency and patient care. *Healthc Financ Manage.* 1998;52:86–88.
21. Sandrick K. Calculating ROI for CPRs. *Health Manag Technol.* 1998;19:16–20.
22. Didear K, Kalata M. CPR success stories. *J AHIMA.* 1998;69:54–57.
23. Zdon L, Middleton B. Ambulatory electronic medical records implementation cost benefit: An enterprise case study. *Healthc Inform Manage and Syst Soc.* 1999;4:97–117.
24. Ury A. The business case for an electronic medical record system. *Group Pract J.* 2000;49:1–6.
25. Pifer EA, Smith S, Keever GW. EMR to the rescue. An ambulatory care pilot project shows that data sharing equals cost shaving. *Healthc Inform.* 2001;18:111–114.
26. Mildon J, Cohen T. Drivers in the electronic medical records market. *Health Manag Technol.* 2001;22:14–1618.
27. Gross domestic product deflator inflation calculator. Available at: http://www.jsc.nasa.gov/bu2/inflateGDP.html. Accessed October 5, 2002.
28. Snyder-Halpern R, Thompson CB, Schaffer J. Comparison of mailed vs. Internet applications of the Delphi technique in clinical informatics research. *Proc AMIA Symp.* 2000:809–813.
29. Spurr CD, Wang SJ, Kuperman GJ, et al. Confirming and delivering the benefits of an ambulatory electronic medical record for an integrated delivery system. *TEPR 2001 Conference Proceedings.* Newton, Massachusetts: Medical Records Institute; 2001.
30. The Competitive Edge: HMO Industry Report 10.2. St. Paul, MN: Interstudy Publications; 2000.
31. United States Census 2000. *Ranking Tables for States. Population in 2000 and Population Change from 1990 to 2000 (PHC-T-2).* Washington, DC: U.S. Census Bureau; 2000.
32. Ambulatory EMR. Establishing a business case. Available at: http://www.medicalogic.com/emr/business_benefits/index.html. Accessed April 20, 2002.
33. *Medicare RBRVS Physician Fee Schedule 2002*. Washington, DC: Centers for Medicare and Medicaid Services; 2001.
34. *Prescription Drug Expenditures in 2001*. Washington, DC: National Institute for Health Care Management; 2002.
35. Jha AK, Kuperman GJ, Rittenberg E, et al. Identifying hospital admissions due to adverse drug events using a computer-based monitor. *Pharmacoepidemiol Drug Saf.* 2001;10:113–119.
36. Honigman B, Lee J, Rothschild J, et al. Using computerized data to identify adverse drug events in outpatients. *J Am Med Inform Assoc.* 2001;8:254–266.
37. Tierney WM, Miller ME, McDonald CJ. The effect on test ordering of informing physicians of the charges for outpatient diagnostic tests. *N Engl J Med.* 1990;322:1499–1504.
38. Tierney WM, McDonald CJ, Martin DK, et al. Computerized display of past test results. Effect on outpatient testing. *Ann Intern Med.* 1987;107:569–574.
39. Tierney WM, McDonald CJ, Hui SL, et al. Computer predictions of abnormal test results. Effects on outpatient testing. *JAMA.* 1988;259:1194–1198.
40. Renner K. Cost-justifying electronic medical records. *Healthc Financ Manage.* 1996;50:63–64.
41. Bates DW, Boyle DL, Rittenberg E, et al. What proportion of common diagnostic tests appear redundant? *Am J Med.* 1998;104:361–368.
42. Bates DW, Kuperman GJ, Rittenberg E, et al. A randomized trial of a computer-based intervention to reduce utilization of redundant laboratory tests. *Am J Med.* 1999;106:144–150.
43. Harpole LH, Khorasani R, Fiskio J, et al. Automated evidence-based critiquing of orders for abdominal radiographs: impact on utilization and appropriateness. *J Am Med Inform Assoc.* 1997;4:511–521.
44. Rothschild JM, Khorasani R, Bates DW. Guidelines and decision support help improve image utilization. *Diagn Imaging.* 2000;22:95–9799,101.
45. Reinhardt UE. Reforming American healthcare: an interim report. *J Rheumatol.* 1999;26(suppl):6–10.
46. Jones DL, Kroenke K, Landry FJ, et al. Cost savings using a stepped-care prescribing protocol for nonsteroidal anti-inflammatory drugs. *JAMA.* 1996;275:926–930.
47. Evans JC, Hayashi AM. Implementing on-line medical records. *Doc Manage.* 1994;Sep/Oct:12–17.
48. The quantum experience: a case study from Ernst & Young. Available at: http://www.allscripts.com/ahcs/news_2.asp?S=2000&ID=2. Accessed April 10, 2002.
49. Kian LA, Stewart MW, Bagby C, et al. Justifying the cost of a computer-based patient record. *Healthc Financ Manage.* 1995;49:58–60.
50. Essex D. Skip the song & dance. *Healthc Inform.* 1999;16:49–52 54,56.
51. Balas EA, Weingarten S, Garb CT, et al. Improving preventive care by prompting physicians. *Arch Intern Med.* 2000;160:301–308.
52. Bates DW, Teich JM, Lee J, et al. The impact of computerized physician order entry on medication error prevention. *J Am Med Inform Assoc.* 1999;6:313–321.
53. McDonald CJ, Hui SL, Smith DM, et al. Reminders to physicians from an introspective computer medical record. A two-year randomized trial. *Ann Intern Med.* 1984;100:130–138.
54. McDonald CJ, Overhage JM, Tierney WM, et al. The Regenstrief Medical Record System: a quarter century experience. *Int J Med Inf.* 1999;54:225–253.

Seven Year Cost Savings

The overall savings reflection in the cost/benefit analysis 7 years out from implementation is projected to be $1,495.273. This number was arrived at by adding the projected savings in six major areas: medical records staff, nursing staff, pharmacy staff, pharmaceuticals, lab and tests, medical records supplies, and overhead.

	Savings	Reference	Comment	Resultant Savings (7 years)	FTE Impact
Medical Records Staff	10% per year for 3 years – cumulative 30%	Based on the analysis of the Medical Records work processes, it is estimated that Medical Records Staff over a seven year period would spend at least 13,154 hours in functions related to managing the paper record. See Attachment 21.	There is a possibility that the savings would be greater if the Electronic Health Record replaces more medical record functions than anticipated.	$374,024	(6.3)
Nursing Staff	RN Current base 26,000 hours 10% reduction; LPN at 80% reduction of 5,600 hours	Jail Health Services' nurses spend over 26,400 hours annually doing paperwork, charting, and writing in logs and in treatment mgmt. See Attachment 29.	26,400 hours is the sum of JHS RN hours A and D in the attachment.	$397,196	(3.4)
Pharmacy Staff	1 FTE ongoing	A study of the process for writing and filling a non-narcotic prescription (See Attachment 26), which is just a subset of the Jail Health Services Medication Administration process, revealed that there are over 27 key steps involved in filing a new prescription. This activity involves the provider, nurse, pharmacy assistant, and pharmacist.	A review by a cross functional team revealed that the steps removed would reduce the amount of Pharmacy Technician time required on a daily basis.	$57,045	(1.0)
Pharmaceuticals	20% immediate	In a study conducted by Wang (See Attachment 28), an expert panel estimated that alternative drug suggestion reminders would save 15% (range of 5% to 25%) of total drug costs per year.	JHS Medical Director and Sr. Pharmacist confirmed the potential 20% reduction.	$582,759	None
Lab and Tests	20% reduction of Public Health lab budget of $48,000. Could be greater with outside lab impact.	It is estimated that 20% of the lab tests paid for by Jail Health are unnecessarily repeated due to lack of medical information available or inaccurate and incomplete information in the patient's medical	JHS Medical Director confirmed the potential 20%reduction.	$12,161	None

		record.			
Medical Records Supplies		Roughly $18,000 dollars is currently spent annually on materials to make medical records. Computer-generated forms and charts eliminate the need to purchase pre-printed forms.	Source = 2004 cost and quantities as reported by Admin Service Warehouse.	$22,802	None
JHS Overhead	Per FTE – assume 25% of amount budgeted per FTE basis			$49,286	None
Total				**$1,495,273**	

Methadology:

Nursing post orders were evaluated for the time spent on each daily tak. Columns A - E were those tasks that most likely will be impacted by the implementation of an Electronic Health Record.

Totals	Total Hours to cover post per year	Charting/Ppwk/Logs/Trans. - A	Sick Call Prep - B	Med Pass Prep - C	Orders/ Med Admin Mgmt - D	Treatment Mgmt - E	Other	
KCCF RN Hours	64,310	14,178	2,982	4,297	1,023	3,303	38,528	
RJC RN Hours	27,562	6,824	2,806	1,228	1,244	2,030	13,430	
JHS RN Hours	91,872	21,001	5,788	5,525	2,268	5,333	51,958	
KCCF LPN Hours	27,562	6,164	0	3,771	1,783	88	15,756	
RJC LPN Hours	12,110	3,633	0	1,817	672	104	5,884	
JHS LPN Hours	39,672	9,797	0	5,587	2,455	192	21,640	
JHS Nursing Hours	131,544	30,798	5,788	11,112	4,723	26,973	73,598	
KCCF RN %	100%	31%	14%	16%	11%	14%	15%	
RJC RN %	100%	25%	10%	4%	5%	7%	49%	
JHS RN %	100%	55%	24%	20%	5%	21%	64%	
KCCF LPN %	100%	22%	0%	14%	6%	0%	57%	
RJC LPN %	100%	30%	0%	15%	6%	1%	49%	
JHS LPN %	100%	52%	0%	29%	12%	1%	106%	
JHS Nursing %	100%	28%	9%	13%	8%	9%	34%	

*Other: Med pass, triage, giving treatments, narcotic counts, stocking, med verification, kite pickup, emergencies report, responding to pager, consults, cleaning patient contact areas, rounds, and visual observations

Methadology:
Nursing post orders were evaluated for the time spent on each daily task.

Post	Total FTE to cover post	Charting/Ppwk/Logs/ Trans. - A	Sick Call Prep - B	Med Pass Prep - C	Orders/ Med Admin Mgmt - D	Treatment Mgmt - E	Other*
KCCF	FTE	%	%	%	%	%	%
RN Posts							
D1 - RN	1.4	25%	25%	0%	0%	0%	50%
D2 - RN	1.4	38%	25%	0%	0%	2%	35%
D3 - RN	1.4	13%	19%	13%	0%	0%	55%
D4 - RN/LPN	1.4	0%	0%	25%	14%	0%	61%
D Infirmary - RN	1.4	19%	3%	0%	0%	13%	65%
Day ITR - RN	2.8	30%	0%	0%	0%	3%	67%
D Psy-R	1.4	12%	0%	0%	3%	3%	82%
D Psy-SA	1.4	9%	0%	9%	6%	14%	62%
E1 - RN	1.4	19%	6%	0%	2%	0%	73%
E2 - RN	1.4	24%	22%	0%	0%	0%	54%
E3 - RN	1.4	19%	2%	29%	0%	0%	50%
E4 - RN/LPN	1.4	0%	0%	34%	4%	0%	62%
E Infirmary - RN	1.4	19%	0%	0%	0%	31%	50%
E ITR - RN	2.8	44%	0%	0%	0%	0%	56%
E Psy-R	1.4	22%	0%	12%	3%	3%	60%
E Psy-SA	1.4	3%	0%	25%	3%	3%	66%
N Infirmary - RN	1.4	13%	0%	0%	0%	38%	49%
N ITR - RN	1.4	35%	0%	0%	0%	0%	65%
N Float - RN	1.4	35%	0%	0%	0%	0%	65%
N Psy	1.4	32%	0%	0%	0%	0%	68%
Total RN	**30.8**	31%	14%	16%	11%	14%	15%
LPN - Posts							
D Clinic - LPN	2.4	38%	0%	0%	0%	0%	62%
D Psy	1.4	13%	0%	0%	3%	3%	81%
D Infirmary - LPN	1.4	0%	0%	13%	35%	0%	52%
D2 - LPN	1.4	0%	0%	25%	14%	0%	61%
E Clinic - LPN	1.0	50%	0%	0%	0%	0%	50%
E Infirmary - LPN	1.4	34%	0%	19%	0%	0%	47%
LE2 - LPN	1.4	0%	0%	34%	9%	0%	57%
N Infirmary - LPN	1.4	25%	0%	25%	0%	0%	50%
N Float - LPN	1.4	38%	0%	13%	0%	0%	49%
Total LPN	**13.2**	22%	0%	14%	6%	0%	57%
RJC -							
RN Posts							
D1 - RN	1.4	30%	28%	0%	0%	0%	42%
D2 - RN	1.4	38%	0%	25%	5%	15%	17%
12 - 8 RN	1.4	25%	0%	0%	10%	10%	55%
HA - RN	1.0	30%	0%	0%	5%	13%	52%
DM - RN	1.4	10%	10%	10%	5%	10%	55%
D ITR - RN	1.0	35%	0%	0%	0%	10%	55%
E1 - RN	1.4	25%	15%	0%	3%	3%	54%
E2 - RN	1.4	28%	20%	0%	0%	6%	46%
EM - RN	1.4	25%	10%	7%	10%	6%	42%
NF - RN	1.4	6%	13%	0%	6%	3%	72%
Total RN	**13.2**	25%	10%	4%	5%	7%	49%

LPN Posts							
DHA - LPN	1.0	50%	0%	0%	0%	0%	50%
DL - LPN	1.4	25%	0%	25%	3%	0%	47%
Clinic - LPN	1.0	55%	0%	0%	0%	5%	40%
EL - LPN	1.4	10%	0%	30%	20%	0%	40%
NM - LPN	1.0	20%	0%	10%	0%	0%	70%
Total LPN	**5.8**	30%	0%	15%	6%	1%	49%
Total RN	44.0	28.88%	12.58%	12.38%	8.81%	12.05%	25.30%
Total LPN	19.0	24.69%	0.00%	14.08%	6.19%	0.48%	54.55%
JHS Total	63.0	27.62%	8.79%	12.89%	8.02%	8.56%	34.12%

*Other: Med pass, triage, giving treatments, narcotic counts, stocking, med verification, kite pickup, emergencies report, responding to pager, consults, cleaning patient contact areas, rounds, and visual observations

Methadology:
Nursing post orders were evaluated for the time spent on each daily tak. Columns A - E were those tasks that most likely will be impacted by the implementation of an Electronic Health Record.

Post	Total FTE to cover post	Charting/Ppwk/Logs/Trans.	Sick Call Prep	Med Pass Prep	Orders/ Med Admin Mgmt	Treatment Mgmt	Other*
KCCF							
D1 - RN	2,923	731	731	0	0	0	1,462
D2 - RN	2,923	1,111	731	0	0	58	1,023
D3 - RN	2,923	380	555	380	0	0	1,608
D4 - RN/LPN	2,923	0	0	731	409	0	1,783
D Infirmary - RN	2,923	555	88	0	0	380	1,900
Day ITR - RN	5,846	1,754	0	0	0	175	3,917
D Psy-R	2,923	351	0	0	88	88	2,397
D Psy-SA	2,923	263	0	263	175	409	1,812
E1 - RN	2,923	555	175	0	58	0	2,134
E2 - RN	2,923	702	643	0	0	0	1,579
E3 - RN	2,923	555	58	848	0	0	1,462
E4 - RN/LPN	2,923	0	0	994	117	0	1,812
E Infirmary - RN	2,923	555	0	0	0	906	1,462
E ITR - RN	5,846	2,572	0	0	0	0	3,274
E Psy-R	2,923	643	0	351	88	88	1,754
E Psy-SA	2,923	88	0	731	88	88	1,929
N Infirmary - RN	2,923	380	0	0	0	1,111	1,432
N ITR - RN	2,923	1,023	0	0	0	0	1,900
N Float - RN	2,923	1,023	0	0	0	0	1,900
N Psy	2,923	935	0	0	0	0	1,988
Total RN	64,310	14,178	2,982	4,297	1,023	3,303	38,528
LPN							
D Clinic - LPN	5,011	1,904	0	0	0	0	3,107
D Psy	2,923	380	0	0	88	88	2,368
D Infirmary - LPN	2,923	0	0	380	1,023	0	1,520
D2 - LPN	2,923	0	0	731	409	0	1,783
E Clinic - LPN	2,088	1,044	0	0	0	0	1,044
E Infirmary - LPN	2,923	994	0	555	0	0	1,374
LE2 - LPN	2,923	0	0	994	263	0	1,666
N Infirmary - LPN	2,923	731	0	731	0	0	1,462
N Float - LPN	2,923	1,111	0	380	0	0	1,432
Total LPN	27,562	6,164	0	3,771	1,783	88	15,756
RJC							
D1 - RN	2,923	877	818	0	0	0	1,228
D2 - RN	2,923	1,111	0	731	146	438	497
12 - 8 RN	2,923	731	0	0	292	292	1,608
HA - RN	2,088	626	0	0	104	271	1,086
DM - RN	2,923	292	292	292	146	292	1,608
D ITR - RN	2,088	731	0	0	0	209	1,148
E1 - RN	2,923	731	438	0	88	88	1,579
E2 - RN	2,923	818	585	0	0	175	1,345
EM - RN	2,923	731	292	205	292	175	1,228
NF - RN	2,923	175	380	0	175	88	2,105
Total RN per 24 hrs	**27,562**	6,824	2,806	1,228	1,244	2,030	13,430
DHA - LPN	2,088	1,044	0	0	0	0	1,044
DL - LPN	2,923	731	0	731	88	0	1,374

Clinic - LPN	2,088	1,148	0	0	0	104	835
EL - LPN	2,923	292	0	877	585	0	1,169
NM - LPN	2,088	418	0	209	0	0	1,462
Total LPN	12,110	3,633	0	1,817	672	104	5,884
Total RN	91,872	21,001	5,788	5,525	2,268	3,391	51,958
Total LPN	39,672	9,797	0	5,587	2,455	192	21,640
JHS Total	131,544	30,798	5,788	11,112	4,723	3,583	73,598

*Other: Med pass, triage, giving treatments, narcotic counts, stocking, med verification, kite pickup, emergencies report, responding to pager, consults, cleaning patient contact areas, rounds, and visual observations

Reprinted from Volume 18, Number 1 ● Winter 2004

JOURNAL OF HEALTHCARE INFORMATION MANAGEMENT

Original Contributions

The Economic Effect of Implementing an EMR in an Outpatient Clinical Setting

Scott Barlow, MBA, Jeffrey Johnson, MD, Jamie Steck, MBA

ABSTRACT

Central Utah Multi-Specialty Clinic, a 59-physician group with practices in nine locations treating 200,000 active patients, documented the economic impact of implementing an electronic medical record. During the one-year period of the study, the clinic experienced direct reductions in spending and increases in revenue of more than $952,000 compared with the prior year, and anticipates cumulative savings of more than $8.2 million over the next five years.

KEYWORDS

• Electronic medical record (EMR) • Electronic health record • Document imaging • Coding • Evaluation and management (E/M) codes

Interest in using information technology to quickly create and easily access a complete clinical note as well as automate clinical workflow has led many healthcare institutions to consider adopting an electronic medical record (EMR). The EMR is widely assumed to provide qualitative benefits (easier access to information, greater patient and provider satisfaction, improved patient safety, etc.), yet there is limited data regarding the economic benefits of EMR to an institution. This dearth of evidence is especially vexing because a majority of healthcare organizations cite lack of funding as the most common constraint in implementing clinical information technology solutions like an EMR.[1]

To better understand the financial impact of an EMR, we conducted an extensive evaluation of an EMR at a large, multi-specialty and multi-site ambulatory physician practice. Our study analyzed expenditures related to maintaining patient records at Central Utah Multi-Specialty Clinic (CUMC) in the 12 months following the EMR's implementation (April 1, 2002 to May 30, 2003) and then compared these figures with identical data collected during the prior 12-month period (April 1, 2001 to May 30, 2002).

CUMC is the largest independent multi-specialty group in the state of Utah, with 59 physicians and nine locations. The organization has been growing rapidly, more than doubling the number of physician specialists on staff in less than two years – from 26 in 2001 to 59 in 2003 – and CUMC's strategic plan projects this growth to continue for the foreseeable future. The high growth rate, multi-specialty focus of the organization, and multiple sites pose significant challenges to the clinic's ability to manage patients' clinical records. On April 1, 2002, CUMC implemented the TouchWorks™ electronic medical record, developed by Allscripts Healthcare Solutions of Chicago, IL.

Expenditures analyzed by the study related to five primary areas that were directly affected by the clinic's implementation of an EMR: (1) expenses for transcription of physicians' dictated clinical notes; (2) expenses for pulling, filing, and maintaining charts for current patients; (3) expenses for developing charts for new patients, including the purchase of paper supplies and personnel costs; (4) changes in reimbursement due to coding levels; and (5) physical space requirements for storage of patient charts.

Study Data

Transcription. Prior to April 1, 2002, the clinic experienced significant clinical and financial challenges to the management of patients' clinical records. These challenges, such as the expense of medical transcription, are identical to those faced daily at tens of thousands of healthcare facilities worldwide. It has been estimated that the medical industry spends between $10 billion and $12 billion per year on transcription and managing medical records.

At CUMC, by the time the EMR was implemented, transcription expenses for physicians had begun to exceed $1 million per year. These costs were incurred whenever physicians chose to dictate their clinical notes into a recording device rather than handwrite them into the paper chart. The dictated note was then transmitted via phone line to a professional transcription service, which turned it into a paper record and faxed it back to the clinic for filing. The process resulted in delays of up to three weeks before the transcribed note was added to a patient's master chart.

The study analyzed expenses for transcription services over the 12 months prior to EMR implementation, considering expenditures at the level of individual physicians, entire specialties, and the organization as a whole. We analyzed the subsequent impact of implementing the EMR's note application – which reduced or, in some cases, eliminated the need for transcription – by comparing these figures with post-implementation expenditures on transcription.

Chart Maintenance. Among the biggest challenges faced by CUMC prior to implementation of the EMR was the difficulty of accessing clinical information stored in paper charts across multiple locations (the clinic, which currently has nine sites, had eight during the study period). CUMC was developing more than 20,000 charts per year, significantly complicating the issue of limited physician space available in the clinic.

Physicians and nurses frustrated by delays in accessing patient charts commonly created so-called "shadow charts," or multiple charts for the same patient, and kept them at their desks for easy access. This practice typically resulted in delays in the delivery of patient care as clinical personnel were forced to search the facility for a complete record.

Expensive clinical tests were occasionally repeated unnecessarily because a portion of the paper record could not be located. Moreover, maintaining CUMC's nearly 200,000 paper charts (130,000 of them active) required expensive staffing of the chart room and chart-management process, diverting resources from CUMC's core mission of patient care.

The study analyzed expenses for pulling, filing, and maintaining charts for current patients, based on an estimate of the amount of time devoted to current patients' records by the 10.2 full-time-equivalent (FTE) employees involved in chart management during the study period. Expenses for developing charts for new patients were analyzed, assessing an average cost of developing a new chart, both in terms of labor and supplies.

Coding Levels. Prior to the implementation of the EMR, CUMC physicians faced a challenge that is typical in the healthcare industry – appropriate documentation for the appropriate level of care. In general, the more highly compensated interactions (and thus codes) require the most stringent documentation. Physicians often lacked confidence in their documentation and, as a result, were likely to "downcode," choosing the less restrictive (and lower compensated) reimbursement codes, thereby causing significant monetary losses for their practices.

The study compared the percentage of patient visits that were coded 99213 (problems of low to moderate severity) and 99214 (problems of moderate to high severity) in 2000-2001 and during the study period. The percentage differ-

ence over the two periods was used to gauge the revenue impact of implementing the EMR's note application, which provides templates to help better document the level of care provided. The application enhances billing and reimbursement by decreasing the incidence of under- and over-coding by recommending the appropriate evaluation and management (E/M) code based on the level of care that was documented.

Storage Requirements. The necessity of storing vast numbers of patient charts on-site created significant practical problems for CUMC, including a significant negative financial impact. The clinic is currently adding about 20,000 new patient records per year. In the last two years alone, CUMC purchased several large rolling racks to accommodate the growth in the number of paper charts. Pressed for space, the clinic was forced to convert a conference room previously used for meetings of the board of directors and executive management into chart storage. Other space, which might otherwise be used to generate revenue, was also being converted to chart storage.

The study analyzed the amount of space dedicated to chart storage in a new facility under construction by CUMC to gauge the expected space-saving benefit of implementing the EMR. In addition, the required chart racks and miscellaneous build-out expenses were calculated. For the purposes of this analysis, the incremental revenue associated with the use of the additional space for revenue generating activities was not included.

Figure 1. Cumulative Financial Impact of EMR

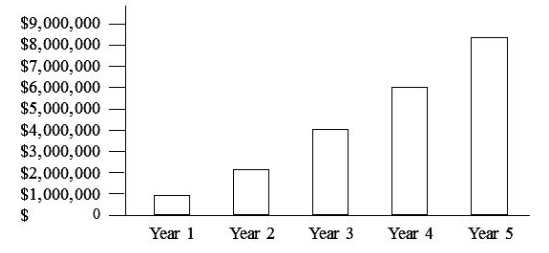
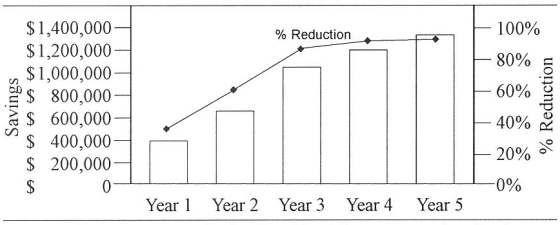


Figure 2. Projected Annual Reduction in Transcription Expenses



Note: Year 1 represents realized savings. Year 2-5 represents projected savings.

"The EMR has reduced the need for transcription across CUMC by allowing physicians multiple options for documenting a patient encounter."

Results

Organization-Wide Financial Impact of the EMR. Soon after CUMC implemented the EMR on April 1, 2002, the clinic's management of patient records began to improve radically. The change followed a nearly five-year search for an EMR, during which time CUMC personnel examined more than 40 different products. In the end, CUMC decided that the EMR offered the best software feature set, a proven ability to integrate with the practice management system from IDX Systems used by the clinic, and a track record for quickly gaining physician utilization of the new system.

Today, for the first time, physicians are consistently able to access appropriate clinical information instantly from any of their clinics, as well as any hospital or even from home. As a direct result of implementing the EMR, CUMC has dramatically reduced its transcription expenses; cut its staffing requirements for chart pulling, filing, and maintenance; eliminated the cost of building charts for new patients; eliminated the need for chart storage space in its newest facility; and generated increased revenues through improved E/M coding.

Our analysis indicates that, in its first year of operation, the EMR had a $952,000 positive financial impact on the clinic's bottom line, both in terms of increased revenues and reduced operational expenses. Based on these findings, our conservative estimate is a positive financial impact of more than $8.2 million over the next five years (see figure 1).

Savings from Reduced Need for Transcription Services. The EMR has reduced the need for transcription across CUMC by allowing physicians multiple options for documenting a patient encounter. They can use both structured and unstructured note templates to record certain elements of the patient encounter and limit dictation to more complex citations.

The templates have proven to be a vast improvement over handwritten notes. They leverage the Medcin® database of 200,000 medical terms, utilize structured data entry for standardized clinical terminology and searchable clinical findings, and automatically calculate E/M codes. Additionally, the application automatically populates components of the note as a byproduct of caring for the patient. For example, when writing a prescription, the medication list is automatically updated in the note.

Templates represent a significant transition from dictation and this initially raised some concerns with physicians. In order to address this concern, CUMC provided the option to physicians to continue to use dictation when required. For example, in certain complex encounters it may be more efficient to dictate part of the note. The system allows for this combined approach.

In cases where physicians dictate, the EMR captures the dictation electronically, automatically routes it to the transcription service, and stores the completed transcription in the electronic patient record with an electronic signature. Physicians can then access their completed notes from virtually anywhere, even using a PDA. Where dictation is still used, it is combined with templates to create a compound note. This further limits spending on dictation.

As a result of these improvements to

the physician record-keeping process, CUMC physicians reduced their expenditures on transcription services by 35 percent or $380,000 in the one-year period of the study. As physicians' comfort levels with templates further increase, we estimate CUMC physicians will reduce their use of dictation by 90 percent, representing a $4.5 million savings over five years (see figure 2).

TABLE 1. SAVINGS DIRECTLY RELATED TO EMR IMPLEMENTATION

AREA	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTAL
Savings Due to Lower Space Requirements	$248,000	-	-	-	-	$248,000
Cost Avoidance Due to No Increase in Chart Room FTEs while Patient Volume has Doubled	$61,692	$67,861	$74,647	$82,112	$90,323	$376,634
Savings via Chart Room FTEs Reduction Through Attrition	-	$63,679	$63,679	$63,679	$63,679	$254,717
Savings Due to Eliminating Development of Charts for New Patients	$160,000	$176,000	$193,600	$212,960	$234,256	$976,816
Increased Revenue Due to Improved E/M Coding	$103,059	$283,413	$415,673	$457,240	$502,964	$1,762,349
Savings Due to Lower Transcription Expenses	$380,000	$660,000	$1,028,500	$1,197,900	$1,317,690	$4,584,090
TOTAL	**$952,751**	**$1,250,953**	**$1,776,099**	**$2,013,891**	**$2,208,912**	**$8,202,606**

Savings from Decreased Labor and Supply Costs for Chart Maintenance and Creation. In recent years, CUMC's physician staff and patient population have both expanded rapidly. During the course of this study, the clinic doubled physician staff (from 26 to 52 physicians) and acquired thousands of new patients. This rapid growth rate placed added pressure on the clinic's paper chart management system. Prior to implementation of the EMR, CUMC staff pulled nearly 1,000 charts per day, including approximately 450 to 550 for scheduled patients and another 450 for walk-ins or individual chart requests. To meet this demand, at the beginning of the study period CUMC had 10.2 FTEs dedicated to managing charts (e.g., file clerks).

The implementation of the EMR allowed CUMC to dramatically reduce its reliance on paper charts. During the study period, the number of chart requests to the records room fell by 35-40 percent. As a result, the clinic was able to avoid increases to FTE chart room staffing, even as the patient load rose significantly.

To estimate the savings in chart-related personnel costs due to implementation of the EMR, we assessed a projected patient load increase of 10 percent annually for the next five years. That figure is fairly conservative, considering CUMC's physician staff increased from 26 to 52 during the one-year study period. Based on this increase in providers, we project that CUMC would have needed to increase chart-related staff by approximately 30 percent, or three FTEs, to handle the associated increase in demand, assuming the EMR had not been implemented. Since the EMR allowed a zero net increase in chart-related FTEs, this represents a savings of $61,692 in the first year of implementation and close to $376,634 over the next five years (see table 1).

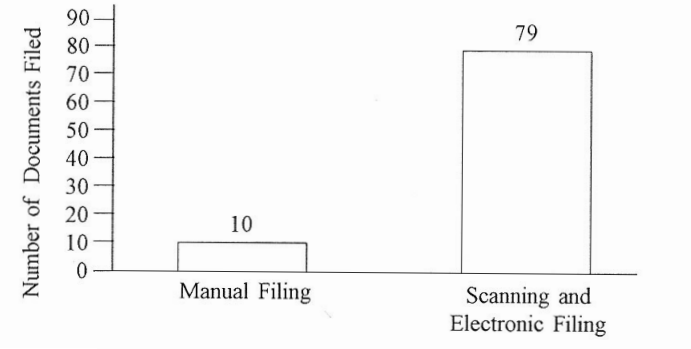
"During the study period, the number of chart requests to the records room fell by 35-40 percent."

Additionally, as CUMC transitions to a completely paperless environment in July 2003, we anticipate an additional 30 percent reduction in chart room FTEs as a result of attrition (two FTEs have already been eliminated), as traditional chart-related activities are replaced with tasks such as electronically scanning documents. This amounts to an additional savings of $254,717 over five years, for a total savings of $631,351 in chart-related personnel costs.

One of the key components of the system that enabled CUMC to transition to a completely paperless environment was document imaging, the conversion of paper documents to electronic images. The EMR allows CUMC staff to electronically scan into the computer system existing paper charts and other non-automated documents, such as written correspondence. Scanned documents are available to physicians via the EMR instantly – a significant improvement over the old system, which often required up to three weeks for paper documents to make it into a patient's chart.

In addition to simplifying access to information, scanning has proven to be more efficient from a resource perspective. We conducted a study to validate the effectiveness of scanning versus manual filing and found that CUMC staff were able to file 79 scanned documents in the same amount of time required to file 10 documents manually – a nearly 800 percent increase in productivity (see figure 3).

FIGURE 3. PRODUCTIVITY COMPARISON OF MANUAL DOCUMENT FILING VS. SCANNING/ELECTRONIC FILING (IN THE SAME PERIOD OF TIME)



Further savings can be expected from a reduction of labor and supply costs associated with the creation of paper charts for new patients. We have assessed the average cost of developing a new chart, both in terms

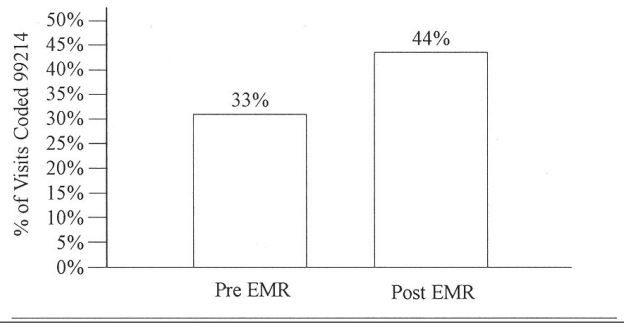
of the labor involved and the supplies, to be $8 per chart. Based on an estimated annual increase in patient load of 20,000, this amounts to $160,000 per year saved by the EMR's elimination of new paper charts. Over five years, this savings amounts to $976,816 (see table 1).

Even more savings could be estimated if we were to consider potential savings. For instance, we estimate that the EMR results in a 15 percent reduction (1.2 hours per day) in the amount of time CUMC RNs and medical assistants spend working with and/or searching for patient records. Based on a conservative estimate of an average 8-hour workday, this would amount to an annual savings of at least 312 hours per RN/MA. However, since these are potential and not actual savings, and since CUMC does not project targeting savings by adjusting clinical staffing, we did not include the estimate in our final calculation.

Savings and Revenue Generated from Increased Coding Levels. As noted above, prior to the implementation of the EMR, CUMC physicians were likely to "downcode," choosing the less restrictive (and lower compensated) E/M codes, thereby causing significant monetary losses for their practices. Leveraging the EMR's templates during the course of the study, the clinic's physicians were able to better document the level of care they rendered, enabling an increase in coding levels. The EMR includes an automatic E/M code calculator that recommends the proper code based on the level of care that they have electronically documented.

To evaluate the impact of the EMR on revenue generated by E/M coding, the study compared the percentage of patient visits that were coded 99213 (problems of low to moderate severity) and 99214 (problems of moderate to high severity) in 2000-2001 and during the study period. We found an 11 percent overall increase in the appropriate use of 99214 codes that would previously have been coded 99213 (see figure 4). To ensure the accuracy of this finding, the CUMC compliance committee retrospectively audited the use of 99214 codes and found them to have met the proper documentation levels. The resulting reduction in downcoding due to the EMR produced an average billable gain of $26 per patient during the study period, for a total positive revenue impact of $103,059. Over a five-year span, we estimate that CUMC will generate $1,762,349 in revenue gains as a direct result of physicians utilizing the EMR's templates to improve documentation and coding.

FIGURE 4. PERCENTAGE OF VISITS CODED 99214 - PRE AND POST EMR



"Scanned documents are available to physicians via the EMR instantly – a significant improvement over the old system, which often required up to three weeks for paper documents to make it into a patient's chart."

Decreased Physical Space Requirements Due to Paperless Record. CUMC is building a new facility next to its main clinic in Provo, Utah. Thanks to the elimination of paper records for new patients, there will be no records room in this new facility, resulting in a projected savings of $248,000. This figure accounts for space, the cost of a storage rack system, and miscellaneous build-out expenses. Additionally, CUMC has downsized its physical space requirements for record storage in existing buildings. Several chart storage rooms are slated to become offices or exam rooms in the near future. Our calculations do not include the incremental revenue that will be generated by the transformation of storage space into revenue-generating areas.

Discussion

While the EMR is widely assumed to provide qualitative benefits to the provision of patient care (easier access to information, greater patient and provider satisfaction, etc.), there is limited data regarding its economic benefits to an institution. Our study suggests that implementation of an electronic medical record can quickly produce a significant economic benefit for a healthcare institution, resulting in substantial savings and increased revenue. This provides the economic justification for the investment in a technology that CUMC believes will have a significant impact on patient outcomes. The ability to receive health maintenance alerts and notification of potential drug interactions, to graph results, to instantly access information anywhere at any time, to improve communication between providers, and to have the assurance of a complete patient record, all will play a major role in improving patient outcomes.

A number of potential limitations should be considered in interpreting these results. The evaluation was carried out at a single organization that was not part of an integrated delivery network. Additionally, larger clinics, such as CUMC, have a greater ability to invest in information technology, considering that the expenses can be spread over a larger number of physicians. Considering these institution factors, the results may not be applicable in all settings. However, it is important to note that CUMC is a large multi-specialty clinic with several locations and a diverse patient population, which may lend credence to the generalizability of the results.

Overall, disappointingly few studies have examined the financial case for EMR. However, some data are available.

In the ambulatory setting, Renner performed a study of a 40-physician ambulatory care medical group and estimated a net present value for the EMR system of $279,670.[2] And Wang[3] estimated that electronic medical records would save the average primary care provider an estimated $86,400 over five years, compared to traditional paper-based methods. Benefits cited include reduced drug spending, reductions in radiology, decreased billing errors, and improved charge capture for billing.

There have been additional studies that have focused on savings at a macro level. A recent analysis for the Massachusetts Technology Collaborative[4] concluded that, assuming a physician adoption rate of 75 percent, the annual net benefit to the state would be $290.3 million. This research also concluded that EMRs would eliminate 47,000 preventable adverse drug events (ADEs). An additional assessment by the Center for Information Technology Leadership[5] concluded that ambulatory computerized physician order entry (ACPOE) can save approximately $44 billion per year in reduced medication, radiology, laboratory, and ADE-related expenses per year. The report also concluded that ACPOE could eliminate more that $10 in rejected claims per outpatient visit.

Our analysis did not contemplate savings in areas such as drug spending and radiology, as there was not a direct economic benefit to the organization. Depending on the location and environment, these savings might be more applicable.

Taken together, these data confirm our findings that financial benefits will accrue to healthcare institutions from the implementation of an EMR. Moreover, the benefits may accrue more quickly, as in the case of CUMC, than most past studies have projected.

About the Authors

Scott Barlow, MBA, (sbarlow@cumcmds.com) is the chief executive officer for Central Utah Multi-Specialty Clinic.

Jeffrey Johnson, MD, (jjohnson@cumcmds.com) is an internist and the physician lead for EMR implementation at Central Utah Multi-Specialty Clinic.

Jamie Steck, MBA, (jsteck@cumcmds.com) is director of information technology at Central Utah Multi-Specialty Clinic.

References

1. Medical Records Institute. *MRI Survey of Electronic Health Record Trends and Usage*. 2003.
2. Renner, K. "Cost-Justifying Electronic Medical Records." *Healthcare Financial Management*, 1996, 50: 63-64.
3. Wang, S. J., Middleton, B., and others. "A Cost-Benefit Analysis of Electronic Medical Records in Primary Care." *American Journal of Medicine*, April 1, 2003, 114: 397-403.
4. First Consulting Group, report prepared for the Massachusetts Technology Collaborative. Advanced Technologies to Lower the Cost of Health Care and Improve Quality. Fall 2003, pp. 19-20.
5. Center for Information Technology Leadership. The Value of Computerized Provider Order Entry in Ambulatory Settings. 2003.

Medical Records Assessment Survey Overview

Compiled and written by Steven Kleyn

Introduction

A survey entitled "Medical Records Assessment Survey" was sent out to the Jail Health Services clinical and non-clinical staff on February 9th, 2005. The purpose of this survey was for Jail Health Management and the Electronic Health Record (EHR) project team to evaluate the opinions of Jail Health employees regarding the effectiveness of the current paper-based medical records system as well the importance of particular medical records issues as a contribution to the quality of care provided. Furthermore, management and the EHR team wanted to appraise the thoughts of employees regarding the implementation of an Electronic Health Record. Two separate surveys were sent out, one for clinical staff and one for non-clinical staff, with some questions consistent across both surveys and some questions specific to a particular survey. The survey was optional, but once began, some questions were mandatory in order to reduce the error percentage and bring about consistent data. The survey was open for responses for 10 days, until February 18th, 2005.

Current Medical Records System

Thirteen of the seventeen medical records-related questions were structured in a rating scale form. In most cases, each employee was charged with assessing the "importance" of the issue and "satisfaction" with the current practice at Jail Health by rating the issue on a scale of 1 to 5. An answer of "1" denoted "Not Important/Satisfied" and an answer of "5" indicated "Very Important/Satisfied". **Forty-seven** clinical staff and **eighteen** non-clinical staff responded to the survey. The following table lists the results of all seven questions that were asked in both the clinical and non-clinical surveys.

Results of Questions asked of Clinical and Non-Clinical Staff

	Clinical Staff		Non-Clinical Staff	
Question	**Importance of Issue Avg. Rating**	**Satisfaction with Current Practice Avg. Rating**	**Importance of Issue Avg. Rating**	**Satisfaction with Current Practice Avg. Rating**
Organization of patient records	4.64	2.63	4.67	3.11
Ease of accessing a patient's MR	4.79	2.33	4.67	2.67
Confidentiality and security of patient records	4.72	3.54	4.83	3.39
The efficiency with which you can communicate patient info.	4.57	2.61	4.39	2.83

The medical records system contributes to the quality of care provided	4.68	2.46	4.78	2.83
Degree of confidence in the current Route and Transfer system	N/A	2.20	N/A	2.44
Effectiveness of Route and Transfer system	N/A	2.30	N/A	2.25

Please note the similarity of clinical and non-clinical answer average. Every medical record-related issue averaged high importance, while satisfaction with current practice typically lingered a little below "3" across both the clinical and non-clinical surveys. This is an important finding because these are the individuals who understand the system inside and out. When assessments from separate viewpoints are so striking in likeness, it emphasizes the weaknesses in the system as well as the staff knowledge of and constant interaction with these weaknesses. As a result of the weaknesses inherent in the paper-based medical records system, best practice is not being put forth.

Beyond the questions asked of both clinical and non-clinical staff, there were some questions that were specifically asked of each group, based on their area of expertise and knowledge of the current system. Here are the results of the current medical records system questions asked of clinical or non-clinical staff only.

Results of Questions Asked of Clinical Staff Only

Question	Clinical Importance of Issue Avg. Rating	Clinical Satisfaction with Current Practice Avg. Rating
Ease of finding specific information within a patient's medical record	4.74	2.70
Ease of tracking results of clinical operations	4.36	2.20
Ease with which medical records help prevent overlooked patient information	4.49	2.15
Medical records as a tool to help deliver preventive care	4.26	2.65
Systems are in place to prevent prescriptions for medications that might result in allergic drug reactions or drug-drug interactions	4.85	2.80

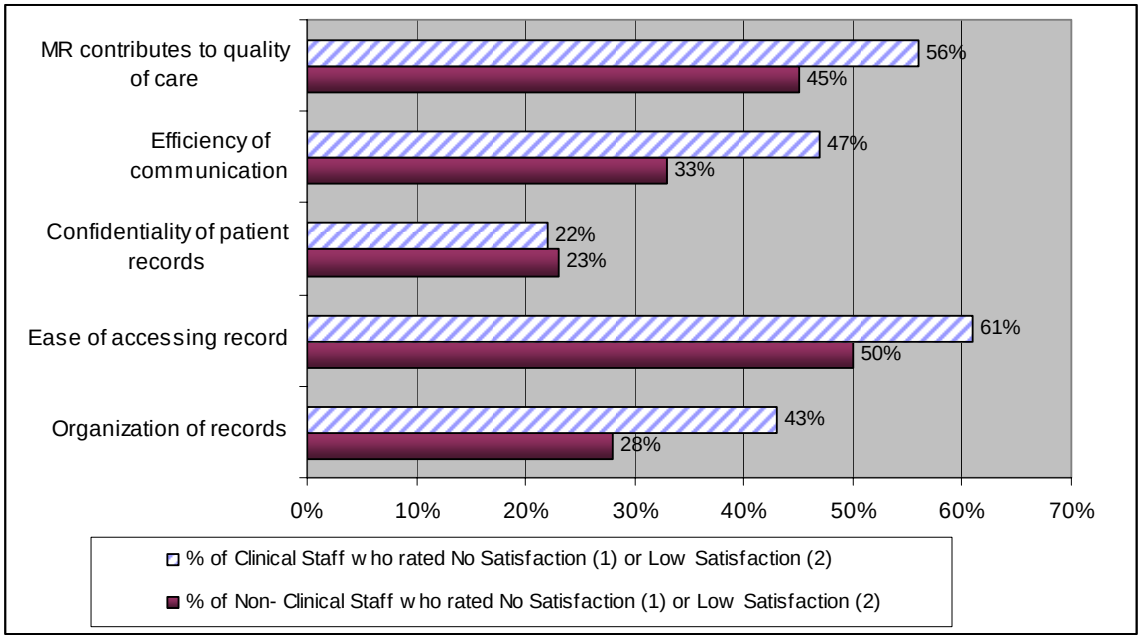
Results of Questions Asked of Non-Clinical Staff Only

Question	Non-Clinical Importance of Issue Avg. Rating	Non-Clinical Satisfaction with Current Practice Avg. Rating
Accessibility of medical record information	4.72	2.61

Information is accurately and clearly documented by clinical staff into the medical record	4.61	2.72
Contribution of medical records to the overall efficiency of business operations	4.50	2.83
Minimal time spent accessing medical records	4.50	2.33
The medical records system contributes to the overall quality of work life	4.33	2.67

The low satisfaction rates suggest that the current medical records system at JHS is marginally effective, consuming unnecessary time and resources. There was a high rate of dissatisfaction among clinical and non-clinical staff with particular medical-records related issues, as shown in the graph below, which notes the dissatisfaction percentage of each of the 5 statements asked of both clinical and non-clinical staff.

JHS Staff Dissatisfaction with Current Medical Records Issues



Furthermore, the following statements asked individually of clinical or non-clinical staff returned a result of at least **50%** of the staff claiming No Satisfaction (1) or Low Satisfaction (2).

<u>Clinical Staff</u>

- Ease of tracking results of clinical operations (58% dissatisfied)
- Ease with which medical records help prevent overlooked patient information (63% dissatisfied)

<u>Non-Clinical Staff</u>

- Accessibility of medical record information (50% dissatisfied)
- Minimal time spent accessing medical records (61% dissatisfied)

Electronic Health Record

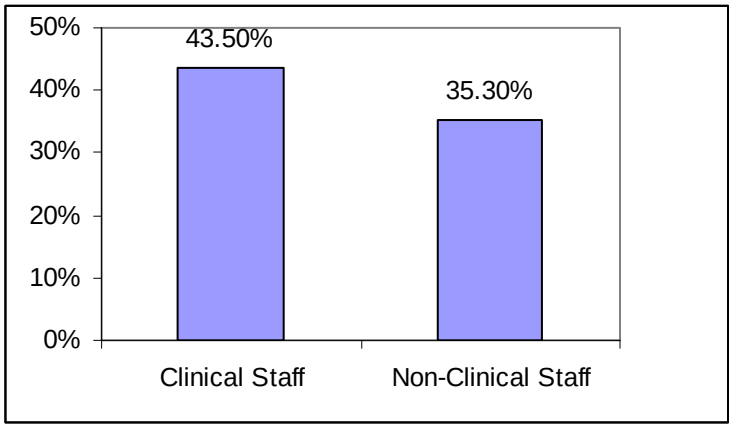
The Electronic Health Record section of the Assessment Survey was designed for JHS Management and the EHR Project Team to gain a preliminary measurement of staff's thoughts about the implementation of an electronic health record. This section of the survey began with an open-ended statement: "Describe the ways you feel an Electronic Health Record would benefit our current practice." There was an overwhelming response of answers by staff as to the virtues and benefits of an EHR. Some of the responses include:

- "We will eliminate the need to find charts all the time and to send records back and forth between sites and archives."
- ". . . Very beneficial in terms of instant access for both sites to patient medical information."
- "It will greatly reduce medical errors while providing us a favorable return on investment over time."
- "Instant, up to date information on patients, which is crucial for providers."
- "Better organization of information; easier access to information; more effective patient care; better communication among staff; less care overlooked."
- "EHR would greatly assist in a higher efficacy of health care delivery in JHS. Ease in accessing information, increased speed in obtaining information, less time spent physically searching for charts and patient information would be more cost effective for the department and allow for better time management of staff."
- "It would allow timely communication between all providers, from prescription writer to pharmacy to prescription deliverer."

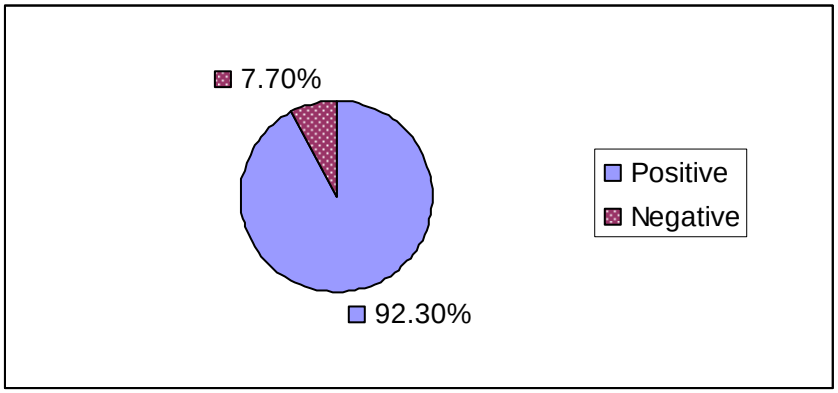
The only complaint, which was mentioned twice out of 47 total comments, was fear of potential technology and computer system problems.

The next question asked respondents to asses their experience with an Electronic Health Record. The graphs below note the percentage of JHS Staff with previous EHR experience and the positive percentage rate of those with previous experience.

Percentage of JHS Staff Respondents with Previous EHR Experience



Self-Assessment of Previous EHR Experience



Of the 46 clinical responses, 26 (56.5%) did not have previous EHR experience, while 20 (43.5%) did have previous experience. Of the 17 non-clinical respondents, 11 (64.7%) did not have experience, while 6 (35.3%) did have experience. Those with EHR experience were asked to comment on their experience, and once again, the result was overwhelmingly positive:

- "As a patient, I receive seamless care!"
- "I have worked in several health care organizations where EHR was extremely beneficial in accessing and entering clinical data which greatly reduced the need for hardcopy materials."
- "People were initially resistant, but after about a year they wouldn't ever think about going back to the old system."
- "My Primary Care Provider uses an electronic health record, so I have experience from the patient side, and this has been VERY positive."

Computer Skill Level

The survey asked one question regarding the level of computer skill in order to assess the level of training and time for adaptation that may be involved with the implementation of an EHR. An answer of "1" was designated as beginner, "3" as sufficient, and "5" as proficient. The results of this survey are below.

Question	Clinical Respondents Avg. Response	Non-Clinical Respondents Avg. Response
What is your current level of computer skill?	3.46	4.29

Even with the technological impediment, notably on the clinical side, not a single employee mentioned lack of computer skill as an obstruction to effective implementation and use of an EHR.

Demographics

Respondents were given the option to give their name, work site, shift, employment status (Career Service, Agency, etc.), and team affiliation. This information allows management to have an even greater understanding of the responses and the viewpoints they are coming from.

Conclusion

There are health care delivery weaknesses in all systems that incorporate the use of a paper medical record. This problem is not specific to Jail Health Services, but is a community-wide predicament. The goal of this survey was to assess importance and satisfaction of JHS staff with the current system and give hard data to support what the Wellcon Report confirmed in 2003: At JHS there are many inefficiencies and deficiencies in the system related to the current medical records system. The results of the survey confirm the belief that implementation of an EHR will greatly reduce many of these weaknesses and increase staff satisfaction in their work.

JHS and DAJD Interface Grid

		JHS Rely on DAJD for				DAJD Rely on JHS for		
	Business Requirement Reference	Primary Data	Resources	Auxilary Data				
INTAKE								
Ability to, in real-time, interface with Department of Adult/Juvenile Detention (DAJD) system to capture Initial Receiving data. a. Ability to enter data directly into the EHR when DAJD interface is unavailable. b. Ability to automatically synchronize DAJD and EHR systems when interface becomes available again. 1. When synchronization occurs, notify System Administrator, via priority e-mail, when data discrepancies occur. 2. Produce "report" of data fields in conflict.	**2-3-1.1 #1**							
Assign Medical Record Number (MR#) for first time offenders. 🡻	**2-3-1.1 #2**							
Ability to capture, store, modify Initial Receiving Assessment during intake of offenders, including: a. Patient demographics b. Arresting Information c. Observations d. Medical Problems e. Mental Health f. Substance Abuse/Alcohol g. Current Prescription Medications h. Medication Allergies i. Food Allergies j. Female data k. Disposition	**2-3-1.1 #3**							
Based on positive Initial Receiving Assessment responses, application will automatically trigger events.	**2-3-1.1 #4**							
Ability to interface with Signature system to assure only one medical record number has been assigned to the same individual. Match clients, at a minimum, on: a. Name b. Date of birth	**2-3-1.1 #5**							

🡻 = A subsection of information is continued below, but not included here

		JHS Rely on DAJD for				DAJD Rely on JHS for		
	Business Requirement Reference	Primary Data	Resources	Auxilary Data				
Ability to provide or interface with a symptom-based decision support module for medical triage to assist clinical staff with pathways/guidelines for assessing and responding to presenting symptoms.	**2-3-1.1 #6**							
Capacity to interface or link with King County Mental Health system.	**2-3-1.1 #8**							
Ability to produce copies of patient history forms or screens for patient self reporting of history in multiple languages.	**2-3-1.1 #11**							
KITE/TRIAGE								
Ability to provide or interface with a symptom-based decision support module for medical triage to assist clinical staff with pathways/guidelines for assessing and responding to presenting symptoms.	**2-3-1.1 #6**							
System maintains a master file of problems including the following information: a. Problem code (table driven). b. Problem category (table driven). c. Problem description (unlimited free text). d. Multiple associated diagnoses.	**2-3-1.2 #1**							
System maintains, at a minimum, the following problems: a. Psychiatric Problems. b. Medical Problems. c. Nursing Problems. d. Social Problems. e. Family Problems. f. Substance Abuse Problems. g. Housing Problems. h. Dental Problems. i. Miscellaneous Problems.	**2-3-1.2 #2**							
Ability to build a Problem List during intake and during stay of offenders including the following: 🡻	**2-3-1.2 #3**							
Allow authorized users to add problems to problem list in following way: 🡻	**2-3-1.2 #4**							

🡻 = A subsection of information is continued below, but not included here

		JHS Rely on DAJD for				DAJD Rely on JHS for		
	Business Requirement Reference	Primary Data	Resources	Auxilary Data				
Ability to subcategorize problems by status: chronic, acute, recurrent, episodic, special needs.	**2-3-1.2 #5**							
Allow authorized user to determine which relevant items collected at a prior point, either during referral, admission or a prior episode of care, can be continued over to an Assessment.	**2-3-1.3 #2**							
Assessments are integrated with the Health Treatment Planning and Notes module.	**2-3-1.3 #8**							
Provide the ability to display and maintain Medical and Mental Health Assessment information.	**2-3-1.3 #15**							
Ability to link together with each problem the internal encounters where this problem was addressed, diagnostic tests ordered, external referrals ordered and status of referrals.	**2-3-1.3 #19**							
Ability to provide screening tools and clinical risk assessment calculators for: ↓	**2-3-1.3 #20**							
When Treatment Plan elements are also gathered automatically from other modules of the system (e.g., assessments, progress notes from previous episode, medications), data are shared with Treatment Plan and vice versa.	**2-3-1.4 #9**							
System maintains different note categories, including: d. Progress Note documentation is driven by the encounter so each treatment plan goal and intervention has associated progress notes. ↓	**2-3-1.5 #1d**							
System maintains Summary Notes including, at a minimum, the following: a. Progress Notes including: 1. Selection of problems, goals or objectives being addressed by note 2. Severity ratings of selected active problems 3. Shift Notes 4. Discharge Planning Note 5. Treatment Plan Review Conference Note ↓	**2-3-1.5 #2a**							
System provides the capability to capture other types of Notes: e. Ability to build a Problem List ↓	**2-3-1.5 #5e**							

↓ = A subsection of information is continued below, but not included here

		JHS Rely on DAJD for				DAJD Rely on JHS for		
	Business Requirement Reference	Primary Data	Resources	Auxilary Data				
Ability for disciplines to enter, correct, authenticate notes. ↓	**2-3-1.5 #6**							
Ability for disciplines to append authenticated notes. ↓	**2-3-1.5 #7**							
Ability to capture JHS internal program referrals, including: ↓	**2-3-1.10 #1**							
Ability to capture external referrals, including: ↓	**2-3-1.10 #2**							
Ability to create trend reports for reasons for referrals, referrals by providers, reasons for denials, etc.	**2-3-1.10 #6**							
Ability to capture, store, modify Admission information, including: ↓	**2-3-1.11 Admission #1**							
Ability to capture, store, modify Discharge Information, including: ↓	**2-3-1.11 Discharge #1**							
Ability to capture, store, modify Transfer information, including: ↓	**2-3-1.11 Transfer #1**							
Decision Support: a. Ability to support dental triage system to assist nurse on determining need for a dental referral based on information at intake.	**2-3-2.3 #2a**							
Clinical Decision Support system (CDS) r. Ability to display reminders/alerts based on past history, including social/family history as well as medical history z. Provide reminders linked to problems on problem list. al. Support RN triage screening system for use at jail intake, with pathways/guidelines. ↓	**2-3-4.1 #5 r, z, and al**							
Access (Log-On) ↓	**2-3-4.1 #10**							
↓ = A subsection of information is continued below, but not included here								

		JHS Rely on DAJD for				DAJD Rely on JHS for		
	Business Requirement Reference	Primary Data	Resources	Auxilary Data				

↓ = A subsection of information is continued below, but not included here

		JHS Rely on DAJD for				DAJD Rely on JHS for		
	Business Requirement Reference	Primary Data	Resources	Auxilary Data				

↓ = A subsection of information is continued below, but not included here

		JHS Rely on DAJD for				DAJD Rely on JHS for		
	Business Requirement Reference	Primary Data	Resources	Auxilary Data				

↓ = A subsection of information is continued below, but not included here

		JHS Rely on DAJD for				DAJD Rely on JHS for		
	Business Requirement Reference	Primary Data	Resources	Auxilary Data				

↓ = A subsection of information is continued below, but not included here

		JHS Rely on DAJD for				DAJD Rely on JHS for		
	Business Requirement Reference	Primary Data	Resources	Auxilary Data				

↓ = A subsection of information is continued below, but not included here

		JHS Rely on DAJD for				DAJD Rely on JHS for		
	Business Requirement Reference	Primary Data	Resources	Auxilary Data				

↓ = A subsection of information is continued below, but not included here

Description of First and Second Level Vendor Selection Review Process

Introduction:
In November 2004, the EHR Steering Committee developed a two tier evaluation model to conduct reviews of the vendor responses to the RFP. The first level was designed to be a high level review where points were awarded to vendors based on their self-scored RFP responses with the goal of eliminating any vendors who did not meet the designated thresholds. The second level review delegated teams to conduct a more thorough analysis of the responses by asking the vendors to demonstrate their product's capabilities during product demonstrations and site visits.

First Level Review:
The first level review relies on points being awarded to the vendors based on self-evaluation of their ability to comply with specific EHR requirements. This review evaluated each vendor using the Multi-Attribute Utility (MAU) Model, a model based on the specification of weighted criteria, where each vendor is scored on all of the criteria. The purpose of achieving a score was not to compare vendor scores, but to set a minimum threshold and eliminate all who were not able to meet it. There were 5 basic thresholds in the first level review encompassing 4 major areas: technical, business, company viability and reliability, and cost/benefit. Each vendor was required to be technically acceptable to Public Health IT without a fatal flaw being identified, exceed 80% of the business requirements total points, be able to assist JHS in achieving its Business Objectives, be experienced in the Correctional Healthcare Industry and with the size and complexity of a system such as Jail Health, and return a positive ROI within 7 years.

Second Level Review:
The second level review contains a more strenuous and in-depth analysis of each of the remaining options. Commencing with written questions and answers for each of the remaining vendors to gain a better understanding of their technical architecture and application, as well as notify them of any concerns. The next step in the second level review is to conduct on-site vendor presentations. During these visits, vendors will have the chance to demonstrate their product to Jail Health and Public Health Management, the Steering Committee, and Public Health MIS. The vendor will be asked to perform JHS scripts and answer questions from Public Health representatives. Concurrently, the EHR Teams will conduct interface analysis, perform site visits and reference checks, and score the vendor based on their product demonstrations. A vendor will then be selected and contract negotiations will begin.

Conclusion:
These two levels of review will provide each vendor the opportunity to thoroughly demonstrate their product, and allow the EHR Stakeholders to conduct careful and rigorous analysis to ensure that a viable vendor is selected to implement a longitudinal EHR system within Jail Health Services.

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.1 INTAKE, TRANSFER, RELEASE

CLINICAL OPERATIONS

INTAKE, TRANSFER, RELEASE

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
1. Ability to, in real-time, interface with Department of Adult/Juvenile Detentions (DAJD) system to capture Initial Receiving data.					
a. Ability to enter data directly into the EHR when DAJD interface is unavailable.					
b. Ability to automatically synchronize DAJD and EHR systems when interface becomes available again.					
1. When synchronization occurs, notify System Administrator, via priority e-mail, when data discrepancies occur.					
2. Produce "report" of data fields in conflict.					
2. Assign Medical Record Number (MR#) for first time offenders.					
a. Minimum 12 alpha-numeric character patient MR# exclusive of check digit.					
3. Ability to capture, store, modify Initial Receiving Assessment during intake of offenders, including:					
a. Patient demographics					
b. Arresting Information					
c. Observations (table driven with ability to select all that apply)					
d. Medical Problems (table driven with ability to select all that apply)					
e. Mental Health (table driven with ability to select all that apply)					
f. Substance Abuse/Alcohol (table driven with ability to select all that apply)					
g. Current Prescription Medications					
h. Medication Allergies (table driven with ability to select all that apply)					
i. Food Allergies (table driven with ability to select all that apply)					
j. Female data (table driven with ability to select all that apply)					
k. Disposition (table driven with ability to select only one)					
4. Based on positive Initial Receiving Assessment responses, application will automatically trigger events.					

CLINICAL OPERATIONS

INTAKE, TRANSFER, RELEASE

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
5. Ability to interface with Signature system to assure only one medical record number has been assigned to the same individual. Match clients, at a minimum, on: a. Name. b. Date of Birth					
6. Ability to provide or interface with a symptom-based decision support module for medical triage to assist clinical staff with pathways/guidelines for assessing and responding to presenting symptoms.					
7. Capacity to capture request for well care visits (well baby, well adult).					
8. Capacity to interface or link with King County Mental Health system.					
9. Ability to interface or link with Washington State Child Profile system for immunizations history and tracking.					
10. Ability to transfer data to and receive data from Public Health Parent Child Health Track system for field based home visits.					

CLINICAL OPERATIONS

INTAKE, TRANSFER, RELEASE

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	2	1	1	0	

11. Ability to produce copies of patient history forms or screens for patient self reporting of history in multiple languages.

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.2 PROBLEM LIST

CLINICAL OPERATIONS

PROBLEM LIST

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
1. System maintains a master file of problems including the following information:					
a. Problem code (table driven).					
b. Problem category (table driven).					
c. Problem description (unlimited free text).					
d. Multiple associated diagnoses.					
2. System maintains, at a minimum, the following problems:					
a. Psychiatric Problems.					
b. Medical problems					
c. Nursing Problems.					
d. Social Problems.					
e. Family Problems.					
f. Substance Abuse Problems.					
g. Housing Problems.					
h. Dental Problems.					
i. Miscellaneous Problems.					
3. Ability to build a Problem List during intake and during stay of offenders including the following:					
a. Active Problem & Date					
b. Ability to document smoking, alcohol use, drug use					
c. Ability to track and document allergies and response					
d. Show problem status for each encounter.					
e. Ability to document Outcome & Date					
f. Ability to archive/view problems complete with status history.					
g. Link problems automatically with orders and results.					
h. Linked to patient education materials.					

CLINICAL OPERATIONS

PROBLEM LIST

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

4. Allow authorized users to add problems to problem list in following way:

a. User designates problem to be entered as active or inactive
b. When entering a problem, user selects problem category from user-defined table.
c. Once category is selected, category and program-specific pick list should appear.
d. User is prompted to note behavioral manifestations of problem.
e. User should be able to enter the problem severity.
f. User indicates whether problem will be addressed by current treatment.
g. User should be able to update the status or severity of a problem through the progress note or the Treatment Plan.

5. Ability to subcategorize problems by status: chronic, acute, recurrent, episodic, special needs.

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.3 ENCOUNTERS

CLINICAL OPERATIONS

ENCOUNTERS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
1. Ability to create and modify Assessments that contain items, both table driven (where applicable) and text that comply with Medical and Mental Health standards.					
2. Allow authorized user to determine which relevant items collected at a prior point, either during referral, admission or a prior episode of care, can be continued over to an Assessment.					
3. Provide means to track medications ordered from physicians outside of system in format that matches internally ordered medications.					
4. Provide the ability to collect comprehensive Clinic Visit (Medical or Dental Diagnostic) information including: a. Provide ICD-9 or 10 and CPT-4 diagnostic code table with ability to de-activate codes and add facility specific codes. b. Provide ability to automatically update ICD and CDT diagnostic codes when new codes are published. c. When old records containing ICD AND CDT diagnoses are viewed or printed, the system must search the ICD-9 version that was in use at the time of diagnosis to retrieve the correct diagnoses. d. When diagnoses are made for client, system must keep track of the version that was in use at the time. e. Provide several methods to code diagnoses for client (e.g. by code, by description, by SoundX).					
5. Provide the ability to collect comprehensive Mental Health Diagnostic information including: a. Provide DSM diagnostic code table (Tables for Axis I and Axis II diagnoses for each version of the DSM) with ability to de-activate and add facility specific codes. 1. An unlimited number of Axis I, II, III, IV, and V diagnoses. 2. Effective dates for each Axis especially to delineate Past Year and Past Month diagnostic coding. b. Provide ability to automatically update DSM diagnostic codes when new codes are published.					

CLINICAL OPERATIONS

ENCOUNTERS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

c. When old records containing DSM diagnoses are viewed or printed, the system must search the DSM version that was in use at the time of diagnosis to retrieve the correct diagnoses.
d. When diagnoses are made for client, system must keep track of the version that was in use at the time.
e. Provide several methods to code DSM diagnoses for client (e.g. by code, by description, by SoundX).
f. System should allow, but not require, entry of ICD codes for Axis III diagnoses, with option for table driven pick list.
g. Axis IV and V should be table driven with optional text for Axis V.
h. System should have "cross-walk" to ICD diagnoses.

6. Client Assessments can explicitly be associated to an episode of care.

7. Client Assessments can implicitly be associated to an episode of care based on assessment date and episode begin/end dates.

8. Assessments are integrated with the Health Treatment Planning and Notes module.

9. Assessment results can automatically recommend a diagnosis.

a. System accommodates ICD-9-CM, DSM-IV diagnostic code sets and is committed to ongoing support of future changes to these code sets.
b. System will support SNOMED code set if it becomes a community standard.

10. Provide Assessment graphing tool to measure results over time.

11. Provide means to indicate persons or disciplines responsible for assessment and automatically e-mail notice of required assessment to person or office responsible for assessment.

CLINICAL OPERATIONS

ENCOUNTERS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
12. Provide ability for Assessments to be automatically and flexibly scheduled, to include: a. Assigned to a responsible party b. Frequency c. Scheduled Assessment results in notifying the responsible party via e-mail, tickler list, or other means.					
13. Enable the design and implementation of custom Assessment tools as determined by JHS. Functionality to include the following: a. Upload tool designs from Microsoft Word b. Value pull-down lists c. Radio buttons d. Yes/No check boxes e. Flexible editing logic to verify responses. f. Integration to the user customizable data model to capture the responses. g. Scoring capabilities to build T-scores, percentiles, and other mathematical algorithms against the responses. h. Customizable online help to guide the client in filling out the assessment/survey. i. Logical handling of missing values as specified by the user such as set to zero, treat as null, etc.					
14. Provide the ability to print patient educational materials associated with the encounter.					
15. Provide the ability to display and maintain Medical and Mental Health Assessment information.					

CLINICAL OPERATIONS

ENCOUNTERS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
16. Provide the ability to build (ideally supply) JHS specific Assessment templates for example: speech and language; self care; cognitive functioning; abnormal involuntary movements; nursing; educational functioning; psychological; neurological; general physical health; and, rehabilitation readiness.					
17. Capability to print patient education materials in multiple languages.					
18. Ability to maintain a list of all providers actively involved in treating the patient within the last 12 months.					
19. Ability to link together with each problem the internal encounters where this problem was addressed, diagnostic tests ordered, external referrals ordered and status of referrals.					
20. Ability to provide screening tools and clinical risk assessment calculators for: a. Cardiac Events b. Osteoparesis Fractures c. Substance Abuse d. Depression e. Anxiety f. Geriatric Screening g. Mini Mental Status h. Others					

CLINICAL OPERATIONS

ENCOUNTERS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	2	1	1	0	

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.4 TREATMENT PLANNING

CLINICAL OPERATIONS

TREATMENT PLANNING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
1. System maintains a Multidisciplinary Treatment Plan Library with distinct sections that can be modified independently by authorized users. a. The system allows for the creation, alteration or update of all standard treatment plans at anytime. (Permanent changes performed only by authorized users). b. Treatment Plan standards individualized by system of care, program, team, or individual clinician.					
2. System can incorporate treatment plan standards individualized by system of care, program, team, or individual clinician.					
3. Based on the Provider Type, the preferred treatment plan library is presented to them.					
4. Selection of treatment plans is integrated with diagnosis.					
5. Create individual client treatment plan from the selected library.					
6. Provide mechanism for assigning responsibility for Treatment Plan section to specific staff or disciplines.					

CLINICAL OPERATIONS

TREATMENT PLANNING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
7. Provide mechanism for assigning responsibility to update specific section of treatment plan.					
8. System keeps track of who is responsible for completing or updating which section of Treatment Plan and indicates date of completion or update.					
9. When Treatment Plan elements are also gathered automatically from other modules of the system (e.g., assessments, progress notes from previous episode, medications), data are shared with Treatment Plan and vice versa.					
10. System automatically notifies user when Treatment Plans requires review, as specified by JHS.					
11. Treatment Plan must include the following elements for viewing, printing, adding, or updating:					

a. Treatment team disciplines (I.e. team members).
b. Five Axis DSM Diagnosis.
c. I CD-9 Standard Medical Diagnosis
d. Summary sections of all assessments gathered in Assessment Section.
e. Client Problems
f. Behavioral manifestations of problem.
g. Problem status
h. Problem treatment status
i. Goals associated with each active problem.
j. Measurable objectives associated with each goal.
k. Treatment modalities/ interventions
l. Current Medications.
m. Inmate participation in treatment planning process.

CLINICAL OPERATIONS

TREATMENT PLANNING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	2	1	1	0	

n. Inmate and/or family agreement with Treatment Plan.
o. Discharge criteria related to inmate problems.
p. Date of next scheduled review of Treatment Plan as determined by the user.
q. Functional strengths.
r. Barriers to treatment.
s. Motivation for treatment.
t. Contraindicated procedures.
u. Necessity of continued stay.
v. Continuing care plan.
w. Discharge Plan (Table driven and unlimited free text).
x. Post discharge modalities associated with each level of care or program identified in Discharge Plan.
y. Date of 1st scheduled appointment.
z. Client's agreement to be contacted for follow-up (Y/N).
aa. Referrals including: Dental, WIC, Immunizations

12. System maintains a JHS defined table of offered interventions.

13. System maintains, for each offered intervention, by program, the following:

a. Associated CPT code
c. Associated charge
d. Approximate cost
e. Contracted cost
f. Actual cost
g. Associated note types (Multiple, related to table of notes)
h. Intervention type
i. RVU's

14. Identified interventions results in the forwarding of the intervention to the identified responsible party in one or more of the following ways:

A Via e-mail alert
b. Assignment of the intervention on a system provided user "work list" with automatic update based on inmate housing location.

CLINICAL OPERATIONS

TREATMENT PLANNING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

c. Forwarding to the appointment scheduling module.
d. Color coded annotations in the treatment plan highlighting scheduled interventions with automatic updates based on patient location.

15. Display and print on demand updated treatment plan.

16. Coordination interventions and their planning between independent systems of care and Departments.

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.5 CLINICAL NOTES & DOCUMENTATION

CLINICAL OPERATIONS

CLINICAL NOTES & DOCUMENTATION

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
1. System maintains different note categories, including:					
a. Summary Notes which document a particular area of client functioning or summarize response to different discipline-specific treatment efforts.					
b. Order-Related Notes that correspond to particular types of orders and are automatically generated by such orders.					
c. Incident Notes which document the occurrence of particular incidents.					
d. Progress Note documentation is driven by the encounter so each treatment plan goal and intervention has associated progress notes.					
e. System allows each type of service note to be associated with an intervention from the Table of Interventions.					
2. System maintains Summary Notes including, at a minimum, the following:					
a. Progress Notes including:					
1. Selection of problems, goals or objectives being addressed by note					
2. Severity ratings of selected active problems					
3. Shift Notes					
4. Discharge Planning Note					
5. Treatment Plan Review Conference Note					
b. Team Conference Note including:					
1. Participants in conference (Table driven)					
2. Automatic mailing of note to participants for electronic signature					
3. System maintains Order-Related Notes including, at a minimum, the following:					
a. Admission Note					
b. Discharge Note					
c. Change in Status Note					
d. Medication Change Note					
4. System maintains Incident Notes including, at a minimum, the following:					
a. Aggression Control Note					
b. Seclusion and Restraint Note					
c. Special Precautions Note/ 15 minute checks.					

CLINICAL OPERATIONS

CLINICAL NOTES & DOCUMENTATION

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

d. Suicidal ideation/behavior Note
e. Allergic Reaction Note
f. Activity Restriction Note
g. PRN administration Note
h. Communication Restriction/ gang affiliation
i. Note of Treatment Refusal
j. Report of Code Called
k. Medication Side Effect Note
l. Client Complaint Note
m. Report of client Illness
n. Emergency Room Transfer Note

5. System provides the capability to capture other types of Notes:

a. Ability to enter office visit notes
b. Ability to document demographics/family history, risk factors
c. Ability to write History and Physical/assessment notes
d. Ability to write or enter Medication List
e. Ability to build a Problem List
f. Ability to document smoking, alcohol use, drug use
g. Ability to track and document allergies and response
h. Ability to enter/record vital signs
i. Ability to document risk factors
j. Ability to enter or accept multiple note types: Radiology, Lab, etc.
k. Ability to import notes from referral (as defined by Access Control) or allow entry of notes by referral provider
l. Ability to import notes from hospital (inpatient) record
m. Ability to capture social history

6. Ability for disciplines to enter, correct, authenticate notes.

a. Ability to correct notes prior to authentication
b. Ability to discard a note, with system warning, prior to authentication.
c. Ability to authenticate (electronic signature) notes.
d. Provides ability to add co-signature if needed.
e. Linked to Clinical Decision Support (CDS) system and Controlled Medical Vocabulary (CMV) to provide alert if co-signature required

CLINICAL OPERATIONS

CLINICAL NOTES & DOCUMENTATION

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
f. Ability to date/time stamp notes					
7. Ability for disciplines to append authenticated notes.					
a. Original documentation					
b. Date and time of change					
c. Responsible party (names)					
d. Corrected documentation					
e. System records a flag displaying that a correction exists.					
8. The system allows for specific views (i.e. role based displays) via a person's sign on code.					
9. Print on demand documentation for an individual client over a user-specified time period (e.g., today, week, and month).					
10. Ability to provide language to satisfy Medicare requirements for precepting medical students/residents:					
Example: :"I have personally interviewed, examined and discussed this patient's care with (name of student/resident)."					
a. Washington State Labor & Industries encounter form					
b. WA State DSHS Medical Assessment form					
c. SSI medical forms					
d. Handicap license/Bus fare reduction medical request forms, etc.					

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.6 FLOW SHEETS

CLINICAL OPERATIONS

FLOW SHEETS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

1. Ability to display Flow Sheet data that contain items, both table driven (where applicable) and text that comply with Medical and Mental Health standards. Examples are:

a. HIV Flow Sheet
b. DIABETIC MONITORING Flow Sheet
c. HYPERTENSIVE MONITORING Flow Sheet
d. SEIZURE DISORDER - CHRONIC CARE Flow Sheet
e. ASTHMA/COPD MONITORING Flow Sheet
f. COUMADIN Flow Sheet
g. NEURO Flow Sheet
h. DIABETES EVALUATION Flow Sheet
i. Immunization Records
j. Child Growth Charts
k. Dental
l. Maternal Support Services
m. WIC
n. Health Maintenance

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.7 ORDERS & RESULTS REPORTING

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
ENTRY of ORDERS:					
1. Provide a clinically oriented multidisciplinary order entry tool that streamlines the order entry process with the treatment plan.					
2. Identify physician/provider initiating order, staff entering order, date, and time. If the name of the individual entering the order and/or date and time are not put in at time of order entry, the system should automatically do so.					
3. Ability to enter Orders On-Line and Display or Send Real-time to All Departments.					
4. Allow selection of orders by service and sub-service (e.g., Administration, Intervention, Laboratory, Pharmacy, and Radiology).					
5. Provide a menu display of orders and order panels.					
6. Provide a system of mnemonics for test ordering.					

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

ENTRY of ORDERS:

7. Provide user-defined order sets and order panels with easy support for additions and deletions from these sets/panels.

8. Provide selection of orders via:

a. Alpha listing
b. Procedure codes
c. High-frequency menu listing

9. Enable user to enter order priority to include:

a. Routine
b. STAT
c. ASAP
d. Today
e. Timed
f. Discharge

10. Allow authorized users to change Status including entering information on:

a. New status
b. Justification for status change

11. Allow user to designate start time and stop time for all timed and continuing orders. Authorized users must be able to override stop time for designated orders.

12. Provide ability for order to be marked as "expected to be renewed", with prompts to clinician to renew order at appropriate time.

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

ENTRY of ORDERS:

13. System has ability to "know" that orders expected to be renewed, which are associated with long acting medications given once a month, should appear as medications that the inmate is "on", even between orders.					
14. Provide inmate schedules and department work lists based on orders placed.					
15. Allow entering of free text comments with order.					
16. Provide step-by-step ("Help") guide for Order Entry activities, returning the cursor to the place on the Order Entry screen at which the user left off.					
17. Display possible conflict of current order with previously entered orders including drug incompatibilities, based on user-specified criteria.					
18. Allow authorized individuals to override order conflicts, and maintain audit trail of these events.					
19. System automatically identifies and notifies user online of: a. Apparent duplicate orders. b. Improper order in scheduling sequential interventions.					
20. Upon attestation of medication order, create Medication Adjustment Note which indicates the order information and includes the reason for the medication change.					

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	2	1	1	0	

ENTRY of ORDERS:

21. When a medication is ordered that requires either one-time or ongoing associated blood work, the system should prompt users to automatically write the necessary orders and make the necessary appointments.					
22. Indicate verification status of each order including when order was countersigned per provider policy.					
23. Provide system acknowledgment of acceptance of order.					
24. Enable user to communicate routine, standing, and selective prior orders on day of client is booked into custody.					
25. Allow user to bypass menus when entering orders and directly key in desired order information.					
26. Provide an online narrative description of the use of each test, procedure, or intervention as well as any ordering policies and protocols affecting the ordering to assist the clinician when entering the order into the system.					
27. Identify and report specific procedures in the procedure master file which require verification prior to becoming active.					

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
ENTRY of ORDERS:					
28. Allow sensitive orderable items to be flagged as confidential.					
29. Permit inquiry into the exact status of all orders, by inmate (e.g., ordered, verified, canceled, preliminary report, or final report).					
30. Ability to entry prescription refill authorizations.					
31. Ability to generate work or school notes.					
32. Ability to capture data and link with Dynacare/Labcorp system for lab orders.					

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.7 ORDERS & RESULTS REPORTING

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
EDITING of ORDERS:					
1. Provide automatic edit of all orders for necessary data which must be included at time of entry (e.g., route, dosage, assessment, interactions based on CDS, treatment plan).					
2. Display message identifying missing data in the order.					
3. Display of alert if order varies from guidelines and rules and/or presents safety issue.					
4. Ability to flag duplicate or conflicting orders.					
5. Provide order correction mechanism without requiring cancellation and re-entering of entire order, automatically recording date, time, and person entering correction.					
6. Permit only authorized personnel to cancel orders and automatically notify ancillary area of cancellation.					

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
7. Allow for backdating of order times and dates if system has been unavailable. Maintain actual date and time when orders are entered.					
8. Require inmate identification in order (to avoid processing of order for inmate who is not in system).					
9. Allow multiple methods of order entry: a. Text entry allowed b. Keyboard entry allowed c. Entry through handheld device allowed d. Entry through voice recognition allowed (See Question #9, Appendix A)					

TOTAL POINT

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.7 ORDERS & RESULTS REPORTING

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

VERIFICATION of ORDERS:

1. Prompt user for verification, including the following:

a. Completeness, such that all elements are included in order (e.g., route of administration, dose, time, frequency, and special instructions).
b. Nurse or presumed ancillary personnel collection.
c. Identification such that inmate with same or similar names are accounted for in the system.
d. Provide for dual verification by authorized personnel (e.g., physician/provider, pharmacist, etc).
e. Authentication and electronic signature for order.
f. Ability to authenticate and allow electronic co-signature if needed.
g. If co-signature required, linked to CDS and alert provided.
h. Date/time stamp for order.

2. Ability to limit use of abbreviations to those on a list approved by Public Health.

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.7 ORDERS & RESULTS REPORTING

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
TRANSMITTAL of ORDERS:					
1. Orders tracked through processing (e.g. know when Pharmacy receives order and when it has filled Rx).					
2. Completion of order documented.					
3. Alert or message generated if order is not followed through to completion (e.g. patient does not receive/pick-up Rx).					
4. Order processing is based on efficient workflow (e.g. tasks sent to appropriate persons and all departments involved in completing the order).					
5. Provides ability to trigger medical necessity criteria.					
6. Prompt is given for a diagnostic code when order is entered.					

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

TRANSMITTAL of ORDERS:

7. Interfaces with business/financial accounting modules.

a. Provides ability to charge items individually or in batches.
b. Ability to display total cost of items when ordered (e.g. test, medication, procedure).
c. Ability to display “out of pocket” cost of items when ordered to provider and patient (See also Referral and Benefits Authorization).
d. Ability provided for “no charge” items, such as test reruns or Rx fill repeat due to lab/radiology/pharmacy error.
e. Ability to create Charge Master File with description and accompanying prices.

8. Interfaces with LAB (DynaCare or LabCorps), Pharmacy (FSI), Radiology (Harborview) systems.

9. Capability to "explode" orders, generating multiple orders from one request to all appropriate responsible parties.

10. Capability to "explode" cancellations to appropriate providers when original order is canceled.

11. Provide option of visual or auditory alarm which requires a response on receipt of STAT, ASAP, timed orders, or special instructions.

12. Provide information online on status of a specific order being processed.

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

TRANSMITTAL of ORDERS:

13. Flag canceled or held orders with a visual or audible alarm. If order is not canceled at the provider location, also notify the provider.

14. Flag any changed order with a visual or audible alarm in the ancillary area.

15. Retain record of order cancellation to identify who ordered the cancellation and when it was issued.

16. Provide an audit trail of:

a. Date and time an order was entered
b. Date and time an order was received
c. Time completed
d. By whom completed
e. The responsible party completing the order

17. Display and print on demand an accumulated list of orders for a client for a designated time period.

18. Ability to automatically print requisitions and labels in area of required service upon order entry for today's tests and on appropriate day for future orders.

19. Ability to automatically override print requisitions and labels into the area where the order was placed in the system instead of the client's registered location.

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	2	1	1	0	

TRANSMITTAL of ORDERS:

20. Flag STAT, ASAP, timed orders, or special instructions when the requisition prints.

21. Ability to flag or add prompts to follow-up and close:

a. Dental
b. Radiology
c. WBCHP
d. LAB
e. Specialists

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.7 ORDERS & RESULTS REPORTING

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
1. Allow scheduling of one-time and continuing orders.					
2. Allow scheduling of a test (procedure) when ordering. Notify provider (where test is scheduled) so time and date may be verified. Provide automatic feedback of verification to ordering area.					
3. Provide automatic scheduling of tests requiring more than one session for completion.					
4. Provide authorized individuals with ability to override scheduling constraints.					

SCHEDULING of ORDERS:

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.7 ORDERS & RESULTS REPORTING

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

CANCELLATION, RENEWAL, DISCONTINUANCE of ORDERS

1. **Allow online update, cancellation, renewal, reschedule, and discontinuation of order/test. If order/test are canceled in error, there is a simplified way to reinstate them.**

2. **Automatically notify appropriate provider(s) online and optionally in print of change(s) in order.**

3. **Notify physician/provider online and optionally in print of need for renewal before expiration of continuing order(s) per provider criteria, including:**
   a. Name of patient
   b. Client ID number
   c. Name of service
   d. Beginning date and time of order

4. **Provide for automatic cancellation of orders upon discharge, release, or death of an inmate.**

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.7 ORDERS & RESULTS REPORTING

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

DISPLAY of ORDERS:

1. Clearly displayed (and printed, if needed) documentation of order.

2. Allows multiple views of orders:

a. Allows view of all active and/or discontinued orders.
b. Allows view of orders attached to a particular problem.
c. Allows historical view of orders by inmate.
d. Allows view of orders by date.
e. Allows view of orders by provider.

3. Can be customized to meet JHS needs:

a. Commonly ordered tests can be added.
b. Commonly ordered medications can be added (per JHS formulary).
c. Medications and procedures not per JHS formulary or protocol can be removed from orders view.
d. Commonly ordered tests/medications can be organized per specialty (e.g. protocols).

4. Order search ability by:

a. Patient Name
b. Patient/Medical Record Number
c. Provider
d. Location
e. Diagnostic Codes and Names
f. Procedure Codes and Names
g. Date

5. Ability to generate outbound message to other systems when/where needed.

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
6. Ability to perform multiple passes (attempts) for outbound message if acknowledgement not received.					
7. Ability to Lock Out Ordering (e.g. ARNP not able to order medications for himself).					

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.7 ORDERS & RESULTS REPORTING

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

RETRIEVAL of ORDER

1. Display and/or print multiple views of orders.					
2. Display and/or print list of orders received, completed, canceled, postponed, held, or unreported, in chronological sequence by provider.					
3. Display and/or print on demand status of order (e.g., routine, ASAP, STAT, scheduled including start time and intervals).					
4. Display and/or print on demand orders for clients in the following manner: a. All orders for the current episode of care b. Outstanding orders c. Unverified orders d. Orders for last 24 hours					

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.7 ORDERS & RESULTS REPORTING

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

RESULTS DISPLAY/REPORTING

1. Ability to Display Results from All Departments (i.e. RAD, LAB, Rx, etc.).					
2. Ability to Import all Results not Displayed within Application. Note: will require interfaces with MLAB system for Public Health laboratory and Dynacare/Labcorps system for contracted lab results.					
3. Clearly displayed (and printed, if needed) results.					
a. Results (at least summary results or most current results) available on one page.					
4. Allows multiple views of results:					
a. Ability to drill down into results for more detail					
b. Longitudinal display of results available with normals/abnormals noted					
c. Graphical display of results and/or response trended over time (e.g. Coumadin charted against INR and Pro-Time)					
d. Allows view of orders attached to a particular problem.					
e. Allows historical view of orders by patient.					
f. Allows view of orders by date.					
g. Allows view of orders by provider.					
h. Allows display by test result/result type (e.g. normal, abnormal).					
i. Allows import of scanned results.					

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

RESULTS DISPLAY/REPORTING

j. Allows display of digital images (e.g. radiograph) or video (e.g. ultrasound).

k. Allows display of results to patient as defined by patient.

5. Clearly displayed origin for results (where they came from).

6. Date/time stamp for results.

7. Results display can be configured by role, by specialty, by location, by date - down to individual level - e.g. backup provider can be designated to receive if primary out of office or first/second sequence can be defined.

8. Results outside of normal values are noted through alerts (linked to CDS and CMV).

9. Results not viewed or associated with an action can result in an alert.

10. Ability to search results by:

a. Patient Name

b. Medical Record Number

c. Provider

d. Location

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

RESULTS DISPLAY/REPORTING

e. Diagnostic Codes (Problem)
f. Procedure Codes
g. Date

11. Ability to display interface data as needed (e.g. from other systems).

12. Action taken when viewing result followed – ability to link action to result by provider, patient, date, etc.

13. Follow-up available for documentation.

14. For test results, ability to display range of results in addition to normal/abnormal.

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.8 CONSENTS

CLINICAL OPERATIONS

CONSENTS, RELEASE of INFORMATION REQUESTS, REFUSALS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
1. Ability to design and implement Consents, Release of Information Requests, Requests for Information, Health Treatment Refusals, Letters, and other forms as determined by JHS. Functionality to include the following: a. Designed using Microsoft Word functionality. b. Ability to insert data from Patient Medical Record. c. Ability to automatically trigger the completion of a specific electronic form based on a clinical event (e.g. intake, encounter, etc.). d. Ability to complete any electronic form on-demand for a specific patient. e. Ability to (re)display or (re)print patient specific form on-demand from within the EHR. f. Secure form revision handling (i.e. unable to modify form once produced)					
2. Ability to enter multiple electronic signatures via a variety of secure methods. a. Ability to authenticate and allow electronic signatures, co-signatures. b. Provide for dual verification by authorized personnel (e.g., physician/provider, pharmacist, etc).					
3. Ability to capture/print Authorization For ROI And Disclosure Of Protected Health Information, including: a. Language and formatting comply with HIPAA requirements					
4. Ability to capture/print Immunizations Screening Questions, including: a. Immunization consent forms or import forms from Public Health SKIIS system. b. Family Planning procedure consent form. c. Medicare ABN/Waivers d. Take Charge program waivers.					
5. Ability to capture/print Health Memo to Inmates, including: a. Scheduled substances/Narcotic contract. b. Behavior contract.					

CLINICAL OPERATIONS

CONSENTS, RELEASE of INFORMATION REQUESTS, REFUSALS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

c. Consent to participate in a study.

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.9 PATIENT EDUCATION

CLINICAL OPERATIONS

PATIENT EDUCATION

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

1. Ability to design and implement Patient Education material (text and pictures) as determined by JHS. Functionality to include the following:

a. Designed using Microsoft Word or other off-the-shelf software products.
b. Ability to (re)display or (re)print patient specific material on demand from within the EHR.
c. Secure form revision handling (i.e. unable to modify material once in production).

2. Incorporates (i.e. ability to import educational materials from other sources) a library of educational material using industry standard technology.

CLINICAL OPERATIONS

PATIENT EDUCATION

TOTAL POINTS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.10 REFERRALS

CLINICAL OPERATIONS

REFERRALS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

1. Ability to capture JHS internal program referrals, including:

a. Automatically generate JHS inter-facility referrals based on positive screening responses, including:
   1. Ability to automatically refer an inmate to PSYCH based on a positive Mental Health Screening response.
   2. Ability to automatically refer a pregnant inmate to OBSTETRICS based on a positive response to Prenatal Screening.

b. Ability to send referral note on-line.

c. Track status of referral (e.g. sent, received, under review, accepted, denied, etc.) and trigger alert when not responded to within predetermined time limits.

d. Ability to provide multiple referral paths.
   1. Inter-Facility (e.g. to/from Infirmary, Psych.)

e. Provide for referral approval/denial.

f. Ability to co-sign referral using electronic signature and authentication capability.

g. Provide for capability to configure so certain referrals do not require pre-approval (as defined by JHS).

h. Ability to view referrals provided to patient authorized by role based security.

i. Ability to track, log, and view referrals.

2. Ability to capture external referrals, including:

a. Ability to enter Referral (and Benefits Authorization).

b. Ability to send referral note on-line.

c. Ability to include clinical data, results, and notes as well as a summary with the referral note.

d. Track status of referral (e.g.. sent, received, under review, accepted, denied, etc.) and trigger alert when not responded to within predetermined time limits.

e. Ability to provide multiple referral paths, including:
   1. Hospitalization/inpatient stay
   2. Outpatient Ancillary Services (Harborview Radiology)

f. Provide for capability for referral approval/denial.

g. Electronic signature and authentication capability.

h. Ability to co-sign referral using electronic signature and authentication capability.

i. Provide for capability to configure so certain referrals do not require pre-approval (as defined by JHS).

CLINICAL OPERATIONS

REFERRALS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

j. Ability to view referrals provided to patient authorized by role based security.

3. Ability to support WA State standardized referral format (CHITA).

4. Ability to close a referral under the following conditions:

a. When a report is received from the specialist.
b. When the referral authorization is denied.
c. When the patient does not appear for the referral appointment.
d. When the patient declines to accept the referral.

5. Ability to capture and access payor lists of referrals requiring prior authorization.

6. Ability to create trend reports for reasons for referrals, referrals by providers, reasons for denials, etc.

7. Ability to capture data on referrals to Public Health programs from other Public Health programs or from other entities and to track the status and disposition of these referrals to closure.

8. Ability to capture data and track referral status for Child and Adult Protective Services referrals.

CLINICAL OPERATIONS

REFERRALS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.11 ADMISSION, DISCHARGE, TRANSFER, REVERSAL

CLINICAL OPERATIONS

ADMISSION, DISCHARGE, TRANSFER, REVERSAL

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

ADMISSION:

1. Ability to capture, store, modify Admission information, including:

a. Allows authorized users to archive and retrieve inactive patients.
b. When a previously discharged patient is re-admitted, automatically list the name of the Primary clinician of record upon discharge during that previous stay, and patient location at the time of discharge.
c. Allow user to enter the name of a Primary clinician and two Associates, onto the Admission screen at the point of admission or at a later time or date.
d. Allow user to change the Primary clinician designation throughout the patient stay.
e. Allow user to assign patient to Complex Management List.

DISCHARGE:

1. Ability to capture, store, modify Discharge information, including:

a. When an inmate is released from custody, the release generates an automatic predefined discharge summary and "cancels" all outstanding orders, treatments, appointments, medications, and notifies appropriate clinicians of discharge.
b. Upon discharge from a program or service (e.g.. Infirmary), allow user to indicate discharge status, date, "to location", and alert Offender Management System of disposition.
c. Upon discharge from an Outpatient Stay (Hospital), allow user to capture discharge status, date, "to location", and alert Offender Management System of disposition.
d. Upon discharge allow user capture the following:
   1. Mental status/level (Table driven)
   2. Condition at last visit (Table driven)
   3. Disposition of case (Table driven)
   4. Discharge DSM diagnoses and ICD-9 Medical diagnoses
   5. Discharge Plan
   6. Date of discharge
   7. Time of discharge

CLINICAL OPERATIONS

ADMISSION, DISCHARGE, TRANSFER, REVERSAL

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

e. If any data (from above item) had previously been collected during episode, it should be retrieved when discharge screen is activated.
f. System allows development and entry of an After Care Plan.
g. When patients are determined to be NICK (Not in Custody) in Offender Management System, they will inactivate in the EHR.

TRANSFER:

1. Ability to capture, store, modify Transfer information, including:

a. System maintains history for transfers between facilities, units, services, or levels of care, including:
   1. Date and Time
   2. Type or Transfer (Inter-Facility Transfer, Medical/Psychiatric Transfer, Hospital Inpatient Transfer, Specialty Service Transfer)
   3. Reason for Transfer
   4. Current Location
   5. To Location
   6. Requested by Provider
   7. Requested by Provider

b. Ability to automatically route Transfer Requests (e.g. Ultra Security Placement To) for Approval(s)
c. When system displays list of episodes, this list includes transfer data within episodes.
d. A transfer report can be generated upon an inmate's transfer. The report will include all diagnoses, allergies, progress notes, services provided, test results and a list of medications the patient is currently taking.

REVERSAL:

1. Allow reversal by authorized user of an admission, discharge, or transfer with appropriate automatic adjustments to statistics and other related areas.

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.12 POPULATION BASED CLINICAL AREAS (REGISTRIES)

CLINICAL OPERATIONS

POPULATION BASED CLINICAL AREAS (REGISTRIES)

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

1. Ability to manage POPULATION BASED CLINICAL AREAS (i.e. Registries)

a. Ability to manage Population Based Clinical Areas within the system.
b. Documentation of Plan of Care/Roadmaps.
c. Ability to Provide Data for Utilization Review.
d. Ability to Provide Data for Quality Management.
e. Provides tools for management of chronic illness for provider and patient.
f. Ability to send alerts/reminders by role based security, including to patients.
g. Ability to easily access references for management (tie to CDS and CMV)
h. Incorporate Risk assessments (e.g. clinical calculators).
i. Ability to incorporate information into written form (letter, e-mail) for patient and/or others.
j. Ability to create standard sets of orders/procedures per protocol for Health Maintenance “Registry” conditions.
k. Ability to incorporate advanced directives such as Living Will, Power of Attorney, next of kin, dependents, and code status.
l. Ability to customize for individual within populations.

2. Ability to support contact investigations for communicable disease populations

a. Ability to link contacts to source case via source identifier code.
b. Ability to capture demographic data on each contact.
c. Ability to capture intervention and follow up data.

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-2 CLINICAL SPECIALTIES

2-3-2.1 PHARMACY

CLINICAL SPECIALTIES

PHARMACY

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

1. Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Prescription Dispensing, including the following:

a. New Prescription Process
b. Refill Prescription Process
c. Prescription Directions (Sig) – User friendly shorthand input.
d. Renew Prescription Process – Update of expired prescription.
e. Edit Prescription – All Fields (in compliance with Pharmacy regulations).
f. Cancel Prescriptions – That meet set criteria.
g. Refill Adjustment/Authorization Process – Ability to alter the number of refills remaining on a prescription and ability to automate refill requests.
h. Child Resistant Caps – Ability to track consumers that have requested Non-child Resistant Caps & to provide a warning to obtain a new request after a specific period of time.
I. Pharmacy Monitoring Alerts – Ability to tag consumers to assist pharmacy with providing full service – Such as Medicaid Nursing Home, Adverse Drug Reaction, and Same Spelling or Sound Alike Names.
j. Front Counter Transaction – Ability for pharmacy to see what prescriptions are ready for the consumer to pick up, what pharmacy they are at (if other than where patient is), and ability to enter Over the Counter Medications into the Transactions as requested by the patient. Transaction also provides alerts to assist the pharmacist with patient management.
k. Prescription Charge Correction – Ability to alter the billing account the prescription is charged against without altering the clinical record.
l. Prescription Data Display – Ability to look at the detail of the data elements of a specific prescription.
m. Prior Authorization – Ability to retrieve current authorizations, consumer history, and pending authorizations for medications that must have prior authorizations before they are covered as part of the patients pharmacy benefit.
n. Prescription Text System – Ability to add, modify, and display text messages and information and attach them to specific prescriptions and auto display the messages whenever the prescription is processed.
o. Prescription Archiving – Ability to move prescriptions from/to an active working profile to/from an inactive profile after a specified number of days or manually on demand.
p. Auxiliary Labels – Ability to tag a drug file item with auxiliary directions (warning labels) that print automatically as part of the prescription label printing.

CLINICAL SPECIALTIES

PHARMACY

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

q. Return To Stock – Ability to return prescriptions to inventory and to create an audit trail of the activity.
r. New Prescription Will Call Option – Data entered into System, but prescription label not print until patient arrives – Reduce Returns To Stock.

2. Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Profiles, including the following:

a. Short Profile – Ability to display an abbreviated medication profile in a variety of sort configurations.
b. Non-Controlled Substance Profile – Ability to display a medication profile in a variety of sort configurations for only Non-Controlled Substances.
c. Controlled Substance Profile – Ability to display a medication profile in a variety of sort configurations for only Controlled Substances.
d. Profile Print Request – Ability to print on-demand a patient's full medication profile.
e. Long Term Profile – Ability to tag medications so that a record of all prescriptions for that medication is available for a specified period of time.
f. Ability to upload or manually add medications to client's medication profile from multiple sources in addition to Public Health's current FSI system. (Example: from Harborview's pharmacy system for TB clients).
g. Ability to upload drug inventory for TB clinic from Harborview Medical Center pharmacy system.

3. Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Pharmacy Purchasing and Materials Management, including the following:

a. Inventory Receipt – Provide a receipt for each inventory shipment and the ability to accept the shipment in total.
b. Non-PO Receipt (Schedule Drugs) – Ability to receive a shipment into inventory without generating a Purchase Order.
c. Drug Transfer (overnight) – Ability for the system to automatically receive a shipment into inventory at the end of the business day.
d. Drug Transfer (immediate) – Ability to receive a shipment or part of a shipment into inventory on request.
e. Inventory On Hand Display – Ability to display the inventory status of an item by location or all locations.
f. MTD Transaction Display – Ability to display the Month To Date utilization for any stock item.
g. Drug Catalog Display – Ability to display detail on any stock item, including cost, package size, charge structure, units per case, NDC, etc.
h. Electronic Purchasing/Inventory System
i. Materiel Management utilizes bar code technology.

CLINICAL SPECIALTIES

PHARMACY

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

4. Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Pharmacy Inventory Control Functionality, including the following:

a. Allow pharmacy staff to add pill counts of all medication in the formulary
b. Automatically deduct the number of pills given out in a filled prescription
c. Allow pharmacy staff the ability to set floor values for various medications.
d. Provide alerts when medications go below their set restock value.
e. Manage the inventory of restricted medications such as narcotics.
f. Produce reports detailing the number of various medication stocks that are being used on a daily, weekly, monthly and quarterly basis.
g. Track cost analysis data for the treatment of illness.

5. Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Drug Maintenance, including the following:

a. Drug - Drug Interactions – Ability to program and automate interactions.
b. Formulary Text – Ability to create, modify, and display Formulary text material.

6. Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Cash Management, including the following:

a. Ability to collect payments for pharmacy transactions and produce detailed receipts.
b. Ability to bill and manage accounts receivables for pharmacy transactions.

7. Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Allergies, including the following:

a. Ability to record, update, display, and log patient allergies and allergy hits.
b. Ability to record, update, display, and log patient allergy profiles.

8. Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Text, including the following:

a. Provide text system to be able to record, update, display, and log drug monitoring, patient counseling, and patient processing data by medical record number and prescription.

CLINICAL SPECIALTIES

PHARMACY

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
9. Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Immunizations, including the following: a. Ability to enter, modify/delete, display, and log patient immunization data. b. Ability to track individual patient records and provide alerts if patient is not current with immunizations. c. Ability to import current data from WA State Child Profile immunization tracking system to assure current immunization history.					
10. Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Chronic Conditions, including the following: a. Ability to enter, modify/delete, display, and log patient chronic conditions. b. Ability to automatically log patient chronic conditions based on criteria established to review the patient medication profile. c. Ability to provide alerts, logs, and notes for medication/chronic condition incompatibility.					
11. Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Electronic Claims Processing, including the following: a. Ability to submit and process prescription claims electronically. b. Ability to display and search electronic claims records.					
12. Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Alert Codes, including the following: a. Ability to enter, modify/delete, display, and log patient alert codes. b. Ability to log and provide notes for patients with alert codes.					
13. Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Coverage Display, including the following: a. Ability to display Patient Pharmacy Coverage Data.					
14. Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Medication Use Management, including the following: a. Drug Interactions: ability to detect, log, display, and add notes for Drug Interaction's. b. Adverse Drug Reactions: ability to log, display, and add notes for Adverse Drug Reaction's.					

CLINICAL SPECIALTIES

PHARMACY

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

c. Medication Errors: ability to log, display, and add notes for Medication Errors.
d. Drug Usage Evaluation: ability to log, display, and add notes for Drug Use Evaluations.
e. Pharmaceutical Care: ability to log, display, and add notes for Pharmaceutical Care Evaluations and compliance monitoring.
f. Pharmacy/Pharmacist Reminder: ability to log, display, and add notes specific for a given patient.
g. Events Alerts: ability to log, track, display, and add notes for patient events.
h. Cognitive Services Fee
i. Observations and follow up.

15. Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Medication Administration Record (MAR), including the following:

a. MAR is required to properly document the administration of medications.
b. Display only the current medications that have been authorized for the patient.
c. Allow for a means to automatically identify the patient, through the use of IT technology
d. Display the patient's name, identity, diagnoses and allergies, current medications and unit information.
e. Record, the patient, and the unit nurse providing the medications, the medications, the date and time the medications were given.
f. Prompt for a reason for any medication that was indicated as not given.
g. Will contain some method to allow for point of care input.
h. Ability to print on demand current MAR.
i. Allow automated dispensing log, linked to material management reporting/inventory.

16. Ability to support multiple Formularies.

a. Support downloading of formulary information.
b. Support multiple formularies concurrently.
c. Support formulary based on patient's plan of care.
d. Support dynamic, real-time use of formulary at point-of-care based on patient's plan.
e. Support dynamic updating of formularies.
f. Provide alerts/reminders when departing from patient specific formulary.

17. Ability to Interface to other systems, as required:

a. Electronic Health Record system

CLINICAL SPECIALTIES

PHARMACY

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

b. Offline Prescriptions – System to allow processing of prescriptions when the link to interfaced systems is unavailable and the ability to electronically upload data to the interfaced system when the link becomes available.
c. Automated Refill Orders – System to allow voice/touchtone/web refill requests that will be processed automatically by the system.
d. Pharmacy Prescription Data Warehouse.
e. OMNICELL system.

18. Ability to utilize data from and/or support the following databases and functions:

a. First DataBank or Medispan
b. MICROMEDEX – Ability to access drug information systems, real time, such as MICROMEDEX..
c. National Council for Prescription Drug Programs (NCPDP) Telecommunication Standards – (EDIFACT syntax and EDIFACT/ASC X12 data tables) (SCRIPT Standard)
d. HCPCS, CPT4, HL7, ICD9, HIPAA, Support
e. Convert Current Pharmacy System Profile Data to New System.
f. Food – Drug – Allergy Checking
g. Drug Disease Contraindication Checking
h. Pregnancy/Lactation Warnings
i. Minimum/Maximum Dose Checking
j. Gender and Age Checking
k. Rules – Ability to define dispensing criteria based on age, sex, quantity, benefits, therapeutic class, missed refills, companion medications, and other.
l. Medication and Prescription Expiration Dates
m. Drug Maintenance Lists (Formularies)
n. Drug Specific Quantity Limit Edits
o. Patient Education Database/Printing (Monographs) – Automatic for selected drugs and on request.
p. Prescription Label and Monograph Prints in: English, Spanish, different font/styles
q. Label (re)prints
r. Prescription Inactivation
s. Field Specific Help Functions – Enter limited amount of days and System displays screen with options to select from.
t. Prescription Data Access – Ability for any pharmacy in the system to access prescription data entered at any other pharmacy.
u. Prescription Transfers – Ability to record data required by state and Federal Laws/Regulations when transferring prescriptions to an outside pharmacy.
v. Concurrent Access to Same Patient/Drug.
w. Controlled Substance Processing and Reporting
x. Chemotherapy, Unit Dose, and IV Processing and Labeling

CLINICAL SPECIALTIES

PHARMACY

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

y. DME Support (Durable Medical Equipment)
z. Electronic Prescription Writing/Processing
aa. Telephonic Interface and Automated Refill Technology
ab. Bar Coding/Hand Held Technology
ac. Medicare/Medicaid Formulary Support
ad. Tax Statements
ae. Primary/Secondary Coordination of Benefits
af. Tiered Benefits – Different patient cost share (co-pay, co-insurance) for different groups of medications, such as generic and brand. Ability to accurately adjudicate multiple benefit configurations.
ag. Plan Limitations/Rules – Dispensing limits, dollar limits, and other.
ah. Assisted Living/Nursing Homes Support
ai. Manifesting – For inventory transfers, prescription transfers from refill center to pharmacy, and prescription transfers from pharmacy to nursing home and other assisted living facilities.
aj. Efficient Storage Retrieval System of Filled Prescriptions
ak. Locator System – Ability to track and locate prescriptions through the filling, processing, and delivery process.
al. Laser Printing
am. 3rd Party Billing/ Split Billing
an. Team Pharmacist Concept Support – Pharmacists assigned to practitioner teams to provide medication use management (MUM) support, prescription order entry, and patient counseling.
ao. Report Generation
ap. On-line tutorials help functions and proficiency testing.
aq. Patient Driven Gateway to Pharmacy On-line Activities – Ability to have a menu driven system to enter a patient identifier and then move to prescription, billing, benefit, demographic, and profile transactions/systems.

19. Ability to support printing labels, patient education materials, instructions in multiple languages.

CLINICAL SPECIALTIES

PHARMACY

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-2 CLINICAL SPECIALTIES

2-3-2.2 PSYCHIATRIC

CLINICAL SPECIALTIES

PSYCHIATRIC

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
Please list (in comments) any offered functionality specific to Psychiatry that has not been covered in the previous Clinical Operations sections.					

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-2 CLINICAL SPECIALTIES

2-3-2.3 DENTAL

CLINICAL SPECIALTIES

DENTAL

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
1. Documentation: a. Periodontal charts. b. Adult and child tooth charts. c. Charting of soft tissue disease management and dental anatomy.					
2. Decision Support: a. Ability to support dental triage system to assist nurse on determining need for a dental referral based on information at intake.					
3. Patient Education: a. Ability to provide on-line access to dental patient education materials and ability to print in multiple languages.					
4. Ability to upload and capture data for field preventive sealant visits.					
TOTAL POINTS					

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-2 CLINICAL SPECIALTIES

2-3-2.4 OBSTETRICS

CLINICAL SPECIALTIES

OBSTETRICS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
1. Ability to link all OB encounters, orders for ancillary services and results to create a comprehensive listing of services and outcomes for the episode of care for one pregnancy.					
2. Ability to track when the pregnancy is completed and the outcome.					
3. Capture estimated due date and date of last menstrual period.					
4. Ability to capture HIPAA OB transaction data.					
TOTAL POINTS					

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-2 CLINICAL SPECIALTIES

2-3-2.5 COMMUNICABLE DISEASE

CLINICAL SPECIALTIES

COMMUNICABLE DISEASE

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
1. Ability to link all TB encounters, orders for ancillary services and results to create a comprehensive listing of services and outcomes for the episode of care.					
2. Ability to track legal obligations for treating TB clients: Public Health orders, court orders, by client, including: date of order, date delivered. Ability to flag for isolation requirements.					
3. Ability to interface with Harborview PACS for on-line access to digital radiography images (preferred) or to receive, store and retrieve scanned digitized images.					
4. Surveillance: ability to query and report on multiple parameters.					
5. Ability to tie records of one client to other clients (same as other communicable disease outbreak management tracking needs for sexually transmitted diseases, pertussis, SARS, etc.)					
6. Ability to link, retrieve, organize and achieve data for linked cases.					

Note: consider TB as a potential program area for model the cost of adding access for read-only users, when the electronic health record is only implemented in JHS. Or consider costing out adding TB Clinic as an additional site to JHS project. TB Clinic involves 3 providers and 6 case managers. Average number of co-managed cases/month between TB and JHS: 1, range of 0-3. HIV/AIDS has same co-management and tracking issues with JHS.

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-2 CLINICAL SPECIALTIES

2-3-2.6 FAMILY PLANNING

CLINICAL SPECIALTIES

FAMILY PLANNING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
1. Ability to link all FP encounters, orders for ancillary services and results to create a comprehensive listing of services and outcomes for the episode of care.					
2. Ability to protect access to confidential data.					
3. Ability to provide alternative identifiers for clients seeking testing to enable them to remain anonymous within the system.					
4. Decision support: ability to load and access family planning clinical guidelines.					
5. Ability to print FP patient education materials and document that it was given to the client.					
6. Ability to support secure messaging.					
7. Ability to support on-line staff/provider education, to document and track by clinician, type of clinician, education module, org/project, etc.					

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-3 STAFF MANAGEMENT

2-3-3.1 STAFF MANAGEMENT

STAFF MANAGEMENT

STAFF MANAGEMENT

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
Please list (in comments) any offered functionality related to Staff Management, such as: Facility Calendar, Staff Scheduling, Credentialing, Continuing Education, Immunizations, Performance Reviews, etc.					

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-4 TECHNICAL ENVIRONMENT

2-3-4.1 GENERAL SYSTEM FUNCTIONS

TECHNICAL ENVIRONMENT

GENERAL SYSTEM FUNCTIONS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

1. MULTI-ENTITY

a. Provide a multi-facility longitudinal EHR with linkages to other computer systems, as required.
   1. Uses open architecture and can be interfaced/integrated with other applications.
   2. EHR is HIPAA compliant, will be EHR certified, and adheres to all regulatory body requirements.
   3. Support purging (i.e. archiving) of EHR data, as defined by JHS.
   4. Support a "secondary" EHR for research purposes.

2. Support a Master Patient Index (MPI)

a. Support a Master Patient Index (MPI).
b. Functionality to minimize occurrence of duplicate patients e.g. system will not allow second patient with same SOC#).
   1. Ability to view MPI by enterprise or by facility.
   2. Ability to link same patient records on same vendor's system at different facilities.
   3. Provide several defined patient list formats. These lists are produced by a clinician signing on.
   4. Indicators are provided on patient lists as defined above, which indicate new, abnormal, or critical data.
   5. Patient lists will display no less than 15 patients per screen.
   6. Provide each clinician with his/her clients (I.e. default list) that are active and open, with patient demographics, and diagnosis and/or service.
   7. Provide clinician with a display of his/her Group/Team's clients that are active and open, with patient demographics, and length of stay by diagnosis and/or service.
   8. The caregiver may select a different patient list as a default sign-on screen for different locations, programs.
   9. The caregiver may select a different patient list from the chosen default list.
   10. Provide a list of all previously seen patients for whom new data is available.
   11. The caregiver can print on-demand a copy of patient list.
c. User can locate inmates using several methods (e.g. by Name, SOC#, MR#, Service/Program, Housing Unit, etc.).

3. TABLES and MASTER FILES

a. Provide multi-facility, multi-provider (i.e. role based) based set of tables and master files.

TECHNICAL ENVIRONMENT

GENERAL SYSTEM FUNCTIONS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

b. Provide GUI utility to build tables and master files in a hierarchical relationship (e.g. built at the enterprise level, then facility level, then at the provider Type level, then at the provider level.).
c. Provide a utility to load industry standard dictionaries and master files.

4. CLINICAL ACCESS VIEW

a. Provide online access both locally and remotely via the Internet to EHR system for client demographics, location, and census information, via integrated desktop work environment.
b. Provide online access both locally and remotely via the Internet to Data Repository for medical and clinical information, including treatment plans, progress notes, and assessments.
c. Provide online access both locally and remotely via the Internet to Order Entry for transmission of orders, and status check on orders.
d. Provide online access both locally and remotely via the Internet to staff and on-call schedules.
e. Provides ability to conform to Health System patient confidentiality requirements.
f. Provide context based switching between application modules (e.g., no need to re-identify patient when switching applications).
g. Provide each clinician with display and printed listing of his/her clients that are active and open, with patient demographics, and diagnosis and/or service.
h. Provide each clinician with display and printed listing of his/her Group/Team's clients that are active and open, with patient demographics, and length of stay by diagnosis and/or service.
i. Provides several defined patient lists. These lists are produced by a clinician signing on.
j. A list of all previously seen clients for whom new data is available.
k. The caregiver may select a different patient list as a default sign-on screen for different settings, i.e.., inpatient lists for inpatient sign-on, office schedule lists for office sign-on, and so forth.
l. The caregiver may, from the sign-on in any setting, select a different patient list from the chosen default list with no more than two key strokes or mouse clicks.
m. Patient lists as defined above will display no less than 15 patients per screen.
n. The caregiver can print, using no more than 1 keystroke or mouse click, a copy of the above list.

TECHNICAL ENVIRONMENT

GENERAL SYSTEM FUNCTIONS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

o. Color indicators are provided on patient list screens as defined above, which indicate new, abnormal, or critical data and the data is accessible by either 1 click of a mouse or 1 keystroke.
p. Provide Electronic messaging capability for communication with staff.
q. Provide online prompts where signatures or co-signatures are required in the completion of medical records documentation to avoid charting deficiencies
r. Provide online access both locally and remotely via the Internet to one or more databases (e.g., Medline) of bibliographic information.
s. Provide online access both locally and remotely via the Internet to drug information databases and texts.

5. CLINICAL DECISION SUPPORT system (CDS)

a. Ability to configure the timing/location/frequency of alerts to support vs. control care.
b. Incorporates a best practices library of interdisciplinary evidence based rules/alerts developed at leading institutions.
c. Provide ability to interface with third-party reference databases, (Medline, PDR, etc).
d. Ability to easily access or link to references used in writing evidence-based guidelines.
e. Allow integration of external rules databases (e.g. Micromedix) into the ordering process.
f. Allows development of JHS specific rules and alerts that can be applied to library.
g. Ability for reminders/alerts to be differentiated by clinical category (e.g. radiology studies, medication order checks, lab).
h. Provide time based checks (e.g. health screen intervals, assessments, drug monitoring ,etc.).
i. Ability to prioritize levels of alerts specific to JHS.
j. Ability to route alerts as defined by JHS.
k. Uses rules to interpret specific but varied client data points to determine if a reminder should be generated.
l. Provide rules based event detection.
m. Ability to escalate non-response, as defined by JHS, to an alert will automatically escalate alert to another user.
n. Ability to configure method of alert notification using variety of methods (e.g.. priority e-mail, pager, screen pop-up, etc.).
o. Provides relevant information display (e.g.. ancillary or reference information pertinent to an action as defined by JHS.).

TECHNICAL ENVIRONMENT

GENERAL SYSTEM FUNCTIONS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

p. Provide statistical modeling (e.g.. regression, time series), optimization, critical success analysis, & "what-if" scenarios.
q. Ability to identify clearly abnormal values (abnormal criteria can be based on standard sets or on client defined normal).
r. Ability to display reminders/alerts based on past history, including social/family history as well as medical history.
s. Ability to identify and clearly display safety issues, such as allergies and response to allergen.
t. Ability to provide alerts regarding “medical necessity”.
u. Warns users of dangerous clinical states with access to incidents, outcomes, and assessment data.
v. Ability, via alert to interactively order and document care against EHR and client defined rules (e.g. JHS guidelines).
w. Ability to note and log response to alert.
x. Ability to print alerts on-demand.
y. Ability to log alerts.
z. Provide reminders linked to problems on problem list.
aa. Recommends diagnosis based on assessment data entered.
ab. User can look up definition of diagnosis.
ac. Recommends standard clinical pathway or protocol based on medical diagnoses entered.
ad. Provides pre-selected treatment plans when provisional diagnosis is entered for patient encounter.
ae. Provide suggestions for treatment, diagnosis, etc. based on literature and user/clinician definition.
af. Recommends preventive medical interventions.
ag. User can look up definition of interventions.
ah. Provides list of possible activities based on intervention selected.
ai. Support standard sets of "normals" for findings.
aj. Support expedited template-based findings.
ak. Utilize iconic interface using human anatomy images.
al. Support RN triage screening system for use at jail intake, with pathways/guidelines.
am. Support system to track disease outbreaks, including ability to link clients to an initiating case.

6. CONTROLLED MEDICAL VOCABULARY (CMV)

a. Incorporates multiple controlled Vocabularies and Standard Code Sets.
   1. Support local, regional, national vocabularies; updates.
   2. Use vocabulary control on all appropriate fields.
   3. Use enhanced versions of ICD-9-CM as principle for the controlled vocabulary with ability to support ICD-10-CM.
   4. Use Logical Observation Identifier Names and Codes (LOINC)
   5. Use Home Care Financing Administration Common Procedural Coding System (HCPCS)
   6. Use National Drug Code (NDC)

TECHNICAL ENVIRONMENT

GENERAL SYSTEM FUNCTIONS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

7. Use National Council for Processing Prescription Drug Programs (NCPDP)
8. Use Diagnosis Related Group Number (DRG)
9. Use Claim Adjustment Reason Codes
10. Use Remittance Remarks Codes
11. Use another recognized vocabulary source.
12. Flexibility to support SNOMED code set at such time as this becomes a community standard.

b. Relationships between Code Sets clearly defined.
c. Standard Code Sets mapped with a common Dictionary Definition.
d. Attributes for each data element; support all data types.
e. Supports static/dynamic data element relationships.
f. Accommodate new, unforeseen codes, data elements.
g. Provide granularity at "atomic level", the lowest common denominator.
h. Ability to Recognize Semantic Differences (e.g. Heart and Cardiac).
i. Controlled on-line data, can use different descriptions but get consistent display of a term (e.g. CBC, blood count).
j. CMV is part of database with open functionality and can interface to other applications (Service-Oriented Architecture).

7. CLINICAL PATHWAYS and GUIDELINES

TECHNICAL ENVIRONMENT

GENERAL SYSTEM FUNCTIONS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

a. Provide industry standard pathways and guidelines.
b. Ability to modify any provided sets of pathways and guidelines.
c. Provide the capability to develop custom JHS pathways and guidelines.
d. Pathways and guidelines are tied to the generation of treatment plans and assessments.
e. Can be displayed as a calendar of clinical events to be accomplished.
f. Can be displayed organized by care provider type (e.g., Therapist, Psychiatrist, Nurse, Physicians, Clinicians, etc.).
g. Offer medical & mental health diagnosis decision matrix that addresses continuity of interventions in treatment planning.
h. Provide dual diagnosis decision matrix that addresses the continuity of interventions in treatment planning following:
   1. Low severity mental illness/low severity substance abuse.
   2. Severe and persistent mental illness/substance abuse.
   3. Low severity psychiatric disorder/high severity substance disorder.
   4. Severe and persistent mental illness/high severity substance disorder.
   5. High severity psychiatric but not severe and persistent mental illness/high severity substance disorder.

8. COST MEASURING and QUALITY ASSURANCE

a. Built-in mechanisms/access to other systems to capture cost information.
b. Access to other systems to capture cost information, employing quality measurement tools.
c. Collects cost/quality information.
d. Cost, quality, severity information structured to influence clinician decisions.
e. Support multiple EDI Financial links.
f. Ability to interface with SCKPH Billing system (Signature).
g. Availability of a Billing module (nice to have but not mandatory).

9. INTEGRATED E-MAIL (SECURE CLINICAL MESSAGING)

a. Ability to Communicate Clinical Information through Secure E-Mail.
b. Ability to Conference (i.e. chat) on-line.
c. Ability for patient to enter data on line (e.g. blood pressure readings, dietary information).
d. Ability for provider and patient to communicate by secure e-mail.
e. Allow user messages and comments to be sent from one entity to another.

Note: Functionality very helpful for monitoring of TB patients, to support isolation & quarantine clients during communicable disease outbreaks and to replace the “kiting” process in the jail.

TECHNICAL ENVIRONMENT

GENERAL SYSTEM FUNCTIONS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

10. ACCESS (Log- On)

a. Provide on-line access both locally and remotely via the Internet to EHR via integrated desktop environment.
   1. Display an on-line message at JHS designated points warning users that a record of their access is being maintained.
   2. Data sent over the public network is encrypted (e.g. uses secured socket layer).

b. EHR access is secured via encrypted passwords and user identifications, per JHS standards.
   1. Support multiple security levels.
      a. Role based where User Groups are created with access levels, and individuals are assigned to those groups
      b. User based where each individual user is assigned the approved access levels.
      c. Maintain an emergency access login that has the password reset after each use.
   2. Support industry standard, Washington State approved, electronic signatures.
      a. Provide on-line signatures or co-signatures where required to complete medical records documentation.
   3. Password attempts are restricted, per JHS rules.
      a. Display on-line alert (optional report) to a designated PC when certain, JHS specified security violations occur.
      b. System provides a 'disable warning' if a user's password is entered incorrectly a specified number of times.
      c. Support automatic audit trail for all accesses.
      d. Provide means to limit the number of log in attempts.
      e. Support automatic analysis of audit trails/unauthorized access attempts.
      f. Warns system designed user(s), in real time when user has tried to access restricted data as defined by JHS.
      g. Password resets are required, per JHS defined schedule.
      h. Password cannot be saved on the desktop (i.e. must be re-entered for every log-in).
      i. Provide alternate user authentication methods other than the typical keypad entered user id and password.

c. Access to functions within the EHR are automatically controlled by secure user profiles.
   1. Allow authorized user (System Administrator) to create, modify, and cancel user profiles (with reason code).
   2. Create documentation of new, modified, and canceled user profiles.

TECHNICAL ENVIRONMENT

GENERAL SYSTEM FUNCTIONS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

3. Restrict access for given functions by location or designation of PC and/or time of day, day of week.
   i. User accounts can be built with expiration dates (temporary employees).
   ii. Users can be connected to a group and gain resource access at the group level.
   iii. User may belong to more than one security group.
   iv. Require users to change passwords every x days as specified by the security administrator.
   v. Designated users can not be signed on to more than one PCl (device) at a time .
   vi. Allow multilevel, read-only access to the system by authorized personnel only.
4. Restrict additions to, changes to, and/or deletion of records by security level to only those authorized.
5. At user's request, print management report of security access by application and by department.
6. Provide a report of user's activity per sign-on for productivity tracking.
7. Provide a report of user Logon ID's not used for a specified time.
8. Provide a report whereby a user can list the names of all who have accessed a specific patient's record.
9. Ability to process file from Human Resources system for terminated employees, and automatically turns off access.

d. Response time and availability:
   1. Response times: in 2 seconds or less 99 percent of the time. Sub-second response time 98 percent of the time.
   2. Support redundancy/fault tolerance access.
   3. Available 99.99 percent of the time.
   4. Time-out occurs, per JHS rules (e.g. PC specific, User specific, User Role specific).

e. Support multiple, simultaneous users concurrently.
   1. Log all transaction processing and archiving.
   2. Support write-locking mechanism to prevent unauthorized updates.
   3. Alert simultaneous users of each other's presence on the same record.
   4. Print at authorized user request, an audit report of every transaction initiated on the system (HIPPA compliant).

f. Patient confidentiality can be protected, per HIPPA regulations, when data is extracted from repository through encryption.

11. SCREEN DISPLAYS

a. Graphical rather than text based user interface.

b. Ergonomic presentation.
   1. Support user-friendly movement across the system.
   2. Engineered with human factors emphasis.
   3. Rapid screen "painting".
   4. Provide consistent information and graphical queues.
   5. Provide balance between density of information and uncluttered aesthetics.
   6 Consistent formatting for users to find information.

TECHNICAL ENVIRONMENT

GENERAL SYSTEM FUNCTIONS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

c. Ability to display updates or changes (e.g. edit an entry) in “real-time”.
d. Navigation through display well-organized and easy to use.
e. Standardized screen design.
    1. Standardized navigation flow similar from screen to screen.
    2. Standardized naming conventions throughout application.
    3. Standardized menus (whether drop-down, drill-down, tree) throughout application.
f. User is able to identify where the current display is in the whole record (e.g. site map).
g. Time efficient - Ideally no more than three “mouse clicks” for any process, with most in one.
h. Patient information (e.g. name, medical record #) clearly displayed on each page specific to that individual’s EHR.
i. Support simultaneous User Views in the EHR.
    1. Support tailored specialty views at enterprise level.
    2. Support departmental specific user views.
    3. Support different views for different users.
j. Provide views of patient data based upon user needs (e.g.. Clinician, Pharmacist, Administrative, Medical Records):
    1. Clinician view.
    2. Therapist view.
    3. Pharmacist view.
    4. Administrator view.
    5. Quality Assurance view.
    6. Medical Records view.
    7. Parent Child Health view.
    8. Immunization view.
    9. Managed Care view.
    10. Dental view.
k. Provide the ability to "flip through" the patient data in a manner similar to reviewing a paper chart.
l. Provide key data as defined by the user (e.g., problem list, allergies) on a single screen.
m. Provide access to patient data with three or less menu selections, including sign-on.
n. Provide graphical capabilities for viewing data trends.
o. Provide screen print capabilities of any screen, including screens with graphical displays.

12. DATA ENTRY

a. POINT OF CARE ABILITY (Can be Used Whenever/Wherever Care Given).
b. Allows point of care entry/display.
    1. Utilize hand held devices (i.e. wireless) or a PC.

TECHNICAL ENVIRONMENT

GENERAL SYSTEM FUNCTIONS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

2. Easy to use entry device (e.g. keyboard, touch pad) at point of care.

c. Engineered with human factors emphasis.
   1. Easy data entry (e.g. uses drop-down lists) for all fields.
   2. Input protocol is easy/fast; intuitive input interface.
   3. Display is easy to read.

d. Data is entered once (e.g. patient name) and displayed without requiring redundant data entry.
e. System prevents users from moving to the next field (minimum next screen) if error or omissions exists.
f. Ensure dynamic documentation during encounter complying with all coding rules.
g. All fields have on-line Help (data dictionary name and codes) for easy reference and look-up.
h. Provide dynamic re-engineering of workflow for efficiency.
i. System supports efficient workflow for user (makes job easier rather than harder):
   1. Charting by exception as much as possible
   2. Use Microsoft word processing functions (e.g. formatting, cut-n-paste, spell check, paragraph control, bullets).
   3. Seamless integration with Microsoft Word for creation, editing, spell checking of notes using Microsoft templates.
   4. Point and click choices
   5. Minimize required free text
   6. Provide structured format and content
   7. Port like data elements
   8. Provide predefined list of words/phrases for specified: subtopics; diagnosis; interventions; procedures; findings; etc.
   9. Note format and template can be customized based on the type of note.
   10. Templates can be customized by specialty, location, problems, and provider.
   11. Verbiage such as “canned” phrases or data elements are available for note types and contents
   12. Multiple means provided for notes entry – e.g. keyboard, mouse, handheld portable device, voice and to edit notes
   13. Support downloads from a dictation/transcription system for inclusion of clinician’s progress notes.
   14. Supports downloads from voice recognition software as integral part of notes
   15. Ability to link notes with problems by patient
   16. Type of notes entry allowed can be configured based on role.
   17. Support unlimited number of user definable time period views of notes (e.g. today, current week, monthly).

13. SCREEN BUILDER

TECHNICAL ENVIRONMENT

GENERAL SYSTEM FUNCTIONS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

a. Provide online screen building utility enabling authorized users to place data elements (from data dictionary) onto screen.
b. Provide edit options for each data element:
   1. Mandatory
   2. Optional
   3. Default values
   4. Flash/Inverse
   5. Edit logic (e.g., If element1=X then element2 should = Y)
   6. Others means
c. Provide input format attributes for each data element:
   1. Any text
   2. Alpha
   3. Numeric
   4. Dollar amount
   5. Time
d. Allow JHS to compose functions by linking screens into fixed or variable sequences, based on edit and format rules.
e. Distinguish between test versus production libraries of screens and functions.
f. Allow the JHS to label fields on screens and reports consistently with JHS's terminology, without program code changes.
g. Provide graphic building capabilities including:
   1. Line drawing
   2. Drag-and-drop positioning of any screen element
   3. Images (e.g., JPEG, BMP, GIF)
   4. Font / Size
   5. Color formatting
h. Designed to add new data elements dynamically.

TECHNICAL ENVIRONMENT

GENERAL SYSTEM FUNCTIONS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

14. REPORT GENERATOR

a. Ability for authorized employee's without programming skills to generate reports related to any identifier in the system.
b. Provide industry standard Report Writer (e.g.. Crystal). ***Please indicate software product in comments.***

15. STANDARD REPORTS

a. Provide standardized formatting on all reports, including:
   1. Standard report headings and formats.
   2. Report will include definition of a printed code.
   3. Ability to define routes to printers by report type/process.
   4. Ability to track distribution of reports on-line.
   5. Ability to define number of reports to print.
   6. Ability to define only portions of a report to print.
   7. Ability to define automatic report schedules if desired.
   8. Ability to print (both scheduled and on-demand) or display (at user's option).
   9. Ability to be produced in either summary or detail format (at user's option).
   10. Ability to select a specified time period (e.g.. by day, by week, by month, etc.).

b. Provide standard reports that correspond to existing documents in the paper chart.
   1. Allow JHS to customize any standard report.

TECHNICAL ENVIRONMENT

GENERAL SYSTEM FUNCTIONS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	2	1	1	0	

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-4 TECHNICAL ENVIRONMENT

2-3-4.2 TECHNICAL ARCHITECTURE

TECHNICAL ENVIRONMENT

TECHNICAL ARCHITECTURE

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

1. SERVER ARCHITECTURE

a. STANDARDS

1. The server architecture and supporting hardware (i.e. RAID) must be scalable, dual redundant/fault tolerant, and hot-swappable. The architecture must adhere to King County Public Health standards, as defined below:

Public Health standard server hardware vendor is DELL, Windows Based.

b. DOMAINS

1. The system must be configured, at a minimum, with the following domains:
   a. Establish and maintain a complete and separate Production environment.
   b. Establish and maintain a complete and separate Reporting environment which is "refreshed" daily, at a minimum.
   c. Establish and maintain a complete and separate Training environment.
   d. Establish and maintain a complete and separate Testing environment.

Please provide proposed SERVER schematic as ATTACHMENT B.

c. APPLICATION SERVICE PROVIDER (ASP) MODEL

1. Provide Application Service Provider (ASP) option for remote hosting of the application(s) at vendor's data center.
2. The Data Center must be high-tech (i.e. secured, provide generator back-up, 24 hour Help Desk support, Service Level Agreements, Off-Site back-up/recovery storage, utilizes current technology with vendor Maintenance Agreements, technology replace cycle, etc.).

2. DESKTOP ARCHITECTURE

a. STANDARDS

1. The PC architecture, hardware and operating system, must adhere to King County Public Health standards, as defined below:
   -PH standard for PC hardware vendor is DELL.
   -OS is Window XP. All applications must run at the XP User level.

TECHNICAL ENVIRONMENT

TECHNICAL ARCHITECTURE

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

Please describe the MINIMUM DESKTOP CONFIGURATION as ATTACHMENT C.
Please describe the DESIRABLE DESKTOP CONFIGURATION as ATTACHMENT C.

3. PERIPHERAL ARCHITECTURE

a. STANDARDS

1. The Peripheral Hardware architecture must adhere to King County Public Health standards, as defined below:

PRINTERS:

Public Health standard for printer vendor is Hewlett Packard.
Please describe the technical aspects of your proposed PRINTER solution in ATTACHMENT D.

SCANNERS:

Public Health standard for scanner vendor is Hewlett Packard or Fijitsu.
Please describe the technical aspects of your proposed SCANNER solution in ATTACHMENT D.

a. The system will record the scanned image as a pre-configurable type of clinical record (e.g. Release of Information).
b. The system will maintain an index of all scanned documents in relation to all electronic records, allowing users the ability to view all records in chronological order.
c. Support integrated documentation imaging via icon on the clinical workstation.
d. Forms (i.e.. including all data) can be printed in lieu of the original paper document.

FAX:

Public Health standard supports industry standard dedicated fax boards or API to remote fax server solution.
Please describe the technical aspects of your proposed FAX solution in ATTACHMENT D.

a. Forms can be automatically faxed via a fax server.
b. Support facsimile (inbound and outbound) transmission.

IMAGE DATA STORAGE:

Public Health does not have a standard.
Please describe the technical aspects of your proposed IMAGE STORAGE solution in ATTACHMENT D.

a. Support complete image (e.g. DICOM) display technologies.
b. Use industry standard compression algorithms.

TECHNICAL ENVIRONMENT

TECHNICAL ARCHITECTURE

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

c. Support integrated diagnostic imaging via icon on the clinical workstation.

MULTIMEDIA/VIDEO:

Public Health does not have a standard.

Please describe the technical aspects of your proposed MULTIMEDIA solution in ATTACHMENT D.

a. Support Multimedia via object-relational DBMS technologies.

b. Support complete multimedia, full-motion video via icon on the clinical workstation.

DICTATION/TRANSCRIPTION:

Public Health does not have a standard.

Please describe the technical aspects of your proposed DICTATION/TRANSCRIPTION solution in ATTACHMENT D.

a. Support integrated/interfaced voice dictation via icon on the clinical workstation.

b. Support integrated/interfaced speech recognition via icon on the clinical workstation.

BAR CODING:

Public Health does not have a standard.

Please describe the technical aspects of your proposed BAR CODING/SCANNING solution in ATTACHMENT D.

a. Support bar coding technology.

b. Print Bar Code at the bottom of every printed Patient Specific document.

4. WEB ARCHITECTURE

a. STANDARDS

1. The WEB architecture must adhere to King County Public Health standards, as defined below:
   Public Health Standard is Microsoft, Windows based, Internet Explorer.
   Transmission of data must be encrypted
   Please describe the technical aspects of your proposed WEB ARCHITECTURE in ATTACHMENT E.
2. The vendor must comply with the Health Insurance Portability and Accountability Act (HIPAA) security standards.
3. Provide internet browser enabled user access to all EHR functionality.

5. NETWORK ARCHITECTURE

a. STANDARDS

1. The Network architecture must adhere to King County Public Health standards, as defined below:
   Public Health standard is Microsoft NT 4.0 scalable to Active Directory and Netware 6.5 for file and print access.
   Please describe the technical aspects of your proposed NETWORK ARCHITECTURE in ATTACHMENT F.
2. Network connections must be secure. Electronic communications must have a security function to only allow authorized communication and access.

TECHNICAL ENVIRONMENT

TECHNICAL ARCHITECTURE

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

6. APPLICATION ARCHITECTURE

a. STANDARDS

1. The EHR Application software must adhere to King County Public Health standards, as defined below:
   Public Health standard is a multi-tiered, .Net based application.
   The application must maintain security logs; it must log events to a syslog or event log of a server.
   Please describe the APPLICATION ARCHITECTURE in ATTACHMENT G.

b. THIRD PARTY SOFTWARE

1. The use of Third Party software in support of the EHR must adhere to King County Public Health standards, as defined below:
   Public Health standard is a multi-tiered, .Net based application
   Must run at the User level on the desktop.
   It must integrate with Active Directory or LDAP for authorization for login.
   It must not be a proprietary authentication scheme.
   Please describe the any THIRD PARTY SOFTWARE required in ATTACHMENT G.

c. APPLICATION SECURITY

1. The system must have restricted access to only authorized users via User Ids and encrypted passwords.
2. The system will not display any type of data prior to successful login. The system will have a warning banner (i.e. acknowledge confidential medical record information) displayed prior to or after the log in where the user must acknowledge the warning banner prior to gaining access to the data.

7. DATABASE ARCHITECTURE

a. STANDARDS

1. The Database software must adhere to King County Public Health standards, as defined below:
   Public Health standard is MS-SQL, structured to allow ad-hoc reporting via 3rd party reporting tools.
   It must allow for direct database access through select statements and stored procedures.

b. DATABASE STRUCTURE (Data Warehouse)

1. Fully Relational Database
2. Third Normal Form (Minimum)
3. Provide entity-relationship diagrams indicating relationships among tables, including keys.
   a. How are primary database keys defined?
   b. How does database structure affect processing and display time?
3. Database structure allows users to access needed data where and when needed.
4. Provides for Clinical Data Integrity.
   a. Ability to provide views of data for reliability/validity checking.

TECHNICAL ENVIRONMENT

TECHNICAL ARCHITECTURE

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

b. Tools or processes in place to assist in validating clinical data integrity.
c. Database structure provides support to JHS to meet regulatory requirements.
d. Provides ability to define Maximum Data Set (per HIPAA Requirements).
e. Comply with the evolving standards for the Computer-Based Patient Record from the Institute of Medicine.

5. Provide extensive editing of data entered in the EHR to guarantee data quality:
   a. Standard editing.
   b. User defined editing.
6. Database structure allows incorporation of "user defined data" not already included in the standard database sets.
   a. Database upgrades maintain data integrity of “user defined data”.
7. Supports a master terminology index which designates a single, unambiguous standard term for each commonly used medical term, diagnosis, observation, intervention, etc.
8. Thesaurus translates acceptable abbreviations, synonyms, shorthand and common misspellings for the standard terms.
9. Application provides a configuration option that suggests standard terms whenever a non-standard term is used.
10. Provide standardized coding (I.e. ICD9) of data elements to allow reporting and analysis.
11. Provide lifetime patient record, including:
    a. Unlimited number of patients in the database.
    b. Unlimited number of encounters per patient.
12. Provide two separate databases: active database and archival.
13. Maintenance and upgrades do not interfere with JHS clinical and business processes.
14. Provide export capabilities to the following file formats:
    a. Excel
    b. Comma delimited Text File
    c. SAS
    d. Access

8. INTERFACE ENGINE

a. STANDARDS

1. The Interface Engine must adhere to King County Public Health standards, as defined below:
   Public Health standard is Openlink. HL7 interfaces preferred.
   Vendor proprietary interface is not an option.

TECHNICAL ENVIRONMENT

TECHNICAL ARCHITECTURE

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

2. Provide support for Application Level Transaction Standards relevant to the medical industry including, but not limited to the following:
   a. HL7
   b. DICOM
3. Comply with the Health Insurance Portability and Accountability Act (HIPAA) security standards.
4. Perform security checks on messages passed between application systems.
5. Protect application definitions, routing information, and interface message definition from unauthorized access.
6. Provide ability for the interface engine to serve as a security manager by providing a menu of authorized applications based on the user's sign-on ID.
7. Support the use of encryption for messages passed between systems.
8. Support the use of centralized authentication servers as part of access control.
9. Support the use of multiple levels of user ID and password access control.
10. System provides a console lock with keyboard inactivity timeout.

b. PERFORMANCE and RELIABILITY:

1. Provide around-the-clock (24 hours per day, 7 days per week) interface engine operation.
2. Provide ability to add new interfaces, devices, and applications without taking down the interface engine.
3. Provide ability to add new interfaces, devices, and applications without vendor involvement.
4. Provide ability to log messages for recovery and error correction.
5. Provide ability to dial beepers or phones, and send electronic mail, as well as notify the interface engine console when interface failures occur.
6. Provide an automated mechanism for re-synchronizing the transaction flow when bringing up a new receiving system or after a failure.
7. Provide system redundancy and fail-safe mechanisms.
8. Provides the ability to share tasks across multiple interface engine systems with hardware and application fail over occurring without manual intervention.
9. Failed transactions may be examined online and corrected by authorized personnel prior to retransmission.

c. DATA CAPTURE:

1. Perform capture of simultaneous data transaction streams from multiple senders within the network.
2. System provides 'pre-packaged' communication clients to acquire and send data from/to major information systems in use at the County, including:
   a. DAJD (XKMS): inmate demographics.
   b. Signature: Billing System & Demographics.
   c. Rx (FSI): Pharmacy system.
   d. Harborview Radiology: Orders, Scheduling, Results, PACS
   e. MLAB Laboratory: Orders, Scheduling, Results
   f. KC Data Warehouse
   g. Referrals to external organizations

TECHNICAL ENVIRONMENT

TECHNICAL ARCHITECTURE

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

d. DATA MANIPULATION:

1. Allow data from a sender to be manipulated before being passed onto the receiver(s):
   a. Translate from 1 value to another
   b. Assemble discrete data elements into 1
   c. Coordinate discrete messages into 1
   d. Hold for future action or state
   e. Sub-string text
   f. Convert data types (e.g., text->numeric)
   g. Change element length
   h. Format (e.g., adding dashes to a phone number)
2. Provide tools to create routines that automatically modify the content of messages, and perform message routing.
3. Allow a single input transaction to be broadcast to multiple receivers.
4. Allow different data manipulation mappings and formats for each broadcast message and each receiver message.
5. Provide facilities for complex data conversions including:
   a. Database lookups
   b. Conditional operations
6. Provide ability to route messages to various combinations of applications and platforms based upon message content and pre-defined rules.

e. DATA TRANSMISSION:

1. Provide ability to "store and forward" messages when receiver is down without manual intervention.
2. Provide ability to resend transactions, on demand, for a given time period.
3. Provide alert notification if a scheduled sender does not transmit.
4. Provide alert notification for messages stored for a period greater than a user-definable period of time.

f. PERFORMANCE MONITORING and OPTIMIZATION:

1. Allow messages to be displayed and/or written to a file for debugging purposes.
2. Provide facilities for auditing and performance monitoring.
3. Provide ability to prioritize messages and transactions depending on content or source of message.
4. Provide for log retention for user-defined periods.
5. Provide ability to export logs to standard database formats, including, but not limited to the following:
   a. Microsoft Access

TECHNICAL ENVIRONMENT

TECHNICAL ARCHITECTURE

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

b. Comma delimited ASCII
c. Microsoft Excel

6. Provide summary reporting regarding performance of the interface engine.
   a. Provide cumulative performance reporting for day, week, month, quarter, year, or other user-defined periods.
   b. Provide ability to display graphically the performance data on screen and in printed output.
   c. Provide graphical user interface display of gateway status, activity, and performance.
7. System provides for ability to down the interface engine and maintains ability to restart transmissions after service resumption.
8. System provides an authorized user the ability to halt a transaction in progress without loss of the message data.
9. System provides an authorized user the ability to reorder or modify transactions in the queue.

g. BUILDING INTERFACES:

1. Provide a graphic user interface for specifying data mappings and control functions.
2. Provide the ability to trap an incoming message for mapping definition through population of list boxes.
3. Track and report on fields available and used in designing mapping relationships.
4. Can interface easily to other King County systems to enter and display needed information
5. Can interface easily to systems outside of King County to enter and display needed information
6. The interfaces must be standard, reusable, and maintainable.
7. The system must be designed and programmed to send and/or receive standard messages through an interface engine when there is a requirement to exchange data with other applications running on different systems. This requirement covers both real-time transaction and batch interfaces, in-house developed and vendor-supplied applications.
8. The system (i.e. interface engine) must be able to route interface transactions to the Production environment and/or the Test environment (et. al. environments).
9. The system must support current health industry and telecommunications standards such as HL7, DICOM, EDI (X.12), and HIPAA.

9. EHR SYSTEM PERFORMANCE and RELIABILITY

1. The system must be capable of efficiently completing transactions (send/receive cycle).
   a. Response times: in 2 seconds or less 99 percent of the time.
   b. Sub-second response time 98 percent of the time.
   c. Available 99.99 percent of the time.
2. The system must capable of handling thousands of concurrent users.
3. The system must be scalable enough to handle future increases in volumes.
4. Ability to perform backups without taking any portion of the system down.

TECHNICAL ENVIRONMENT

TECHNICAL ARCHITECTURE

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	2	1	1	0	

TOTAL POINTS

SEATTLE-KING COUNTY DEPARTMENT OF PUBLIC HEALTH
JAIL HEALTH SERVICES
Electronic Health Record Vendor List

CORRECTIONAL HEALTH CARE VENDORS (seen at NCCHC)

VENDOR	CONTACT	PRODUCT	RFP RESPONSE
Asystar Medical Records Solutions 27 Millstream Way Winnipeg, Manitoba R3T 5R2 www.asystar.com	**Contact: John Angus** Janice Clark John@asystar.com Phone: (204) 275-1829 (800) 667-1829 Cell: Fax: (204) 269-3187	**CorrectStar** Asystar Medical Records Solutions presents CorrectStar, an integrated electronic medical record for correctional health care. CorrectStar includes infectious disease tracking and electronic medication administration records, and can link to other electronic systems such as pharmacy, laboratory and jail management systems. CorrectStar also follows a patient from intake screening through custody stay, streamlines the delivery of prescribed medications, treatments and diets, orders lab tests, collects results, schedules follow-up visits, tracks TB and HIV patients... with ease and cost efficiency.	
CorrecTek, Inc. 986 Grant Terrace Atlanta, GA 30315 www.correctek.com	**Contact: Bonnie Logan** BLogan@correctck.com Phone: (866) GET-EMR1 Cell: (602 999-5326 Fax:	**CorrecTek** CorrecTek is a comprehensive electronic medical records system specifically designed for the needs of correctional facilities. Those who work in this environment know that a correctional medical records solution can help manage every aspect of the health care process. If your facility is looking to transition to paperless medical charts, streamline your medical practices and raise your standard of health care, please contact CorrecTek and see how they can be your solution.	**RECEIVED.**
Darlogix Inc. 1967 Weble Dr. Williamsville, NY 14221 www.darlogix.com	**Contact:** Phone: (443) 306-0799 Cell: Fax: (516) 977-1066	**Ptrax** DarLogix was founded on the premise that well-designed and implemented management and IT systems are critical success factors in today's correctional health care world. Their flagship product is Ptrax, an electronic patient management system. Ptrax was built from the ground up to work in the correctional environment in both a clinical and management role. Ptrax is a perfect fit for the health care contractor and contract monitor. Darlogix has full-time integration specialists, trainers and programmers who are available to work side-by-side with your personnel to implement Ptrax in your environment.	
BCA Formerly:**IMRAC Corp.** 230 Great Circle Road Nashville, TN 37228 www.imrac.com	**Contact: Doug Vincent** DVincent@imrac.com Phone: (615) 777-8030 Cell: Fax: (615) 312-5230	**EMERALD** Physicians can use the clinical and financial management functions of IMRAC's Emerald service to achieve data-driven, high quality health care delivery to patients. Using the powerful Emerald application, physicians can turn to IMRAC to manage the complexities of health care accounting, regulatory compliance, billing and collections, and robust clinical control. Time spent on routine administrative tasks can now be spent on patients. Emerald has proven to be an ideal solution in correctional institutions.	**RECEIVED.**
QuickMed Inc.	**Contact: Eric M. Cadwell**	**QuickMed**	**RECEIVED.**

SEATTLE-KING COUNTY DEPARTMENT OF PUBLIC HEALTH
JAIL HEALTH SERVICES
Electronic Health Record Vendor List

VENDOR	CONTACT	PRODUCT	RFP RESPONSE
6202 W. Okanogan Ave. Kennewick, WA 99336 www.quickmed.com	Phone: (509) 735-5300 (800) 615-3774 Cell: Fax: (509) 783-6060	QuickMed® Electronic Medical Office™ combines EMR, charting, inmate intake, messaging and QuickMed's medication management with MedPass® designed specifically for institutional medicine.	
SYSCON Justice Systems LTD. 230 – 8211 Sea Island Way Richmond, BC, Canada V6X 2W3 www.syscon.net	**Contact: Susan Dean** Phone: (604) 606-7650 ext. 8712 (888) 797-2662 ext. 8712 Cell: Fax: (604) 606-7654	**TAG®** Designed exclusively for correctional institutions, TAG's EHR module allows medical users to create and manage a single comprehensive and protected offender health record. With health records completely integrated with the world-beating TAG Offender Management System, data entererd in TAG oo such as scheduling information, updates and core offender demographics – is available to medical and institutional personnel in real-time.	**RECEIVED.**

CORRECTIONAL HEALTH CARE VENDORS (NOT seen at NCCHC)

VENDOR	CONTACT	PRODUCT	RFP RESPONSE
Tiburon, Inc. **CorrLogic is a subsidiary of Tiburon, Inc. Refer to e-mail received 12/30/2004.** ~~**CorrLogic**~~ ~~4720 Walnut Street~~ ~~Boulder, CO 80301~~ ~~www.corrlogic.com~~	**Contact: Carroll Allison** **callison@tibinc.com** Phone: (970) 856-6819 Cell: (970) 260-1919 Fax: (970) 856-6820	**CorrMedica**™ designed as an integrated solution for today's complex correctional health care facilities. CorrMedica™ is a comprehensive and cost-efficient institutional medical management system that helps existing medical departments evolve into modern, state-of-the-art operations. CorrMedica™ incorporates standard medical policies and procedures with an electronic medical chart. Patient charting follows the natural flow of events in a medical session and provides all the tools necessary to record information and carry out tasks. It also allows accurate records to be shared throughout the facility using a single database, eliminating duplicate data entry. CorrMedica™ can interface seamlessly with existing institutional management systems such as CorrLogic's Premier IMS™ or CellStream™, which allows for the administration of all inmate information. In addition, the sharing of medical data is controlled by medical staff through a comprehensive security system. CorrLogic is committed to automating the health care portion of the corrections industry as a way to help address the high liability potential faced by medical staff on a daily basis. With CorrMedica™, corrections health care professionals can spend more time on their primary responsibilities while increasing the efficiency and quality of inmate health care.	**DECLINED.** **Wanted more time.**

SEATTLE-KING COUNTY DEPARTMENT OF PUBLIC HEALTH
JAIL HEALTH SERVICES
Electronic Health Record Vendor List

VENDOR	CONTACT	PRODUCT	RFP RESPONSE
Corrtech Technology 3101 SW Wanamaker Dr., #82 Topeka, KS 66614 www.corrtechnology.com	**Contact:** Phone: (785) 220-2721 Cell: Fax:	**Corrtech** Technology provides automation and technical resource management to the correctional industry. The company is comprised of professionals in correctional health care delivery, medicine, technology, human resources and organizational resource management. They offer low cost automation solutions for medical records, human resources, commissary, etc.	
Serapis 12647 Olive Blvd. St. Louis, MO 63141 www.serapisonline.com	**Contact:** Phone: (314) 919-9104 Cell: Fax: (314) 919-8908	**SERAPIS** established in 1997, became an industry leading, revolutionary electronic records system, tailored to accommodate the unique characteristics of health care delivery within your correctional environment. Simply put, Serapis allows you to better understand, manage and report on the care provided to your inmate population. "The Art of Medicine, the Power of Technology".	

SEATTLE-KING COUNTY DEPARTMENT OF PUBLIC HEALTH
JAIL HEALTH SERVICES
Electronic Health Record Vendor List

PUBLIC HEALTH VENDORS

VENDOR	CONTACT	PRODUCT	RFP RESPONSE
CERNER 2800 Rockcreek Parkway, Kansas City, MO 64117 www.cerner.com	**Contact:** Phone: (816) 221-1024 Cell: Fax: (816) 474-1742	**Cerner *Correctional Solutions,*** with increasing budgetary constraints, rising health care costs, and an increasing number of inmates afflicted with chronic and debilitating diseases, health care professionals in the correctional setting are turning to information technology to find ways to deliver safe, effective, cost-efficient and defensible care. The Cerner *Correctional Solutions* suite is customized to meet these needs by enhancing patient safety, increasing workflow efficiencies and improving health care delivery within regulatory compliance while reducing costs and the risk of litigation. The Cerner *Correctional Solutions* suite unifies the various health care systems in a correctional facility, ensuring that quality care is delivered to inmates by providing critical patient information at the point of care. The electronic medical record (EMR) captures all health care information for each inmate and eliminates time and costs associated with locating and transporting paper medical records. Clinical decision support, including alerts and expert information systems, reduce costly medical errors and minimize the possibilities of adverse drug events, duplicative testing or misdiagnosis. Proven clinical departmental solutions can also automate processes in auxiliary departments such as radiology, laboratory and pharmacy. Clinicians can order meds and tests and electronically view results in real time. With Cerner solutions, correctional facilities can seamlessly interface with existing inmate management systems, track inmates with multiple care encounters and aliases, store information on a single database, and save time and money through improved medical staff efficiency.	**DECLINED.** **Wanted more time, additional 4 weeks.**
EPIC Systems Corporation 5301 Tokay Blvd. Madison, WI 53711 www.EPICsystems.com	**Contact:** Phone: (608) 271-9000 Cell: Fax: (608) 271-7237	**EPIC** Across inpatient, ambulatory, and payor environments, Epic's integrated systems can link thousands of concurrent users to the single source of relevant clinical, access, and financial information. A comprehensive eHealth suite extends the reach to patient homes, affiliate offices and the world through the internet. Enterprise Clinical applications include: • Order Entry • Nursing Documentation • MAR	**DECLINED.** **Unable to respond at this time.**

SEATTLE-KING COUNTY DEPARTMENT OF PUBLIC HEALTH
JAIL HEALTH SERVICES
Electronic Health Record Vendor List

VENDOR	CONTACT	PRODUCT	RFP RESPONSE
		• Interdisciplinary Notes • Care Plans & Clinical Pathways • Nurse Triage • EMR • Pharmacy • Emergency Department • Laboratory • Radiology • Handheld Access to Patient Information	
Multinomah County	**Contact: Michael (Mike) Leahy** Phone: (503) 943-2500 Cell: E-mail:LeahyM@Community-Health.org Contact: Blair Hite E-mail: HiteBG@Community-Health.org	**EPIC** He and his board (leaders in Oregon Public Health Departments, Community Health Centers, and Correctional Health) have contracted with EPIC for both Practice Management and for the Electronic Health Record. He is interested in speaking with you about responding to our RFP. He is traveling in the next few days...so I would contact him right away. He requested a bit of lead time on the RFP.	**DECLINED.** **They left the door open to continue discussions or collaboration.**
IDX 40 IDX Drive Burlington, VT 05402 www.IDX.com	**Contact:** Phone: (802) 862-1022 Cell: Fax: (802) 862-6848	***Carecast*** is a leader in providing integrated clinical and financial/administrative software solutions and services across the healthcare enterprise. Built on 25 years of innovation, *Carecast* provides integrated delivery networks, academic medical centers and hospitals with clinical software solutions to automate workflow and enable rapid access to patient information. *Carecast* solutions help institutions achieve clinical excellence by improving the accuracy of information, promoting patient safety and achieving greater operational efficiencies. Most critically, *Carecast* enhances patient care via a system that delivers unsurpassed reliability and response time. *Carecast* enterprise clinical system creates a comprehensive lifetime patient record by automating the workflow of users and supporting clinical, financial and administrative processes. *Carecast* integrates core clinical processes for orders, results, pharmacy and care documentation, in concert with	**DECLINED.** **No product solution.**

SEATTLE-KING COUNTY DEPARTMENT OF PUBLIC HEALTH
JAIL HEALTH SERVICES
Electronic Health Record Vendor List

VENDOR	CONTACT	PRODUCT	RFP RESPONSE
		administrative/financial processes for scheduling, registration/admitting, charging and billing. The system helps safeguard patient care through computerized physician order entry, clinical decision support and expert rules, while documenting all aspects of patient care. Currently, the *Carecast* system supports patient care at more than 900 hospitals and clinics. The *Carecast* application runs exclusively on HP NonStop™ servers that provide 99.9 percent uptime and "Thinkspeed" subsecond response time.	
NextGen 795 Horsham Road, 2nd floor Horsham, PA 19044 www.NextGen.com	**Contact:** Phone: (215) 657-7010 Cell: Fax: (215) 657-7011	**NextGen** Healthcare Information Systems, Inc. provides computer-based practice management and electronic medical records systems to more than 700 physician practices across the country. Ideal for any size practice, from the multi-provider enterprise to a solo practitioner, NextGen's proven suite of applications streamline front and back office administration and manage all clinical data relating to patient care outcomes. As a wholly-owned subsidiary of Quality Systems, Inc. (NASDAQ: QSII), NextGen is financially solid and continues to be profitable—as proven by our numerous recognitions, including Forbes' 200 Best Small Companies in America and Business 2.0's Top 100 Fastest Growing Technology Companies. Our decade-long history of financial stability speaks to the longevity of our products and key personnel, and thus offers customers an unparalleled level of investment protection.	
SIEMANS Medical Solutions, Inc. 51 Valley Stream Parkway Malvern, PA 19355 www.MEDICAL.SIEMENS.com	**Contact:** Phone: 1 (888) 826-9702 Cell: Fax:	**Siemens Medical Solutions** brings together innovative imaging equipment, information technology, management consulting and services to help customers achieve tangible, sustainable clinical and financial outcomes Siemens Medical Solutions of Siemens AG (NYSE: SI) with headquarters in Malvern, Pennsylvania and Erlangen, Germany, is one of the largest suppliers to the healthcare industry in the world. From imaging systems for diagnosis, to therapy equipment for treatment, to patient monitors to hearing instruments and beyond, Siemens innovations contribute to the health and well being of people across the globe, while	**DECLINED.** **Wanted more time.**

SEATTLE-KING COUNTY DEPARTMENT OF PUBLIC HEALTH
JAIL HEALTH SERVICES
Electronic Health Record Vendor List

VENDOR	CONTACT	PRODUCT	RFP RESPONSE
		improving operational efficiencies and optimizing workflow in hospitals, clinics, home health agencies, and doctors' offices. **Soarian,** it's knowledge on a whole new level. Personal. Actionable. Comprehensive. Soarian is the dynamic health information solution that synchronizes workflow across your entire enterprise. Soarian knows how health systems work. How you work. It functions as an intuitive member of your team. Anticipating your needs. Simplifying your tasks. It orchestrates patient care by bringing together clinical, financial, therapeutic and diagnostic information. To help you make better and faster decisions. Help avoid medical errors. Reduce regulatory snarls. Control costs. Raise satisfaction across the board. And make patients feel valued. At the simplest, yet most profound level, Soarian will create a whole new healthcare experience. Soarian synchronizes workflow across your entire enterprise, orchestrating patient care, improving operational efficiency, and raising patient and clinician satisfaction. Soarian's impact will be felt from the time a patient accesses your system to the time care is completed and receivables are collected. The fast-paced world of healthcare demands that your clinical team respond immediately, diagnose accurately and treat promptly. With Soarian® Clinical Access, these are reasonable demands. This longitudinal clinical repository enables users across departments to view patient histories, demographics, allergies, results and images – and they can view this information from any *syngo*®-speaking workplace, reporting workstation, or machine with a standard Internet browser. Built with an open design, Soarian Clinical Access not only brings together results and other patient information from multiple information systems into a single comprehensive, object-oriented database, but also interfaces with your Picture Archiving Communications System (PACS). Soarian Clinical Access extends your reach across the enterprise so you can: ▪ **Streamline workflow**, saving time formerly spent gathering information from disparate systems and paper charts – so your clinical team can spend less time searching for information and more time acting	

SEATTLE-KING COUNTY DEPARTMENT OF PUBLIC HEALTH
JAIL HEALTH SERVICES
Electronic Health Record Vendor List

VENDOR	CONTACT	PRODUCT	RFP RESPONSE
		on it. ▪ **Prioritize tasks** with worklists that help physicians by pushing real-time information, such as new results that require signoff. ▪ **Leverage a consistent interface**, based on the syngo user interface (UI) design, used across Siemens modalities and workstations from Siemens. Developed for intuitive use, this UI provides a consistent data view, whether on an imaging workstation or a PC. ▪ **Transition seamlessly** between the diagnostic and patient record views, since no separate sign-on is required. The system maintains the patient context, automatically managing patient identity as the user moves from one view to the next.	
Correctional Medical Services	**Contact: Gary McWillilams** Phone: Cell: Fax:		**DECLINED.** **Unable to respond at this time.**

REQUEST FOR PROPOSAL

King County

Department of Executive Services
Finance and Business Operations Division
Procurement and Contract Services Section
206-684-1681 **TTY Relay: 711**

DATE ADVERTISED: December 23, 2004

RFP Title:	**Electronic Health Record Management System (EHR)**
Requesting Dept./ Div.:	**Seattle – King County Department of Public Health**
RFP Number:	**102-05RLD**
Due Date:	**January 2005 – no later than 2:00 P.M.**
Buyer:	**Roy L. Dodman** roy.dodman@metrokc.gov, (206) 263-4266

Pre-Proposal Conference:

A conference to discuss questions related to this RFP shall be held at ***10:00 a.m.*** on ***Tuesday, January 4, 2005***, in Conference Room 6A on the 6th Floor of the Exchange Building, 821 Second Avenue, Seattle, WA 98104.

Sealed Proposals are hereby solicited and will **ONLY** be received by

King County Procurement Services Section
Exchange Building, 8th Floor
821 Second Avenue
Seattle, WA 98104-1598

Office Hours - 8:00 a.m. - 5:00 p.m.
Monday - Friday

SUBMITTERS MUST COMPLETE AND SIGN THE FORM BELOW (TYPE OR PRINT)

Company Name		
Address	City/State/Zip Code	
Signature	Authorized Representative / Title	
E-mail	Phone	Fax
Prime Proposer SEDB Certification number (if applicable - see Section II, 2-2-6-D of this RFP)		

This Request for Proposal will be provided in alternative formats such as Braille, large print, audio cassette or computer disk for individuals with disabilities upon request.

If you received or downloaded this document in .pdf format, a MS Word copy may be obtained by contacting the buyer listed above. This document will be transmitted by e-mail.

King County is an Equal Opportunity Employer and does not discriminate against individuals or firms because of their race, color, creed, marital status, religion, age, sex, national origin, sexual orientation, or the presence of any mental, physical or sensory handicap in an otherwise qualified handicapped person.

Sealed proposals are hereby solicited and will be received only at the office of the King County Procurement Services Section at 821 Second Avenue, 8th Floor, Seattle, Washington, 98104 no later than 2 p.m. on the date noted above regarding an *Electronic Health Record Management System (EHR)* for the *Seattle – King County Department of Public Health.* The deliverables for this project shall be provided to King County in accordance with the following and the attached instructions, requirements, and specifications.

Submittal: King County requires the Proposer to sign and return *this entire Request for Proposal (RFP) document*. The Proposer shall provide *one unbound original,* and *three (3) copies* of the proposal response, data or attachments offered, for *four (4) items* total. The original in both cases shall be noted or stamped "Original". The Proposer shall also provide a copy of their proposal, including all material and required forms, in an electronic format, preferably in either MS Word or pdf format, on 2 CD-ROMs. The County requires the above listed items be placed in sealed boxes marked with the RFP number and proposal due date, with one (1) original **Attachment A** in a sealed envelope within the sealed box.

Pre-Proposal Conference: A conference to discuss questions related to this RFP shall be held at 10:00 a.m. on Tuesday, January 4, 2005, in Conference Room 6A on the 6th Floor of the Exchange Building, 821 Second Avenue, Seattle, WA 98104. See link for driving instructions.
http://www.metrokc.gov/finance/procurement/find_us.asp

Questions: After the Pre-Proposal Conference, Proposers will be required to submit any further questions in writing prior to the close of business Wednesday, January 5, 2005 in order for staff to prepare any response required to be answered by Addendum. Questions are best received and most quickly responded to when sent via e-mail directly to the following King County procurement personnel: *Primary* – Roy L. Dodman, Senior Buyer roy.dodman@metrokc.gov / *Secondary* – Cathy M. Betts, Buyer cathy.betts@metrokc.gov. Questions may also be sent via fax or mail to the address above.

SECTION I – PROPOSAL PREPARATION

A. All submitted proposals and evaluation materials become public information and may be reviewed by appointment by anyone requesting to do so *at the conclusion* of the evaluation, negotiation, and award process. This process is concluded when a signed contract is completed between King County and the selected Consultant. Please note that if an interested party requests copies of submitted documents or evaluation materials, a standard King County copying charge per page must be received prior to processing the copies. King County *will not* make available photocopies of pre-printed brochures, catalogs, tear sheets or audio-visual materials that are submitted as support documents with a proposal. Those materials will be available for review at King County Procurement.

B. No other distribution of proposals will be made by the Proposers prior to any public disclosure regarding the RFP, the proposal or any subsequent awards without written approval by King County. For this RFP all proposals received by King County shall remain valid for one hundred twenty (120) days from the date of submittal. All proposals received in response to this RFP will be retained.

C. Proposals shall be prepared simply and economically, providing a straightforward and concise but complete and detailed description of the Proposer's abilities to meet the requirements of this RFP. Fancy bindings, colored displays and promotional materials are not desired. Emphasis shall be on completeness of content.

D. King County reserves the right to reject any or all proposals that are deemed not responsive to its needs.

E. In the event it becomes necessary to revise any part of this RFP, addenda shall be created and posted at the King County Procurement web site. Addenda will also be conveyed to those potential submitters providing an accurate e-mail address. If desired, a hard copy of any addenda may be provided upon request.

F. King County is not liable for any cost incurred by the Proposer prior to issuing the contract.

G. A contract may be negotiated with the Proposer whose proposal would be most advantageous to King County in the opinion of the Seattle – King County Department of Public Health, all factors considered. King County reserves the right to reject any or all proposals submitted.

H. It is proposed that if a selection is made as a result of this RFP, a contract with a fixed price/prices will be negotiated. Negotiations may be undertaken with the Proposer who is considered to be the most suitable for the work. This RFP is primarily designed to identify the most qualified firm. Price and schedule will be negotiated with the "first choice" Proposer; negotiations may be instituted with the second choice and subsequent Proposer until the project is canceled or an acceptable contract is executed.

I. This RFP shall be available for use by all King County Departments, Divisions and Agencies. If orders will be placed by the County's Transit Division, the Contractor will be required to sign and comply with the Federal Transit Administration's (FTA)'s required documentation.

J. The contents of the proposal of the selected Proposer shall become contractual obligations if a contract ensues. Failure of the Proposer to accept these obligations may result in cancellation of their selection.

K. A contract between the Consultant and King County shall include all documents mutually entered into specifically including the contract instrument, the RFP, and the response to the RFP. The contract must include, and be consistent with, the specifications and provisions stated in the RFP.

L. News releases pertaining to this RFP, the services, or the project to which it relates, shall not be made without prior approval by, and then only in coordination with, the King County Department of Executive Services.

M. King County Code 4.16.025 prohibits the acceptance of any proposal after the time and date specified on the Request for Proposal. There shall be no exceptions to this requirement.

N. King County agencies' staffs are prohibited from speaking with potential Proposers about the project during the solicitation.

Please direct all questions to:

Roy L. Dodman / Senior Buyer (206) 263-4266 roy.dodman@metrokc.gov	or	Cathy M. Betts / Buyer (206) 263-4267 cathy.betts@metrokc.gov

NOTE: Documents and other information is available in alternate formats for individuals with disabilities upon advance request by calling Mary Lou Allwine at 206-296-4210 or TTY711.

O. Protest Procedure - King County has a process in place for receiving protests based upon either proposals or contract awards. If you would like to receive or review a copy, please contact the Buyer named on the front page of this document or call Procurement Services at 206-684-1681.

P. Term Service Requirement

If a contract is awarded based on this RFP, it may contain the following provision:

Contract Extension

The initial contract period will be for one (1) year from the start date of the contract. The term of the contract may be extended in one (1) year increments for two (2) additional one-year periods for a contract duration of three (3) years, in accordance with the County's best interest and at the sole option of the County. Prices shall remain firm for the duration of the contract period. Reasonable price changes based on market conditions and price/cost analysis *may* be requested, if such escalations are based on changes in the U.S. Department of Labor, Bureau of Labor Statistics Consumer Price Index for All Urban Consumers ("CPI-U") for the Seattle-Tacoma-Bremerton Statistical Metropolitan Area for the preceding calendar year. You may obtain information about the CPI-U in general and the Seattle area in particular by visiting the United States Bureau of Labor Statistics web site at http://www.bls.gov/cpi/. In the event the CPI-U (or a successor or substitute index) is no longer published, a reliable government or other non-partisan index of inflation selected by the County shall be used to calculate any adjusted amounts. Requests for any such changes are to be made in writing to the Seattle – King County Department of Public Health, and approved by the County Executive or his/her designee. Any agreed-to change shall take effect at the time of the contract extension and shall remain in effect throughout the extension period. The parties hereto recognize that such changes could be increases or decreases in the prices; both parties are entitled to benefit from such price changes.

Q. Electronic Commerce and Correspondence. King County is committed to reducing costs and facilitating quicker communication to the community by using electronic means to convey information. As such, most Invitations to Bid and Requests for Proposal, as well as related exhibits, appendices, and issued addenda can be found on the King County Internet Web Site, located at http://www.metrokc.gov/finance/procurement. Please refer to the "RFPs, RFQs & ITBs / New / Consultants" portion of the site (note: some documents or portions thereof may not be posted on the site. Please note any special messages regarding a particular solicitation). This information is posted at the Web Site as a *convenience* to the public, and is not intended to replace the King County process of formally requesting bid documents and providing the County with contact information for the potential proposer. Each proposer bears the responsibility to confirm the completeness and accuracy of all documents pertaining to a given solicitation, including the receipt of all issued addenda.

If a proposer downloads a document from the Web Site and does not contact the Procurement Office to obtain a hard copy, the proposer *must* use the "Feedback" (Envelope) button at the bottom of the Web page to convey the proposer's company name, contact name, mailing address, and phone/fax number to the County. Please note which document/documents were downloaded.

After proposals have been opened in public, the County will post a listing of the consultants submitting proposals at the King County Internet site. Please refer to the "RFPs, RFQs & ITBs / Awarded / Consultants" portion of the site for a listing, as well as a notification of a final award.

Unless otherwise requested, letters and other transmittals pertaining to this RFP will be issued to the e-mail address noted in our files, and after submittal, noted on the first page of this document. If other personnel should be contacted via e-mail in the evaluation of this proposal, or to be notified of evaluation results, please complete the information in the table below.

Contact Name	Title	Phone	E-mail address

R. Washington State Public Disclosure Act (RCW 42.17) requires public agencies in Washington to promptly make public records available for inspection and copying unless they fall within the specified exemptions contained in the Act, or are otherwise privileged.

S. Proposals submitted under this RFP shall be considered public documents and with limited exceptions proposals that are recommended for contract award will be available for inspection and copying by the public.

If a Proposer considers any portion of his/her proposal to be protected under the law, the Proposer shall clearly identify on the page(s) affected such words as “CONFIDENTIAL”,” PROPRIETARY” or “BUSINESS SECRET.” The Proposer shall also use the descriptions above in the following table to identify the affected page number(s) and location(s) of any material to be considered as confidential (attach additional sheets as necessary). If a request is made for disclosure of such portion, the County will determine whether the material should be made available under the law. If the material is not exempt from public disclosure law, the County will notify the Proposer of the request and allow the Proposer ten (10) days to take whatever action it deems necessary to protect its interests. If the Proposer fails or neglects to take such action within said period, the County will release the portion of the Proposal deemed subject to disclosure. By submitting a Proposal, the Proposer assents to the procedure outlined in this paragraph and shall have no claim against the County on account of actions taken under such procedure.

Type of exemption	Beginning Page / Location	Ending Page / Location

T. Proposers are urged to use recycled/recyclable products and both sides of paper for printed and photocopied materials, whenever practicable, in preparing responses to this RFP.

U. Bid Identification Label: Please see the Bid Identification Label on the last page of this document.

V. Pricing

All pricing information shall be quoted in U.S. Dollars. Provide complete pricing information on a unit basis. Proposers are to complete the Price Detail Sheet, **Attachment F**, in the format provided.

W. Proposal Alternatives

Proposals shall address all requirements identified in this RFP. In addition, the County may consider Proposal Alternatives submitted by Proposers that provide enhancements beyond the RFP requirements. Proposal alternatives will only be considered if a Proposer submits a complete proposal in response to all requirements. Proposal alternatives may be considered if deemed to be in the County's best interests. Proposal alternatives shall be clearly identified.

X. Procurement schedule

SCHEDULE OF RFP ACTIVITIES (ALL TIMES ARE PACIFIC TIME)

	Date	Time
Announcement / Advertisement of RFP	December 23, 2004	
Pre-proposal questions due in writing	December 29, 2004	4:30 PM
Pre-proposal conference King County Procurement & Contract Services Section, Exchange Building 6th Floor Conference Room "A" 821 Second Avenue Seattle, WA 98104	January 4, 2005	10:00 AM
Proposals due	January 18, 2005	2:00 PM
*Evaluation of Proposals.	January 31, 2005	
*PH conducts Vendors Presentations	February 2005	
*PH performs Reference Checks	February 2005	
*PH performs Site Visits	March 2005	
*PH creates Business Case	April 2005	
*PH obtains Policy Review Board Approval	April 2005	
*PH enters into Contract Negotiations	April 2005	
*JHS EHR Implementation Start-Up	May 2005	
*JHS EHR Go Begins	January 2006	
*JHS EHR Post Implementation Review	June 2006	

NOTE: Dates preceded by an asterisk are estimated dates. Estimated dates are for informational purposes only, and are subject to change.

Y. Proposal Price and Effective Date

The Proposal price shall include everything necessary for the prosecution and completion of the Contract, including but not limited to, furnishing all materials, equipment, supplies, tools, plant and other facilities and all management, supervision, labor and service, except as may be Provided otherwise in this RFP. Prices quoted on the Proposal Response Form shall include all freight charges, FOB to the designated delivery point. Washington State sales/use taxes and Federal excise taxes shall not be included in the Proposal price. The County will pay any Washington State sales/use taxes applicable to the Contract price or tender an appropriate amount to the Contractor for payment to Washington State. The County is exempt from Federal excise taxes. All other government taxes, duties, fees, royalties, assessments and charges shall be included in the Proposal price. In the event of a discrepancy between the unit price and the extended amount for a Proposal item, the County reserves the right to clarify the Proposal.

SECTION II: PART 1 – GENERAL AND BACKGROUND INFORMATION

2-1-1 Purpose of this RFP

The Seattle-King County Department of Public Health (SKCDPH), in conjunction with King County Procurement Services, is distributing this Request for Proposal for an Electronic Health Record Management System (EHR) in an effort to identify potential candidates for implementing a fully integrated system throughout its Jail Health Services (JHS) and Community Health Services (CHS) divisions.

SKCDPH plans to begin implementing the EHR within JHS no later than mid-2005 and have the system fully functional by early-2006.

SKCDPH may then begin automating its CHS Division services and programs, if a vendor can meet the needs of an organization of this size and complexity.

2-1-2 Project Description

The purpose of this project is for JHS to convert from a paper-based medical record to an integrated EHR. The system will include supporting software modules, technology, and interfaces as identified. Additionally, the needs of SKCDPH will be considered for potential future implementation.

2-1-3 Project Objectives

JHS expects that as a result of implementing the EHR care and cost outcome will improve, as measured by:

A. Pertinent healthcare management data will be readily available to health care staff to optimize patient care.
B. Reduction in the amount of time to locate health care information resulting in more efficient use of staff resources and improved health care decision-making.
C. Improved documentation and standardized charting practices.
D. Improved efficiency in health information management and improved compliance with regulations and rules governing the management of medical records.

The EHR project involves re-engineering many JHS business processes. Anticipated improvements include:

A. Immediate access by multiple providers to the medical chart.
B. Improve medical records management.
C. Cost-containment through process re-engineering.
D. Improve efficiency of internal processes.
E. Automate many healthcare functions.
F. Increase staff effectiveness.
G. Re-direction of work efforts of Jail Health staff.
H. Reduce storage space and related cost for paper medical records.
I. Document evidence of compliance with NCCHC standards for accreditation.
J. Improve continuity of care with community partners.

2-1-4 Project Scope

The scope of the EHR is to automate the following business functions within JHS:

Patient (Inmate) Management:
- Intake Interface
- Co-pay Management
- Admission, Discharge, Transfer
- Referrals
- Appointment Scheduling
- Merge/unmerge Record
- Alias Management
- Patient Tracking (interface)
- Patient Transport Management
- Registration of DNR Orders
- Registration of Living Will
- Release of Information
- Special Accommodations
- Census Reporting

Clinical Operations by Provider:
- Intake, Transfer, Release
- Problem List
- Encounters
- Treatment Planning
- Clinical Guidelines and Notes
- Flow Sheets
- Orders & Results Reporting
- Consents
- Patient Education
- Referrals
- Admission, Discharge, Transfer
- Population Based Clinical Areas
- Clinician Access View
- Clinical Decision Support
- Controlled Medical Vocabulary
- Clinical Pathways & Guidelines
- Charge Capture

Clinical Specialties:
- Pharmacy:
  - Order/Results Interface
  - Medication Administration
  - Drug-Drug/Allergy Interactions
  - Drug Look-up
  - Formulary Management
  - Inventory Management
- Infirmary
- Psychiatrics:
  - Testing Support
  - Mental Health Evaluation
  - Mental Health Screening
- Dental Care:
  - Appointment Scheduling
  - Screening
  - Charting
- Obstetrics
- Communicable Diseases
- Family Planning
- Emergency Care Management

2-1-5 Overview of Seattle-King County Department of Public Health

SKCDPH is a department within King County Government, serving the greater Seattle Metropolitan area within Washington State. The SKCDPH mission is to achieve and sustain healthy people and healthy communities throughout King County by providing public health services that promote health and prevent disease. SKCDPH consists of seven divisions and maintains twenty-five operating sites, offering a broad range of clinical and prevention oriented services for a wide spectrum of individuals in diverse and growing communities throughout urban, suburban and rural King County.

2-1-6 Description of SKCDPH Community Health Services Division

A. Family Support Services

In some venues also called Parent and Child Health Program, the purpose of the Family Support Service program is to provide assessment, education, skills-building, and support to pregnant women and families with children so that babies are born with the best opportunity to grow and thrive, the impact of health problems are minimized, and children receive the care and nurturing they need to become functional adults. Services are: Home and office visits, classes and groups in which the following services are provided; assessment, education, counseling, referrals, case management, and parenting support. Other services include: nutrition education in schools and community locations through the Seattle Nutrition Action Coalition (SNAC); review of health records of children in foster care and development of a health "passport" for each child; assistance to apply for subsidized housing; and coordination of services between agencies. For teen first-time mothers intensive services are provided using Best Beginnings Nurse Family Partnership protocols from pregnancy through the first 2 years of the child's life. For HIV-affected families, services are provided as a part of the statewide Title IV Network.

B. Clinical Primary Care and Maternity Care

The purpose of the Primary Care program is to provide accessible health care services for King County residents so they can maintain and/or improve their health. Services are: Preventive health maintenance; acute and chronic care for adults and children (primary care); Obstetrical services (pre-natal and post-partum clinical service to promote healthy birth outcomes).

C. Oral Health

The purpose of the Oral Health program is to provide community based and clinical dental services to high-risk populations so that dental disease is prevented and oral health is improved. Services are: Prevention Services in the community; Clinical Services.

D. Family Planning

The purpose of the Family Planning program is to provide reproductive health, STD, outreach and education services for King County residents in order to promote sexual health and well being and reduce unintended pregnancies. Services are: Clinical services; Health education and access services; Outreach services.

E. Immunizations

The purpose of the Immunizations Program is to assure access to, and technical support for, immunization services for King County residents and health care providers in order to prevent disease in individuals and the spread of disease in the community. Services are: Community education; Provider consultation and education; Vaccine delivery services; Contract management; Clinical services.

F. WIC

The purpose of the Supplemental Nutrition Program for Women, Infants and Children (WIC) is to provide nutrition assessment, education and supplemental food to low income women and young children so that they have adequate nutrition to grow and develop to reach full capacity. Services are: Nutrition assessment, education, referrals, checks to purchase healthy food, contract management for community clinic sites.

G. Youth Health Services

The purpose of the Youth Health Services program is to provide leadership and technical assistance to community partners and to provide services to youth through collaborative partnerships so that youth have access to quality coordinated health, mental health and preventive services. Services are: Training and Education; Technical Assistance; Program Development; Interagency collaboration.

H. Occupational Health

The purpose of the Public Health – Seattle & King County Occupational Health Program is to provide occupational health services to contracted employers in order to prevent workplace related injuries and disease. Services are: Pre-placement exams; Medical surveillance exams for workers with exposures to hazardous materials, lead, asbestos, and hyperbaric conditions; Respiratory medical clearance exams for workers who are required to wear a respirator; Health and safety training on blood-borne pathogens and communicable disease; Consultation on various workplace health and safety concerns.

I. Refugee Health

The purpose of the Refugee Health Access Program is to assure that newly arriving refugees receive critical public health services and are linked to ongoing health care and receive limited civil surgeon (immigration related) health care services. Services are: Limited medical history; Immunization assessment/update; Administration of PPD and Hepatitis B screening as indicated; linking all refugees to ongoing care with particular focus paid to class B refugees; Immigration related health services for refugees (i.e. Limited Civil Surgeon assistance); Assure refugees receive needed immunizations.

2-1-7 Overview of Jail Health Services

JHS is a section of the SKCDPH. The purpose of the JHS program is to provide quality health services (medical, psychiatric, and dental) to the detained population of the King County Department of Adult and Juvenile Detention (DAJD) so that they receive comparable health care to other King County residents. Services are: Intake and assessment; Urgent Care/Screening, Education and Intervention for Communicable Disease; Health Screening exams and Education in Disease Prevention; Prenatal care for high-risk moms; Provision of Birth Control Methods; Education in Family Planning; Psychiatric assessment and treatment; Oral health care; Chronic Care Management; Release planning; Specialty referrals.

JHS is staffed 24 hours a day, 365 days a year. The jail admits about 55,000 arrestees each year, with an average daily population of 2,200, and an average length of stay of 18 days. These services are provided in two primary sites: Seattle, at the King County Correctional Facility (KCCF) and Kent, at the King County Detention Facility at the Regional Justice Center (RJC). KCCF is accredited by the National Commission on Correctional Health Care. Services are focused on urgent, emergent, and chronic care. The difficulty of providing care in a locked facility with security restricted access contributes to the challenges in the delivery of health services. Mental Health and chemical dependency needs are endemic in the program challenges.

A. Tandem Operation of Health and Corrections

JHS functions as a clinical service component of the SKCDPH while working in tandem with the officers and administration of DAJD.

In the last 15 years, the U.S. Supreme Court has determined in several landmark cases that detained populations have a constitutional right to health care and that it is the obligation of the custodial institution to ensure access to that health care.

Thus, the two disciplines of health care and corrections have had to learn to operate side-by-side, supporting each other while delivering their services. In King County, administrators and manager of DAJD have developed a team to accomplish these goals effectively.

B. Health Status of Inmates

This list of the tem most frequently prescribed conditions (over 80,000 prescriptions dispensed annually) gives a sample of the health status of inmates:

- Psychosis
- Diabetes
- Ulcers/GI
- Depression
- Detoxification
- Asthma
- Hypertension
- HIV
- Seizures
- Infections

C. Staffing

Staffing is inclusive of the following provider types: Physician, Advanced Registered Nurse Practitioner (ARNP), Psychiatrist, Dentist, Dental Assistant, Pharmacist, Pharmacist Assistant, Psychiatric Evaluation Specialist, Nursing Supervisor, Charge Nurse, Public Health Nurse, Registered Nurse, Licensed Practical Nurse, Social Worker, Disease Intervention Specialist, Medical Records staff, and Administrative staff.

D. Care Linkages with Community Health Providers

Due to the short length of stay, Jail Health staff work with community health providers to ensure that care linkages are made for persons with acute, emergent, and specialty care needs.

It is a goal for JHS to practice as an integrated segment of the continuum of health services for this population. It is important that health care for a high-risk population be identified as a pathway to better community health status.

E. Demographics

- The population of the King County Correctional Facilities is 90% male and 10% female.
- The patient population of JHS is 77% male and 23% female.
- About 60% of the patient (and detained) population is in the 18-34 age group; 1.5% is 60 or older.

2-1-8 Description of JHS Healthcare Functions and Services

A. Booking Screening

When a person is booked into jail they are screened by a correctional officer who uses a structured form that solicits information about medical and psychiatric conditions. When a problem is identified the officer then refers the inmate to Jail Health Services RN's who are available 24 hours to evaluate the individual and initiate a plan of care. The care plan may be developed independently or in consultation with a JHS provider. If a person is found to be medically unstable, the RN may defer admission to jail until a thorough evaluation is done at Harborview Medical Center (HMC) or Valley Medical Center (VMC), the JHS referral hospitals.

B. Special Housing

Patients who are identified as having health care needs that dictate special housing while in jail are moved on a priority basis to special locations.. In addition to psychiatric housing, a separate area is designated for medical housing that allows JHS staff easy access to inmates who require frequent monitoring. Another area houses patients with special needs such as diabetes, coagulopathies, need for frequent medications and people with casts, crutches or orthotics.

C. Infirmary

The infirmary is a housing unit at KCCF where 24-hour nursing care is provided to ambulatory inmates with acute, chronic and convalescent health problems, which do not require hospitalization.

D. Access to Health Care

RN's are on staff 24 hours a day at both the Seattle and the Kent facilities. Medical/psychiatric rounds and sick call activities occur at least once a day. Inmates can make written (through the use of a "kite") or verbal requests for care. Correctional officers and classification staff can also refer people for health care when it is appropriate. RNs triage requests and see patients according to a priority system. When the level of care required is beyond that of the RN, the inmate is referred to the clinic to be seen by a medical provider, psych provider, or dentist

The clinic operates most days and evenings in Seattle; and five days per week in Kent. When appropriate, Jail Health medical staff verifies medical information given by patients with their private, community providers. This information is given consideration in the plan of care decided upon by JHS staff. The plan of care while in jail may vary from what has been ordered outside of jail to allow for safe care within the limitations of institution security, and the effects of the environment upon the individual. In the case where an inmate has need for specialized care, the person is transported by DAJD to the appropriate off site provider on an appointment or emergent basis.

E. Pharmacy

Licensed pharmacies in Seattle and Kent provide a system for medication preparation, dispensing services, and quality assurance to JHS patients. Providers prescribe drugs within the parameters of the SKCDPH formulary, and are dispensed by a licensed pharmacist or from floor stock by a licensed provider.

Medications are delivered to inmates according to procedures that allow self-administration (KEEP ON PERSON – KOP) or are delivered to inmates in single doses by nursing staff when drugs have the potential for abuse or special housing restrictions preclude self administration.

F. Special Diets

Special diets are evaluated by the medical staff, and when necessary an order is written.

G. Psychiatry

For those inmates housed on the psychiatric unit, the following services are provided:

- Systematic mental health screening
- Specialized housing with enhanced observation
- Confidential medical records
- Treatment planning
- Prescription of psychotropic medications
- Interface with legal system
- Discharge planning

The psychiatric services listed above are provided by a team of psychiatrists, psychiatric advanced registered nurse practitioners, psychiatric evaluation specialists, and nurses. Inmates with mental health issues are housed in one of the following types of housing: acute, sub-acute, psych receiving, sheltered housing, or general population.

Orders are written for civil commitment, competency evaluations, competency restorations, use of restraints, follow-up appointments, housing, release interviews, release medications, and group treatment.

H. Dental Care

Dental screening is offered through the 14 day Health Assessment done by the nurses.. Dental services are limited; they cover urgent and emergent dental care. If the inmate resides in our facilities for a year or longer, additional dental services are required. Emergency care on off-hours is provided through the HMC or University of Washington (UW) emergency dental services.

I. OB/GYN and Maternity Services

Women's health services are provided in each jail clinic. Services include: diagnosis of pregnancy, prenatal care, abortion or adoption referrals, family planning and contraception, diagnosis and treatment of sexually transmitted diseases, pap smears, breast exams, hormone replacement therapy, and referrals for domestic violence victims. Jail Health Services does not provide evidence collection in the case of sexual assault. Jail Health Services is one of three sites within the Public Health Department that functions as a satellite clinic of the University of Washington's OB program. Pregnant incarcerated women are seen for both routine and high-risk OB care. Case management services through the MOM's Project, drug and alcohol treatment, and public health nursing services including home visit after release is available to pregnant women though the jail's OB program. Women incarcerated throughout the duration of their pregnancy deliver at the University of Washington Hospital.

J. HIV Services

The Jail Health HIV Program provides HIV/AIDS education for Jail inmates and staff, HIV counseling and testing for high-risk individuals and those legally mandated (court ordered) to receive testing and clinical services for the HIV infected.

Washington State law mandates HIV counseling and testing for persons convicted and sentenced for:

- A Sexual Offense under Chapter 9A.44 RCW
- Prostitution or offenses relating prostitution under Chapter 9A.88 RCW
- Drug offenses under Chapter 69.50 RCW if the offense is associated with the use of hypodermic needles.

In custody defendants will receive HIV counseling and testing at Jail Health or Department of Corrections. They should be given a copy of the information sheet *The Court has Ordered You to Have a Test for the AIDS Virus* by the appropriate court official.

The Jail Health HIV Program Coordinator manages court order originating from Superior Court for both in and out of custody defendants. After HIV counseling and testing has been completed, documentation is sent to the Superior Court Clerks.

If an offender test positive for HIV, there is a mechanism for the Health Department to notify partners, including persons who may have been substantially exposed during crime.

Training in universal precautions (now called standard precautions) for all DAJD and JHS staff is provided annually to comply with OSHA regulations about blood borne pathogens.

K. Services for Inmates with Alcohol and/or Substance Abuse Problems

Of the patient population seen by Jail Health staff, more than half experience problems associated with alcohol and/or substance abuse. The effects of substance abuse contribute to the medical and mental health problems that this population faces and in some cases causes those problems.

There are Alcoholics Anonymous and Narcotics Anonymous meetings that are available.

Alcohol withdrawal is monitored carefully during the 72-hour period of detoxification, but other substance addicts will experience withdrawal, if at the facility long enough, while they are housed in the general population.

L. Forensic Activities

For professional reasons and to comply with the National Commission on Correctional Health Care (NCCHC) the health staff of JHS does not participate in the collection of evidence for any reason. JHS does not provide "expert witness" testimony or psychiatric competency evaluations. Staff can only be compelled to appear via appropriate us of subpoena or other court order.

M. Administration

The JHS Leadership Team provides oversight and leadership for all programs at both sites: administration, service delivery, and quality review.

N. Medical Records/Release of Information

A record of all health encounters for a patient is maintained by JHS. Information from a client's medical record may be released upon written authorization from the client. Records are copied and sent to the authorized recipient within a specified time frame.

O. Communicable Disease Services

Preventing and treating communicable diseases is another one of the public health services that Jail Health Services provides to inmates.

Tuberculin tests are administered by nursing staff at the point of admission to individuals in the "at-risk" group. Basic health questions in multiple languages have been translated in written form to maximize the opportunity to get accurate health history information for use in the TB surveillance program and their health history.

Access to a variety of languages is available through interpreters and language banks, as is sign interpretation for the hearing impaired.

SECTION II: PART 2 - PROPOSAL EVALUATION AND CONTRACT AWARD

2-2-1 General

Proposals will be evaluated and ranked by the Proposal Evaluation Committee on the basis of the criteria established in this RFP. The Evaluation Committee will evaluate the Proposals submitted in response to the RFP, conduct fact finding, discussions/negotiations, request Best and Final Offers and determine which Proposal is the most advantageous to the County for Contract award. The Evaluation Committee's recommendation is subject to review and approval.

The County reserves the right to request oral interviews, product presentations using Public Health defined scripts, site visits, or any other type of clarification of Proposal information it deems necessary to evaluate Proposals.

2-2-2 Rejection of Proposals

The County reserves the right to reject any and all proposals. Without limiting the generality of the foregoing, and proposal which either:

A. Is incomplete, obscure, irregular or unrealistic;
B. Has non-authorized (not initialed) erasures or corrections in the Proposal Offer or any Schedule thereto;
C. Omits or fails to include any one or more items in the Proposal Offer for which a price is required by the RFP;
D. Fails to complete the information required by the RFP to be furnished with a Proposal or fails to complete the information required whether the same purports to be completed or not;
E. A vendor's past performance, financial capabilities, completion schedule and compliance with federal, State and County legislation.

As it is the purpose of the County to obtain a Proposal most suitable to the interests of the County and what it wishes to accomplish, the County has the right to waive any irregularity or insufficiency in any Proposal submitted and to accept the Proposal which is deemed most favorable to the interests of the County.

2-2-3 Changes in Requirements

When, either before or after receipt of Proposals, the County changes, revises, increases, or otherwise modifies its requirements, the County shall publish a written addendum to the RFP. In considering which Proposers to notify of a change, the County will consider the stage in the procurement process at which the change occurs and the magnitude of the change, as follows:

A. If Proposals are not yet due; the addendum will be sent to all Proposers that have received the RFP.
B. If the time for receipt of Proposals has passed but Proposals have not been evaluated, the addendum will be sent only to Proposers responding to the RFP.
C. If the Proposals have been evaluated and classified, only those Proposers in the competitive range.
D. If a change is so substantial that it warrants substantial revision of the RFP, the County may cancel the original RFP and issue a new one, regardless of the state of the procurement process. The new solicitation will be issued to all Proposers originally solicited and to any Proposers added to the original list.

2-2-4 Proposal Evaluation

The Evaluation Committee will evaluate each Proposal using the criteria set forth in this RFP. If deemed necessary by the Evaluation Committee, written and/or oral discussions may be conducted with those Proposers whose proposals are found to be potentially acceptable. Identified deficiencies, technical requirements, terms and conditions of the RFP, costs or prices, and suspected mistakes may be included among the items for discussion. The discussions are intended to give Proposers a reasonable opportunity to resolve deficiencies, uncertainties and suspected mistakes as requested by the Committee and to make the cost, pricing or technical revisions required by the resulting changes.

2-2-5 Evaluation of Responsiveness and Responsibility

Part of the evaluation process involves a determination of Responsiveness and Responsibility. The County may request that the Proposer provide additional information, explanation and

documentation to be used in the determination. The requests for information can occur at any point in the evaluation process. The additional information will normally be in the following subject areas:

A. Responsiveness

The County will consider all the material submitted by the Proposer to determine whether the Proposer's offering is in compliance with the terms and conditions set forth in this RFP.

B. Responsibility

1. The County will consider all the material submitted by the Proposer, and other evidence it may obtain otherwise, to determine whether the Proposer is capable of and has a history of successfully completing Contracts of this type. This will include requiring the Proposer to provide references from customers who have been provided the same or equivalent Goods or Services. References shall include the names and addresses of the parties to whom such Goods or Services were provided and the name and phone number of contact persons with such parties.
2. The following elements will be given consideration by the County in determining whether a Proposer is responsible:
   a. The ability, capacity and skill of the Proposer to perform the Contract or provide the service required;
   b. The character, integrity, reputation, judgment and efficiency of the Proposer;
   c. Whether the Proposer has the financial resources and experience to perform the Contract properly and within the times specified;
   d. The quality and timeliness of performance by the Proposer on previous Contracts with the County and with other local governments and state and federal agencies, including, but, not limited to, the relative costs, burdens, time and effort necessarily expended by the County and such governments and agencies in securing satisfactory performance and resolving claims;
   e. The previous and existing compliance by the Proposer with laws relating to public Contracts or services, including, but not limited to, Disadvantaged Business Enterprise (DBE) and equal employment opportunity requirements;
   f. The history of the Proposer in filing claims and litigation on prior projects involving the County or on other public or private projects; and;
   g. Such other information as may be secured having a bearing on the decision to award the Contract.
3. Proposers shall furnish acceptable evidence of the Proposer's ability to perform, such as Proposer commitments by subcontractors, equipment, supplies and facilities, and the Proposer's ability to obtain the necessary personnel, when requested by the County. Refusal to provide such information when requested will cause the Proposal to be rejected.

C. Financial Resources

Submit proof of adequate financial resources, which would be available to the Proposer for the completion of the Work as required. When requested, the required financial information shall include:

1. Audited financial statements such as balance sheets, statements of income, statements of cash flow and stockholders' equity for each of the three most recently completed fiscal years, including notes to financial statements, independent accountants' reports and annual reports to stockholders;
2. Documentation of an open line of credit or other arrangement with an established bank under which adequate financing would be available for prosecution and completion of the Work called for hereunder;
3. Certification by the principal financial officer of or an independent accountant for the Proposer, stating that the Proposer has adequate financial resources for the prosecution and completion of the Work called for hereunder; and
4. The names, addresses and telephone numbers of at least one contact in the company's principal financial or banking organization and its independent auditor.

The Evaluation Committee may find that the Proposer appears fully qualified to perform the Contract or it may require additional information or actions from the Proposer. In the event the Evaluation Committee determines that there are problems of such a nature or magnitude that it is advantageous to the County to bypass the highest scored Proposal, the Evaluation Committee shall evaluate the qualifications of the next ranked Proposer for award of the Contract. A Proposer bypassed for award by the Evaluation Committee team for whatever reason shall have no claim for costs incurred including, but not limited to, presentation costs, Proposal preparation, the cost of providing additional information requested, or modification made either to its Proposal or internal structure or systems of the Proposer or its organization.

D. Financial Condition

The Proposer shall provide a current copy of its Dun and Bradstreet report if requested by the County.

2-2-6 Scoring and Evaluation Criteria

Proposers shall meet the following minimum qualifications:

A. Clinical Health Information System, with Correctional Healthcare Industry expertise preferred.
B. Provide multi-facility longitudinal Electronic Health Record with linkages to other computer systems.
C. Provide Application Service Provider (ASP) model.

Proposers not meeting the minimum qualifications will not be scored and will be eliminated from the process.

Proposers that meet the minimum qualifications will have their Proposals carry forward to be scored. Proposals shall be scored according to the following methodology:

Description	Weighting	Points
Vendor Profile:	**10%**	
Corporate Profile & Viability	2.50%	
Customer Base & Reputation	2.50%	
Implementation Team, Training Approach, and On-Going Support	2.50%	
Cost and ROI	2.50%	
Vendor Response to EHR Requirements:	**50%**	
Clinical Operations		
Pharmacy and Medication Administration	7.50%	
Intake/Transfer/Release	5.00%	
Problem List	5.00%	
Encounters	5.00%	
Treatment Planning	5.00%	
Clinical Notes and Documentation	5.00%	
Flow Sheets	1.25%	
Orders and Results Reporting	5.00%	
Consents	1. 25%	
Patient Education	1.25%	
Referrals	2.50%	
Admission, Discharge, Transfer	1.25%	
Population Based Clinical Areas	2.50%	
General System Functions	**20%**	
Technical Architecture	**10%**	
Vendor Pricing/Cost	**10%**	
Total	**100%**	

Additional points will be awarded and taken into consideration for the following functionality:

Public Health Clinical Specialties	**10%**
Psychiatric	0.00%
Dental	2.50%
Obstetrics	2.50%
Communicable Disease	2.50%
Family Planning	2.50%
Staff Management	**10%**
Total	**20%**

Points will be awarded to each EHR Requirement according to the following scheme:

EHR SYSTEM REQUIREMENT	CURRENTLY AVAILABLE, fully meets requirement	CURRENTLY AVAILABLE, partially meets requirement	IN DEVELOPMENT, available by July 2005	NOT AVAILABLE	COMMENTS

POINTS AWARDED	2	1	1	0	

Evaluation criteria shall be as outlined in Section 2: Part 3 – Detail System Requirements.

For each System Requirement, Proposers must enter the appropriate **points**.

When a Proposer **cannot** meet all of the requirements for a specific criteria (a score of 1), the Proposer must identify the deficiency in the corresponding **comments** area.

Proposers must complete the **attachments** as requested.

For those Vendors that pass the written evaluation noted above, Public Health reserves the right to conduct Proposer product presentations using Public Health defined scripts, and site visits.

Proposals shall be scored according to the following methodology:

Description	Weighting	Points
Proposer's Presentation via Public Health scripts	**80%**	
Site Visits	**20%**	
Corporate and Data Center site visit	10.0%	
Client site visit	10.0%	
Total	**100%**	

A key requirement is to find a vendor that can supply an EHR that complies with the technical requirements and meets most of the functional requirements. We do not expect any vendor's system will satisfy all our requirements, so we are interested in identifying vendors who would be willing to enter into a partnership with us to develop portions of their system that need added functionality to meet our requirements.

D. King County Contracting Opportunities Program

King County Contracting Opportunities Program is a public contracting assistance. The purpose of the King County Contracting Opportunities Program is to maximize the participation of Small Economically Disadvantaged Businesses (SEDB) through the use of rating points in the award of King County competitively bid contracts for the acquisition of technical services. The program is open to all firms that are certified as an SEDB by King County's Business Development and Contract Compliance Office.

A "Small Economically Disadvantaged Business" (SEDB) means that a business and the person or persons who own and control it are in a financial condition, which puts the business at a substantial disadvantage in attempting to compete for public contracts. The relevant financial condition for eligibility under the Program is set at fifty percent (50%) of the Federal Small Business Administration (SBA) small business size standards using the North American Industrial Classification System (NAICS), and an Owners' Personal Net Worth less than $750K dollars.

A "Certified Firm" means a business that has applied for participation in King County's Contracting Opportunities Program, and has been certified as an SEDB by the King County Business Development and Contract Compliance (BDCC) office. Information about becoming a Certified Firm, as well as a list of Certified Firms, may be obtained by visiting the King County's Contracting Opportunities Program Website address: http://www.metrokc.gov/exec/bred/bdcc/prog/kccontractopp.htm or contacting the BDCC office at (206) 205-0711.

In the evaluation of proposals, in addition to the criteria stated above, ten percentage points of the written score will be allotted for SEDB participation. King County will count only the participation of SEDBs that are certified by King County at the date and time of proposal submittal. After tabulation of the selection criteria points of all prime submitters, ten percentage points shall be added to the score of all proposals that meet at least one of the two following sub-criterion:

1. If the Prime submitter is a SEDB firm that anticipates performing work for the entire contract unassisted and includes the SEDB certification number on page one of this submittal.
2. If the Prime submitter is not an SEDB but will use SEDBs for at least 5% of the total contract labor hours in the work to be performed in this contract, and who complete the following table and include it in their proposal submission:

SEDB No.	Contractor Name	Contact Name / Phone	Work to be performed	Percentage of Total Work

SEDB participation shall be counted only for SEDBs performing a commercially useful function according to custom and practice in the industry. A commercially useful function is defined as a specific scope of work for which the SEDB has the management and technical expertise to perform using its own workforce and resources.

2-2-7 Competitive Range

The evaluation of Proposals may result in successive reductions of the number of Proposals that remain in the competitive range. The Proposers remaining in the competitive range may be invited to participate in additional evaluations, interviews, product presentations using Public Health defined scripts, site visits, or any other type of clarification of Proposal information it deems necessary to evaluate Proposals.

The Committee may issue to all remaining potentially acceptable Proposers written requests for additional information. The County reserves the right to make a contract award without written and/or oral discussions.

2-2-8 Cost/Price Analysis

Cost/Price Analysis may be required by the County for the evaluation of proposals, Best and Final Offers, negotiations, Change Orders, Terminations, Revisions to Contract requirements or other circumstances as determined by the Buyer.

2-2-9 Negotiations

The County may enter negotiations with the highest ranked Proposers to finalize Contract terms and conditions. In the event negotiations are not successful, the County may initiate negotiations with the next highest-ranking Proposers, or may elect to reject all Proposals. Negotiation of a Contract will be in conformance with applicable federal, state and local laws, regulations and procedures. The objective of the negotiations will be to reach agreement on all provisions of the proposed Contract.

2-2-10 Contract Award

Contract award, if any, will be made by the County to the responsible Proposer whose Proposal meets the requirements of the RFP and will be the most advantageous to the County with respect to price, quality and other factors as evaluated by the County. The County is not required to award a Contract to the Proposer offering the lowest price. The County shall have no obligations until a Contract is signed between the Proposer and the County.

2-2-11 HIPAA - Protecting Patient Privacy

The work under this Contract will require compliance with “The Health Insurance Portability and Accountability Act of 1996” (HIPAA). Information on this Act can be found at the Office of Civil Rights website: http://www.hhs.gov/ocr/hipaa/.

A. Application Functionality

The selected Proposer shall ensure the Electronic Health Records Management System will, at minimum, comply with all application functionality and specifications.

B. Security

1. The application will conform to federally mandated HIPAA privacy and security requirements for medical data by providing password-protected access, auditing of data entry, and encrypted file system storage of encrypted client data.
2. The selected Proposer shall provide documentation for strong user authentication, SSL encryption, and digital signatures.

C. Auditing

1. The selected application will establish data audit trail capability, with time stamp in compliance with HIPAA security.

2-2-12 Business Associate Agreement

Regarding compliance with HIPPA, the selected Proposer shall sign a Business Associate Agreement with the County. The Business Associate Agreement is in regards to Protected Health Information, as regards to the Department of Health and Human Services Privacy Regulations, Code of Federal Regulations, (“CFR”), Title 45, Sections 160 and 164, or as required by law. A copy of this form may be obtained by contacting the buyer listed on page 1 of this RFP.

2-2-13 Insurance Requirement

The Proposer to whom the County awards a contract pursuant to this RFP shall file with the County evidence of insurance from insurer(s) satisfactory to the County certifying to the coverage of insurance set forth in this RFP. Such evidence of insurance shall be submitted within seven (7) calendar days of receipt of a request from the County. Failure by the Proposer to submit satisfactory evidence of insurance shall result in rejection of the Proposal.

2-2-14 Execution of Contract

The Proposer to whom the County intends to award the contract shall sign the contract and return it to the County. Upon authorization by the County Executive, or designee, a Contract will be issued.

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.1 INTAKE, TRANSFER, RELEASE

CLINICAL OPERATIONS

INTAKE, TRANSFER, RELEASE

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
1. Ability to, in real-time, interface with Department of Adult/Juvenile Detentions (DAJD) system to capture Initial Receiving data. a. Ability to enter data directly into the EHR when DAJD interface is unavailable. b. Ability to automatically synchronize DAJD and EHR systems when interface becomes available again. 1. When synchronization occurs, notify System Administrator, via priority e-mail, when data discrepancies occur. 2. Produce "report" of data fields in conflict.					
2. Assign Medical Record Number (MR#) for first time offenders. a. Minimum 12 alpha-numeric character patient MR# exclusive of check digit.					
3. Ability to capture, store, modify Initial Receiving Assessment during intake of offenders, including: a. Patient demographics b. Arresting Information c. Observations (table driven with ability to select all that apply) d. Medical Problems (table driven with ability to select all that apply) e. Mental Health (table driven with ability to select all that apply) f. Substance Abuse/Alcohol (table driven with ability to select all that apply) g. Current Prescription Medications h. Medication Allergies (table driven with ability to select all that apply) i. Food Allergies (table driven with ability to select all that apply) j. Female data (table driven with ability to select all that apply) k. Disposition (table driven with ability to select only one)					
4. Based on positive Initial Receiving Assessment responses, application will automatically trigger events.					

CLINICAL OPERATIONS

INTAKE, TRANSFER, RELEASE

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	2	1	1	0	
5. Ability to interface with Signature system to assure only one medical record number has been assigned to the same individual. Match clients, at a minimum, on: a. Name. b. Date of Birth					
6. Ability to provide or interface with a symptom-based decision support module for medical triage to assist clinical staff with pathways/guidelines for assessing and responding to presenting symptoms.					
7. Capacity to capture request for well care visits (well baby, well adult).					
8. Capacity to interface or link with King County Mental Health system.					
9. Ability to interface or link with Washington State Child Profile system for immunizations history and tracking.					
10. Ability to transfer data to and receive data from Public Health Parent Child Health Track system for field based home visits.					
11. Ability to produce copies of patient history forms or screens for patient self reporting of history in multiple languages.					

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.2 PROBLEM LIST

CLINICAL OPERATIONS

PROBLEM LIST

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
1. System maintains a master file of problems including the following information:					
a. Problem code (table driven).					
b. Problem category (table driven).					
c. Problem description (unlimited free text).					
d. Multiple associated diagnoses.					
2. System maintains, at a minimum, the following problems:					
a. Psychiatric Problems.					
b. Medical problems					
c. Nursing Problems.					
d. Social Problems.					
e. Family Problems.					
f. Substance Abuse Problems.					
g. Housing Problems.					
h. Dental Problems.					
i. Miscellaneous Problems.					
3. Ability to build a Problem List during intake and during stay of offenders including the following:					
a. Active Problem & Date					
b. Ability to document smoking, alcohol use, drug use					
c. Ability to track and document allergies and response					
d. Show problem status for each encounter.					
e. Ability to document Outcome & Date					
f. Ability to archive/view problems complete with status history.					
g. Link problems automatically with orders and results.					
h. Linked to patient education materials.					
4. Allow authorized users to add problems to problem list in following way:					

CLINICAL OPERATIONS

PROBLEM LIST

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	2	1	1	0	

a. User designates problem to be entered as active or inactive
b. When entering a problem, user selects problem category from user-defined table.
c. Once category is selected, category and program-specific pick list should appear.
d. User is prompted to note behavioral manifestations of problem.
e. User should be able to enter the problem severity.
f. User indicates whether problem will be addressed by current treatment.
g. User should be able to update the status or severity of a problem through the progress note or the Treatment Plan.

5. Ability to subcategorize problems by status: chronic, acute, recurrent, episodic, special needs.

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.3 ENCOUNTERS

CLINICAL OPERATIONS

ENCOUNTERS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
1. Ability to create and modify Assessments that contain items, both table driven (where applicable) and text that comply with Medical and Mental Health standards.					
2. Allow authorized user to determine which relevant items collected at a prior point, either during referral, admission or a prior episode of care, can be continued over to an Assessment.					
3. Provide means to track medications ordered from physicians outside of system in format that matches internally ordered medications.					
4. Provide the ability to collect comprehensive Clinic Visit (Medical or Dental Diagnostic) information including: a. Provide ICD-9 or 10 and CPT-4 diagnostic code table with ability to de-activate codes and add facility specific codes. b. Provide ability to automatically update ICD and CDT diagnostic codes when new codes are published. c. When old records containing ICD AND CDT diagnoses are viewed or printed, the system must search the ICD-9 version that was in use at the time of diagnosis to retrieve the correct diagnoses. d. When diagnoses are made for client, system must keep track of the version that was in use at the time. e. Provide several methods to code diagnoses for client (e.g. by code, by description, by SoundX).					
5. Provide the ability to collect comprehensive Mental Health Diagnostic information including: a. Provide DSM diagnostic code table (Tables for Axis I and Axis II diagnoses for each version of the DSM) with ability to de-activate and add facility specific codes. 1. An unlimited number of Axis I, II, III, IV, and V diagnoses. 2. Effective dates for each Axis especially to delineate Past Year and Past Month diagnostic coding. b. Provide ability to automatically update DSM diagnostic codes when new codes are published. c. When old records containing DSM diagnoses are viewed or printed, the system must search the DSM version that was in use at the time of diagnosis to retrieve the correct diagnoses. d. When diagnoses are made for client, system must keep track of the version that was in use at the time. e. Provide several methods to code DSM diagnoses for client (e.g. by code, by description, by SoundX). f. System should allow, but not require, entry of ICD codes for Axis III diagnoses, with option for table driven pick list. g. Axis IV and V should be table driven with optional text for Axis V. h. System should have "cross-walk" to ICD diagnoses.					

CLINICAL OPERATIONS

ENCOUNTERS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
6. Client Assessments can explicitly be associated to an episode of care.					
7. Client Assessments can implicitly be associated to an episode of care based on assessment date and episode begin/end dates.					
8. Assessments are integrated with the Health Treatment Planning and Notes module.					
9. Assessment results can automatically recommend a diagnosis. a. System accommodates ICD-9-CM, DSM-IV diagnostic code sets and is committed to ongoing support of future changes to these code sets. b. System will support SNOMED code set if it becomes a community standard.					
10. Provide Assessment graphing tool to measure results over time.					
11. Provide means to indicate persons or disciplines responsible for assessment and automatically e-mail notice of required assessment to person or office responsible for assessment.					
12. Provide ability for Assessments to be automatically and flexibly scheduled, to include: a. Assigned to a responsible party b. Frequency c. Scheduled Assessment results in notifying the responsible party via e-mail, tickler list, or other means.					

CLINICAL OPERATIONS

ENCOUNTERS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
13. Enable the design and implementation of custom Assessment tools as determined by JHS. Functionality to include the following: a. Upload tool designs from Microsoft Word b. Value pull-down lists c. Radio buttons d. Yes/No check boxes e. Flexible editing logic to verify responses. f. Integration to the user customizable data model to capture the responses. g. Scoring capabilities to build T-scores, percentiles, and other mathematical algorithms against the responses. h. Customizable online help to guide the client in filling out the assessment/survey. i. Logical handling of missing values as specified by the user such as set to zero, treat as null, etc.					
14. Provide the ability to print patient educational materials associated with the encounter.					
15. Provide the ability to display and maintain Medical and Mental Health Assessment information.					
16. Provide the ability to build (ideally supply) JHS specific Assessment templates for example: speech and language; self care; cognitive functioning; abnormal involuntary movements; nursing; educational functioning; psychological; neurological; general physical health; and, rehabilitation readiness.					
17. Capability to print patient education materials in multiple languages.					
18. Ability to maintain a list of all providers actively involved in treating the patient within the last 12 months.					
19. Ability to link together with each problem the internal encounters where this problem was addressed, diagnostic tests ordered, external referrals ordered and status of referrals.					

CLINICAL OPERATIONS

ENCOUNTERS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	2	1	1	0	

20. Ability to provide screening tools and clinical risk assessment calculators for:

a. Cardiac Events
b. Osteoparesis Fractures
c. Substance Abuse
d. Depression
e. Anxiety
f. Geriatric Screening
g. Mini Mental Status
h. Others

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.4 TREATMENT PLANNING

CLINICAL OPERATIONS

TREATMENT PLANNING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
1. System maintains a Multidisciplinary Treatment Plan Library with distinct sections that can be modified independently by authorized users. a. The system allows for the creation, alteration or update of all standard treatment plans at anytime. (Permanent changes performed only by authorized users). b. Treatment Plan standards individualized by system of care, program, team, or individual clinician.					
2. System can incorporate treatment plan standards individualized by system of care, program, team, or individual clinician.					
3. Based on the Provider Type, the preferred treatment plan library is presented to them.					
4. Selection of treatment plans is integrated with diagnosis.					
5. Create individual client treatment plan from the selected library.					
6. Provide mechanism for assigning responsibility for Treatment Plan section to specific staff or disciplines.					
7. Provide mechanism for assigning responsibility to update specific section of treatment plan.					
8. System keeps track of who is responsible for completing or updating which section of Treatment Plan and indicates date of completion or update.					

CLINICAL OPERATIONS

TREATMENT PLANNING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

9. When Treatment Plan elements are also gathered automatically from other modules of the system (e.g., assessments, progress notes from previous episode, medications), data are shared with Treatment Plan and vice versa.

10. System automatically notifies user when Treatment Plans requires review, as specified by JHS.

11. Treatment Plan must include the following elements for viewing, printing, adding, or updating:

a. Treatment team disciplines (I.e. team members).
b. Five Axis DSM Diagnosis.
c. I CD-9 Standard Medical Diagnosis
d. Summary sections of all assessments gathered in Assessment Section.
e. Client Problems
f. Behavioral manifestations of problem.
g. Problem status
h. Problem treatment status
i. Goals associated with each active problem.
j. Measurable objectives associated with each goal.
k. Treatment modalities/ interventions
l. Current Medications.
m. Inmate participation in treatment planning process.
n. Inmate and/or family agreement with Treatment Plan.
o. Discharge criteria related to inmate problems.
p. Date of next scheduled review of Treatment Plan as determined by the user.
q. Functional strengths.
r. Barriers to treatment.
s. Motivation for treatment.
t. Contraindicated procedures.
u. Necessity of continued stay.
v. Continuing care plan.
w. Discharge Plan (Table driven and unlimited free text).
x. Post discharge modalities associated with each level of care or program identified in Discharge Plan.
y. Date of 1st scheduled appointment.
z. Client's agreement to be contacted for follow-up (Y/N).
aa. Referrals including: Dental, WIC, Immunizations

12. System maintains a JHS defined table of offered interventions.

CLINICAL OPERATIONS

TREATMENT PLANNING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

13. System maintains, for each offered intervention, by program, the following:

a. Associated CPT code
c. Associated charge
d. Approximate cost
e. Contracted cost
f. Actual cost
g. Associated note types (Multiple, related to table of notes)
h. Intervention type
i. RVU's

14. Identified interventions results in the forwarding of the intervention to the identified responsible party in one or more of the following ways:

A Via e-mail alert
b. Assignment of the intervention on a system provided user "work list" with automatic update based on inmate housing location.
c. Forwarding to the appointment scheduling module.
d. Color coded annotations in the treatment plan highlighting scheduled interventions with automatic updates based on patient location.

15. Display and print on demand updated treatment plan.

16. Coordination interventions and their planning between independent systems of care and Departments.

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.5 CLINICAL NOTES & DOCUMENTATION

CLINICAL OPERATIONS

CLINICAL NOTES & DOCUMENTATION

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

1. System maintains different note categories, including:

a. Summary Notes which document a particular area of client functioning or summarize response to different discipline-specific treatment efforts.
b. Order-Related Notes that correspond to particular types of orders and are automatically generated by such orders.
c. Incident Notes which document the occurrence of particular incidents.
d. Progress Note documentation is driven by the encounter so each treatment plan goal and intervention has associated progress notes.
e. System allows each type of service note to be associated with an intervention from the Table of Interventions.

2. System maintains Summary Notes including, at a minimum, the following:

a. Progress Notes including:
   1. Selection of problems, goals or objectives being addressed by note
   2. Severity ratings of selected active problems
   3. Shift Notes
   4. Discharge Planning Note
   5. Treatment Plan Review Conference Note
b. Team Conference Note including:
   1. Participants in conference (Table driven)
   2. Automatic mailing of note to participants for electronic signature

3. System maintains Order-Related Notes including, at a minimum, the following:

a. Admission Note
b. Discharge Note
c. Change in Status Note
d. Medication Change Note

4. System maintains Incident Notes including, at a minimum, the following:

a. Aggression Control Note
b. Seclusion and Restraint Note
c. Special Precautions Note/ 15 minute checks.
d. Suicidal ideation/behavior Note
e. Allergic Reaction Note
f. Activity Restriction Note
g. PRN administration Note
h. Communication Restriction/ gang affiliation
i. Note of Treatment Refusal
j. Report of Code Called
k. Medication Side Effect Note
l. Client Complaint Note

CLINICAL OPERATIONS

CLINICAL NOTES & DOCUMENTATION

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
m. Report of client Illness					
n. Emergency Room Transfer Note					
5. System provides the capability to capture other types of Notes:					
a. Ability to enter office visit notes					
b. Ability to document demographics/family history, risk factors					
c. Ability to write History and Physical/assessment notes					
d. Ability to write or enter Medication List					
e. Ability to build a Problem List					
f. Ability to document smoking, alcohol use, drug use					
g. Ability to track and document allergies and response					
h. Ability to enter/record vital signs					
i. Ability to document risk factors					
j. Ability to enter or accept multiple note types: Radiology, Lab, etc.					
k. Ability to import notes from referral (as defined by Access Control) or allow entry of notes by referral provider					
l. Ability to import notes from hospital (inpatient) record					
m. Ability to capture social history					
6. Ability for disciplines to enter, correct, authenticate notes.					
a. Ability to correct notes prior to authentication					
b. Ability to discard a note, with system warning, prior to authentication.					
c. Ability to authenticate (electronic signature) notes.					
d. Provides ability to add co-signature if needed.					
e. Linked to Clinical Decision Support (CDS) system and Controlled Medical Vocabulary (CMV) to provide alert if co-signature required					
f. Ability to date/time stamp notes					
7. Ability for disciplines to append authenticated notes.					
a. Original documentation					
b. Date and time of change					
c. Responsible party (names)					
d. Corrected documentation					
e. System records a flag displaying that a correction exists.					
8. The system allows for specific views (i.e. role based displays) via a person's sign on code.					
9. Print on demand documentation for an individual client over a user-specified time period (e.g., today, week, and month).					

CLINICAL OPERATIONS

CLINICAL NOTES & DOCUMENTATION

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
10. Ability to provide language to satisfy Medicare requirements for precepting medical students/residents: Example: :"I have personally interviewed, examined and discussed this patient's care with (name of student/resident)." a. Washington State Labor & Industries encounter form b. WA State DSHS Medical Assessment form c. SSI medical forms d. Handicap license/Bus fare reduction medical request forms, etc.					

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.6 FLOW SHEETS

CLINICAL OPERATIONS

FLOW SHEETS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

1. Ability to display Flow Sheet data that contain items, both table driven (where applicable) and text that comply with Medical and Mental Health standards. Examples are:

a. HIV Flow Sheet
b. DIABETIC MONITORING Flow Sheet
c. HYPERTENSIVE MONITORING Flow Sheet
d. SEIZURE DISORDER - CHRONIC CARE Flow Sheet
e. ASTHMA/COPD MONITORING Flow Sheet
f. COUMADIN Flow Sheet
g. NEURO Flow Sheet
h. DIABETES EVALUATION Flow Sheet
i. Immunization Records
j. Child Growth Charts
k. Dental
l. Maternal Support Services
m. WIC
n. Health Maintenance

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.7 ORDERS & RESULTS REPORTING

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
ENTRY of ORDERS:					
1. Provide a clinically oriented multidisciplinary order entry tool that streamlines the order entry process with the treatment plan.					
2. Identify physician/provider initiating order, staff entering order, date, and time. If the name of the individual entering the order and/or date and time are not put in at time of order entry, the system should automatically do so.					
3. Ability to enter Orders On-Line and Display or Send Real-time to All Departments.					
4. Allow selection of orders by service and sub-service (e.g., Administration, Intervention, Laboratory, Pharmacy, and Radiology).					
5. Provide a menu display of orders and order panels.					
6. Provide a system of mnemonics for test ordering.					
7. Provide user-defined order sets and order panels with easy support for additions and deletions from these sets/panels.					

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

ENTRY of ORDERS:

8. Provide selection of orders via:
- a. Alpha listing
- b. Procedure codes
- c. High-frequency menu listing

9. Enable user to enter order priority to include:
- a. Routine
- b. STAT
- c. ASAP
- d. Today
- e. Timed
- f. Discharge

10. Allow authorized users to change Status including entering information on:
- a. New status
- b. Justification for status change

11. Allow user to designate start time and stop time for all timed and continuing orders. Authorized users must be able to override stop time for designated orders.

12. Provide ability for order to be marked as "expected to be renewed", with prompts to clinician to renew order at appropriate time.

13. System has ability to "know" that orders expected to be renewed, which are associated with long acting medications given once a month, should appear as medications that the inmate is "on", even between orders.

14. Provide inmate schedules and department work lists based on orders placed.

15. Allow entering of free text comments with order.

16. Provide step-by-step ("Help") guide for Order Entry activities, returning the cursor to the place on the Order Entry screen at which the user left off.

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

ENTRY of ORDERS:

17. Display possible conflict of current order with previously entered orders including drug incompatibilities, based on user-specified criteria.					
18. Allow authorized individuals to override order conflicts, and maintain audit trail of these events.					
19. System automatically identifies and notifies user online of: a. Apparent duplicate orders. b. Improper order in scheduling sequential interventions.					
20. Upon attestation of medication order, create Medication Adjustment Note which indicates the order information and includes the reason for the medication change.					
21. When a medication is ordered that requires either one-time or ongoing associated blood work, the system should prompt users to automatically write the necessary orders and make the necessary appointments.					
22. Indicate verification status of each order including when order was countersigned per provider policy.					
23. Provide system acknowledgment of acceptance of order.					
24. Enable user to communicate routine, standing, and selective prior orders on day of client is booked into custody.					

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	2	1	1	0	

ENTRY of ORDERS:

25. **Allow user to bypass menus when entering orders and directly key in desired order information.**

26. **Provide an online narrative description of the use of each test, procedure, or intervention as well as any ordering policies and protocols affecting the ordering to assist the clinician when entering the order into the system.**

27. **Identify and report specific procedures in the procedure master file which require verification prior to becoming active.**

28. **Allow sensitive orderable items to be flagged as confidential.**

29. **Permit inquiry into the exact status of all orders, by inmate (e.g., ordered, verified, canceled, preliminary report, or final report).**

30. **Ability to entry prescription refill authorizations.**

31. **Ability to generate work or school notes.**

32. **Ability to capture data and link with Dynacare/Labcorp system for lab orders.**

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.7 ORDERS & RESULTS REPORTING

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
EDITING of ORDERS:					
1. Provide automatic edit of all orders for necessary data which must be included at time of entry (e.g., route, dosage, assessment, interactions based on CDS, treatment plan).					
2. Display message identifying missing data in the order.					
3. Display of alert if order varies from guidelines and rules and/or presents safety issue.					
4. Ability to flag duplicate or conflicting orders.					
5. Provide order correction mechanism without requiring cancellation and re-entering of entire order, automatically recording date, time, and person entering correction.					
6. Permit only authorized personnel to cancel orders and automatically notify ancillary area of cancellation.					
7. Allow for backdating of order times and dates if system has been unavailable. Maintain actual date and time when orders are entered.					
8. Require inmate identification in order (to avoid processing of order for inmate who is not in system).					

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

9. Allow multiple methods of order entry:

a. Text entry allowed
b. Keyboard entry allowed
c. Entry through handheld device allowed
d. Entry through voice recognition allowed (See Question #9, Appendix A)

TOTAL POINT

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.7 ORDERS & RESULTS REPORTING

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

VERIFICATION of ORDERS:

1. Prompt user for verification, including the following:

a. Completeness, such that all elements are included in order (e.g., route of administration, dose, time, frequency, and special instructions).
b. Nurse or presumed ancillary personnel collection.
c. Identification such that inmate with same or similar names are accounted for in the system.
d. Provide for dual verification by authorized personnel (e.g., physician/provider, pharmacist, etc).
e. Authentication and electronic signature for order.
f. Ability to authenticate and allow electronic co-signature if needed.
g. If co-signature required, linked to CDS and alert provided.
h. Date/time stamp for order.

2. Ability to limit use of abbreviations to those on a list approved by Public Health.

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.7 ORDERS & RESULTS REPORTING

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

TRANSMITTAL of ORDERS:

1. **Orders tracked through processing (e.g. know when Pharmacy receives order and when it has filled Rx).**
2. **Completion of order documented.**
3. **Alert or message generated if order is not followed through to completion (e.g. patient does not receive/pick-up Rx).**
4. **Order processing is based on efficient workflow (e.g. tasks sent to appropriate persons and all departments involved in completing the order).**
5. **Provides ability to trigger medical necessity criteria.**
6. **Prompt is given for a diagnostic code when order is entered.**
7. **Interfaces with business/financial accounting modules.**
   a. Provides ability to charge items individually or in batches.
   b. Ability to display total cost of items when ordered (e.g. test, medication, procedure).
   c. Ability to display “out of pocket” cost of items when ordered to provider and patient (See also Referral and Benefits Authorization).
   d. Ability provided for “no charge” items, such as test reruns or Rx fill repeat due to lab/radiology/pharmacy error.
   e. Ability to create Charge Master File with description and accompanying prices.

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	2	1	1	0	

TRANSMITTAL of ORDERS:

8. **Interfaces with LAB (DynaCare or LabCorps), Pharmacy (FSI), Radiology (Harborview) systems.**

9. **Capability to "explode" orders, generating multiple orders from one request to all appropriate responsible parties.**

10. **Capability to "explode" cancellations to appropriate providers when original order is canceled.**

11. **Provide option of visual or auditory alarm which requires a response on receipt of STAT, ASAP, timed orders, or special instructions.**

12. **Provide information online on status of a specific order being processed.**

13. **Flag canceled or held orders with a visual or audible alarm. If order is not canceled at the provider location, also notify the provider.**

14. **Flag any changed order with a visual or audible alarm in the ancillary area.**

15. **Retain record of order cancellation to identify who ordered the cancellation and when it was issued.**

16. **Provide an audit trail of:**
    a. Date and time an order was entered

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	2	1	1	0	

TRANSMITTAL of ORDERS:

b. Date and time an order was received
c. Time completed
d. By whom completed
e. The responsible party completing the order

17. Display and print on demand an accumulated list of orders for a client for a designated time period.

18. Ability to automatically print requisitions and labels in area of required service upon order entry for today's tests and on appropriate day for future orders.

19. Ability to automatically override print requisitions and labels into the area where the order was placed in the system instead of the client's registered location.

20. Flag STAT, ASAP, timed orders, or special instructions when the requisition prints.

21. Ability to flag or add prompts to follow-up and close:

a. Dental
b. Radiology
c. WBCHP
d. LAB
e. Specialists

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.7 ORDERS & RESULTS REPORTING

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

SCHEDULING of ORDERS:

1. Allow scheduling of one-time and continuing orders.					
2. Allow scheduling of a test (procedure) when ordering. Notify provider (where test is scheduled) so time and date may be verified. Provide automatic feedback of verification to ordering area.					
3. Provide automatic scheduling of tests requiring more than one session for completion.					
4. Provide authorized individuals with ability to override scheduling constraints.					

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.7 ORDERS & RESULTS REPORTING

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

CANCELLATION, RENEWAL, DISCONTINUANCE of ORDERS

1. **Allow online update, cancellation, renewal, reschedule, and discontinuation of order/test. If order/test are canceled in error, there is a simplified way to reinstate them.**

2. **Automatically notify appropriate provider(s) online and optionally in print of change(s) in order.**

3. **Notify physician/provider online and optionally in print of need for renewal before expiration of continuing order(s) per provider criteria, including:**
   a. Name of patient
   b. Client ID number
   c. Name of service
   d. Beginning date and time of order

4. **Provide for automatic cancellation of orders upon discharge, release, or death of an inmate.**

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.7 ORDERS & RESULTS REPORTING

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

DISPLAY of ORDERS:

1. Clearly displayed (and printed, if needed) documentation of order.

2. Allows multiple views of orders:

a. Allows view of all active and/or discontinued orders.
b. Allows view of orders attached to a particular problem.
c. Allows historical view of orders by inmate.
d. Allows view of orders by date.
e. Allows view of orders by provider.

3. Can be customized to meet JHS needs:

a. Commonly ordered tests can be added.
b. Commonly ordered medications can be added (per JHS formulary).
c. Medications and procedures not per JHS formulary or protocol can be removed from orders view.
d. Commonly ordered tests/medications can be organized per specialty (e.g. protocols).

4. Order search ability by:

a. Patient Name
b. Patient/Medical Record Number
c. Provider
d. Location
e. Diagnostic Codes and Names
f. Procedure Codes and Names
g. Date

5. Ability to generate outbound message to other systems when/where needed.

6. Ability to perform multiple passes (attempts) for outbound message if acknowledgement not received.

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

7. Ability to Lock Out Ordering (e.g. ARNP not able to order medications for himself).

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	2	1	1	0	

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.7 ORDERS & RESULTS REPORTING

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

RETRIEVAL of ORDER

1. Display and/or print multiple views of orders.					
2. Display and/or print list of orders received, completed, canceled, postponed, held, or unreported, in chronological sequence by provider.					
3. Display and/or print on demand status of order (e.g., routine, ASAP, STAT, scheduled including start time and intervals).					
4. Display and/or print on demand orders for clients in the following manner: a. All orders for the current episode of care b. Outstanding orders c. Unverified orders d. Orders for last 24 hours					

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.7 ORDERS & RESULTS REPORTING

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

RESULTS DISPLAY/REPORTING

1. Ability to Display Results from All Departments (i.e. RAD, LAB, Rx, etc.).

2. Ability to Import all Results not Displayed within Application. Note: will require interfaces with MLAB system for Public Health laboratory and Dynacare/Labcorps system for contracted lab results.

3. Clearly displayed (and printed, if needed) results.

a. Results (at least summary results or most current results) available on one page.

4. Allows multiple views of results:

a. Ability to drill down into results for more detail
b. Longitudinal display of results available with normals/abnormals noted
c. Graphical display of results and/or response trended over time (e.g. Coumadin charted against INR and Pro-Time)
d. Allows view of orders attached to a particular problem.
e. Allows historical view of orders by patient.
f. Allows view of orders by date.
g. Allows view of orders by provider.
h. Allows display by test result/result type (e.g. normal, abnormal).
i. Allows import of scanned results.
j. Allows display of digital images (e.g. radiograph) or video (e.g. ultrasound).
k. Allows display of results to patient as defined by patient.

5. Clearly displayed origin for results (where they came from).

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	2	1	1	0	

RESULTS DISPLAY/REPORTING

6. **Date/time stamp for results.**

7. **Results display can be configured by role, by specialty, by location, by date - down to individual level - e.g. backup provider can be designated to receive if primary out of office or first/second sequence can be defined.**

8. **Results outside of normal values are noted through alerts (linked to CDS and CMV).**

9. **Results not viewed or associated with an action can result in an alert.**

10. **Ability to search results by:**
    a. Patient Name
    b. Medical Record Number
    c. Provider
    d. Location
    e. Diagnostic Codes (Problem)
    f. Procedure Codes
    g. Date

11. **Ability to display interface data as needed (e.g. from other systems).**

12. **Action taken when viewing result followed – ability to link action to result by provider, patient, date, etc.**

CLINICAL OPERATIONS

ORDERS & RESULTS REPORTING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	2	1	1	0	

RESULTS DISPLAY/REPORTING

13. Follow-up available for documentation.					
14. For test results, ability to display range of results in addition to normal/abnormal.					

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.8 CONSENTS

CLINICAL OPERATIONS

CONSENTS, RELEASE of INFORMATION REQUESTS, REFUSALS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	2	1	1	0	

1. Ability to design and implement Consents, Release of Information Requests, Requests for Information, Health Treatment Refusals, Letters, and other forms as determined by JHS. Functionality to include the following:

a. Designed using Microsoft Word functionality.
b. Ability to insert data from Patient Medical Record.
c. Ability to automatically trigger the completion of a specific electronic form based on a clinical event (e.g. intake, encounter, etc.).
d. Ability to complete any electronic form on-demand for a specific patient.
e. Ability to (re)display or (re)print patient specific form on-demand from within the EHR.
f. Secure form revision handling (i.e. unable to modify form once produced)

2. Ability to enter multiple electronic signatures via a variety of secure methods.

a. Ability to authenticate and allow electronic signatures, co-signatures.
b. Provide for dual verification by authorized personnel (e.g., physician/provider, pharmacist, etc).

3. Ability to capture/print Authorization For ROI And Disclosure Of Protected Health Information, including:

a. Language and formatting comply with HIPAA requirements

4. Ability to capture/print Immunizations Screening Questions, including:

a. Immunization consent forms or import forms from Public Health SKIIS system.
b. Family Planning procedure consent form.
c. Medicare ABN/Waivers
d. Take Charge program waivers.

5. Ability to capture/print Health Memo to Inmates, including:

a. Scheduled substances/Narcotic contract.
b. Behavior contract.
c. Consent to participate in a study.

TOTAL POINTS

2-3-1 CLINICAL OPERATIONS

2-3-1.9 PATIENT EDUCATION

CLINICAL OPERATIONS

PATIENT EDUCATION

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
1. Ability to design and implement Patient Education material (text and pictures) as determined by JHS. Functionality to include the following: a. Designed using Microsoft Word or other off-the-shelf software products. b. Ability to (re)display or (re)print patient specific material on demand from within the EHR. c. Secure form revision handling (i.e. unable to modify material once in production).					
2. Incorporates (i.e. ability to import educational materials from other sources) a library of educational material using industry standard technology.					

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.10 REFERRALS

CLINICAL OPERATIONS

REFERRALS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

1. Ability to capture JHS internal program referrals, including:

a. Automatically generate JHS inter-facility referrals based on positive screening responses, including:
   1. Ability to automatically refer an inmate to PSYCH based on a positive Mental Health Screening response.
   2. Ability to automatically refer a pregnant inmate to OBSTETRICS based on a positive response to Prenatal Screening.
b. Ability to send referral note on-line.
c. Track status of referral (e.g. sent, received, under review, accepted, denied, etc.) and trigger alert when not responded to within predetermined time limits.
d. Ability to provide multiple referral paths.
   1. Inter-Facility (e.g. to/from Infirmary, Psych.)
e. Provide for referral approval/denial.
f. Ability to co-sign referral using electronic signature and authentication capability.
g. Provide for capability to configure so certain referrals do not require pre-approval (as defined by JHS).
h. Ability to view referrals provided to patient authorized by role based security.
i. Ability to track, log, and view referrals.

2. Ability to capture external referrals, including:

a. Ability to enter Referral (and Benefits Authorization).
b. Ability to send referral note on-line.
c. Ability to include clinical data, results, and notes as well as a summary with the referral note.
d. Track status of referral (e.g.. sent, received, under review, accepted, denied, etc.) and trigger alert when not responded to within predetermined time limits.
e. Ability to provide multiple referral paths, including:
   1. Hospitalization/inpatient stay
   2. Outpatient Ancillary Services (Harborview Radiology)
f. Provide for capability for referral approval/denial.
g. Electronic signature and authentication capability.
h. Ability to co-sign referral using electronic signature and authentication capability.
i. Provide for capability to configure so certain referrals do not require pre-approval (as defined by JHS).
j. Ability to view referrals provided to patient authorized by role based security.

3. Ability to support WA State standardized referral format (CHITA).

4. Ability to close a referral under the following conditions:

CLINICAL OPERATIONS

REFERRALS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

a. When a report is received from the specialist.
b. When the referral authorization is denied.
c. When the patient does not appear for the referral appointment.
d. When the patient declines to accept the referral.

5. Ability to capture and access payor lists of referrals requiring prior authorization.

6. Ability to create trend reports for reasons for referrals, referrals by providers, reasons for denials, etc.

7. Ability to capture data on referrals to Public Health programs from other Public Health programs or from other entities and to track the status and disposition of these referrals to closure.

8. Ability to capture data and track referral status for Child and Adult Protective Services referrals.

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.11 ADMISSION, DISCHARGE, TRANSFER, REVERSAL

CLINICAL OPERATIONS

ADMISSION, DISCHARGE, TRANSFER, REVERSAL

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

ADMISSION:

1. Ability to capture, store, modify Admission information, including:

a. Allows authorized users to archive and retrieve inactive patients.
b. When a previously discharged patient is re-admitted, automatically list the name of the Primary clinician of record upon discharge during that previous stay, and patient location at the time of discharge.
c. Allow user to enter the name of a Primary clinician and two Associates, onto the Admission screen at the point of admission or at a later time or date.
d. Allow user to change the Primary clinician designation throughout the patient stay.
e. Allow user to assign patient to Complex Management List.

DISCHARGE:

1. Ability to capture, store, modify Discharge information, including:

a. When an inmate is released from custody, the release generates an automatic predefined discharge summary and "cancels" all outstanding orders, treatments, appointments, medications, and notifies appropriate clinicians of discharge.
b. Upon discharge from a program or service (e.g.. Infirmary), allow user to indicate discharge status, date, "to location", and alert Offender Management System of disposition.
c. Upon discharge from an Outpatient Stay (Hospital), allow user to capture discharge status, date, "to location", and alert Offender Management System of disposition.
d. Upon discharge allow user capture the following:
   1. Mental status/level (Table driven)
   2. Condition at last visit (Table driven)
   3. Disposition of case (Table driven)
   4. Discharge DSM diagnoses and ICD-9 Medical diagnoses
   5. Discharge Plan
   6. Date of discharge
   7. Time of discharge
e. If any data (from above item) had previously been collected during episode, it should be retrieved when discharge screen is activated.
f. System allows development and entry of an After Care Plan.
g. When patients are determined to be NICK (Not in Custody) in Offender Management System, they will inactivate in the EHR.

TRANSFER:

CLINICAL OPERATIONS

ADMISSION, DISCHARGE, TRANSFER, REVERSAL

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

1. Ability to capture, store, modify Transfer information, including:

a. System maintains history for transfers between facilities, units, services, or levels of care, including:
   1. Date and Time
   2. Type or Transfer (Inter-Facility Transfer, Medical/Psychiatric Transfer, Hospital Inpatient Transfer, Specialty Service Transfer)
   3. Reason for Transfer
   4. Current Location
   5. To Location
   6. Requested by Provider
   7. Requested by Provider

b. Ability to automatically route Transfer Requests (e.g. Ultra Security Placement To) for Approval(s)

c. When system displays list of episodes, this list includes transfer data within episodes.

d. A transfer report can be generated upon an inmate's transfer. The report will include all diagnoses, allergies, progress notes, services provided, test results and a list of medications the patient is currently taking.

REVERSAL:

1. Allow reversal by authorized user of an admission, discharge, or transfer with appropriate automatic adjustments to statistics and other related areas.

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-1 CLINICAL OPERATIONS

2-3-1.12 POPULATION BASED CLINICAL AREAS (REGISTRIES)

CLINICAL OPERATIONS

POPULATION BASED CLINICAL AREAS (REGISTRIES)

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	2	1	1	0	

1. Ability to manage POPULATION BASED CLINICAL AREAS (i.e. Registries)

a. Ability to manage Population Based Clinical Areas within the system.
b. Documentation of Plan of Care/Roadmaps.
c. Ability to Provide Data for Utilization Review.
d. Ability to Provide Data for Quality Management.
e. Provides tools for management of chronic illness for provider and patient.
f. Ability to send alerts/reminders by role based security, including to patients.
g. Ability to easily access references for management (tie to CDS and CMV)
h. Incorporate Risk assessments (e.g. clinical calculators).
i. Ability to incorporate information into written form (letter, e-mail) for patient and/or others.
j. Ability to create standard sets of orders/procedures per protocol for Health Maintenance “Registry” conditions.
k. Ability to incorporate advanced directives such as Living Will, Power of Attorney, next of kin, dependents, and code status.
l. Ability to customize for individual within populations.

2. Ability to support contact investigations for communicable disease populations

a. Ability to link contacts to source case via source identifier code.
b. Ability to capture demographic data on each contact.
c. Ability to capture intervention and follow up data.

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-2 CLINICAL SPECIALTIES

2-3-2.1 PHARMACY

CLINICAL SPECIALTIES

PHARMACY

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

1. Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Prescription Dispensing, including the following:

a. New Prescription Process
b. Refill Prescription Process
c. Prescription Directions (Sig) – User friendly shorthand input.
d. Renew Prescription Process – Update of expired prescription.
e. Edit Prescription – All Fields (in compliance with Pharmacy regulations).
f. Cancel Prescriptions – That meet set criteria.
g. Refill Adjustment/Authorization Process – Ability to alter the number of refills remaining on a prescription and ability to automate refill requests.
h. Child Resistant Caps – Ability to track consumers that have requested Non-child Resistant Caps & to provide a warning to obtain a new request after a specific period of time.
I. Pharmacy Monitoring Alerts – Ability to tag consumers to assist pharmacy with providing full service – Such as Medicaid Nursing Home, Adverse Drug Reaction, and Same Spelling or Sound Alike Names.
j. Front Counter Transaction – Ability for pharmacy to see what prescriptions are ready for the consumer to pick up, what pharmacy they are at (if other than where patient is), and ability to enter Over the Counter Medications into the Transactions as requested by the patient. Transaction also provides alerts to assist the pharmacist with patient management.
k. Prescription Charge Correction – Ability to alter the billing account the prescription is charged against without altering the clinical record.
l. Prescription Data Display – Ability to look at the detail of the data elements of a specific prescription.
m. Prior Authorization – Ability to retrieve current authorizations, consumer history, and pending authorizations for medications that must have prior authorizations before they are covered as part of the patients pharmacy benefit.
n. Prescription Text System – Ability to add, modify, and display text messages and information and attach them to specific prescriptions and auto display the messages whenever the prescription is processed.
o. Prescription Archiving – Ability to move prescriptions from/to an active working profile to/from an inactive profile after a specified number of days or manually on demand.
p. Auxiliary Labels – Ability to tag a drug file item with auxiliary directions (warning labels) that print automatically as part of the prescription label printing.
q. Return To Stock – Ability to return prescriptions to inventory and to create an audit trail of the activity.
r. New Prescription Will Call Option – Data entered into System, but prescription label not print until patient arrives – Reduce Returns To Stock.

2. Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Profiles, including the following:

CLINICAL SPECIALTIES

PHARMACY

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

a. Short Profile – Ability to display an abbreviated medication profile in a variety of sort configurations.
b. Non-Controlled Substance Profile – Ability to display a medication profile in a variety of sort configurations for only Non-Controlled Substances.
c. Controlled Substance Profile – Ability to display a medication profile in a variety of sort configurations for only Controlled Substances.
d. Profile Print Request – Ability to print on-demand a patient's full medication profile.
e. Long Term Profile – Ability to tag medications so that a record of all prescriptions for that medication is available for a specified period of time.
f. Ability to upload or manually add medications to client's medication profile from multiple sources in addition to Public Health's current FSI system. (Example: from Harborview's pharmacy system for TB clients).
g. Ability to upload drug inventory for TB clinic from Harborview Medical Center pharmacy system.

3. Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Pharmacy Purchasing and Materials Management, including the following:

a. Inventory Receipt – Provide a receipt for each inventory shipment and the ability to accept the shipment in total.
b. Non-PO Receipt (Schedule Drugs) – Ability to receive a shipment into inventory without generating a Purchase Order.
c. Drug Transfer (overnight) – Ability for the system to automatically receive a shipment into inventory at the end of the business day.
d. Drug Transfer (immediate) – Ability to receive a shipment or part of a shipment into inventory on request.
e. Inventory On Hand Display – Ability to display the inventory status of an item by location or all locations.
f. MTD Transaction Display – Ability to display the Month To Date utilization for any stock item.
g. Drug Catalog Display – Ability to display detail on any stock item, including cost, package size, charge structure, units per case, NDC, etc.
h. Electronic Purchasing/Inventory System
i. Materiel Management utilizes bar code technology.

4. Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Pharmacy Inventory Control Functionality, including the following:

a. Allow pharmacy staff to add pill counts of all medication in the formulary
b. Automatically deduct the number of pills given out in a filled prescription
c. Allow pharmacy staff the ability to set floor values for various medications.
d. Provide alerts when medications go below their set restock value.
e. Manage the inventory of restricted medications such as narcotics.
f. Produce reports detailing the number of various medication stocks that are being used on a daily, weekly, monthly and quarterly basis.
g. Track cost analysis data for the treatment of illness.

5. Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Drug Maintenance, including the following:

a. Drug - Drug Interactions – Ability to program and automate interactions.
b. Formulary Text – Ability to create, modify, and display Formulary text material.

6. Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Cash Management, including the following:

a. Ability to collect payments for pharmacy transactions and produce detailed receipts.
b. Ability to bill and manage accounts receivables for pharmacy transactions.

7. Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Allergies,

CLINICAL SPECIALTIES

PHARMACY

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

including the following:

a. Ability to record, update, display, and log patient allergies and allergy hits.
b. Ability to record, update, display, and log patient allergy profiles.

8. Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Text, including the following:

a. Provide text system to be able to record, update, display, and log drug monitoring, patient counseling, and patient processing data by medical record number and prescription.

9. Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Immunizations, including the following:

a. Ability to enter, modify/delete, display, and log patient immunization data.
b. Ability to track individual patient records and provide alerts if patient is not current with immunizations.
c. Ability to import current data from WA State Child Profile immunization tracking system to assure current immunization history.

10. Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Chronic Conditions, including the following:

a. Ability to enter, modify/delete, display, and log patient chronic conditions.
b. Ability to automatically log patient chronic conditions based on criteria established to review the patient medication profile.
c. Ability to provide alerts, logs, and notes for medication/chronic condition incompatibility.

11. Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Electronic Claims Processing, including the following:

a. Ability to submit and process prescription claims electronically.
b. Ability to display and search electronic claims records.

12. Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Alert Codes, including the following:

a. Ability to enter, modify/delete, display, and log patient alert codes.
b. Ability to log and provide notes for patients with alert codes.

13. Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Coverage Display, including the following:

a. Ability to display Patient Pharmacy Coverage Data.

14. Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Medication Use Management, including the following:

a. Drug Interactions: ability to detect, log, display, and add notes for Drug Interaction's.
b. Adverse Drug Reactions: ability to log, display, and add notes for Adverse Drug Reaction's.

CLINICAL SPECIALTIES

PHARMACY

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	2	1	1	0	

c. Medication Errors: ability to log, display, and add notes for Medication Errors.
d. Drug Usage Evaluation: ability to log, display, and add notes for Drug Use Evaluations.
e. Pharmaceutical Care: ability to log, display, and add notes for Pharmaceutical Care Evaluations and compliance monitoring.
f. Pharmacy/Pharmacist Reminder: ability to log, display, and add notes specific for a given patient.
g. Events Alerts: ability to log, track, display, and add notes for patient events.
h. Cognitive Services Fee
i. Observations and follow up.

15. Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Medication Administration Record (MAR), including the following:

a. MAR is required to properly document the administration of medications.
b. Display only the current medications that have been authorized for the patient.
c. Allow for a means to automatically identify the patient, through the use of IT technology
d. Display the patient's name, identity, diagnoses and allergies, current medications and unit information.
e. Record, the patient, and the unit nurse providing the medications, the medications, the date and time the medications were given.
f. Prompt for a reason for any medication that was indicated as not given.
g. Will contain some method to allow for point of care input.
h. Ability to print on demand current MAR.
i. Allow automated dispensing log, linked to material management reporting/inventory.

16. Ability to support multiple Formularies.

a. Support downloading of formulary information.
b. Support multiple formularies concurrently.
c. Support formulary based on patient's plan of care.
d. Support dynamic, real-time use of formulary at point-of-care based on patient's plan.
e. Support dynamic updating of formularies.
f. Provide alerts/reminders when departing from patient specific formulary.

17. Ability to Interface to other systems, as required:

a. Electronic Health Record system
b. Offline Prescriptions – System to allow processing of prescriptions when the link to interfaced systems is unavailable and the ability to electronically upload data to the interfaced system when the link becomes available.
c. Automated Refill Orders – System to allow voice/touchtone/web refill requests that will be processed automatically by the system.
d. Pharmacy Prescription Data Warehouse.
e. OMNICELL system.

18. Ability to utilize data from and/or support the following databases and functions:

a. First DataBank or Medispan
b. MICROMEDEX – Ability to access drug information systems, real time, such as MICROMEDEX..
c. National Council for Prescription Drug Programs (NCPDP) Telecommunication Standards – (EDIFACT syntax and EDIFACT/ASC X12 data tables) (SCRIPT Standard)
d. HCPCS, CPT4, HL7, ICD9, HIPAA, Support

CLINICAL SPECIALTIES

PHARMACY

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

e. Convert Current Pharmacy System Profile Data to New System.
f. Food – Drug – Allergy Checking
g. Drug Disease Contraindication Checking
h. Pregnancy/Lactation Warnings
i. Minimum/Maximum Dose Checking
j. Gender and Age Checking
k. Rules – Ability to define dispensing criteria based on age, sex, quantity, benefits, therapeutic class, missed refills, companion medications, and other.
l. Medication and Prescription Expiration Dates
m. Drug Maintenance Lists (Formularies)
n. Drug Specific Quantity Limit Edits
o. Patient Education Database/Printing (Monographs) – Automatic for selected drugs and on request.
p. Prescription Label and Monograph Prints in: English, Spanish, different font/styles
q. Label (re)prints
r. Prescription Inactivation
s. Field Specific Help Functions – Enter limited amount of days and System displays screen with options to select from.
t. Prescription Data Access – Ability for any pharmacy in the system to access prescription data entered at any other pharmacy.
u. Prescription Transfers – Ability to record data required by state and Federal Laws/Regulations when transferring prescriptions to an outside pharmacy.
v. Concurrent Access to Same Patient/Drug.
w. Controlled Substance Processing and Reporting
x. Chemotherapy, Unit Dose, and IV Processing and Labeling
y. DME Support (Durable Medical Equipment)
z. Electronic Prescription Writing/Processing
aa. Telephonic Interface and Automated Refill Technology
ab. Bar Coding/Hand Held Technology
ac. Medicare/Medicaid Formulary Support
ad. Tax Statements
ae. Primary/Secondary Coordination of Benefits
af. Tiered Benefits – Different patient cost share (co-pay, co-insurance) for different groups of medications, such as generic and brand. Ability to accurately adjudicate multiple benefit configurations.
ag. Plan Limitations/Rules – Dispensing limits, dollar limits, and other.
ah. Assisted Living/Nursing Homes Support
ai. Manifesting – For inventory transfers, prescription transfers from refill center to pharmacy, and prescription transfers from pharmacy to nursing home and other assisted living facilities.
aj. Efficient Storage Retrieval System of Filled Prescriptions
ak. Locator System – Ability to track and locate prescriptions through the filling, processing, and delivery process.
al. Laser Printing
am. 3rd Party Billing/ Split Billing
an. Team Pharmacist Concept Support – Pharmacists assigned to practitioner teams to provide medication use management (MUM) support, prescription order entry, and patient counseling.
ao. Report Generation
ap. On-line tutorials help functions and proficiency testing.
aq. Patient Driven Gateway to Pharmacy On-line Activities – Ability to have a menu driven system to enter a patient identifier and then move to prescription, billing, benefit, demographic, and profile transactions/systems.

CLINICAL SPECIALTIES

PHARMACY

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
19. Ability to support printing labels, patient education materials, instructions in multiple languages.					

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-2 CLINICAL SPECIALTIES

2-3-2.2 PSYCHIATRIC

CLINICAL SPECIALTIES

PSYCHIATRIC

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
Please list (in comments) any offered functionality specific to Psychiatry that has not been covered in the previous Clinical Operations sections.					

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-2 CLINICAL SPECIALTIES

2-3-2.3 DENTAL

CLINICAL SPECIALTIES

DENTAL

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

1. Documentation:
a. Periodontal charts.
b. Adult and child tooth charts.
c. Charting of soft tissue disease management and dental anatomy.

2. Decision Support:
a. Ability to support dental triage system to assist nurse on determining need for a dental referral based on information at intake.

3. Patient Education:
a. Ability to provide on-line access to dental patient education materials and ability to print in multiple languages.

4. Ability to upload and capture data for field preventive sealant visits.

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-2 CLINICAL SPECIALTIES

2-3-2.4 OBSTETRICS

CLINICAL SPECIALTIES

OBSTETRICS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
1. Ability to link all OB encounters, orders for ancillary services and results to create a comprehensive listing of services and outcomes for the episode of care for one pregnancy.					
2. Ability to track when the pregnancy is completed and the outcome.					
3. Capture estimated due date and date of last menstrual period.					
4. Ability to capture HIPAA OB transaction data.					

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-2 CLINICAL SPECIALTIES

2-3-2.5 COMMUNICABLE DISEASE

CLINICAL SPECIALTIES

COMMUNICABLE DISEASE

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
1. Ability to link all TB encounters, orders for ancillary services and results to create a comprehensive listing of services and outcomes for the episode of care.					
2. Ability to track legal obligations for treating TB clients: Public Health orders, court orders, by client, including: date of order, date delivered. Ability to flag for isolation requirements.					
3. Ability to interface with Harborview PACS for on-line access to digital radiography images (preferred) or to receive, store and retrieve scanned digitized images.					
4. Surveillance: ability to query and report on multiple parameters.					
5. Ability to tie records of one client to other clients (same as other communicable disease outbreak management tracking needs for sexually transmitted diseases, pertussis, SARS, etc.)					
6. Ability to link, retrieve, organize and achieve data for linked cases.					

Note: consider TB as a potential program area for model the cost of adding access for read-only users, when the electronic health record is only implemented in JHS. Or consider costing out adding TB Clinic as an additional site to JHS project. TB Clinic involves 3 providers and 6 case managers. Average number of co-managed cases/month between TB and JHS: 1, range of 0-3. HIV/AIDS has same co-management and tracking issues with JHS.

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-2 CLINICAL SPECIALTIES

2-3-2.6 FAMILY PLANNING

CLINICAL SPECIALTIES

FAMILY PLANNING

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
1. Ability to link all FP encounters, orders for ancillary services and results to create a comprehensive listing of services and outcomes for the episode of care.					
2. Ability to protect access to confidential data.					
3. Ability to provide alternative identifiers for clients seeking testing to enable them to remain anonymous within the system.					
4. Decision support: ability to load and access family planning clinical guidelines.					
5. Ability to print FP patient education materials and document that it was given to the client.					
6. Ability to support secure messaging.					
7. Ability to support on-line staff/provider education, to document and track by clinician, type of clinician, education module, org/project, etc.					

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-3 STAFF MANAGEMENT

2-3-3.1 STAFF MANAGEMENT

STAFF MANAGEMENT

STAFF MANAGEMENT

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	
Please list (in comments) any offered functionality related to Staff Management, such as: Facility Calendar, Staff Scheduling, Credentialing, Continuing Education, Immunizations, Performance Reviews, etc.					

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-4 TECHNICAL ENVIRONMENT

2-3-4.1 GENERAL SYSTEM FUNCTIONS

TECHNICAL ENVIRONMENT

GENERAL SYSTEM FUNCTIONS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

1. MULTI-ENTITY

a. Provide a multi-facility longitudinal EHR with linkages to other computer systems, as required.
   1. Uses open architecture and can be interfaced/integrated with other applications.
   2. EHR is HIPAA compliant, will be EHR certified, and adheres to all regulatory body requirements.
   3. Support purging (i.e. archiving) of EHR data, as defined by JHS.
   4. Support a "secondary" EHR for research purposes.

2. Support a Master Patient Index (MPI)

a. Support a Master Patient Index (MPI).
b. Functionality to minimize occurrence of duplicate patients e.g. system will not allow second patient with same SOC#).
   1. Ability to view MPI by enterprise or by facility.
   2. Ability to link same patient records on same vendor's system at different facilities.
   3. Provide several defined patient list formats. These lists are produced by a clinician signing on.
   4. Indicators are provided on patient lists as defined above, which indicate new, abnormal, or critical data.
   5. Patient lists will display no less than 15 patients per screen.
   6. Provide each clinician with his/her clients (I.e. default list) that are active and open, with patient demographics, and diagnosis and/or service.
   7. Provide clinician with a display of his/her Group/Team's clients that are active and open, with patient demographics, and length of stay by diagnosis and/or service.
   8. The caregiver may select a different patient list as a default sign-on screen for different locations, programs.
   9. The caregiver may select a different patient list from the chosen default list.
   10. Provide a list of all previously seen patients for whom new data is available.
   11. The caregiver can print on-demand a copy of patient list.
c. User can locate inmates using several methods (e.g. by Name, SOC#, MR#, Service/Program, Housing Unit, etc.).

3. TABLES and MASTER FILES

a. Provide multi-facility, multi-provider (i.e. role based) based set of tables and master files.
b. Provide GUI utility to build tables and master files in a hierarchical relationship (e.g. built at the enterprise level, then facility level, then at the provider Type level, then at the provider level.).
c. Provide a utility to load industry standard dictionaries and master files.

4. CLINICAL ACCESS VIEW

TECHNICAL ENVIRONMENT

GENERAL SYSTEM FUNCTIONS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

a. Provide online access both locally and remotely via the Internet to EHR system for client demographics, location, and census information, via integrated desktop work environment.

b. Provide online access both locally and remotely via the Internet to Data Repository for medical and clinical information, including treatment plans, progress notes, and assessments.

c. Provide online access both locally and remotely via the Internet to Order Entry for transmission of orders, and status check on orders.

d. Provide online access both locally and remotely via the Internet to staff and on-call schedules.

e. Provides ability to conform to Health System patient confidentiality requirements.

f. Provide context based switching between application modules (e.g., no need to re-identify patient when switching applications).

g. Provide each clinician with display and printed listing of his/her clients that are active and open, with patient demographics, and diagnosis and/or service.

h. Provide each clinician with display and printed listing of his/her Group/Team's clients that are active and open, with patient demographics, and length of stay by diagnosis and/or service.

i. Provides several defined patient lists. These lists are produced by a clinician signing on.

j. A list of all previously seen clients for whom new data is available.

k. The caregiver may select a different patient list as a default sign-on screen for different settings, i.e.., inpatient lists for inpatient sign-on, office schedule lists for office sign-on, and so forth.

l. The caregiver may, from the sign-on in any setting, select a different patient list from the chosen default list with no more than two key strokes or mouse clicks.

m. Patient lists as defined above will display no less than 15 patients per screen.

n. The caregiver can print, using no more than 1 keystroke or mouse click, a copy of the above list.

o. Color indicators are provided on patient list screens as defined above, which indicate new, abnormal, or critical data and the data is accessible by either 1 click of a mouse or 1 keystroke.

p. Provide Electronic messaging capability for communication with staff.

q. Provide online prompts where signatures or co-signatures are required in the completion of medical records documentation to avoid charting deficiencies

r. Provide online access both locally and remotely via the Internet to one or more databases (e.g., Medline) of bibliographic information.

s. Provide online access both locally and remotely via the Internet to drug information databases and texts.

5. CLINICAL DECISION SUPPORT system (CDS)

a. Ability to configure the timing/location/frequency of alerts to support vs. control care.

b. Incorporates a best practices library of interdisciplinary evidence based rules/alerts developed at leading institutions.

TECHNICAL ENVIRONMENT

GENERAL SYSTEM FUNCTIONS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	2	1	1	0	

c. Provide ability to interface with third-party reference databases, (Medline, PDR, etc).
d. Ability to easily access or link to references used in writing evidence-based guidelines.
e. Allow integration of external rules databases (e.g. Micromedix) into the ordering process.
f. Allows development of JHS specific rules and alerts that can be applied to library.
g. Ability for reminders/alerts to be differentiated by clinical category (e.g. radiology studies, medication order checks, lab).
h. Provide time based checks (e.g. health screen intervals, assessments, drug monitoring ,etc.).
i. Ability to prioritize levels of alerts specific to JHS.
j. Ability to route alerts as defined by JHS.
k. Uses rules to interpret specific but varied client data points to determine if a reminder should be generated.
l. Provide rules based event detection.
m. Ability to escalate non-response, as defined by JHS, to an alert will automatically escalate alert to another user.
n. Ability to configure method of alert notification using variety of methods (e.g.. priority e-mail, pager, screen pop-up, etc.).
o. Provides relevant information display (e.g.. ancillary or reference information pertinent to an action as defined by JHS.).
p. Provide statistical modeling (e.g.. regression, time series), optimization, critical success analysis, & "what-if" scenarios.
q. Ability to identify clearly abnormal values (abnormal criteria can be based on standard sets or on client defined normal).
r. Ability to display reminders/alerts based on past history, including social/family history as well as medical history.
s. Ability to identify and clearly display safety issues, such as allergies and response to allergen.
t. Ability to provide alerts regarding “medical necessity”.
u. Warns users of dangerous clinical states with access to incidents, outcomes, and assessment data.
v. Ability, via alert to interactively order and document care against EHR and client defined rules (e.g. JHS guidelines).
w. Ability to note and log response to alert.
x. Ability to print alerts on-demand.
y. Ability to log alerts.
z. Provide reminders linked to problems on problem list.
aa. Recommends diagnosis based on assessment data entered.
ab. User can look up definition of diagnosis.
ac. Recommends standard clinical pathway or protocol based on medical diagnoses entered.
ad. Provides pre-selected treatment plans when provisional diagnosis is entered for patient encounter.
ae. Provide suggestions for treatment, diagnosis, etc. based on literature and user/clinician definition.
af. Recommends preventive medical interventions.
ag. User can look up definition of interventions.
ah. Provides list of possible activities based on intervention selected.
ai. Support standard sets of "normals" for findings.
aj. Support expedited template-based findings.
ak. Utilize iconic interface using human anatomy images.
al. Support RN triage screening system for use at jail intake, with pathways/guidelines.
am. Support system to track disease outbreaks, including ability to link clients to an initiating case.

6. CONTROLLED MEDICAL VOCABULARY (CMV)

a. Incorporates multiple controlled Vocabularies and Standard Code Sets.
   1. Support local, regional, national vocabularies; updates.
   2. Use vocabulary control on all appropriate fields.

TECHNICAL ENVIRONMENT

GENERAL SYSTEM FUNCTIONS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

3. Use enhanced versions of ICD-9-CM as principle for the controlled vocabulary with ability to support ICD-10-CM.
4. Use Logical Observation Identifier Names and Codes (LOINC)
5. Use Home Care Financing Administration Common Procedural Coding System (HCPCS)
6. Use National Drug Code (NDC)
7. Use National Council for Processing Prescription Drug Programs (NCPDP)
8. Use Diagnosis Related Group Number (DRG)
9. Use Claim Adjustment Reason Codes
10. Use Remittance Remarks Codes
11. Use another recognized vocabulary source.
12. Flexibility to support SNOMED code set at such time as this becomes a community standard.

b. Relationships between Code Sets clearly defined.
c. Standard Code Sets mapped with a common Dictionary Definition.
d. Attributes for each data element; support all data types.
e. Supports static/dynamic data element relationships.
f. Accommodate new, unforeseen codes, data elements.
g. Provide granularity at "atomic level", the lowest common denominator.
h. Ability to Recognize Semantic Differences (e.g. Heart and Cardiac).
i. Controlled on-line data, can use different descriptions but get consistent display of a term (e.g. CBC, blood count).
j. CMV is part of database with open functionality and can interface to other applications (Service-Oriented Architecture).

7. CLINICAL PATHWAYS and GUIDELINES

a. Provide industry standard pathways and guidelines.
b. Ability to modify any provided sets of pathways and guidelines.
c. Provide the capability to develop custom JHS pathways and guidelines.
d. Pathways and guidelines are tied to the generation of treatment plans and assessments.

TECHNICAL ENVIRONMENT

GENERAL SYSTEM FUNCTIONS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

e. Can be displayed as a calendar of clinical events to be accomplished.
f. Can be displayed organized by care provider type (e.g., Therapist, Psychiatrist, Nurse, Physicians, Clinicians, etc.).
g. Offer medical & mental health diagnosis decision matrix that addresses continuity of interventions in treatment planning.
h. Provide dual diagnosis decision matrix that addresses the continuity of interventions in treatment planning following:
   1. Low severity mental illness/low severity substance abuse.
   2. Severe and persistent mental illness/substance abuse.
   3. Low severity psychiatric disorder/high severity substance disorder.
   4. Severe and persistent mental illness/high severity substance disorder.
   5. High severity psychiatric but not severe and persistent mental illness/high severity substance disorder.

8. COST MEASURING and QUALITY ASSURANCE

a. Built-in mechanisms/access to other systems to capture cost information.
b. Access to other systems to capture cost information, employing quality measurement tools.
c. Collects cost/quality information.
d. Cost, quality, severity information structured to influence clinician decisions.
e. Support multiple EDI Financial links.
f. Ability to interface with SCKPH Billing system (Signature).
g. Availability of a Billing module (nice to have but not mandatory).

9. INTEGRATED E-MAIL (SECURE CLINICAL MESSAGING)

a. Ability to Communicate Clinical Information through Secure E-Mail.
b. Ability to Conference (i.e. chat) on-line.
c. Ability for patient to enter data on line (e.g. blood pressure readings, dietary information).
d. Ability for provider and patient to communicate by secure e-mail.
e. Allow user messages and comments to be sent from one entity to another.

Note: Functionality very helpful for monitoring of TB patients, to support isolation & quarantine clients during communicable disease outbreaks and to replace the “kiting” process in the jail.

10. ACCESS (Log- On)

a. Provide on-line access both locally and remotely via the Internet to EHR via integrated desktop environment.
   1. Display an on-line message at JHS designated points warning users that a record of their access is being maintained.
   2. Data sent over the public network is encrypted (e.g. uses secured socket layer).
b. EHR access is secured via encrypted passwords and user identifications, per JHS standards.
   1. Support multiple security levels.
      a. Role based where User Groups are created with access levels, and individuals are assigned to those groups

TECHNICAL ENVIRONMENT

GENERAL SYSTEM FUNCTIONS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

b. User based where each individual user is assigned the approved access levels.
c. Maintain an emergency access login that has the password reset after each use.

2. Support industry standard, Washington State approved, electronic signatures.
   a. Provide on-line signatures or co-signatures where required to complete medical records documentation.
3. Password attempts are restricted, per JHS rules.
   a. Display on-line alert (optional report) to a designated PC when certain, JHS specified security violations occur.
   b. System provides a 'disable warning' if a user's password is entered incorrectly a specified number of times.
   c. Support automatic audit trail for all accesses.
   d. Provide means to limit the number of log in attempts.
   e. Support automatic analysis of audit trails/unauthorized access attempts.
   f. Warns system designed user(s), in real time when user has tried to access restricted data as defined by JHS.
   g. Password resets are required, per JHS defined schedule.
   h. Password cannot be saved on the desktop (i.e. must be re-entered for every log-in).
   i. Provide alternate user authentication methods other than the typical keypad entered user id and password.

c. Access to functions within the EHR are automatically controlled by secure user profiles.
1. Allow authorized user (System Administrator) to create, modify, and cancel user profiles (with reason code).
2. Create documentation of new, modified, and canceled user profiles.
3. Restrict access for given functions by location or designation of PC and/or time of day, day of week.
   i. User accounts can be built with expiration dates (temporary employees).
   ii. Users can be connected to a group and gain resource access at the group level.
   iii. User may belong to more than one security group.
   iv. Require users to change passwords every x days as specified by the security administrator.
   v. Designated users can not be signed on to more than one PCl (device) at a time .
   vi. Allow multilevel, read-only access to the system by authorized personnel only.
4. Restrict additions to, changes to, and/or deletion of records by security level to only those authorized.
5. At user's request, print management report of security access by application and by department.
6. Provide a report of user's activity per sign-on for productivity tracking.
7. Provide a report of user Logon ID's not used for a specified time.
8. Provide a report whereby a user can list the names of all who have accessed a specific patient's record.
9. Ability to process file from Human Resources system for terminated employees, and automatically turns off access.

d. Response time and availability:
1. Response times: in 2 seconds or less 99 percent of the time. Sub-second response time 98 percent of the time.
2. Support redundancy/fault tolerance access.
3. Available 99.99 percent of the time.
4. Time-out occurs, per JHS rules (e.g. PC specific, User specific, User Role specific).

e. Support multiple, simultaneous users concurrently.
1. Log all transaction processing and archiving.
2. Support write-locking mechanism to prevent unauthorized updates.
3. Alert simultaneous users of each other's presence on the same record.
4. Print at authorized user request, an audit report of every transaction initiated on the system (HIPPA compliant).

f. Patient confidentiality can be protected, per HIPPA regulations, when data is extracted from repository through encryption.

11. SCREEN DISPLAYS

TECHNICAL ENVIRONMENT

GENERAL SYSTEM FUNCTIONS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

a. Graphical rather than text based user interface.
b. Ergonomic presentation.
   1. Support user-friendly movement across the system.
   2. Engineered with human factors emphasis.
   3. Rapid screen "painting".
   4. Provide consistent information and graphical queues.
   5. Provide balance between density of information and uncluttered aesthetics.
   6 Consistent formatting for users to find information.
c. Ability to display updates or changes (e.g. edit an entry) in “real-time”.
d. Navigation through display well-organized and easy to use.
e. Standardized screen design.
   1. Standardized navigation flow similar from screen to screen.
   2. Standardized naming conventions throughout application.
   3. Standardized menus (whether drop-down, drill-down, tree) throughout application.
f. User is able to identify where the current display is in the whole record (e.g. site map).
g. Time efficient - Ideally no more than three “mouse clicks” for any process, with most in one.
h. Patient information (e.g. name, medical record #) clearly displayed on each page specific to that individual’s EHR.
i. Support simultaneous User Views in the EHR.
   1. Support tailored specialty views at enterprise level.
   2. Support departmental specific user views.
   3. Support different views for different users.
j. Provide views of patient data based upon user needs (e.g.. Clinician, Pharmacist, Administrative, Medical Records):
   1. Clinician view.
   2. Therapist view.
   3. Pharmacist view.
   4. Administrator view.
   5. Quality Assurance view.
   6. Medical Records view.
   7. Parent Child Health view.
   8. Immunization view.
   9. Managed Care view.
   10. Dental view.
k. Provide the ability to "flip through" the patient data in a manner similar to reviewing a paper chart.
l. Provide key data as defined by the user (e.g., problem list, allergies) on a single screen.
m. Provide access to patient data with three or less menu selections, including sign-on.
n. Provide graphical capabilities for viewing data trends.
o. Provide screen print capabilities of any screen, including screens with graphical displays.

12. DATA ENTRY

a. POINT OF CARE ABILITY (Can be Used Whenever/Wherever Care Given).
b. Allows point of care entry/display.
   1. Utilize hand held devices (i.e. wireless) or a PC.
   2. Easy to use entry device (e.g. keyboard, touch pad) at point of care.

TECHNICAL ENVIRONMENT

GENERAL SYSTEM FUNCTIONS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

c. Engineered with human factors emphasis.
   1. Easy data entry (e.g. uses drop-down lists) for all fields.
   2. Input protocol is easy/fast; intuitive input interface.
   3. Display is easy to read.

d. Data is entered once (e.g. patient name) and displayed without requiring redundant data entry.
e. System prevents users from moving to the next field (minimum next screen) if error or omissions exists.
f. Ensure dynamic documentation during encounter complying with all coding rules.
g. All fields have on-line Help (data dictionary name and codes) for easy reference and look-up.
h. Provide dynamic re-engineering of workflow for efficiency.
i. System supports efficient workflow for user (makes job easier rather than harder):
   1. Charting by exception as much as possible
   2. Use Microsoft word processing functions (e.g. formatting, cut-n-paste, spell check, paragraph control, bullets).
   3. Seamless integration with Microsoft Word for creation, editing, spell checking of notes using Microsoft templates.
   4. Point and click choices
   5. Minimize required free text
   6. Provide structured format and content
   7. Port like data elements
   8. Provide predefined list of words/phrases for specified: subtopics; diagnosis; interventions; procedures; findings; etc.
   9. Note format and template can be customized based on the type of note.
   10. Templates can be customized by specialty, location, problems, and provider.
   11. Verbiage such as “canned” phrases or data elements are available for note types and contents
   12. Multiple means provided for notes entry – e.g. keyboard, mouse, handheld portable device, voice and to edit notes
   13. Support downloads from a dictation/transcription system for inclusion of clinician’s progress notes.
   14. Supports downloads from voice recognition software as integral part of notes
   15. Ability to link notes with problems by patient
   16. Type of notes entry allowed can be configured based on role.
   17. Support unlimited number of user definable time period views of notes (e.g. today, current week, monthly).

13. SCREEN BUILDER

a. Provide online screen building utility enabling authorized users to place data elements (from data dictionary) onto screen.
b. Provide edit options for each data element:
   1. Mandatory
   2. Optional
   3. Default values
   4. Flash/Inverse
   5. Edit logic (e.g., If element1=X then element2 should = Y)
   6. Others means
c. Provide input format attributes for each data element:
   1. Any text

TECHNICAL ENVIRONMENT

GENERAL SYSTEM FUNCTIONS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

2. Alpha
3. Numeric
4. Dollar amount
5. Time

d. Allow JHS to compose functions by linking screens into fixed or variable sequences, based on edit and format rules.
e. Distinguish between test versus production libraries of screens and functions.
f. Allow the JHS to label fields on screens and reports consistently with JHS's terminology, without program code changes.
g. Provide graphic building capabilities including:
   1. Line drawing
   2. Drag-and-drop positioning of any screen element
   3. Images (e.g., JPEG, BMP, GIF)
   4. Font / Size
   5. Color formatting
h. Designed to add new data elements dynamically.

14. REPORT GENERATOR

a. Ability for authorized employee's without programming skills to generate reports related to any identifier in the system.
b. Provide industry standard Report Writer (e.g.. Crystal). ***Please indicate software product in comments.***

15. STANDARD REPORTS

a. Provide standardized formatting on all reports, including:
   1. Standard report headings and formats.
   2. Report will include definition of a printed code.
   3. Ability to define routes to printers by report type/process.
   4. Ability to track distribution of reports on-line.
   5. Ability to define number of reports to print.
   6. Ability to define only portions of a report to print.

TECHNICAL ENVIRONMENT

GENERAL SYSTEM FUNCTIONS

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

7. Ability to define automatic report schedules if desired.
8. Ability to print (both scheduled and on-demand) or display (at user's option).
9. Ability to be produced in either summary or detail format (at user's option).
10. Ability to select a specified time period (e.g.. by day, by week, by month, etc.).

b. Provide standard reports that correspond to existing documents in the paper chart.
1. Allow JHS to customize any standard report.

TOTAL POINTS

SECTION II: PART 4 – DETAIL SYSTEM REQUIREMENTS

2-3-4 TECHNICAL ENVIRONMENT

2-3-4.2 TECHNICAL ARCHITECTURE

TECHNICAL ENVIRONMENT

TECHNICAL ARCHITECTURE

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

1. SERVER ARCHITECTURE

a. STANDARDS

1. The server architecture and supporting hardware (i.e. RAID) must be scalable, dual redundant/fault tolerant, and hot-swappable. The architecture must adhere to King County Public Health standards, as defined below:

Public Health standard server hardware vendor is DELL, Windows Based.

b. DOMAINS

1. The system must be configured, at a minimum, with the following domains:
   a. Establish and maintain a complete and separate Production environment.
   b. Establish and maintain a complete and separate Reporting environment which is "refreshed" daily, at a minimum.
   c. Establish and maintain a complete and separate Training environment.
   d. Establish and maintain a complete and separate Testing environment.

Please provide proposed SERVER schematic as ATTACHMENT B.

c. APPLICATION SERVICE PROVIDER (ASP) MODEL

1. Provide Application Service Provider (ASP) option for remote hosting of the application(s) at vendor's data center.
2. The Data Center must be high-tech (i.e. secured, provide generator back-up, 24 hour Help Desk support, Service Level Agreements, Off-Site back-up/recovery storage, utilizes current technology with vendor Maintenance Agreements, technology replace cycle, etc.).

2. DESKTOP ARCHITECTURE

a. STANDARDS

1. The PC architecture, hardware and operating system, must adhere to King County Public Health standards, as defined below:
   -PH standard for PC hardware vendor is DELL.
   -OS is Window XP. All applications must run at the XP User level.

Please describe the MINIMUM DESKTOP CONFIGURATION as ATTACHMENT C.
Please describe the DESIRABLE DESKTOP CONFIGURATION as ATTACHMENT C.

TECHNICAL ENVIRONMENT

TECHNICAL ARCHITECTURE

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

3. PERIPHERAL ARCHITECTURE

a. STANDARDS

1. The Peripheral Hardware architecture must adhere to King County Public Health standards, as defined below:

PRINTERS:

Public Health standard for printer vendor is Hewlett Packard.

Please describe the technical aspects of your proposed PRINTER solution in ATTACHMENT D.

SCANNERS:

Public Health standard for scanner vendor is Hewlett Packard or Fijitsu.

Please describe the technical aspects of your proposed SCANNER solution in ATTACHMENT D.

a. The system will record the scanned image as a pre-configurable type of clinical record (e.g. Release of Information).
b. The system will maintain an index of all scanned documents in relation to all electronic records, allowing users the ability to view all records in chronological order.
c. Support integrated documentation imaging via icon on the clinical workstation.
d. Forms (i.e.. including all data) can be printed in lieu of the original paper document.

FAX:

Public Health standard supports industry standard dedicated fax boards or API to remote fax server solution.

Please describe the technical aspects of your proposed FAX solution in ATTACHMENT D.

a. Forms can be automatically faxed via a fax server.
b. Support facsimile (inbound and outbound) transmission.

IMAGE DATA STORAGE:

Public Health does not have a standard.

Please describe the technical aspects of your proposed IMAGE STORAGE solution in ATTACHMENT D.

a. Support complete image (e.g. DICOM) display technologies.
b. Use industry standard compression algorithms.
c. Support integrated diagnostic imaging via icon on the clinical workstation.

MULTIMEDIA/VIDEO:

Public Health does not have a standard.

Please describe the technical aspects of your proposed MULTIMEDIA solution in ATTACHMENT D.

a. Support Multimedia via object-relational DBMS technologies.
b. Support complete multimedia, full-motion video via icon on the clinical workstation.

DICTATION/TRANSCRIPTION:

Public Health does not have a standard.

Please describe the technical aspects of your proposed DICTATION/TRANSCRIPTION solution in ATTACHMENT D.

a. Support integrated/interfaced voice dictation via icon on the clinical workstation.
b. Support integrated/interfaced speech recognition via icon on the clinical workstation.

BAR CODING:

Public Health does not have a standard.

TECHNICAL ENVIRONMENT

TECHNICAL ARCHITECTURE

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

Please describe the technical aspects of your proposed BAR CODING/SCANNING solution in ATTACHMENT D.

a. Support bar coding technology.
b. Print Bar Code at the bottom of every printed Patient Specific document.

4. WEB ARCHITECTURE

a. STANDARDS

1. The WEB architecture must adhere to King County Public Health standards, as defined below:
   Public Health Standard is Microsoft, Windows based, Internet Explorer.
   Transmission of data must be encrypted
   Please describe the technical aspects of your proposed WEB ARCHITECTURE in ATTACHMENT E.
2. The vendor must comply with the Health Insurance Portability and Accountability Act (HIPAA) security standards.
3. Provide internet browser enabled user access to all EHR functionality.

5. NETWORK ARCHITECTURE

a. STANDARDS

1. The Network architecture must adhere to King County Public Health standards, as defined below:
   Public Health standard is Microsoft NT 4.0 scalable to Active Directory and Netware 6.5 for file and print access.
   Please describe the technical aspects of your proposed NETWORK ARCHITECTURE in ATTACHMENT F.
2. Network connections must be secure. Electronic communications must have a security function to only allow authorized communication and access.

6. APPLICATION ARCHITECTURE

a. STANDARDS

1. The EHR Application software must adhere to King County Public Health standards, as defined below:
   Public Health standard is a multi-tiered, .Net based application.
   The application must maintain security logs; it must log events to a syslog or event log of a server.
   Please describe the APPLICATION ARCHITECTURE in ATTACHMENT G.

b. THIRD PARTY SOFTWARE

1. The use of Third Party software in support of the EHR must adhere to King County Public Health standards, as defined below:
   Public Health standard is a multi-tiered, .Net based application
   Must run at the User level on the desktop.
   It must integrate with Active Directory or LDAP for authorization for login.
   It must not be a proprietary authentication scheme.
   Please describe the any THIRD PARTY SOFTWARE required in ATTACHMENT G.

c. APPLICATION SECURITY

1. The system must have restricted access to only authorized users via User Ids and encrypted passwords.
2. The system will not display any type of data prior to successful login. The system will have a warning banner (i.e. acknowledge confidential medical record information) displayed prior to or after the log in where the user must acknowledge the warning banner prior to gaining access to the data.

7. DATABASE ARCHITECTURE

a. STANDARDS

1. The Database software must adhere to King County Public Health standards, as defined below:

TECHNICAL ENVIRONMENT

TECHNICAL ARCHITECTURE

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	2	1	1	0	

Public Health standard is MS-SQL, structured to allow ad-hoc reporting via 3rd party reporting tools.
It must allow for direct database access through select statements and stored procedures.

b. DATABASE STRUCTURE (Data Warehouse)

1. Fully Relational Database
2. Third Normal Form (Minimum)
3. Provide entity-relationship diagrams indicating relationships among tables, including keys.
   a. How are primary database keys defined?
   b. How does database structure affect processing and display time?
3. Database structure allows users to access needed data where and when needed.
4. Provides for Clinical Data Integrity.
   a. Ability to provide views of data for reliability/validity checking.
   b. Tools or processes in place to assist in validating clinical data integrity.
   c. Database structure provides support to JHS to meet regulatory requirements.
   d. Provides ability to define Maximum Data Set (per HIPAA Requirements).
   e. Comply with the evolving standards for the Computer-Based Patient Record from the Institute of Medicine.
5. Provide extensive editing of data entered in the EHR to guarantee data quality:
   a. Standard editing.
   b. User defined editing.
6. Database structure allows incorporation of "user defined data" not already included in the standard database sets.
   a. Database upgrades maintain data integrity of “user defined data”.
7. Supports a master terminology index which designates a single, unambiguous standard term for each commonly used medical term, diagnosis, observation, intervention, etc.
8. Thesaurus translates acceptable abbreviations, synonyms, shorthand and common misspellings for the standard terms.
9. Application provides a configuration option that suggests standard terms whenever a non-standard term is used.
10. Provide standardized coding (I.e. ICD9) of data elements to allow reporting and analysis.
11. Provide lifetime patient record, including:
    a. Unlimited number of patients in the database.
    b. Unlimited number of encounters per patient.
12. Provide two separate databases: active database and archival.
13. Maintenance and upgrades do not interfere with JHS clinical and business processes.
14. Provide export capabilities to the following file formats:
    a. Excel
    b. Comma delimited Text File
    c. SAS
    d. Access

8. INTERFACE ENGINE

a. STANDARDS

1. The Interface Engine must adhere to King County Public Health standards, as defined below:

TECHNICAL ENVIRONMENT

TECHNICAL ARCHITECTURE

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

Public Health standard is Openlink. HL7 interfaces preferred.
Vendor proprietary interface is not an option.

2. Provide support for Application Level Transaction Standards relevant to the medical industry including, but not limited to the following:
   a. HL7
   b. DICOM
3. Comply with the Health Insurance Portability and Accountability Act (HIPAA) security standards.
4. Perform security checks on messages passed between application systems.
5. Protect application definitions, routing information, and interface message definition from unauthorized access.
6. Provide ability for the interface engine to serve as a security manager by providing a menu of authorized applications based on the user's sign-on ID.
7. Support the use of encryption for messages passed between systems.
8. Support the use of centralized authentication servers as part of access control.
9. Support the use of multiple levels of user ID and password access control.
10. System provides a console lock with keyboard inactivity timeout.

b. PERFORMANCE and RELIABILITY:

1. Provide around-the-clock (24 hours per day, 7 days per week) interface engine operation.
2. Provide ability to add new interfaces, devices, and applications without taking down the interface engine.
3. Provide ability to add new interfaces, devices, and applications without vendor involvement.
4. Provide ability to log messages for recovery and error correction.
5. Provide ability to dial beepers or phones, and send electronic mail, as well as notify the interface engine console when interface failures occur.
6. Provide an automated mechanism for re-synchronizing the transaction flow when bringing up a new receiving system or after a failure.
7. Provide system redundancy and fail-safe mechanisms.
8. Provides the ability to share tasks across multiple interface engine systems with hardware and application fail over occurring without manual intervention.
9. Failed transactions may be examined online and corrected by authorized personnel prior to retransmission.

c. DATA CAPTURE:

1. Perform capture of simultaneous data transaction streams from multiple senders within the network.
2. System provides 'pre-packaged' communication clients to acquire and send data from/to major information systems in use at the County, including:
   a. DAJD (XKMS): inmate demographics.
   b. Signature: Billing System & Demographics.
   c. Rx (FSI): Pharmacy system.
   d. Harborview Radiology: Orders, Scheduling, Results, PACS
   e. MLAB Laboratory: Orders, Scheduling, Results
   f. KC Data Warehouse
   g. Referrals to external organizations

d. DATA MANIPULATION:

1. Allow data from a sender to be manipulated before being passed onto the receiver(s):
   a. Translate from 1 value to another
   b. Assemble discrete data elements into 1
   c. Coordinate discrete messages into 1

TECHNICAL ENVIRONMENT

TECHNICAL ARCHITECTURE

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

   d. Hold for future action or state
   e. Sub-string text
   f. Convert data types (e.g., text->numeric)
   g. Change element length
   h. Format (e.g., adding dashes to a phone number)
2. Provide tools to create routines that automatically modify the content of messages, and perform message routing.
3. Allow a single input transaction to be broadcast to multiple receivers.
4. Allow different data manipulation mappings and formats for each broadcast message and each receiver message.
5. Provide facilities for complex data conversions including:
   a. Database lookups
   b. Conditional operations
6. Provide ability to route messages to various combinations of applications and platforms based upon message content and pre-defined rules.

e. DATA TRANSMISSION:

1. Provide ability to "store and forward" messages when receiver is down without manual intervention.
2. Provide ability to resend transactions, on demand, for a given time period.
3. Provide alert notification if a scheduled sender does not transmit.
4. Provide alert notification for messages stored for a period greater than a user-definable period of time.

f. PERFORMANCE MONITORING and OPTIMIZATION:

1. Allow messages to be displayed and/or written to a file for debugging purposes.
2. Provide facilities for auditing and performance monitoring.
3. Provide ability to prioritize messages and transactions depending on content or source of message.
4. Provide for log retention for user-defined periods.
5. Provide ability to export logs to standard database formats, including, but not limited to the following:
   a. Microsoft Access
   b. Comma delimited ASCII
   c. Microsoft Excel
6. Provide summary reporting regarding performance of the interface engine.
   a. Provide cumulative performance reporting for day, week, month, quarter, year, or other user-defined periods.
   b. Provide ability to display graphically the performance data on screen and in printed output.
   c. Provide graphical user interface display of gateway status, activity, and performance.
7. System provides for ability to down the interface engine and maintains ability to restart transmissions after service resumption.
8. System provides an authorized user the ability to halt a transaction in progress without loss of the message data.
9. System provides an authorized user the ability to reorder or modify transactions in the queue.

g. BUILDING INTERFACES:

1. Provide a graphic user interface for specifying data mappings and control functions.
2. Provide the ability to trap an incoming message for mapping definition through population of list boxes.
3. Track and report on fields available and used in designing mapping relationships.
4. Can interface easily to other King County systems to enter and display needed information
5. Can interface easily to systems outside of King County to enter and display needed information

TECHNICAL ENVIRONMENT

TECHNICAL ARCHITECTURE

	CURRENTLY AVAILABLE fully meets requirements	CURRENTLY AVAILABLE partially meets requirements	IN DEVELOPMENT available by July 2005	NOT AVAILABLE	COMMENTS
POINTS AWARDED	**2**	**1**	**1**	**0**	

6. The interfaces must be standard, reusable, and maintainable.
7. The system must be designed and programmed to send and/or receive standard messages through an interface engine when there is a requirement to exchange data with other applications running on different systems. This requirement covers both real-time transaction and batch interfaces, in-house developed and vendor-supplied applications.
8. The system (i.e. interface engine) must be able to route interface transactions to the Production environment and/or the Test environment (et. al. environments).
9. The system must support current health industry and telecommunications standards such as HL7, DICOM, EDI (X.12), and HIPAA.

9. EHR SYSTEM PERFORMANCE and RELIABILITY

1. The system must be capable of efficiently completing transactions (send/receive cycle).
   a. Response times: in 2 seconds or less 99 percent of the time.
   b. Sub-second response time 98 percent of the time.
   c. Available 99.99 percent of the time.
2. The system must capable of handling thousands of concurrent users.
3. The system must be scalable enough to handle future increases in volumes.
4. Ability to perform backups without taking any portion of the system down.

TOTAL POINTS

SECTION II: PART 4 – PROPOSER REQUIREMENTS

2-4-1 Company Profile and Financial Information – (RESPONSE REQUIRED)

The vendor shall submit a company profile and financial information using **Attachment H** that includes the following:

A. Company's full name and location (address) of the Company's headquarters;

B. Location of company offices and service (including the data) center that would be pertinent to your proposal, including numbers and types of staff at these locations;

C. Company Profile & Viability

1. Company Type (i.e. public, private)
2. Length of time the company has been in the EHR software business;
3. A brief history and profile of the Company;
4. Company founders and whether they are still with the company;
5. Current Company leadership;
6. Provide proof of financial stability as evidenced by supplying a set of current audited financial statements including, but not limited to, Income Statement, Balance Sheet, Cash Flow Statement, Notes to the Financial Statements, and the Management Discussion & Analysis. (If the Vendor cannot provide an audited financial statement, it may provide a reasonable equivalent. However, if King County cannot extract from the information provided, a clear indication of the Vendor's financial stability, this may be prejudicial to the Vendor's Proposal.).
7. Brief description of your target market and reasons for this strategy;

D. Customer Base

1. Number of clients (including number of clients similar in "size and complexity" of SKCDPH; and, number of clients similar in "size and complexity" of JHS).
2. Customer feedback statements from pleased and troubled clients, including the name of the client.

E. Development Direction, Vision, Strategy

1. Describe Company vision, strengths, development strategy and direction.
2. Indicate why the Vendor considers itself to be the "right" Vendor and what key strengths it will bring to King County.

F. Acquisitions and Strategic Partners

2-4-2 References – (RESPONSE REQUIRED)

Using the form provide in **Attachment I** the Vendor shall provide the names of at least six (6) current customers with whom they have entered into a similar agreement as is being requested in this RFP. Of the six client references:

A. Three (3) shall be from the Public Health sector **(Attachment I-A)**, preferably with multiple facilities and with citizen populations over 1,000,000 in which the client has implemented the systems in the past two years.

B. Three (3) shall be from the Correctional Health sector **(Attachment I-B)**, preferably with multiple facilities and with inmate populations over 2,200 in which the client has implemented the systems in the past two years.

Such proof shall consist of:

The Company name and address;

The Contact name, telephone number, fax number, and e-mail address;

The start date for the Contract;

The value of the Contract;

The products, with a brief product description, utilized.

King County may also need to visit customer site references that are using the proposed EHR system. Any expenses required for King County staff to visit site references will be at King County's expense.

2-4-3 Management Reports – (COUNTY REQUIRED)

The Contractor shall supply monthly management reports detailing and summarizing activities for the previous month and year-to-date.

The Proposer shall provide sample reports or a detailed description of their management reports. These reports shall be delivered electronically and may be requested in a specific format to be defined by King County, for example Microsoft EXCEL or WORD formats.

2-4-4 Account Manager – (COUNTY REQUIRED)

The successful bidder shall provide the County with a toll-free telephone number and shall name a single, dedicated account representative to provide a communication channel between the vendor and King County. The account representative shall be responsible for coordinating all aspects associated with the Contract and those services will be provided at no additional cost to the County. The Account Manager shall be responsible to work with County staff to resolve issues and prepare/report performance evaluation statistics on a monthly basis.

The Account Manager shall have led the implementation of at least one (1) of the clients listed in **Attachment I**.

The Proposer will provide the name, location telephone number and a brief biography of that Account Manager identified to work with King County in **Attachment J**.

2-4-5 Project Manager (RESPONSE REQUIRED)

The successful bidder shall provide the County with a toll-free telephone number and shall name a single, dedicated Project Manager to lead the implementation and provide a communication channel between the vendor and King County. The Project Manager shall be responsible for coordinating all aspects associated with the successful Implementation of the EHR and those services will be provided at no additional cost to the County. The Project Manager shall be responsible to work with County staff on a daily basis.

The Project Manager shall have led the implementation of at least one (1) of the clients listed in **Attachment I**.

The Proposer will provide the name, location telephone number and a brief biography of that Project Manager identified to work with King County in **Attachment J**.

2-4-6 Implementation, Training, and Support Teams – (RESPONSE REQUIRED)

The successful bidder shall provide the County with additional personnel necessary to successfully implement the EHR. Such personnel may include, but not limited to the following:

A. AHIMA Certified Medical Records Staff
B. Other Implementation Support Team Members
C. Training Team (please describe your training approach for the proposed system)
D. Programming Staff
E. Help Desk Support (please describe your Help Desk Support and include your Service Level Agreements)
F. Other Resources

The Proposer will provide a list of the additional Team Members/Functions supplied by the vendor in support of the EHR implementation and on-going support of the system in **Attachment J**.

2-4-7 Project Plan – (RESPONSE REQUIRED)

Description: Typical elements of a detailed schedule for the next project phase are a Gantt chart that has been resource-loaded, showing project phases, tasks, resources assigned to these tasks, deliverables, milestones, and begin and end dates for the work

Tool: MS-Project Template

The Proposer shall supply a sample Project Plan as **Attachment K.**

SECTION II: PART 5 – PRICING

A. All pricing information shall be quoted in U.S. Dollars.

B. Provide complete pricing information on a unit basis.

C. Complete the *Price Detail Sheet*, **Attachment A**, in the format provided.

D. Provide all Contracts associated with **Attachment A.**

ATTACHMENT A: DETAIL PRICING SHEET

CATEGORY	LICENSE TERMS	COMMENTS	INITIAL COST	ANNUAL COSTS	OTHER COSTS
ASP Model:					
Hardware Costs: **Server Architecture Costs** **Desktop Architecture Costs** **Peripheral Architecture Costs** **Printers** **Scanners** **Fax** **Image Storage** **Multimedia/Video** **Dictation/Transcription** **Bar Coding** **Other**					
Database Costs:					
Interface Engine Costs:					
Network Costs:					
Application Software					

CATEGORY	LICENSE TERMS	COMMENTS	INITIAL COST	ANNUAL COSTS	OTHER COSTS
(list by Product/Module):					
Third Party Software **(list by Product/Module):**					
Interface Costs **(list by Product/Module):**					
Training Costs: **Initial** **On-Going** **Travel & Expenses**					
Vendor Project Team Costs: **Initial** **On-Going** **Travel & Expenses**					
Other Costs:					

ATTACHMENT B: SERVER ARCHITECTURE

SERVER SCHEMATIC
Please insert proposed SERVER SCHEMATIC here.

Narrative:

ATTACHMENT C: DESKTOP ARCHITECTURE

DESKTOP ARCHITECTURE
MINIMUM DESKTOP SPECIFICATIONS
Please insert minimum DESKTOP specifications here.
DESIREABLE DESKTOP SPECIFICATIONS
Please insert desirable DESKTOP specifications here.

ATTACHMENT D: PERIPHERAL ARCHITECTURE

PERIPHERAL ARCHITECTURE
PRINTER SPECIFICATIONS
Please insert PRINTER specifications here.
SCANNER SPECIFICATIONS
Please insert SCANNER specifications here.
FAX SPECIFICATIONS
Please insert FAX specifications here.
IMAGE DATA STORAGE SPECIFICATIONS
Please insert IMAGE DATA STORGAE specifications here.
MULTI-MEDIA/VIDEO SPECIFICATIONS
Please insert MUTLI-MEDIA VIEDEO specifications here.
DICTATION/TRANSCRIPTION SYSTEM & CONFIGURATION
Please insert DICTATION/TRANSCRIPTION SYSTEM & specifications here.
BAR CODING SPECIFICATIONS
Please insert BAR CODING specifications here.

ATTACHMENT E: WEB ARCHITECTURE

WEB ARCHITECTURE

WEB SPECIFICATIONS

Please insert WEB specifications here.

ATTACHMENT F: NETWORK ARCHITECTURE

NETWORK ARCHITECTURE

NETWORK SPECIFICATIONS

Please insert NETWORK specifications here.

ATTACHMENT G: APPLICATION ARCHITECTURE

APPLICATION ARCHITECTURE

APPLICATION SPECIFICATIONS

Please insert APPLICATION specifications here.

THIRD PARTY APPLICATION SPECIFICATIONS

Please insert THIRD PARTY APPLICATION specifications here.

ATTACHMENT H: COMPANY PROFILE

COMPANY NAME	COMPANY PROFILE &VIABILITY	CUSTOMER BASE	DEVELOPMENT DIRECTION, VISION, STRATEGY	ACQUISITIONS STRATEGIC PARTNERS
Name: **Address:** **Location:**	**Company Type:** **Years in Business:** **History:** **Profile:** **Founders:** **Leadership:** **Finance:** **Marketing practice:**	**Number of Clients:** • **Correctional Health:** • **Public Health:** **Customer Feedback:** • **Pleased clients**: **Quote:** • **Troubled clients:** **Quote:**	**Vision:** **Strength:** **Strategy:** **Development Direction:** **"Right" Vendor for SKCPH & JHS:**	**Policy:** **Acquisitions:** **Acquired:** **Sold:** **Strategic Partners:**

ATTACHMENT I-A REFERENCES (Public Health)

REFERENCE	CUSTOMER	CONTACT	CONTRACT		PRODUCTS/DESCRIPTION
			START DATE	VALUE	
PUBLIC HEALH REFERENCES					
1.	**Company Name:** **Address:**	**Name:** **Phone:** **Fax:** **E-Mail:**			1. 2. 3. 4. 5.
2.	**Company Name:** **Address:**	**Name:** **Phone:** **Fax:** **E-Mail:**			1. 2. 3. 4. 5.
3.	**Company Name:** **Address:**	**Name:** **Phone:** **Fax:** **E-Mail:**			1. 2. 3. 4. 5.

ATTACHMENT I-B: REFERENCES (Correctional Health)

REFERENCE	CUSTOMER	CONTACT	CONTRACT		PRODUCTS/DESCRIPTION
			START DATE	VALUE	
CORRECTIONAL HEALTH REFERENCES					
1.	**Company Name:** **Address:**	**Name:** **Phone:** **Fax:** **E-Mail:**			1. 2. 3. 4. 5.
2.	**Company Name:** **Address:**	**Name:** **Phone:** **Fax:** **E-Mail:**			1. 2. 3. 4. 5.
3.	**Company Name:** **Address:**	**Name:** **Phone:** **Fax:** **E-Mail:**			1. 2. 3. 4. 5.

ATTACHMENT J: PROPOSER PROJECT TEAM

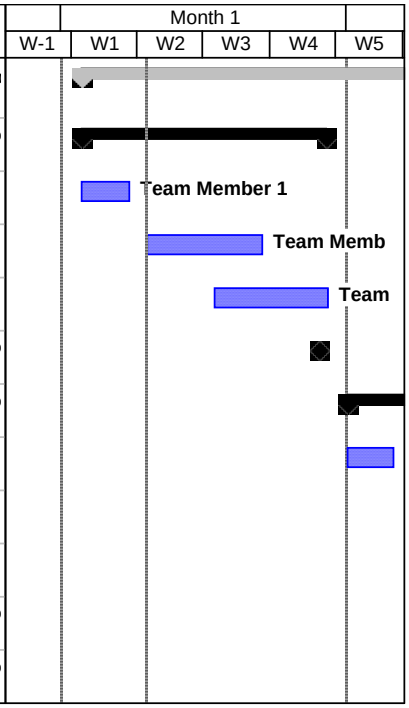
POSITION	TEAM MEMBER	ROLE	BIOGRAPHY
ACCOUNT MANAGER	**Name:** **Title:** **Phone:** **Fax:** **E-Mail:**		
PROJECT MANAGER	**Name:** **Title:** **Phone:** **Fax:** **E-Mail:**		
AHIMA Certified Medical Record Staff	**Name:** **Title:** **Role:**		
OTHERS	**Name:** **Title:** **Role:** **Name:** **Title:** **Role:** **Name:** **Title:** **Role:** **Name:** **Title:** **Role:**		

ATTACHMENT K: PROJECT PLAN (sample)

Description: Typical elements of a detailed schedule for the next project phase are a Gantt chart that has been resource-loaded, showing project phases, tasks, resources assigned to these tasks, deliverables, milestones, and begin and end dates for the work

Tool: MS-Project Template

WBS	Task Name	Duration	Start	Finish	Est Work	Resource	% Comp
0	**MS-Project Template**	**55 days**	**9/3/01**	**11/16/01**	**544 hrs**		**0%**
1	**Work Area 1**	**20 days**	**9/3/01**	**9/28/01**	**200 hrs**		**0%**
1.1	Task 1	5 days	9/3/01	9/7/01	40 hrs	Team Member1	0%
1.2	Task 2	10 days	9/10/01	9/21/01	80 hrs	Team Member2	0%
1.3	Task 3	10 days	9/17/01	9/28/01	80 hrs	Team Member3	0%
1.4	**Deliverable 1 Complete**	**0 days**	**9/28/01**	**9/28/01**	**0 hrs**		**0%**
2	**Work Area 2**	**23 days**	**10/1/01**	**10/31/01**	**224 hrs**		**0%**
2.1	Task 1	5 days	10/1/01	10/5/01	40 hrs	Team Member3	0%
2.2	Task 2	5 days	10/8/01	10/12/01	40 hrs	Team Member2	0%
2.3	Task 3	18 days	10/8/01	10/31/01	144 hrs	Team Member1	0%
2.4	**Deliverable 2 Complete**	**0 days**	**10/31/01**	**10/31/01**	**0 hrs**		**0%**
3	**Work Area 3**	**15 days**	**10/29/01**	**11/16/01**	**120 hrs**		**0%**



Insert Project Plan here:

SECTION III – STANDARD TERMS AND CONDITIONS

If a contract is awarded from this Request for Proposal, it will contain, at a minimum, the following contract language:

PART 1 - Administration

This Contract is between the County and the Contractor who shall be responsible for providing the Work described herein. The County is not party to defining the division of Work between the Contractor and its Subcontractors, if any, and the Scope of Work has not been written with this intent.

The Contractor represents that it has or shall obtain all personnel, materials and equipment required to perform Work hereunder. Such personnel shall not be current or former employees of the County without the written approval of the County. Any current or former County employee who is involved, or becomes involved, in the performance of the Contract shall be disclosed; and the County shall determine whether conflicts of interest or ethical violations exist under the circumstances.

The Contractor's performance under this Contract may be monitored and reviewed by a Project Manager appointed by the County. Reports and data required to be provided by the Contractor shall be delivered to the Project Manager. Questions by the Contractor regarding interpretation of the terms, provisions and requirements of this Contract shall be addressed to the Buyer or Project Manager for a response.

PART 2 - Contract Changes

No oral order or conduct by the County shall constitute a change to the Contract – neither an Administrative Change nor a Contract Amendment. Both parties shall agree to Contract changes in writing.

If any Contract change causes an increase or decrease in the cost of, or the time required for performance of any part of the Work under this Contract, an equitable adjustment in the Contract price, the project schedule, or both shall be made and the Contract and all related purchase orders(s) modified and agreed to in writing by both parties. Every Contract change may require a Cost/Price Analysis to determine the reasonableness of the proposed adjustments to Contract price or schedule. Contract changes do not require notice to sureties by County.

Ref: King County CON 7-8-1 (AEP).

PART 3 - Cost or Price Analysis

The County may require Cost or Price Analysis for the evaluation of Contract changes, terminations and revisions to Contract requirements or other circumstances as determined by the County.

PART 4 - Termination for Convenience / Default/ Non-Appropriation

A. Termination for Convenience

The County for its convenience may terminate this Contract, in whole or in part, at any time by written notice sent certified mail, return receipt requested, to the Contractor. After receipt of a Notice of Termination (“Notice”), and except as directed by the County, the Contractor shall immediately stop Work as directed in the Notice, and comply with all other requirements in the Notice. The Contractor shall be paid its costs, including necessary and reasonable Contract closeout costs and profit on that portion of the Work satisfactorily performed up to the date of termination as specified in the notice. The Contractor shall promptly submit its request for the termination payment, together with detailed supporting documentation. If the Contractor has any property in its possession belonging to the County, the Contractor shall account for the same and dispose of it in the manner the County directs. All termination payment requests may be subject to Cost or Price Analysis to determine reasonableness and compliance with the Contract, applicable laws and regulations.

B. Termination for Default

If the Contractor does not deliver Work in accordance with the Contract, or the Contractor fails to perform in the manner called for in the Contract, or if the Contractor fails to comply with any material provisions of the Contract, the County may terminate this Contract, in whole or in part, for default as follows:

- A “Notice to Cure” shall be served on the Contractor by certified mail (return receipt requested) or delivery service capable of providing a receipt. The Contractor shall have ten (10) Days to cure the default or provide the County with a detailed written plan, which indicates the time and methods needed to bring the Work into compliance and cure the default.
- If the Contractor has not cured the default or the plan to cure the default is not acceptable to the County, the County may terminate the Contract. Termination shall occur by serving a Notice of Termination by certified mail (return receipt requested) or delivery service capable of providing a receipt on the Contractor setting forth the manner in which the Contractor is in default and the effective date of termination.
- The Contractor shall only be paid for Work delivered and Accepted, or Work performed in accordance with the manner of performance set forth in the Contract less any damages to the County caused by or arising from such default. All termination payment requests are subject to Cost or Price Analysis to verify compliance with the Contract, applicable laws and regulations.
- The termination of this Contract shall in no way relieve the Contractor from any of its obligations under this Contract nor limit the rights and remedies of the County hereunder in any manner.
- King County may immediately terminate this Contract by written notice to the Contractor and may regard the Contractor as in default of this Contract if the Contractor becomes insolvent, makes a general assignment for the benefit of creditors, files a voluntary petition of bankruptcy, suffers or permits the appointment of a receiver for its business or assets, or becomes subject to any proceeding under any bankruptcy or insolvency law, whether domestic or foreign, or has wound up or liquidated, voluntarily or otherwise. In the event that any of the above events occurs, the Contractor shall immediately notify the County of its occurrence.

C. Termination for Non-Appropriation

If expected or actual funding is withdrawn, reduced or limited in any way prior to the termination date set forth in this Contract or in any amendment hereto, the County may, upon written notice to the Contractor, terminate this Contract in whole or in part.

In accordance with King County Code 4.04.040B.6, payment shall not exceed the appropriation for the year in which termination is effected. If the Contract is terminated for non-appropriation:

1. The County shall be liable only for payment in accordance with the terms of this Contract for Services rendered prior to the effective date of termination; and,
2. The Contractor shall be released from any obligation under this contract or a related Purchase Order to Provide further Work pursuant to the Contract as are affected by the termination.

Funding under this Contract beyond the current appropriation year is conditional upon the appropriation by the County Council of sufficient funds to support the activities described in this Contract. Should such an appropriation not be approved, the Contract shall terminate at the close of the current appropriation year. The appropriation year ends on December 31 of each year.

PART 5 - Force Majeure

The term "force majeure" shall include, without limitation by the following enumeration: acts of nature, acts of civil or military authorities, terrorism, fire, accidents, shutdowns for purpose of emergency repairs, industrial, civil or public disturbances, causing the inability to perform the requirements of this Contract. If any party is rendered unable, wholly or in part, by a force majeure event or any other cause not within such party’s control, to perform or comply with any obligation or condition of this Contract, upon giving notice and reasonably full particulars to the

other party, such obligation or condition shall be suspended only for the time and to the extent commercially practicable to restore normal operations. In the event the Contractor ceases to be excused pursuant to this provision, then the County shall be entitled to exercise any remedies otherwise provided for in this Contract, including Termination for Default. Whenever a force majeure event causes the Contractor to allocate limited resources between or among the Contractor's customers, the County shall receive no less priority in respect to such allocation than any of the Contractor's other customers.

PART 6 - Washington State Sales Tax

The County shall make payment directly to the State for all applicable State sales taxes in case the Contractor is not registered for payment of sales taxes in the State of Washington. If the Contractor is so registered, it shall add the sales tax to each invoice and upon receipt of payment from the County, promptly remit appropriate amounts to the State of Washington.

PART 7 - Taxes, Licenses, and Certificate Requirements

This Contract and any of the Work Provided hereunder is contingent and expressly conditioned upon the ability of the Contractor to provide the specified goods or Services consistent with applicable federal, state or local laws and regulations. If, for any reason, the Contractor's required licenses or certificates are terminated, suspended, revoked or in any manner modified from their status at the time this Contract becomes effective, the Contractor shall notify the County immediately of such condition in writing.

The Contractor and Subcontractor(s) shall maintain and be liable for all taxes (except sales/use taxes), fees, licenses permits and costs as may be required by applicable federal, state or local laws and regulations as may be required to provide the Work under this Contract.

PART 8 - Assignment

Neither party shall assign any interest, obligation or benefit under or in this Contract or transfer any interest in the same, whether by assignment or novation, without prior written consent of the other party. If assignment is approved, this Contract shall be binding upon and inure to the benefit of the successors of the assigning party. This provision shall not prevent Contractor from pledging any proceeds from this Contract as security to a lender so long as King County Policy Fin10-1 (AP), paragraph 6.1.3 is followed. An assignment shall be accepted by either party upon the posting of all required bonds, securities and the like by the assignee, and the written agreement by assignee to assume and be responsible for the obligations and liabilities of the Contract, known and unknown, and applicable law.

PART 9 - Indemnification and Hold Harmless

A. Patent and Copyright Indemnity

The Contractor shall protect, indemnify, defend and save harmless the County from any and all claims or lawsuits alleging a violation of a third party's copyright or patent rights. So long as the County gives Contractor prompt notice of any infringement claim brought against the County regarding the Software and the County gives Contractor information, reasonable assistance, and sole authority to defend or settle any infringement claim, then, in the defense or settlement of an infringement claim, Contractor shall, in its reasonable judgment and at its option and expense: (i) obtain for the County the right to continue using the Software; (ii) replace or modify the Software so that it becomes noninfringing while giving equivalent performance; or (iii) if Contractor cannot obtain the remedies in (i) or (ii), the parties may proceed to a court of competent jurisdiction to determine the amount of fees that shall be returned to the County. Contractor shall have no liability to indemnify or defend the County to the extent the alleged infringement is based on: (i) a modification of the Software the County or others authorized by the County but not by the contractor; or (ii) use of the Software other than in accordance with the Documentation. If the County is required to defend itself or enter into a settlement agreement due to Contractor's failure to defend, Contractor shall indemnify the County for its costs and expenses as well as any judgment entered against the County.

B. Indemnification For All Other Actions

Contractor shall protect, defend, indemnify and save harmless the County, its officers, employees and agents from any and all costs, claims, judgments, and/or awards of damages for injuries to Persons and/or damage to tangible property, arising out of or in any way resulting from the acts or omissions of the Contractor its officers, employees and/or agents. Contractor's indemnification obligation shall include but is not limited to, all claims against the County by an employee or former employee of the Contractor or its Subcontractors, and the Contractor expressly waives by mutual negotiation, with respect to the County only, all immunity and limitation on liability under any industrial insurance act, including Title 51 RCW, other worker's compensation act, disability benefit act, or other employee benefit act of any jurisdiction which would otherwise be applicable in the case of such claim. In the event the County incurs any costs including attorneys' fees to enforce the provisions of this subsection, all such costs and fees shall be recoverable from the Indemnitor.

C. Limitation of Liability

Except for the County's intentional and willful violations of Contractor's intellectual or proprietary rights, which can be attributed to the County management, and injuries to persons by either party, neither party shall be liable for any indirect, incidental, special or consequential damages, including but not limited to lost data or profits, however arising, even if it has been advised of the possibility of such damages. Excluding damages incurred under the paragraphs A and B, either party's liability for damages to the other under the Contract shall be limited to (TBD in contract negotiations) times the value of the contract or one million dollars whichever is greater. The parties agree to the allocation of liability of risk set forth in this subsection.

PART 10 - Applicable Law and Forum

Except as hereinafter specifically provided, this Contract shall be governed by and construed according to the laws of the State of Washington, including, but not limited to, the Uniform Commercial Code, Title 62A RCW. Any claim or suit concerning this Contract may only be filed in either the King County Superior Court or U.S. District for the Western District of Washington, in Seattle.

PART 11 - Conflicts of Interest and Non-Competitive Practices

A. Conflict of Interest

By entering into this Contract to perform Work, the Contractor represents that it has no direct or indirect pecuniary or proprietary interest, and that it shall not acquire any interest that conflicts in any manner or degree with the Work required to be performed under this Contract. The Contractor shall not employ any Person or agent having any conflict of interest. In the event that the Contractor or its agents, employees or representatives hereafter acquires such a conflict of interest, it shall immediately disclose such conflict to the County. The County shall require that the Contractor take immediate action to eliminate the conflict up to and including termination for default.

B. Contingent Fees and Gratuities

By entering into this Contract to perform Work, the Contractor represents that:

1. No Persons except as designated by Contractor shall be employed or retained to solicit or secure this Contract with an agreement or understanding that a commission, percentage, brokerage, or contingent fee would be paid.

2. No gratuities, in the form of entertainment, gifts or otherwise, were offered or given by the Contractor or any of its agents, employees or representatives, to any official, member or employee of the County or other governmental agency with a view toward securing this Contract or securing favorable treatment with respect to the awarding or amending, or the making of any determination with respect to the performance of this Contract.

3. Any Person having an existing contract with the County or seeking to obtain a contract who willfully attempts to secure preferential treatment in his or her dealings with the County by offering any valuable consideration, thing or promise, in any form to any County official or employee shall have his or her current contracts with the County canceled and shall not be able to bid on any other County contracts for a period of two (2) years.

C. Disclosure of Current and Former County Employees

To avoid any actual or potential conflict of interest or unethical conduct:

1. County employees or former County employees are prohibited from assisting with the preparation of proposals or contracting with, influencing, advocating, advising or consulting with a third party, including Contractor, while employed by the County or within one (1) year after leaving County employment if he/she participated in determining the Work to be done or processes to be followed while a County employee.

2. Contractor shall identify at the time of offer current or former County employees involved in the preparation of proposals or the anticipated performance of Work if awarded the Contract. Failure to identify current or former County employees involved in this transaction may result in the County's denying or terminating this Contract.

3. After Contract award, the Contractor is responsible for notifying the County's Project Manager of current or former County employees who may become involved in the Contract any time during the term of the Contract.

Ref: K.C.C. 3.04.015, 3.04.20, 3.04.30, 3.04.035, 3.04.060

PART 12 - Disputes, Claims and Appeals

The Contractor shall address questions or claims regarding the Contract in writing to the Buyer and Project Manager, within ten (10) Days of the date in which the Contractor knows or should know of the question or claim. No claim by the Contractor shall be allowed if asserted after final payment under this Contract. No claim shall be allowed for any costs incurred more than ten (10) Days before the Contractor gives written notice, as required in this section. The Buyer and Project Manager shall ordinarily respond to the Contractor in writing with a decision, but absent such written response, the question or claim shall be deemed denied upon the tenth (10th) Day following receipt by the Buyer and Project Manager.

In the event the Contractor disagrees with the determination of the Buyer and Project Manager, the Contractor shall, within five (5) Days of the date of such determination, appeal the determination in writing to the Procurement and Contract Services Section Manager. Such written notice of appeal shall include all information necessary to substantiate the appeal. The Procurement and Contract Services Section Manager shall review the appeal and make a determination in writing, which shall be final. Appeal to the Procurement and Contract Services Section Manager shall be a condition precedent alternative dispute resolution or litigation.

Pending final decision of a dispute hereunder, the Contractor shall proceed diligently with the performance of the Contract and in accordance with the direction of the Buyer or Project Manager. Failure to comply precisely with the time deadlines under this subsection as to any claim shall operate as a waiver and release of that claim and an acknowledgment of prejudice to the County.

PART 13 - Mediation and Arbitration

Nothing in this subsection precludes any party from seeking relief at any time from King County Superior Court or the U.S. District Court for the Western District of Washington, in Seattle. If a dispute arises out of or relates to this Contract, or the breach thereof, and if said dispute cannot be settled through direct discussions, the parties agree to first endeavor to settle the dispute in an amicable manner by mediation. Thereafter, any unresolved controversy or claim arising out of or relating to this Contract, or breach thereof, may be resolved by arbitration, and judgment upon the award rendered by the arbitrator may be entered in either King County Superior Court or the U.S. District Court for the Western District of Washington, in Seattle.

PART 14 - Retention of Records, Audit Access and Proof of Compliance with Contract

A. Retention of Records

The Contractor and its Subcontractors shall maintain books, records and documents of its performance under this Contract in accordance with generally accepted accounting principles. The Contractor shall retain for six (6) years after the date of final payment under the Contract all financial information, data and records for all Work.

B. Audit Access

1. Federal, state or County auditors shall have access to Contractor's and its Subcontractors' records for the purpose of inspection, Cost or Price Analysis, audit or other reasonable purposes related to this Contract. Federal, state or County auditors shall have access to records and be able to copy such records during the Contractor's normal business hours. The Contractor shall Provide proper facilities for such access, inspection and copying.

2. Audits may be conducted during or after the Contract period for purposes of evaluating claims by or payments to the Contractor and for any other reason deemed appropriate and necessary by the County. Audits shall be conducted in accordance with generally accepted auditing principles and/or federal, state or County audit procedures, laws or regulations. The Contractor shall fully cooperate with the auditor(s).

3. If an audit is commenced more than sixty (60) Days after the date of final payment for Contract Work, the County shall give reasonable notice to the Contractor of the date on which the audit shall begin.

C. Proof of Compliance with Contract

The Contractor shall, upon request, provide the County with satisfactory documentation of the Contractor's compliance with the Contract.

In addition, the Contractor shall permit the County, and if federally funded, the FTA and the Comptroller General of the United States, or a duly authorized representative, to inspect all Work, materials, payrolls and other data and records involving the Contract.

Ref KCC 2.20.035, 2.20.040, 2.20.050, RCW 43.09.050, 43.88, 42.40.020, 42.40.040, 42.160.

PART 15 - Other Public Agency Orders

Other federal, state, county and local entities may utilize the terms and conditions established by this Contract. The County does not accept any responsibility or involvement in the purchase orders or contracts issued by other public agencies.

PART 16 - Recycled Products Policy

The County promotes the purchase and utilization of recycled material and products where available. Recycled material means material and byproducts, which have been recovered or diverted from solid waste disposal for the purpose of recycling. It does not include those materials and byproducts generated from, and commonly reused within, an original manufacturing process. In the event of similar pricing, availability and other factors affecting the solicitation, preference may be given to products containing recycled material.

Ref: KCC 10.14 and CON 7-1-2 (AEP).

PART 17 - Nondiscrimination and Equal Employment Opportunity

A. Nondiscrimination in Employment and Provision of Services

During the performance of this Contract, neither the Contractor nor any party subcontracting under the authority of this Contract shall discriminate nor tolerate harassment on the basis of race, color, sex, religion, nationality, creed, marital status, sexual orientation, age, or the presence of any sensory, mental, or physical disability in the employment or application for employment or in the administration or delivery

of services or any other benefits under this Contract. King County Code Chapter 12.16 is incorporated herein by reference, and such requirements shall apply to this Contract.

B. Nondiscrimination in Subcontracting Practices

During the solicitation, award and term of this Contract, the Contractor shall not create barriers to open and fair opportunities to participate in County contracts or to obtain or compete for contracts and subcontracts as sources of supplies, equipment, construction and services. In considering offers from and doing business with Subcontractors and suppliers, the Contractor shall not discriminate against any person on the basis of race, color, creed, religion, sex, age, nationality, marital status, sexual orientation or the presence of any mental or physical disability in an otherwise qualified disabled person.

Ref: KCC 12.16.020.

C. Compliance with Laws and Regulations

The Contractor shall comply fully with all applicable federal, state, and local laws, ordinances, executive orders, and regulations that prohibit discrimination.

Unfair Employment Practices. King County Code Chapter 12.18 is incorporated by reference as if fully set forth herein and such requirements apply to this Contract.

D. Record-keeping Requirements and Site Visits

The County may, at any time, visit the project site, Contractor's and Subcontractors' offices to review records related to the solicitation, utilization, and payment to Subcontractors and suppliers in compliance with Executive Order 11246 as amended by Executive Order 11375. This provision includes compliance with any other requirements of this section. The Contractor shall provide all reasonable assistance requested by King County during such visits. The Contractor shall maintain, for six (6) years after completion of all work under this Contract, the following:

1. Records, including written quotes, bids, estimates or proposals submitted to the Contractor by all businesses seeking to participate on this Contract, and any other information necessary to document the actual use of and payment to Subcontractors and suppliers in this Contract.
2. The Contractor shall make the foregoing records available to the County for inspection and copying upon request. Any violation of the mandatory requirements of the provisions of this subsection shall be a material breach of contract, which may result in termination of this Contract or such other remedy as the County deems appropriate, including but not limited to damages or withholding payment.

E. Discrimination In Contracting

King County Code Chapter 12.17 is incorporated by reference as if fully set forth herein and such requirements apply to this Contract. During the performance of this Contract, neither Contractor nor any party subcontracting under the authority of this Contract shall discriminate or engage in unfair contracting practices prohibited by KCC 12.17.

F. Compliance with Section 504 of the Rehabilitation Act of 1973

For all contracts providing consulting, maintenance, training or other services, the Contractor shall complete a Disability Self-Evaluation Questionnaire. The 504/ADA Disability Assurance of Compliance will cover all programs and services offered (including any services not subject to this Contract) for compliance with Section 504 of the Rehabilitation Act of 1973, as amended ("504"), and the Americans with Disabilities Act of 1990 ("ADA"). The Contractor shall complete a 504/ADA Disability Assurance of Compliance within ten (10) Days after receiving written notice of selection. The Contractor shall retain a copy of the completed 504/ADA and submit to the Buyer the original final two (2) signed pages titled "504/ADA Disability Assurance of Compliance", which will be attached to the Contract.

Ref: KCC 12.16.060 D.

PART 18 - Disadvantaged Business Enterprise (DBE) Participation

A. Nondiscrimination 49 CFR part 26. The Contractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this Contract. The Contractor shall carry out applicable requirements of 49 CFR, part 26 in the award and administration of United States Department of Transportation assisted contracts. Failure by the Contractor to carry out these requirements is a material breach of this Contract, which may result in the termination of this Contract or such other remedy, as the County deems appropriate.

B. DBE Program. The County has determined that no DBE goal shall be established for this Contract. However, the County requires that the Contractor report any actual DBE participation on this Contract to enable the County to accurately monitor DBE program compliance.

Ref: KCC 28.20.

C. Efforts to Increase DBE Participation. Even though this Contract has no DBE goal, the County still encourages Contractors to pursue opportunities for DBE participation. To that end, Contractors are encouraged to:

1. Advertise opportunities for Subcontractors and suppliers in a manner reasonably designed to provide DBEs capable of performing the work with timely notice of such opportunities. All advertisements should include a provision encouraging participation by DBE firms and may be done through general advertisements (e.g., newspapers, journals, etc.) or by soliciting proposals directly from DBEs.
2. Utilize the services of available minority community organizations, minority consultant groups, local minority assistance offices and organizations that provide assistance in the recruitment and placement of DBEs and other small businesses.
3. Establish delivery schedules, where requirements of the contract allow and encourage participation by DBEs and other small businesses.
4. Achieve DBE attainment through joint ventures.

D. DBE Listing. A current list of DBE firms accepted as certified by the Washington State Office of Minority and Women's Business Enterprises (OMWBE) is available from that office at (360) 753-9693 or at www.omwbe.wa.gov. For purposes of this Contract, a DBE firm shall be certified by OMWBE as of the date and time of bid submittal.

E. Procedure Applicable when DBEs Are Utilized. Concurrent with the use of any DBE Subcontractor or supplier the Contractor shall provide notice of such use in writing to the King County Business Development and Contract Compliance Section (BDCC). Upon receipt of said notice, BDCC shall provide the Contractor with the applicable procedures for counting DBE participation. Assistance with this section is available from BDCC at (206) 205-0700. Notice referenced herein should be delivered to the following address:

King County
Office of Business Relations and Economic Development
M.S. KCC-EX-0402
516 3rd Avenue, Room 550
Seattle, WA 98104-3271 Phone: 206-205-0700 Fax: 206-296-0194

PART 19 - Severability

Whenever possible, each provision of this Contract shall be interpreted to be effective and valid under applicable law. If any provision is found to be invalid, illegal or unenforceable, then such provision or portion thereof shall be modified to the extent necessary to render it legal, valid and enforceable and have the intent and economic effect as close as possible to the invalid, illegal and unenforceable provision.

PART 20 - Nonwaiver of Breach

No action or failure to act by the County shall constitute a waiver of any right or duty afforded to the County under the Contract; nor shall any such action or failure to act by the County constitute an approval of, or acquiescence in, any breach hereunder, except as may be specifically stated by the County in writing.

PART 21 - Non-Discrimination in Benefits to employees with Domestic Partners

King County's Equal Benefits (EB) Ordinance 14823 states that to be eligible for award of contracts at a cost of $25,000.00 or more, firms must not discriminate in the provisions of employee benefits between employees with spouses, and employees with domestic partners. The Contractor shall be required to complete a Worksheet and Declaration form. Compliance with Ordinance 14823 is a mandatory condition for execution of a contract. The EB Compliance forms, and Ordinance 14823 are available online at: www.metrokc.gov/finance/procurement/forms.asp.

SECTION IV – SPECIFIC CONTRACTUAL TERMS AND CONDITIONS

PART 1 - Execution of the Contract

The documents constituting the Contract between the County and the Contractor are intended to be complementary so that what is required by any one of them shall be as binding as if called for by all of them. In the event of any conflicting provisions or requirements within the several parts of the Contract documents, they shall take precedence as listed on the Contract, page 2. The date the Contract is countersigned by the County is the Contract effective date. No other act of the County shall constitute Contract award. After Contract award, the County shall issue Purchase Orders detailing the Work to be performed.

The Contract may be executed in counterparts, any of which shall be deemed an original and which shall together constitute one Contract.

PART 2 - Contract Term

The term of this Contract shall be three (3) years in one (1) year increments, commencing on the effective date of the Contract and subject to the termination provisions under Termination for Convenience / Default / Non-Appropriation. The Warranty Period begins at Final Acceptance for a period of twelve (12) months. Upon the completion of the Warranty Period, the Maintenance Agreement runs from year to year unless terminated as described in this Contract. The maximum term for this Contract, consisting of the base period plus extensions, is three (3) years unless extended by written agreement signed by all parties.

PART 3 - Payment Procedures

A. Invoices

The Contractor for Work Accepted by the County shall furnish invoices to:

King County Accounts Payable
M/S EXC-ES-0875
Exchange Building, 8th floor
821 Second Avenue
Seattle, WA 98104-1598

B. Payments

Within thirty (30) Days after receipt of an invoice, the County shall pay the Contractor for Accepted Work, upon acceptance of payment Contractor waives any claims for the Work covered by the Invoice.

If the Contractor is registered with the State of Washington it shall add all applicable State sales or use taxes to each invoice and upon receipt of the payment promptly remit appropriate amounts to the State of Washington, or the County will make payment directly to the State.

C. Subcontractor Prompt Payment

The Contractor agrees to pay each Subcontractor under this Contract for satisfactory performance of its Subcontract no later than ten (10) Days from the receipt of each payment the Contractor receives from the County.

PART 4 - Advance Payment Prohibited

No advance payment shall be made for the Work furnished by Contractor pursuant to this Contract.

Ref: Article VIII, § 7 of the Washington State Constitution.

PART 5 - Pricing

A. Prices shall remain firm for the duration of the first Contract period. Price changes based on market conditions and price/cost analysis may be made after the first Contract period. The Contractor shall supply documentation satisfactory to County such as documented changes to the Producers Price Index (PPI), the Consumer Price Index (CPI) or a manufacturer's published notification of price change(s). Requests for any price change are to be made in writing to the Buyer in the Procurement Services Division office. Any price change shall be mutually agreed upon and shall take effect at the time of the Contract extension and remain throughout the extension

B. Reimbursement for meals shall be limited to the per diem rates established by federal travel requisitions for the host city in the Code of Federal Regulations, 41 CFR § 301, App.A.

C. Accommodation rates shall not exceed the federal lodging limit plus host city taxes. The Contractor shall always request government rates.

D. The direct costs contained in A, B and C above shall only be authorized by the County Project Manager for Contractor staff living beyond commuting distance, normally considered to be for the travel beyond 100 miles of 821 Second Avenue, Seattle, WA.

E. Air travel shall be by coach class at the lowest price available at the time the County Project Manager requests a particular trip. In general, a trip is associated with a particular Work activity of limited duration and only one round-trip ticket, per person, shall be billed per trip.

F. Cost for equipment, materials and supplies, such as approved equipment rental; telephone, telegraph and cable expenses; reproduction costs including blueprinting, photographing, telecopying, mimeographing, photocopying and printing; express charges; commercial printing, binding, art Work and models; and, computer programming and data entry costs shall be billed without markup.

G. Authorized subcontract Services; Provided that the limitations set forth in the period. The parties hereto recognize that such changes could be increases or decreases in the prices; both parties are entitled to benefit from such price changes.

PART 6 - Shipping Charges

All prices shall include freight FOB to the designated delivery point. The County shall reject requests for additional compensation for freight charges.

PART 7 - Direct Costs Related to Changed Work

Direct costs for additional Work shall be billed at cost without markup.

Reimbursement of Contractor travel, lodging and meal expenses are limited to the eligible costs based on the rates and criteria established in King County Code, chapter 3.24.

A. The mileage rate allowed by King County shall not exceed the current Internal Revenue Services (IRS) rates per mile as allowed for business related travel. The IRS mileage rate shall be paid for the operation, maintenance and depreciation of individually owned vehicles for that time which the vehicle is used during Work hours. Parking shall be the actual cost. When rental vehicles are authorized, government rates shall be requested. If a person does not request government rates, he/she may be

personally responsible for the difference. Please reference the IRS web site for current rates. http://www.irs.gov/. Above paragraphs shall be applicable to such subcontract services.

B. Other direct costs, not listed above, may be billed if the County has given prior approval.

C. Receipts required for purchases $10 and over, not including meals.

PART 8 - Acceptance Process

The County may give iterative acceptances as the Work is accomplished either by phase or milestone. The Contractor will give the County "notice of completion" of Work related to a specific milestone following the Contractor's completion of all such Work in accordance with the payment schedule and delivery requirements in the Contract.

A. Acceptance Process. Upon completion of the milestone deliverables, the Contractor will notify the County and the Acceptance process will commence. Acceptance shall be based on conformance with the milestone guidelines. After notice by Contractor of completion of the milestone, County will issue a written notice of milestone Acceptance or provide Contractor with a notification of rejection, which will include documentation of the specific grounds for the rejection, outlining items not in compliance with the deliverable guidelines.

B. Correction of Deficiencies Process. If a deliverable is rejected, Contractor will have a commercially practicable time to correct items documented in the County's notification of rejection. Following the delivery of Contractors' notice that the Work has been corrected, the County will issue a written notice of Acceptance or provide Contractor with a notification of rejection, which will include documentation of the specific grounds for the rejection, outlining Work not in compliance with the milestone. The project schedule will be adjusted accordingly in the event that a dispute regarding the method or accuracy of the correction causes a delay. If the deliverable(s) fails to comply with the milestone after Contractor's second attempt to correct the Work and no clear plan can be agreed upon between the County Project Manager and the Contractor's Project Manager, the County will determine the appropriate corrective actions.

PART 9 - Final Acceptance Process

The County shall begin the Final Acceptance process in accordance with the Contract as follows:

A. The parties shall agree on the start date for the Acceptance test.

B. The Acceptance Test shall include thirty (30) Days of continuous operation of the Work without material defect in accordance with the Contract in the County's fully implemented production environment.

C. If the County Accepts the Work, the County will send a notice of Final Acceptance to the Contractor.

D. If County determines that the Work is not Acceptable, the County shall notify the Contractor in writing, describing the deficiencies.

E. The Contractor shall either provide a detailed, written plan to achieve Final Acceptance or to make corrections or replacements within a mutually agreed upon time period with no charge to the County. The parties shall mutually agree on a start date for beginning another Acceptance test.

F. Another thirty (30) Day successful operation period shall follow any corrections or replacements to the Work. Two (2) or more thirty (30) Day operation Acceptance test periods can occur if mutually agreed to by the parties.

G. If the County Accepts the Work following a second or subsequent Acceptance test the County will send a notice of Final Acceptance to the Contractor.

H. If the Contractor does not correct or replace the unacceptable Work the County may declare a breach of contract.

PART 10 - Warranty Provisions

A. No Waiver of Warranties and Contract Rights. Conducting of tests and inspections, review of Scope of Work or plans, payment for a Work, or Acceptance or Final Acceptance of the Work by the County shall not constitute a waiver of any rights under this Contract or in law. The termination of this Contract shall in no way relieve the Contractor from its warranty/guarantee responsibility.

B. Warranty Term. The Contractor warrants that the Work performed under this Contract shall be free from defects in material and workmanship, and shall conform all requirements of this Contract, for a period of twelve (12) months from date of Final Acceptance of such Work by the County. Any Work corrected shall be subject to this subsection to the same extent as the Work initially provided.

C. Warranty Applicable to Third Party Suppliers, Vendors, Distributors and Subcontractors. The Contractor shall ensure that the warranty requirements of this Contract are enforceable through and against the Contractor's suppliers, vendors, distributors and Subcontractors. The Contractor is responsible for liability and expense caused by any inconsistencies or differences between the warranties extended to the County by the Contractor and those extended to the Contractor by its suppliers, vendors, distributors and Subcontractors. Such inconsistency or difference shall not excuse the Contractor's full compliance with its obligations under this Contract. The Contractor shall cooperate with the County in facilitating warranty related Work by such suppliers, vendors, distributors and Subcontractors.

PART 11 - Express Warranties for Software

A. Contractor warrants that on the date of Final Acceptance, the Software provided hereunder shall be free from significant programming Errors and when used in accordance with user manuals shall operate and conform to the Scope of Work, performance capabilities, functions and other descriptions and standards as identified in this Contract and all supplemental information Provided by Contractor.

B. Contractor warrants that it has full power and authority to license or sublicense the Software to the County without the consent of any other Person.

C. Contractor warrants that the performance of the Services related to the Software and the licensed use of the Software by County as permitted by this Contract, including copying, shall not in any way constitute an infringement or other violation of any copyright, trade secret, trademark, patent, invention, proprietary information, nondisclosure or other right of any third party.

D. Contractor warrants that the Software, the License to the County to use the Software, instructions for use of the Software and the performance by Contractor of the Services, shall be in compliance with all applicable laws, rules and regulations.

E. Contractor warrants the tapes, CD’s, DVD’s or other media delivered to the County to be free of defects in materials and workmanship under normal use for sixty (60) Days from the date of receipt by the County.

F. Contractor warrants that the Software provided is free from intentional Viruses, disabling code or other intentional programming defects. Prohibited intentional programming defects include, but are not limited to, features such as “backdoor shutdown mechanisms”, “time bombs”, “automatic unauthorized connection to outside systems”, programming that responds to or Provides information to outside systems’ “pinging”, and features that can “retire”, “shut down”, “cripple” or “stop” the Software. Contractor further warrants that neither the Software alone or through Contract with the Contractor is capable of electronic self-help that may deprive the County of the use of the licensed Software.

G. Contractor warrants that future maintenance or Software releases shall not degrade the Software, cause a breach of any other warranty or require the County to purchase new or additional hardware or Software for continued operation of the Software.

H. The Contractor warrants functionality as described in the Scope of Work and represents that the configuration identified in the Contract has been specifically selected and designed for the County as being an operationally efficient integration of hardware, Software and Services.

I. Contractor shall be responsible for providing and implementing a Software system that is successfully integrated into the existing system environment of the County and meets the functional requirements as specified in this Contract.

THE EXPRESS WARRANTIES SET FORTH IN THIS SECTION ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

PART 12 - Warranty Remedies

A. If at any time during the twelve (12) month period immediately following Final Acceptance of any Work covered by this Contract, Contractor or the County discovers one or more material defects or Errors in the Work or any other aspect in which the Work materially fails to meet the provisions of the warranty requirements herein Contractor shall, at its own expense and within thirty (30) Days of notification of the defect by the County, correct the defect, Error or nonconformity by, among other things, making additions, modifications or adjustments to the Software as may be necessary to keep the Software in operating order in conformity with the warranties herein. Any Work corrected shall be subject to this subsection to the same extent as the Work initially provided.

B. During the sixty (60) Day media warranty period, the County may return defective media to Contractor and it shall be replaced without charge to the County.

C. In order to qualify for remedial action under these warranties, the County shall report a warranty failure to the Contractor in writing within thirteen (13) months from the date of Final Acceptance. The Contractor shall not be responsible for remedial action under this warranty to the extent the failure to meet the warranty is caused by modification to the product(s) by the County or anyone other than the Contractor or its Subcontractors, unless under Contractor's or its Subcontractor's direction.

D. The County shall give written notice of any defect to the Contractor. If the Contractor has not corrected defect with thirty (30) Days after receiving the written notice, the County, in its sole discretion, may correct the defect itself. In the case of an emergency where the County believes delay could cause serious injury, loss or damage, the County may waive the written notice and correct the defect. In either case, the County shall charge-back the cost for such warranty repair to the Contractor.

E. The Contractor is responsible for all costs of repair or replacement in order to restore the Work to the applicable Contract requirements or Scope of Work, including shipping charges, for Work found defective within the warranty period, regardless of who actually corrects the defect.

PART 13 - Defective Work

Prior to Final Acceptance, when and as often as the County determines that the Work, furnished under the Contract is not fully and completely in accordance with any requirement of the Contract, it may give notice and description of such non-compliance to the Contractor. Within seven (7) Days of receiving such written notification, the Contractor shall supply the County with a detailed, written plan which indicates the time and methods needed to bring the Work in compliance with the Contract. The County may reject or accept this plan at its discretion. If the County rejects the plan the Contractor may be determined to be in material default of the Contract. This procedure to remedy defects is not intended to limit or preclude any other remedies available to the County by law, including those available under the Uniform Commercial Code, Title 62A RCW.

PART 14 - Equipment and Software Warranty Process

During the warranty period, equipment and software support shall be as described in the Maintenance Agreement.

PART 15 - Equipment and Software Maintenance

After the warranty period, equipment and Software Maintenance support shall be as described in the Maintenance Agreement, which shall be attached to the contract.

PART 16 - Ownership/Rights to Work Product

A. All data and Work (collectively called “Work Product”) produced pursuant to this Contract shall be considered “work made for hire” under the U.S. Copyright Act, 17 U.S.C. §101 et seq, and shall be owned by King County. Contractor is hereby commissioned to create the Work Product. Ownership includes the right to copyright, patent, register and the ability to transfer these rights and all information used to formulate such Work Product.

B. If for any reason the Work Product would not be considered a “work made for hire” under applicable law, Contractor assigns and transfers to the County the entire right, title and interest in and to all rights in the Work Product and any registrations and copyright applications relating thereto and any renewals and extensions thereof.

C. Contractor shall execute all documents and perform such other proper acts, as the County may deem necessary to secure for the County the rights provided pursuant to this section.

D. Contractor shall not use or in any manner disseminate any Work Product to any third party, or represent in any way Contractor ownership in any Work Product, without the prior written permission of the County. Contractor shall take all reasonable steps necessary to ensure that its agents, employees, or Subcontractors shall not copy or disclose, transmit or perform any Work Product or any portion thereof, in any form, to any third party.

E. Work Product developed for this Contract including preexisting material needed to operate the Work Product shall be transferred to the County with a non-exclusive, royalty-free, irrevocable license to publish, translate, reproduce, deliver, perform, display, and dispose of such preexisting material, and to authorize others to do so except that such license shall be limited to the extent to which Contractor has a right to grant such a license.

PART 17 - Independent Status of Contractor

In the performance of this Contract, the parties shall be acting in their individual, corporate or governmental capacities and not as agents, employees, partners, joint ventures, or associates of one another. The parties intend that an independent contractor relationship shall be created by this Contract. The employees or agents of one party shall not be deemed or construed to be the employees or agents of the other party for any purpose whatsoever. Contractor shall not make any claim of right, privilege or benefit, which would accrue, to an employee under chapter 41.06 RCW or Title 51 RCW.

PART 18 - Nondisclosure of Data

Data provided by the County either before or after Contract award shall only be used for its intended purpose. Contractors and Subcontractors shall not utilize nor distribute the County data in any form without the express written approval of the County.

PART 19 - Non-Disclosure Obligation

While performing the Work under this Contract, the Contractor may encounter personal information, licensed technology, Software, Documentation, drawings, schematics, manuals, data and other materials described as “Confidential”, “Proprietary” or “Business Secret”. The Contractor shall not disclose or publish the information and material received or used in performance of this Contract. This obligation is perpetual. The Contract imposes no obligation upon the Contractor with respect to confidential information which the Contractor can establish that: a) was in the possession of, or was rightfully known by the Contractor without an obligation to maintain its confidentiality prior to receipt from the County or a third party; b) is or becomes generally known to the public without violation of this Contract; c) is obtained by the Contractor in good faith from a third party having the right to

disclose it without an obligation of confidentiality; or, d) is independently developed by the Contractor without the participation of individuals who have had access to the County's or the third party's confidential information. If the Contractor is required by law to disclose confidential information the Contractor shall notify the County of such requirement prior to disclosure.

PART 20 - Board of Ethics Disclosure Requirement

Pursuant to King County Code 3.04.120, the consultant shall file a Consultant Disclosure Form with the Board of Ethics and the King County Executive.

PART 21 - Pricing of Spare Parts

The County shall have the right to conduct a Cost or Price Analysis on specific spare parts if pricing appears to be in excess of standard industry pricing for similar parts. Any differences shall be subject to negotiations to the satisfaction of the County. The County is not required to purchase spare parts under this Contract if it can purchase the same item(s) from another source under terms that are more advantageous to the County.

PART 22 - No Prototype Components

All hardware, Software and Work, shall be in production and be used by customers comparable to the County at the time of the Contract effective date. Test or prototype items shall be clearly identified as such. A sufficient inventory of the Work shall be available to meet delivery requirements.

PART 23 - Patents and Royalties

The Contractor is responsible for paying all license fees, royalties or the costs of defending claims for the infringement of any intellectual property that may be used in performing this Contract. Before final payment is made on this Contract, the Contractor shall, if requested by the County, furnish acceptable proof of a proper release from all such fees or claims.

PART 24 - Changed Requirements

New federal, state and county laws, regulations, ordinances, policies and administrative practices may be established after the date this Contract is established and may apply to this Contract. To achieve compliance with changing requirements, the Contractor agrees to accept all changed requirements that apply to this Contract and require Subcontractors to comply with revised requirements as well. Changed requirements shall be implemented through subsection 1-2, Contract Changes.

PART 25 - Patents, Copyrights and Rights in Data

Any patentable result or materials suitable for copyright arising out of this Contract shall be owned and retained by the County. The County in its sole discretion shall determine whether it is in the public's interest to release or make available any patent or copyright.

The Contractor agrees that the ownership of any plans, drawing, designs, Scope of Work, computer programs, technical reports, operating manuals, calculations, notes and other Work submitted or which is specified to be delivered under this Contract, whether or not complete (referred to in this subsection as "Subject Data") shall be vested in the County.

All such Subject Data furnished by the Contractor pursuant to this Contract, other than documents exclusively for internal use by the County, shall carry such notations on the front cover or a title page, (or in such case of maps, in the name block), as may be requested by the County. The Contractor shall also place its endorsement on all Contractor-furnished Subject Data. All such identification details shall be subject to approval by the County prior to printing.

The Contractor shall ensure that the substance of foregoing subsections is included in each subcontract for the Work under this Contract.

PART 26 - Escrow Agreement / Source Code

If required, a source code escrow agreement shall be executed as part of this Contract.

The Contractor shall maintain a current copy of the program source code with all future updates, improvements, additions and modifications.

In the event that the Contractor ceases to support the programs, the escrow agent shall furnish King County, at no cost to the County, a copy of the relevant escrowed material as defined in the Escrow Agreement. Any escrowed material furnished under this provision shall be considered licensed subject to the terms of this Contract and accompanying Software License Agreement.

PART 27 - Software License

Subject to the terms and conditions set forth in the Contract and the Software License Agreement, including payment of the license fees by County to Contractor, Contractor hereby grants to County a perpetual, non-exclusive, non-transferable license to use the Software, including any Software and source code released pursuant to an Escrow Agreement, as well as any Documentation and training materials.

PART 28 - Disaster Recovery

In the event a disaster is declared at any County site(s), Contractor will allow the County the right to use the Software in accordance with the Software License Agreement, at the recovery site identified by the County, at no additional cost to the County for the Services or maintenance thereof.

PART 29 - Authorized Users

Only employees, agents, and Contractors who need to use the Software in the performance of their duties for the County and who are authorized and enabled by the County may access and utilize the Software.

PART 30 - Bug Status Reports

The Contractor shall Provide bug status reports specifying all known outstanding bugs in the current version of the Software. The initial bug status report shall accompany the Software when delivered. Subsequent reports shall be provided monthly or as agreed to by the County Project Manager.

PART 31 - Enhancements, Upgrades, Replacements and New Versions of Software

A. The Contractor agrees to provide to the County, at no cost, prior to, and during installation and implementation of the system any Software/firmware Enhancements, Upgrades and replacements which the contractor initiates or generates.

B. As long as the County has a maintenance agreement for the Software, the Contractor shall notify the County of the availability of newer versions of the Software and within thirty (30) days provide the County with this new version. The Contractor shall provide free Updated Documentation in the form of new revision manuals or changed pages to current manuals consistent with the original Documentation supplied and reflecting the changes included in the new version of the Software. The Contractor shall Provide bug status reports specifying all known, outstanding bugs in the new Software versions. The information shall be updated periodically as new information and Work-around become known. The Contractor shall also Provide free installation instructions, procedures and any installation program required by the installation.

PART 32 - HIPAA – Protecting Patient Privacy

The work under this Contract shall require compliance with “The Health Insurance Portability and Accountability Act of 1996” (HIPAA). Information on this Act can be found at the Office of Civil Rights website: http://www.hhs.gov/ocr/hipaa/.

SECTION V – INSURANCE REQUIREMENTS

PART 1 - Evidence and Cancellation of Insurance

A. Prior to execution of the Contract, the Contractor shall file with the County evidence of insurance and endorsements from the insurer(s) certifying to the coverage of all insurance required herein. All evidence of insurance shall be certified by a properly authorized officer, agent, general agent or qualified

representative of the insurer(s) and shall certify the name of the insured, the type and amount of insurance, the location and operations to which the insurance applies, the expiration date, and that the County received notice at least forty-five (45) Days prior to the effective date of any cancellation, lapse or material change in the policy.

B. The Contractor shall, upon demand of the County, deliver to the County all such policy of insurance, and all endorsements and riders, and the receipts for payment of premiums thereon.

C. Failure to Provide such insurance in a timeframe acceptable to the County shall enable the County to suspend or terminate the Contractor's Work hereunder in accordance with Contract provisions regarding "Termination for Convenience/Default/Non-appropriation." Suspension or termination of this Contract shall not relieve the Contractor from its insurance obligations hereunder.

PART 2 - Insurance Requirements

A. The Contractor shall obtain and maintain the minimum insurance set forth below.

By requiring such minimum insurance, the County shall not be deemed or construed to have assessed the risks that may be applicable to the Contractor under this Contract. The Contractor shall assess its own risks and, if it deems appropriate and/or prudent, maintain greater limits and/or broader coverage.

Nothing contained within these insurance requirements shall be deemed to limit the scope, application and/or limits of the coverage afforded, which coverage shall apply to each insured to the full extent provided by the terms and conditions of the policy(s). Nothing contained with this provision shall affect and/or alter the application of any other provision contained with this Contract.

For all coverages:

Each insurance policy shall be written on an “occurrence” form; excepting that insurance for professional liability. Errors and omissions when required, may be acceptable on a “claims made” form.

If coverage is approved and purchased on a “Claims Made” basis, the contractor warrants continuation of coverage, either through policy renewals or the purchase of an extended discovery period, if such extended coverage is available, for not less than three (3) years from the date of completion of the Work that is the subject of this Contract.

B. Minimum Scope of Insurance

Coverage shall be at least as broad as:

1. General Liability

   Insurance Services Office form number (CG 00 01 Ed. 11-88) covering COMMERCIAL GENERAL LIABILITY.

2. Automobile Liability

   Insurance Service form number (CA 00 01 Ed. 12-90) covering BUSINESS AUTO COVERAGE, symbol 1 “any auto”; or the combination of symbols 2, 8 and 9.

3. Professional Liability

   Professional Liability, Errors and Omissions coverage.

   In the event that Services pursuant to this Contract either directly or indirectly involve or require professional Services, Professional Liability, Errors and Omissions coverage shall be Provided.

4. Workers’ Compensation

   Workers’ Compensation coverage, as required by the Industrial Insurance Act of the State of Washington, as well as any similar coverage required for this Work by applicable federal or “Other States” State Law.

5. Employers Liability or “Stop Gap”:

   The protection Provided by the Workers Compensation Policy Part 2 (Employers Liability) or, in states with monopolistic state funds, the protection Provided by the “Stop Gap” endorsement to the General Liability policy.

C. Minimum Limits of Insurance

The Contractor shall maintain limits no less than, for:

1. General Liability: $1,000,000 combined single limit per occurrence for bodily injury, Personal injury and property damage, and for those policies with aggregate limits, a $2,000,000 aggregate limit.
2. Professional Liability, Errors and Omissions: $1,000,000 per Claim and in Aggregate.
3. Workers’ Compensation: Statutory requirements of the state of residency.
4. Employers Liability Stop Gap: $1,000,000.

D. Deductibles and Self-Insured Retentions

Any deductibles or self-insured retentions shall be declared to, and approved by, the County. The deductible and/or self-insured retention of the policies shall not limit or apply to the Contractor’s liability to the County and shall be the sole responsibility of the Contractor.

E. Other Insurance Provisions

The insurance policies required in this Contract are to contain, or be endorsed to contain the following provisions:

1. Liability Policies:

   The County, its officers, officials, employees and agents are to be covered as additional insureds as respects liability arising out of activities performed by or on behalf of the Contractor in connection with this Contract. Use the above exact language on the Endorsement Form.

   To the extent of the Contractor’s negligence, the Contractor’s insurance coverage shall be primary insurance as respects the County, its officers, officials, employees and agents. Any insurance and/or self-insurance maintained by the County, its officers, officials, employees or agents shall not contribute with the insurance or benefit the contractor in any way.

   The Contractor’s insurance shall apply separately to each insured against whom a claim is made and/or lawsuit is brought, except with respect to the limits of the insurer’s liability.

F. Acceptability of Insurers

Unless otherwise approved by the County:

Insurance is to be placed with insurers with a Bests’ rating of no less than A:VIII, or, if not rated with Bests’, with minimum surpluses the equivalent of Bests’ surplus size VIII.

If at any time one of the foregoing policies shall be or become unsatisfactory to the County, as to form or substance, or if a company issuing any such policy shall be or become unsatisfactory to the County, the Contractor shall, upon notice to that effect from the County, promptly obtain a new policy, and shall submit the same to the County, with the appropriate certificates and endorsements, for approval.

G. Subcontractors

The Contractor shall include all Subcontractors as insureds under its policies, or shall furnish separate certificates of insurance and policy endorsements for each Subcontractor. *Insurance coverages provided by Subcontractors as evidence of compliance with the insurance requirements of this Contract shall be subject to all of the requirements stated herein.*

H. Work Site Safety

The Contractor shall have the "right to control" and bear the sole responsibility for the job site conditions, and job site safety. The Contractor shall comply with all applicable Federal, State and Local safety regulations governing the job site, employees and Subcontractors. The Contractor shall be responsible for the Subcontractor's compliance with these provisions.

I. Endorsements

Endorsement must be included with insurance form, i.e. standard industry forms: "2010 111" or "GC 76 80 10 00. *The County requires this Endorsement to complete the Contract.*

SECTION VI – CONTRACTOR RESPONSIBLITIES

PART 1 - Implementation

System configuration and prototyping is the primary responsibility of the Contractor. The core Software system shall be configured, prototyped, refined, tested, updated and documented by the Contractor. The County shall accept the system for roll out only after a successful user Acceptance test is performed.

The Contractor shall not be relieved of its obligation to Provide a completely integrated system if the County creates interface programs.

PART 2 - Contractor Responsibilities

The Contractor shall be responsible for performing the Work described in the Scope of Work. Each written deliverable shall require an acceptable preliminary draft to precede Acceptance of deliverable and work completion.

SECTION VII – REQUIRED FORMS

The following completed forms will be required from the selected contractor, prior to contract award:

A. King County Personnel Inventory Report
B. Affidavit and Certificate of Compliance with King County Code 12.16
C. Statement of Compliance - Union or Employee Referral Agency Statement (if applicable)
D. King County Code 3.04.120 and Consultant Disclosure Form
E. 504/ADA Disability Assurance of Compliance and Corrective Action Plan
F. Equal Benefits Compliance Declaration Form

Copies of these forms are available by contacting the King County Procurement and Contract Services Division. They are available in paper form, or may be obtained via e-mail. Please contact Cathy Betts at 206-263-4267 or Roy L. Dodman at 206-263-4266, or by sending an e-mailed request to cathy.betts@metrokc.gov or roy.dodman@metrokc.gov.

SECTION VIII – BID PROPOSAL CHECKLIST

A. One (1) signed copy of entire RFP package.

B. One (1) signed copy of any Addendum that was issued. (If it has signature box at bottom of first page, it must be returned.)

C. One (1) unbound copy of proposal response marked "Original."

D. Three (3) paper copies of proposal response.

E. Two (2) CD-ROMs of the proposal response.

F. Complete the Bid Identification Label below (or reasonable facsimile) and attach it to a prominent place on the exterior of the submission envelope, box, etc.

URGENT – SEALED BID ENCLOSED
Do Not Delay – Deliver Immediately

URGENT

King County

King County Procurement & Contract Services Section
Exchange Building, 8th Floor
821 2nd Ave, EXC-FI-0862
Seattle, WA 98104-1598

Bid No. **RFP 102-05RLD**

Bid Title **Electronic Health Record Management System**

Due Date

Vendor

URGENT

Summary of Options

Option 1:
Vendor 1 has been in business for 27 years. Their EHR software supports 100 healthcare institutions in 30 states. They employ 150 individuals, and are willing and able to expand their product to include all of King County Public Health if given the opportunity. They have experience in this area, with approximately 40 Public Health clients. Vendor 1 also has Correctional Health experience, including the implementation of their product in the Salt Lake County Jail System in Utah, which recently won National Commission on Correctional Healthcare (NCCHC) Facility of the Year

Their product is a longitudinal patient-oriented medical record allowing universal use by all of the patient's healthcare providers. It can be used simultaneously and in real-time. The EHR includes the patient's entire medical history, and "intelligent documents" are automatically indexed to charts. It is built on the Oracle database engine and contains intelligent document imaging, drug databases, and inventory management, to name some features. Vendor 1 proposes an ASP Model, which would minimize costs due to the remote computing availability.

Option 2:
Vendor 2 is relatively new to the Correctional Health Care field. They were formed in January, 2004 to provide EMR software specifically to correctional facilities. They have one client, a correctional facility with 500 inmates in Kentucky, with approximately 30 users. Their parent company's Electronic Medical Records. They are a small, family-owned company with no proven track record in the correctional health field.

Vendor 2 uses Microsoft Windows-based technology and includes such features as photograph display and sound file capture. However, the vendor does not use an ASP Model, which would require Public Health to provide infrastructure support and day-to-day technical management of the system.

Option 3:
Vendor 3 is a privately held corporation that has been providing services to correctional institutions for over 25 years. Their Correctional Health EHR product was developed just over two years ago, although they have a solid customer base in the Corrections Management Software field. Baltimore (MD) and Mecklenberg (NC) Counties are their two EHR clients. These sites have installed and are operating with the software that is proposed for use within King County Jail Health Services.

Vendor 3 runs on Oracle On Demand services operated by Oracle. Each patient has a longitudinal healthcare record containing all health information from both current and previous periods of incarceration, with instant access available to all relevant healthcare staff. They have expressed their interest in expanding to King County Public Health if given the opportunity. This vendor proposes an EHR that runs on an ASP Model, a remote computing option that would minimize costs.

Option 4:
Vendor 4 is privately owned, with 1 previous correctional health client, a sheriff's office in the same state as their headquarters. They have more than 25 years of selling neurodiagnostic equipment. Company 4 proposes an unproven and untested product, based on a Microsoft Access Database.

Technical Assessment First Level Review

Participants:
Patty Schwendeman, MIS Manager
Brent Veenstra, IT Information Systems and Project Services Manager
Lisa Hillman, IT Network and Infrastructure Manager

Objective:
The objective of the technical assessment was to conduct a high level technical review for the purpose of evaluating the technical architecture proposed by the four vendors in response to the Request for Proposal (RFP) for an Electronic Health Record. This review also identified whether their proposed solution met the County and Public Health technical standards. For those areas where the vendor either did not respond, or did not address the question completely, Public Health identified additional information the vendor needed to supply before further assessment could be conducted.

Methods:
Each of the four options was evaluated by the Public Health Technology Team to be technically acceptable or not. "Yes" means the technical architecture matches King County Public Health's IT Standards, as defined in the RFP. "Partial" means the technical architecture does not match Public Health's IT ideal, but may be an acceptable technical equivalent upon further analysis. "No" means the technical architecture does not meet the minimum technical standards but may be an acceptable technical equivalent upon further analysis, and "Fatal Flaw" means the technical architecture has a serious problem that is un-resolvable. A flaw of this caliber would eliminate the option as a potential vendor.

Results:
Based on this first level analysis, Options 1, 2, and 3 were deemed technically acceptable, while Option 4 was deemed technically unacceptable, due to a fatal flaw in the underlying architecture of the system proposed by the vendor. In this case, the use of a Microsoft Access™ database was considered unacceptable because it does not meet HIPAA Security requirements. This technical review was discontinued at this point.

Discussion/Analysis:
One important aspect of this review was to determine the type of technical model used by the vendor, and the strengths and weaknesses inherent within. Option 1 and Option 3 run on an Application Service Provider (ASP) Model, or remotely hosted model EHR. The ASP model requires fewer hardware components, does not require an internal IT staff with unique skills to support it, therefore is more cost effective, and most importantly the expertise for maintenance, operations and disaster recovery is the responsibility of the vendor. Additionally, with an ASP Model, costs can be contained through reduced on-site visits and the lack of need to hire additional IT resources with unique skills and expertise in EHR systems, to support the day-to-day technical management of the system. This model is consistent with the model used by Public Health for its patient billing system.

Recommendations:
After this high level technical review and confirmation from Vendor 4 regarding the use of an Access™ database, it was determined by the EHR Project Team and Public Health

Technical Assessment First Level Review

MIS to recommend the elimination of Option 4 due to the insufficiency of the technical architecture. However, the expert teams made the decision to move forward with additional questions for the other 3 options, in order to gain a more in-depth understanding of the vendor's technical architecture.

EHR Vendor - Preliminary Technical Assessment - High Level

Feb. 2, 2005

	Vendors			
Technical Architecture	**Option 1**	**Option 2**	**Option 3**	**Option 4**
ASP (RCO) Available	Yes	No	Yes	Hybrid Model
PH Server & Desktop Std:				
Meet PH Server Stds.	Yes	Yes	Yes	Yes
Meet PH Desktop Stds.	Yes	Yes	Yes	Yes
App. Run at User Level	Not Answered	Not Answered	Not answered but implied yes	Not Answered
Peripheral Arch. Stds:				
Printers	Yes	Yes	Yes	Yes
Scanners	Yes	Yes	Yes	
Fax	Partial	Partial	N/A	Partial
Image Data Storage	Partial	Partial	Partial	
MultiMedia/Video	Partial	Partial	Partial	
Dictation/Transcription	Yes	N/A	N/A	Yes
Bar Coding	Partial	Partial	Yes	No
Web Arch. Stds:				
Web-Based Application	Partial	N/A	Yes	Not Answered
Network Arch. Stds:				
Meet PH Network Stds:	Yes	Yes	Yes	No
Client/Server Architecture	Yes	Yes	Yes	
Application Arch. Stds:				
Multi-Tier Application	Yes	Yes	Yes	Unknown
.NET Based Application	No	No	No	Unknown
Third Party SW Meet Stds.	Unknown	Unknown	Unknown	Unknown
Meet Application Security	Yes	Yes	Yes	Yes
DataBase Arch. Stds:				
Access Based				Yes - Fatal Flaw
SQL Based		Yes		
Oracle Based	Yes		Yes	
Other DB Based				Unknown
Data Warehouse Available	Yes	No	Yes	No
Interface Engine:				
Meet PH Stds	Partial	Partial	Partial	
Meet Performance Stds	Partial	Partial	Partial	
Meet Data Capture Stds	Partial	Partial	Partial	
Meet Data Manipulation Stds	Partial	Partial	Partial	
Meet Data Transmission Stds	Partial	Partial	Partial	
Meet Perf. Monitoring Stds	Partial	Partial	Partial	
Ability to build interfaces	Partial	Partial	Partial	
Overall EHR System Perf.	Partial	Partial	Partial	

Response to Additional Technical Questions from King County

Technical Questions Asked of the Four Vendor Options

Objective:
As part of the first level assessment of the technical architecture of each of the 4 potential vendors by King County Public Health's IT experts, it was necessary for Public Health IT and the EHR Project Team to gain a more complete understanding of the vendors' technical architecture. To do this, additional questions were asked of each of the vendors.

Methods:
King County Procurement Services notified each of the 4 vendors that they would be receiving additional questions via email and land mail. The vendors responded to these questions via email, providing JHS and Public Health MIS with the more specific, in-depth information necessary to complete the first level review.

Results:
A much more thorough understanding of each of the vendors' capabilities and limitations came about from this question and answer session, enabling JHS and MIS to further assess the strengths and weaknesses inherent in each system and understand how each system would operate within the jail.

Discussion/Analysis:
Each of the technical questions was answered quickly and thoroughly, although at this point the understanding of the technology is limited by the fact that it has not yet been seen in action. Further analysis should be conducted before the proposed technology can be endorsed by Public Health MIS.

Recommendations:
At this point, Public Health's knowledge of the technical architecture of each option is simply an educated understanding. To resolve this deficiency, in-depth analysis will be conducted over the next several months. The EHR Project Team plans to conduct site visits at a client site and the vendor's corporate headquarters/data center to ensure the system is performing in a "real-life" setting.

Response to Additional Technical Questions from King County

Option 1

Answe**rs to Additional Technical Questions from King County/Seattle RFP# 102-05RLD**

1) Is and updated version of [redacted]? Or what is the relationship between the two products?
and are the same software. was the original name of the product. We could not secure a trade mark on the name , so we recently changed the name back to . holds a trade mark on the name .

2) Do you have an integrated Pharmacy module or to create an integrated system would we have to interface between order entry and our current Pharmacy system? If the latter, have you have you built these interfaces with another client? Who?
The MAR/Pharmacy module we offer is being used by other correctional facilities, but we are not sure of the detailed requirements of King County and their current Pharmacy operation. We suggest a gap analysis between our offering and the current system. To do this, we will need King County to send us the specs on the current system (FSI).

3) What version of the Oracle Client is required for the desktop? Oracle 10g (10.1.0).
There is no cost for the Oracle client.

4) How often is the Oracle client updated? It is rare for a client upgrade to be needed.
Any time the Oracle Server Version is upgraded and it is not compatible with the Client version, an upgrade is required. We install Version 10g initially, and the Oracle Client s/w is usually compatible for a long time with the future releases of the database. Oracle does a good job of keeping backwards compatibility. We may also require an update of the Oracle Client if we found a bug and a patch is required to fix the Oracle Client related issue

5) Can it co-exist with SQL client? Oracle uses the OCI interface to secure a connection to the database. Since Microsoft SQL uses a different mechanism, it is reasonable to assume there would be no issues. However, we will test this in our lab to confirm.

6) Is PC Anywhere required at a workstation level? Yes , this is desirable for the Customer support technician to log in to the PC and trouble shoot and assist the users. However, open source alternatives like VNC can also be used.

7) How often is the fat client updated? Versions are generally updated once every 6-12 months or so depending upon the release schedule. The application also has a feature to receive maintenance patches through an update button with in the application. Maintenance patches will be distributed to the Client's update Server and all PCs running can click on the Update button to receive these updates automatically. We give our customers an opportunity to test a Beta version of the update before it is distributed. We recommend creating a test facility for you to test these updates in before general release. The System Administrators at your location and at your convenience and choice will make general releases available to all PCs.
is a self-updating application. All update processes are controlled from the database and the Update Server (which is a local Image Server)

8) How many servers are required? Hardware equipment such as a router, cache engine, etc? If so, what is the recommended model and cost? For a customer using the ASP model, the only required servers are Image Servers, and we recommend 1 for each location. If a customer is going to scan X-Rays, they may consider a separate image server for that function. See the attached document for specs on the server. A Report Server was also discussed as a means to keep the main server from being burdened

Response to Additional Technical Questions from King County

running administrative reports. This is entirely feasible, but would be an additional cost. The user could use Crystal Reports or a similar tool to do any ad-hoc custom queries. A training server is usually not necessary, as the training facility may reside on the same server as the Production database.

9) Is printing workstation based or otherwise? Our current model is Netware. Network based. All printers are networked printers.

10) Apache server running on Linux/Unix or running on NT 4.0 system, Windows 2003? Windows 2003 for the image Servers.

11) Is Apache the only solution or is IIS an alternative? Currently supported on Apache, but in the past we have used IIS . is capable of making it work on IIS.

12) Describe the performance "hit" with 10Mbps speed. How much degradation is noticeable to the client/user? And to the server? The answer to this is really dependant on the current load on your network. If the network currently has a heavy workload performance may suffer. We can work with King County to recommend any needed remedies. We In general, this network speed is acceptable. does not consume a lot of network resources, and we have clinics connected via 384K and 512K circuits that have acceptable performance. Of course, if users start pushing large images across the WAN performance could be affected. That's why we like to place a local image server at each site.

13) We need a more detailed drawing, that includes where the components physically reside from page Attachment E, page 7.
We will provide this under separate cover.

14) Elaborate on the interfaces proposed are they custom developed? Yes, however we have done quite a number of interfaces to foreign systems using HL7 medical and non-HL7 non- medical standards; and also with interface engines like Cloverleaf. With very few exceptions, interfaces to these types of systems always require some degree of customization.

15) Is all programming of Cloverleaf and eGate all compiled, supported and delivered by ? Are they located locally with the customer or off site We do not usually need eGate or Cloverleaf. However we have used Cloverleaf in the past and are familiar with interface engines. If the customer has a need for this type of technology, all code will be programmed and supported through our maintenance agreement from Nashville. Code resides in a script format on the Cloverleaf Server.

16) Describe data communication proposed between the hosted site and the KC jail locations. We proposed a single T-1 from Seattle to Nashville. Communications between sites, should they not currently exist, would probably be best to be T-1s. Some redundancy in these circuits is recommended.

17) Additional Question1: Is the cost of the proposal accurate? The annual cost for listed in the RFP is accurate. The annual fee is billed based on the execution of the contract, and is due over a 12 month period. Those payment terms can be monthly, quarterly, semi-annually, or annually. We will work with King County to find the best payment option to accommodate your cash flow requirements.

Response to Additional Technical Questions from King County

18) Additional Question 2: What are the requirements for the system from King County? We usually recommend 2 to 3 System Administrators, as we discussed, and will be adequate to support the system. These individuals control the setup of the system and administer security. We recommend that you also have Super Users from various clinical disciplines who serve as educators, mentors and monitors during the daily use of the system. We welcome feedback from all of these resources to help us improve the functionality and workflow of the system.

19) In addition, the County asks that you address these additional questions regarding your proposal:

1) Does your application run at XP 'user" level? Runs on user level.
2) Does your application run at XP - SP 2 level? Run on XP - SP2.
3) Does your application run with Office 2003 (instead of Office XP). Yes .
4) What software is required on the PC? We're attaching a document describing a standard PC. In general, Windows 2000/XP, , Oracle client, a remote client (PCAnywhere, VNC), Acrobat Reader, and (optional) Microsoft Office 2000 or higher.
5) Is your software solution compatible with MacAfee Antivirus? Yes
6) Please provide a desktop architecture (from wall to desktop). See attached document
7) Does the EHR application support HP printer models? Yes, that is our standard.
8) What is the recommended WAN and LAN speed? Is 100Mbps desktop to router backbone adequate? Yes, this is our recommendation.
9) For servers located at KC, who is responsible for all server maintenance including backup services and disaster recovery?
We recommend a periodic backup of Image Servers. Images are also migrated to Nashville at night so a duplicate copy always exists.
10) Interface à Is the full suite of HL7 message types supported? Yes, for all the interfaces referenced in the RFP.
11) Can you do a SOAP request? Currently all interfaces use a TCP or ftp . We do not have any SOAP interfaces
12) Who provides monitoring of the interface engine and ensuring they are online?
13) Can data be passed from your interface engine to non-king county health service companies that we contract with? Yes. We have done interfaces with offender Management programs and EDI interfaces to suppliers and other vendors.
14) How are HIPAA auditing logs provided? What format? There is a Patient User Access Report which can be run and supplied in Excel format. logs most activity in the system by user and which screens/modules they accessed with a date/time stamp and from which IP address.
15) Do you have customers that currently interface with Siemens's Openlink? No
16) Have you done any interfacing to the Siemens's billing product? No. However we have interfaced with QMS Focus , IDX Groupcast , ProMed, and CMS and IMPAC Billing Systems . is capable of interfacing to any billing system that can accept HL7 DFT message types. Our interface experience goes beyond billing systems to include labs, EDI, pharmacy and other departmental systems.
17) Does the EHR application support Handhelds, specifically Dell Axim and Palm Tungsten (these are the two current supported models) No, However there

Response to Additional Technical Questions from King County

is a prescription system that is available on Sprint Treo Phones running the Palm OS.

18) Is 80GB hard drive and 512MB of RAM required or recommended? Recommended. 40GIG and 256K are required.

19) What is your release schedule? We usually release patches quarterly unless it is needed for an immediate bug fix. The impact is minimal because us self-updating. The servers are rarely affected by any changes, as most can be dynamically applied to the database. We have an excellent uptime record.

a. What impacts the desktop?
b. What impacts the server?

Response to Additional Technical Questions from King County

Option 2

1) It appears the system is "rigid" with limited or no "customizing" of screens and assessment tools. Is this correct?

This could not be farther from the truth. Our system is extremely flexible and fully customizable. We have user-defined records which allow the end user to define any fields required. We have a Chart interface that works much like the paper chart many are accustomed to which can be customized to mimic your current charts. The chart interface goes even further with “smart tabs” that allow the administrator to customize the chart tabs for individual inmates based on the individual inmates health problems. For example one inmate who has dyslipidemia may have a lipids report tab, while an inmate with diabetes may have a diabetes care tab. We do not try to fit a square peg in a round hole. Your facility though regulated by many of the same entities as other facilities of the same type will still have its own uniqueness. We do not try to conform your facility to our software but rather our software conforms to your needs.

3) How is Altris used at the desktop level?

Altiris is only used at the desktop level if is managing the desktops and not just the servers. In that case Altiris is used to distribute software, recover corrupted PCs, and for remote control for supporting users.

4) How is Altris used at the server level?

Altiris is used at the server level for distributing software, recovering a corrupted server, and some monitoring functions.

5) If Altris is required to run at the desktop level for remote control is this required or an optional solution?

This is optional.

6) Define the role of RDP at the desktop level? Is this an alternative to Citrix?

RDP is used to access the Terminal Servers where the client is installed. In some environments Citrix may also be required but this is not typically the case.

7) How will the servers in KC be monitored? Is a point to point connection required?

The servers are monitored through several mechanisms.

1. All Dell servers we support include a Dell Remote Access Card (DRAC). This card provides hardware monitoring independent of the operating system. Not only can this card email or page us with hardware health information, but can provide this information even if the server has crashed. This greatly aids in troubleshooting the reason for a failure. This card also provides

hardware console redirection. This allows access to the console even in a pre-boot environment and can be used for everything from general access to the server console to rebuilding the server remotely.

2. All Dell servers also include Dell OpenManage. This software application provides redundant monitoring of hardware health and some aspects of the operating system. This application can also email and page us with health information.

3. Microsoft provides MS Health Monitoring which provides health status information for the operating system. This system can also email us in the event of issues with Windows 2003 server.

4. One function we use Altiris Deployment Solution for is to send daily reports on backup operations (can be more often if needed). These reports tell us not only that the backup executed, but give a verified summary of the contents of the backup and metrics to show remaining capacity and backup execution time.

5. We also use GFI Network Monitor from our office to monitor the up/down status of the servers. This application sends heartbeats to the servers to ensure that they are running. This system will page all hardware support personnel in the event of a server failure.

Many of the above systems overlap to provide redundant capabilities to ensure that systems are running optimally and that appropriate personnel are notified with relevant data in the event of a server failure.

Response to Additional Technical Questions from King County

Option 3

1) Will [redacted] be prepared for the new version of Internet Explorer expected to be released soon from Microsoft?

Yes, [redacted] is fully prepared for this expected upgrade.

2) Is there a need for any PH onsite servers? Hardware equipment such as a router, cache engine, etc? If so, what is the recommended model and cost?

a) Hardware such as Routers and Switches are purely Network Architecture. The hosted [redacted] does not require any specific network architecture. However it is recommended to use IP-based networking.

b) Hardware such as a cache engine is not required because [redacted] Oracle Forms run through a JInitiator plugin. JInitiator is the user interface on the client end that interprets the form instance on the application server end.

3) Is printing workstation based or otherwise? Our current model is NetWare.

Printing functionality incorporates the following:

a) Workstation based - Generating a report (pdf) to the client. Selecting a locally defined printer, and then printing.

b) Network based – [redacted] allows users to schedule reports to a network-defined printer whether or not it is in your printer list. These printers are defined in the [redacted] Printer Definition list. The job is independent of the client that scheduled it. It will generate a specific report at a designated time to a designated printer.

4) Do you utilize Java in web programming? If so, what version?

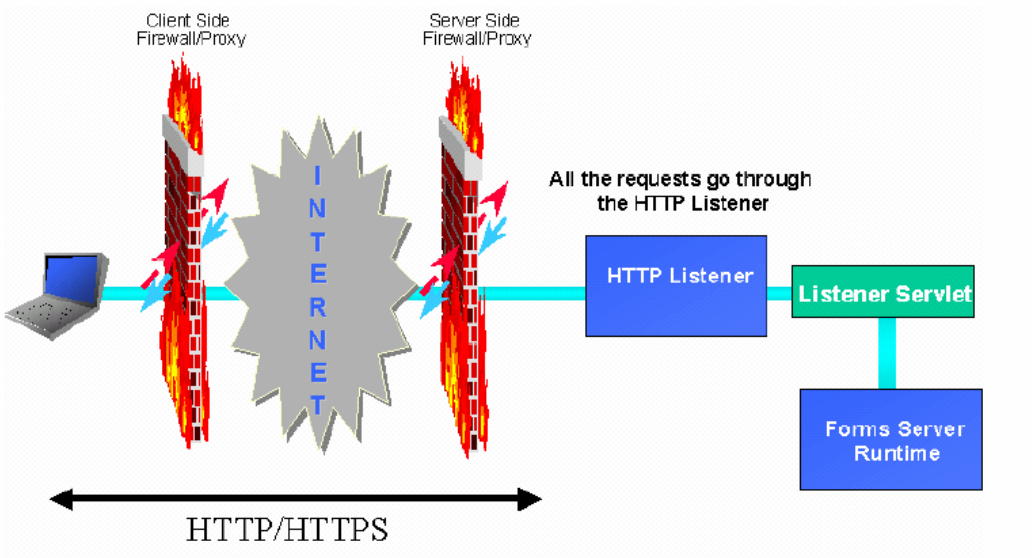
Most of the application functionality is built using Oracle Forms and deployed on the web environment using Java 1.3. The next release of [redacted] will support Java 1.4.2

5) Please describe data communication proposed between the hosted site and the KC jail locations

When a user logs in to the application for the very first time, Oracle Jinitiator – an Oracle java plug-in -- is downloaded to the client. Subsequent logins will not require Jinitiator

downloads and only data and java requests will be passed between the client workstation and the hosted site.

The compressed Oracle JInitiator distribution is approximately 8MB in size and expands to approximately 10MB in size once installed on the client. It uses RSA RC4 40-bit encryption. The communication supports HTTP and HTTPS



Because the client browser always communicates with the web server using HTTP or HTTPS (there is no direct connection between the client and the Forms Server Runtime process), this architecture supports any firewall or proxy that can work with a standard servlet using servlet sessions.

This architecture allows you to use standard load balancing techniques, such as hardware based load balancing, reverse proxy, and standard Apache JServ load balancing.

Although the use of HTTP/1.1-compliant proxies provides better performance, this architecture works well with HTTP/1.0-compliant proxies, too.

In addition to working with Oracle JInitiator, this architecture supports the use of Internet Explorer 5.x with native Microsoft JVM for Internet deployment using HTTP and HTTPS connection modes.

Response to Additional Technical Questions from King County

Option 4

Question: Do you use Access? If not, please explain your database.

Answer:

Software Architecture

[redacted] uses one database for protected Patient information, and another set of databases for demographics, templates, user preferences, and so on. The operational goal was to allow full EMR operation with any computer either connected to or disconnected from the network. To implement this, [redacted] operates on a "distributed" database wherein both workstations and the office server(s) retain copies of all information which is synchronized at frequent intervals. If the workstation is offline, the data is saved and synchronization occurs when the computer is reconnected to the network. This provides robust and fault-tolerant operation. Patient data can be viewed or entered independent of (1) a local area network connection, (2) a dedicated server operating properly or (3) Internet access being operational. The result is a system that can be accessed in the medical clinic or in the pods, and whose nominal uptime is 100%. Each workstation is able to access critical patient information without interruption. This supports the ability to work online and offline, as may be needed for certain times such as distributing medications on the floor. The benefits are also shown in those times when a laptop is transported to the floor (offline) to access an inmate record during a medical emergency.

Database Architecture

The previous discussion on software architecture provides context into a discussion on database architecture. On a workstation, there are certain areas of data, including demographics, resources, templates, and other non-medical data that are natively stored in a Jet database, which is commonly read by the Microsoft Access software.

All patient medical information is stored separately in a Hedgehog database, which is a secure database designed specifically to house sensitive medical information. This database provides the following features:

- Full-time encryption using the Blowfish algorithm for all medical data.
- Full-time compression.
- Patient-centric database organization.
- Append-only data modification.
- Relatively compact data storage, although with multi-gigabyte drives this is not a major concern
- Full audit trails on all chart additions, chart access, chart changes, and orders.
- Continuous backup by virtue of being duplicated within your facility.
- Continuous backup to [redacted]'s regional secure server site. [redacted] also performs a daily tape backup on each regional server.

Non-medical data and resource information, stored in about 30 Jet database files, is combined with the encrypted medical data (Hedgehog database) upon query to dynamically produce the completed medical record.

Response to Additional Technical Questions from King County

Access, the Microsoft application, is not used by [redacted], and need not be present on any workstations or servers.

On the server side, data is stored using the Jet database engine for non-medical data, and Hedgehog is used for medical data. Typically, customers choose to connect to Access files for the database application, because there are no performance considerations to justify using anything else. The database can and has been used in conjunction with Microsoft SQL server, and should run with other ODBC compliant databases, although this has not been tested.

For reporting purposes, we have implemented a data-mining tool for the Hedgehog database that enables extraction of medical data into an .mdb file. We provide a number of useful reports, but the use of an .mdb allows a knowledgeable user to generate arbitrary queries and reports using Access, Excel, Crystal, or other applications.

We recently created the following report for a large medical clinic that discovered one of their new employees had not been recording lot numbers for flu shots as required by law.

- The clinic has 9 physician providers, 26 workstations and two locations.
- There are about 12,000 charts.
- The data-miner was run on all charts in the system spanning a two month period.
- The resulting database was 31.8 MB
- There were 55,494 chart items from 3566 patients seen during the interval.

A query was written to extract all patients under 18 seen by 'provider X' who had given flu shots (based on either CPT or ICD9 codes) and copied to an Excel spreadsheet. The query resulted in 233 unique patients who needed to have lot numbers added or verified. In less than 1 hour the query was written and all data extracted. It saved the clinic hours and hours of searching through all the chart entries for a 2 month period of time looking for this omission.

Summary

[redacted] was built on a platform specifically designed for medical records, which incorporates a higher level of security at less cost to the customer, and allows for the greatest amount of uptime compared to other models. We would be happy to provide any clarifying details as necessary.

MAU Model conducted on EHR Options

Participants:
Bette Pine, JHS Manager
Judy MacCully, JHS Operations Manager
Ben Sanders, JHS Medical Director
Lee Pollock, JHS EHR Project Manager
Steven Kleyn, JHS EHR Research Assistant

Objective:
The objective of the Multi-Attribute Utility (MAU) Model is to provide a means for the EHR Implementation Team to understand the capabilities and weaknesses of each of the system options and express this understanding to the Stakeholders who will then make recommendations regarding each of the options.

Methods:
Each vendor self-assessed their compliance with the standards laid out in the Request for Proposal. Vendors were able to score themselves in 4 possible ways. If a "2" was self-assessed, the vendor claimed full compliance with the particular standard and current availability. Two different "1" options were possible: one indicating current availability but partial compliance, and one noting availability in July, 2005. A self-rating of "0" indicated neither current availability nor plan for implementation. When a "1" or "0" was scored, the vendors were asked to provide explanatory comments in the notes section. After the responses to the RFP were received from the vendors in late January, 2005, the self-assessed scores were put into a spreadsheet known as the MAU Model. This model is based on the specification of weighted criteria, and each alternative solution is scored on all of the criteria. Within the MAU Model, there were 474 possible business requirement points. A threshold level of 80% of the high score was set to exclude any options that stood out as inherently weaker than the others based on their self-score.

Results:
After the self-assessed scores were plugged into the MAU Model, each of the options was given a total score. Option 1 scored 395 total points, giving them 83.33% of the possible points. Thus, they reached the minimum 80% threshold. Option 2 also reached the minimum threshold, receiving a self-assessment score of 423, or 89.24% of the total. Option 3 received a significantly lower score than the first two options. Their score of 292, or 61.60%, was well below the minimum benchmark of 80%.

Discussion/Analysis:
Option 1, although they did not score the highest of the 3 vendors, was very thorough in their scoring. They followed directions and offered detailed comments regarding their product capability. Option 2 received the highest self-assessment score, but offered only very limited explanations as to the rationale behind their scoring. There were no comments given, leaving many ambiguities. Although Option 3 was well below the minimum threshold, after follow-up conversation it was determined by the JHS

Implementation Team to not eliminate them because much of their software will be available in the 2nd quarter of 2005. Option 3's April, 2005 module release will include Health Care Co-payments, Medication Administration Record, Protocols, File Importing, and Clinician Decision Support System. Furthermore, Dental Encounters and Problem List modules will be released in May, 2005.

Conclusion:

The JHS Implementation Team agreed to not eliminate any of the 3 options before the Stakeholders Meeting on February 18, 2005. At this meeting, each of the three vendors was thoroughly evaluated and a SWOT Analysis and discussion of viability took place.

TOTAL POINTS by BUSINESS FUNCTION

FUNCTION		PERFECT SCORE	THRESHOLD	Option 1	Option 2	Option 3
CLINICAL OPERATIONS						
Pharmacy		38	30	25	30	21
Intake/Transfer/Release		22	18	22	19	19
Problem List		10	8	9	8	4
Encounters		40	32	35	36	27
Treatment Plan		32	26	30	31	16
Notes		20	16	17	20	11
Flow Sheets		2	2	2	2	1
Orders		194	155	168	179	119
Consents		10	8	10	10	10
Patient Education		4	3	4	4	3
Referrals		16	13	11	15	10
Admission, Discharge,Transfer		8	6	7	7	5
Population Based Clinical Areas		4	3	3	4	3
TOTAL		**400**	**320**	**343**	**365**	**249**
	80/20 rule		**80.00%**	**85.75%**	**91.25%**	**62.25%**
CLINICAL SPECIALTIES						
Psychiatric		2	2	0	0	0
Dental		8	6	6	6	3
Obstetrics		8	6	8	8	4
Communicable Disease		12	10	9	12	8
Family Planning		14	11	10	12	9
TOTAL		**44**	**35**	**33**	**38**	**24**
	80/20 rule		**80.00%**	**75.00%**	**86.36%**	**54.55%**
GRAND TOTAL		**444**	**355**	**376**	**403**	**273**
			80.00%	**84.68%**	**90.77%**	**61.49%**

Business Requirements Scoring

		Option 1	Option 2	Option 3
CLINICAL OPERATIONS				
INTAKE, TRANSFER, RELEASE				
1	Ability to, in real-time, interface with DAJD system to capture Initial Receiving data	2	1	2
2	Assign Medical Record Number (MR#) for first time offenders	2	2	1
3	Ability to capture, store, modify Initial Receiving Assessment during intake of offenders	2	2	1
4	Based on positive Initial Receiving Assessment responses, application will automatically trigger events	2	2	2
5	Ability to interface with Signature system to assure only one MR# has been assigned to the same individual	2	2	2
6	Ability to provide or interface with a symptom-based decision support module for medical triage to assist clinical staff with pathways/guid	2	2	1
7	Capacity to capture request for well care visits (well baby, well adult)	2	2	2
8	Capacity to interface or link with King County Mental Health system	2	1	2
9	Ability to interface or link with Washington State Child Profile system for immunizations history and tracking	2	1	2
10	Ability to transfer data to and receive data from Public Health Parent Child Health Track system for field based home visits	2	2	2
11	Ability to produce copies of patient history forms or screens for patient self reporting of history in multiple languages	2	2	2
	INTAKE, TANSFER, RELEASE TOTAL POINTS	**22**	**19**	**19**
PROBLEM LIST				
1	System maintains a master file of problems	2	2	1
2	System maintains, at a minimum, the following problems	2	2	1
3	Ability to build a Problem List during intake and during stay of offenders	1	2	1
4	Allow authorized users to add problems to problem list	2	2	1
5	Ability to subcategorize problems by status: chronic, acute, recurrent, episodic, special needs	2		
	PROLEM LIST TOTAL POINTS	**9**	**8**	**4**
ENCOUNTER				
1	Ability to create and modify Assessments that contain items, both table driven (where applicable) and text that comply with Medical and M	2	2	2
2	Allow user to determine which relevant items collected at a prior point, either during referral, admission or a prior episode of care, can be c	2	2	1
3	Provide means to track medications ordered from physicians outside of system in format that matches internally ordered medications	2	2	1
4	Provide the ability to collect comprehensive Clinic Visit (Medical or Dental Diagnostic) information including	1	2	1
5	Provide the ability to collect comprehensive Mental Health Diagnostic information	1	1	1
6	Client Assessments can explicitly be associated to an episode of care	2	2	2
7	Client Assessments can implicitly be associated to an episode of care based on assessment date and episode begin/end dates	2	2	2
8	Assessments are integrated with the Health Treatment Planning and Notes module	2	2	1
9	Assessment results can automatically recommend a diagnosis	0	1	1
10	Provide Assessment graphing tool to measure results over time	1	2	2
11	Provide means to indicate persons or disciplines responsible for assessment and automatically e-mail notice of required assessment to pers	2	2	1
12	Provide ability for Assessments to be automatically and flexibly scheduled, to include+A35	2	2	1
13	Enable the design and implementation of custom Assessment tools as determined by JHS. Functionality to include the following	2	0	1
14	Provide ability to print patient educational materials associated with the encounter	2	2	1

Business Requirements Scoring

15	Provide ability to display and maintain Medical and Mental Health Assessment information	2	2	2
16	Provide ability to build (ideally supply) JHS specific Assessment templates	2	2	2
17	Capability to print patient education materials in multiple languages	2	2	2
18	Ability to maintain a list of all providers actively involved in treating the patient within the last 12 months	2	2	1
19	Ability to link together with each problem internal encounters where this problem was addressed, diagnostic tests ordered, external referral	2	2	1
20	Ability to provide screening tools and clinical risk assessment calculators for:	2	2	1
	ENCOUNTER TOTAL POINTS	**35**	**36**	**27**

TREATMENT PLANNING

1	System maintains a Multidisciplinary Treatment Plan Library with distinct sections that can be modified independently by authorized users	2	2	1
2	System can incorporate treatment plan standards individualized by system of care, program, team, or individual clinician	2	2	1
3	Based on the Provider Type, the preferred treatment plan library is presented to them	2	2	1
4	Selection of treatment plans is integrated with diagnosis	2	2	1
5	Create individual client treatment plan from the selected library	1	2	1
6	Provide mechanism for assigning responsibility for Treatment Plan section to specific staff or disciplines	2	2	1
7	Provide mechanism for assigning responsibility to update specific section of treatment plan	2	2	1
8	System keeps track of who is responsible for completing/updating which section of Treatment Plan and indicates date of completion or upd	2	2	1
9	When Treatment Plan elements are also gathered automatically from other modules of the system data are shared with Treatment Plan	2	2	1
10	System automatically notifies user when Treatment Plans requires review, as specified by JHS	2	2	1
11	Treatment Plan must include the following elements for viewing, printing, adding, or updating	1	1	1
12	System maintains a JHS defined table of offered interventions	2	2	1
13	System maintains, for each offered intervention, by program	2	2	1
14	Identified interventions results in the forwarding of the intervention to the identified responsible party	2	2	1
15	Display and print on demand updated treatment plan	2	2	1
16	Coordination interventions and their planning between independent systems of care and Departments	2	2	1
	TREATMENT PLANNING TOTAL POINTS	**30**	**31**	**16**

CLINICAL NOTES and DOCUMENTATION

1	System maintains different note categories	1	2	1
2	System maintains Summary Notes	2	2	1
3	System maintains Order-Related Notes	2	2	1
4	System maintains Incident Notes	2	2	1
5	System provides the capability to capture other types of Notes	2	2	1
6	Ability for disciplines to enter, correct, authenticate notes	1	2	1
7	Ability for disciplines to append authenticated notes	2	2	1
8	The system allows for specific views (i.e. role based displays) via a person's sign on code	1	2	1
9	Print on demand documentation for an individual client over a user-specified time period (e.g., today, week, and month)	2	2	2
10	Ability to provide language to satisfy Medicare requirements for precepting medical students/residents	2	2	1
	CLINICAL NOTES and DOCUMENTATION TOTAL POINTS	**17**	**20**	**11**

Business Requirements Scoring

FLOW SHEETS

1	Ability to display Flow Sheet data that contain items, both table driven (where applicable) and text that comply with Medical and Mental H	2	2	1
	FLOW SHEETS TOTAL POINTS	**2**	**2**	**1**

ORDERS and RESULTS REPORTING
ENTRY of ORDERS

1	Provide a clinically oriented multidisciplinary order entry tool that streamlines the order entry process with the treatment plan	2	2	1
2	Identify physician/provider initiating order, staff entering order, date, and time	2	2	2
3	Ability to enter Orders On-Line and Display or Send Real-time to All Departments	2	2	2
4	Allow selection of orders by service and sub-service (e.g., Administration, Intervention, Laboratory, Pharmacy, and Radiology)	2	2	1
5	Provide a menu display of orders and order panels	2	2	1
6	Provide a system of mnemonics for test ordering	0	2	0
7	Provide user-defined order sets and order panels with easy support for additions and deletions from these sets/panels	2	2	1
8	Provide selection of orders	2	2	1
9	Enable user to enter order priority	2	2	1
10	Allow authorized users to change Status	2	2	0
11	Allow user to designate start time and stop time for all timed and continuing orders. Authorized users must be able to override stop time fo	2	2	1
12	Provide ability for order to be marked as "expected to be renewed", with prompts to clinician to renew order at appropriate time	2	2	1
13	System has ability to "know" orders expected to be renewed should appear as medications that the inmate is "on", even between orders	2	2	1
14	Provide inmate schedules and department work lists based on orders placed	2	2	1
15	Allow entering of free text comments with order	2	1	2
16	Provide step-by-step ("Help") guide for Order Entry activities, returning the cursor to the place on the Order Entry screen at which the user	0	1	2
17	Display possible conflict of current order with previously entered orders including drug incompatibilities, based on user-specified criteria	1	1	1
18	Allow authorized individuals to override order conflicts, and maintain audit trail of these events	2	0	1
19	System automatically identifies and notifies user online	1	2	1
20	Upon attestation of medication order, create Medication Adjustment Note which indicates the order information and includes the reason fo	2	2	1
21	When a medication is ordered that requires associated blood work, system should prompt to automatically write necessary orders and make	2	2	1
22	Indicate verification status of each order including when order was countersigned per provider policy	2	2	1
23	Provide system acknowledgment of acceptance of order	2	2	1
24	Enable user to communicate routine, standing, and selective prior orders on day of client is booked into custody	2	2	1
25	Allow user to bypass menus when entering orders and directly key in desired order information	2	2	1
26	Provide online narrative description of the use of each test, procedure, or intervention as well as any ordering policies and protocols affecti	0	2	1
27	Identify and report specific procedures in the procedure master file which require verification prior to becoming active	0	2	1
28	Allow sensitive orderable items to be flagged as confidential	2	2	1
29	Permit inquiry into the exact status of all orders, by inmate (e.g., ordered, verified, canceled, preliminary report, or final report)	2	2	1
30	Ability to entry prescription refill authorizations	2	2	1
31	Ability to generate work or school notes	2	2	1
32	Ability to capture data and link with Dynacare/Labcorp system for lab orders	2	2	2

Business Requirements Scoring

	ENTRY of ORDERS TOTAL POINTS	**54**	**59**	**35**
EDITING of ORDERS				
1	Provide automatic edit of all orders for necessary data which must be included at time of entry (e.g., route, dosage, assessment, interactions	1	2	1
2	Display message identifying missing data in the order	2	2	2
3	Display of alert if order varies from guidelines and rules and/or presents safety issue	2	0	1
4	Ability to flag duplicate or conflicting orders	2	0	1
5	Provide order correction mechanism without requiring cancellation and re-entering of entire order, automatically recording date, time, and	2	2	1
6	Permit only authorized personnel to cancel orders and automatically notify ancillary area of cancellation	2	2	1
7	Allow for backdating of order times and dates if system has been unavailable. Maintain actual date and time when orders are entered	2	2	1
8	Require inmate identification in order (to avoid processing of order for inmate who is not in system)	2	2	1
9	Allow multiple methods of order entry	2	2	1
	EDITING of ORDERS TOTAL POINTS	**17**	**14**	**10**
VERIFICATION of ORDERS				
1	Prompt user for verification	1	2	1
2	Ability to limit use of abbreviations to those on a list approved by PH	1	0	2
	VERIFICATION of ORDERS TOTAL POINTS	**2**	**2**	**3**
TRANSMITTAL of ORDERS				
1	Orders tracked through processing (e.g. know when Pharmacy receives order and when it has filled Rx)	2	2	1
2	Completion of order documented	2	2	1
3	Alert or message generated if order is not followed through to completion (e.g. patient does not receive/pick-up Rx)	1	2	1
4	Order processing is based on efficient workflow (e.g. tasks sent to appropriate persons and all departments involved in completing the orde	2	2	1
5	Provides ability to trigger medical necessity criteria	2	2	1
6	Prompt is given for a diagnostic code when order is entered	2	2	1
7	Interfaces with business/financial accounting modules	2	2	1
8	Interfaces with LAB (DynaCare or LabCorps), Pharmacy (FSI), Radiology (Harborview) systems	1	1	2
9	Capability to "explode" orders, generating multiple orders from one request to all appropriate responsible parties	2	2	1
10	Capability to "explode" cancellations to appropriate providers when original order is canceled	2	2	1
11	Provide option of visual or auditory alarm which requires a response on receipt of STAT, ASAP, timed orders, or special instructions	0	2	1
12	Provide information online on status of a specific order being processed	2	2	1
13	Flag canceled or held orders with a visual or audible alarm. If order is not canceled at the provider location, also notify the provider	2	2	1
14	Flag any changed order with a visual or audible alarm in the ancillary area	0	2	1
15	Retain record of order cancellation to identify who ordered the cancellation and when it was issued	2	2	1
16	Provide an audit trail	2	2	2
17	Display and print on demand an accumulated list of orders for a client for a designated time period	2	2	1
18	Ability to automatically print requisitions and labels in area of required service upon order entry for today's tests and on appropriate day fo	2	2	1
19	Ability to automatically override print requisitions and labels into the area where the order was placed in the system instead of the client's	2	0	1
20	Flag STAT, ASAP, timed orders, or special instructions when the requisition prints	2	2	1

Business Requirements Scoring

21	Ability to flag or add prompts to follow-up and close	2	2	1
	TRNASMITTAL of ORDERS TOTAL POINTS	**36**	**39**	**23**
SCHEDULING of ORDERS				
1	Allow scheduling of one-time and continuing orders	2	2	2
2	Allow scheduling of a test (procedure) when ordering. Notify provider so time and date may be verified. Provide automatic feedback of v	2	2	1
3	Provide automatic scheduling of tests requiring more than one session for completion	2	2	1
4	Provide authorized individuals with ability to override scheduling constraints	2	2	2
	SCHEDULING of ORDERS TOTAL POINTS	**8**	**8**	**6**
CANCELLATION, RENEWAL, DISCONTINUANCE of ORDERS				
1	Allow online update, cancellation, renewal, reschedule, and discontinuation of order/test. If order/test IS canceled in error, there is a simpl	2	2	2
2	Automatically notify appropriate provider(s) online and optionally in print of change(s) in order	2	2	1
3	Notify physician/provider online and optionally in print of need for renewal before expiration of continuing order(s) per provider criteria	0	2	1
4	Provide for automatic cancellation of orders upon discharge, release, or death of an inmate	2	2	1
	CANCELLATION, RENEWAL, DISCONTINUANCE of ORDERS TOTAL POINTS	**6**	**8**	**5**
DISPLAY of ORDERS				
1	Clearly displayed (and printed, if needed) documentation of order	2	2	2
2	Allows multiple views of orders	1	2	1
3	Can be customized to meet JHS needs	2	2	1
4	Order search ability	2	2	1
5	Ability to generate outbound message to other systems when/where needed	2	2	2
6	Ability to perform multiple passes (attempts) for outbound message if acknowledgement not received	2	2	2
7	Ability to Lock Out Ordering (e.g. ARNP not able to order medications for himself)	2	2	1
	DISPLAY of ORDERS TOTAL POINTS	**13**	**14**	**10**
RETREIVAL of ORDERS				
1	Display and/or print multiple views of orders	2	2	2
2	Display and/or print list of orders received, completed, canceled, postponed, held, or unreported, in chronological sequence by provider	2	2	1
3	Display and/or print on demand status of order (e.g., routine, ASAP, STAT, scheduled including start time and intervals)	2	2	1
4	Display and/or print on demand orders for clients	2	2	1
	RETREIVAL of ORDERS TOTAL POINTS	**8**	**8**	**5**
RESULTS DISPLAY/REPORTING				
1	Ability to Display Results from All Departments (i.e. RAD, LAB, Rx, etc.)	2	2	2
2	Ability to Import all Results not Displayed within Application. Note: will require interfaces with MLAB system for PH laboratory and Dy	2	1	2
3	Clearly displayed (and printed, if needed) results	2	2	2
4	Allows multiple views of results	1	2	1
5	Clearly displayed origin for results (where they came from)	2	2	2
6	Date/time stamp for results	2	2	2
7	Results display can be configured by role, by specialty, by location, by date - down to individual level	2	2	1

Business Requirements Scoring

8	Results outside of normal values are noted through alerts (linked to CDS and CMV)	2	2	1
9	Results not viewed or associated with an action can result in an alert	2	2	1
10	Ability to search results	1	2	1
11	Ability to display interface data as needed (e.g. from other systems)	2	2	2
12	Action taken when viewing result followed – ability to link action to result by provider, patient, date, etc	0	2	1
13	Follow-up available for documentation	2	2	2
14	For test results, ability to display range of results in addition to normal/abnormal	2	2	2
	RESULTS DISPLAY/REPORTING of ORDERS TOTAL POINTS	**24**	**27**	**22**
	ORDERS and RESULTS REPORTING TOTAL POINTS	**168**	**179**	**119**
CONSENTS, RELEASE of INFORMATION REQUESTS, REFUSALS				
1	Ability to design and implement Consents, Release of Information Requests, Requests for Information, Health Treatment Refusals, Letters,	2	2	2
2	Ability to enter multiple electronic signatures via a variety of secure methods	2	2	2
3	Ability to capture/print Authorization For ROI And Disclosure Of Protected Health Information, including	2	2	2
4	Ability to capture/print Immunizations Screening Questions	2	2	2
5	Ability to capture/print Health Memo to Inmates	2	2	2
	CONSENTS, RELEASE of INFORMATION REQUESTS, REFUSALS TOTAL POINTS	**10**	**10**	**10**
PATIENT EDUCATION				
1	Ability to design and implement Patient Education material (text and pictures) as determined by JHS	2	2	2
2	Incorporates (i.e. ability to import educational materials from other sources) a library of educational material using industry standard techn	2	2	1
	PATIENT EDUCATION TOTAL POINTS	**4**	**4**	**3**
REFERRALS				
1	Ability to capture JHS internal program referrals	1	2	1
2	Ability to capture external referrals	1	2	1
3	Ability to support WA State standardized referral format (CHITA)	2	1	1
4	Ability to close a referral	2	2	2
5	Ability to capture and access payor lists of referrals requiring prior authorization	2	2	1
6	Ability to create trend reports for reasons for referrals, referrals by providers, reasons for denials, etc	1	2	2
7	Ability to capture data on referrals to PH programs from other PH programs or from other entities and to track the status and disposition of	1	2	1
8	Ability to capture data and track referral status for Child and Adult Protective Services referrals	1	2	1
	REFERRALS TOTAL POINTS	**11**	**15**	**10**
ADMISSION, DISCHARGE, TRANSFER, REVERSAL				
1	Ability to capture, store, modify Admission information	2	2	1
2	Ability to capture, store, modify Discharge information	2	1	1
3	Ability to capture, store, modify Transfer information	1	2	1
4	Allow reversal by authorized user of an admission, discharge, or transfer with appropriate automatic adjustments to statistics and other rela	2	2	2
	ADMISSION, DISCHARGE, TRANSFER, REVERSAL TOTAL POINTS	**7**	**7**	**5**
POPULATION BASED CLINICAL AREAS (REGISTRIES)				

Business Requirements Scoring

1	Ability to manage POPULATION BASED CLINICAL AREAS (i.e. Registries)	1	2	1
2	Ability to support contact investigations for communicable disease populations	2	2	2
	POPULATION BASED CLINICAL AREASE (REGISTRIES) TOTAL POINTS	**3**	**4**	**3**
	CLINICAL OPERATIONS GRAND TOTAL POINTS	**318**	**335**	**228**

CLINICAL SPECIALTIES

PHARMACY

1	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Prescription Dispensing	1	1	1
2	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Profiles	1	1	1
3	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Pharmacy Purchasing and Materials Management	1	1	1
4	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Pharmacy Inventory Control Functionality	1	1	1
5	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Drug Maintenance	1	1	1
6	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Cash Management	1	2	1
7	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Allergies	2	2	1
8	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Text	1	2	1
9	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Immunizations	1	2	1
10	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Chronic Conditions	2	2	1
11	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Electronic Claims Processing	2	2	1
12	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Alert Codes	2	2	1
13	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Coverage Display	0	2	1
14	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Medication Use Management	2	1	1
15	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Medication Administration Record (MAR)	2	2	1
16	Ability to support multiple Formularies	1	2	1
17	Ability to Interface to other systems	2	1	1
18	Ability to utilize data from and/or support databases and functions	1	1	2
19	Ability to support printing labels, patient education materials, instructions in multiple languages	1	2	2
	PHARMACY TOTAL POINTS	**25**	**30**	**21**

PSYCHIATRIC

	PSYCHIATRIC TOTAL POINTS	**0**	**0**	**0**

DENTAL

1	Documentation: Periodontal charts; adult and child tooth charts; charting of soft tissue disease management and dental anatomy	2	1	1
2	Decision Support: Ability to support dental triage system to assist nurse on determining need for a dental referral based on information at i	2	1	1
3	Patient Education: Ability to provide on-line access to dental patient education materials and ability to print in multiple languages		2	
4	Ability to upload and capture data for field preventive sealant visits	2	2	1
	DENTAL TOTAL POINTS	**6**	**6**	**3**

OBSTETRICS

1	Ability to link all OB encounters, orders for ancillary services and results to create a comprehensive listing of services and outcomes for th	2	2	1

Business Requirements Scoring

2	Ability to track when the pregnancy is completed and the outcome	2	2	1
3	Capture estimated due date and date of last menstrual period	2	2	1
4	Ability to capture HIPAA OB transaction data	2	2	1
	OBSTETRICS TOTAL POINTS	**8**	**8**	**4**
COMMUNICABLE DISEASE MANAGEMENT				
1	Ability to link all TB encounters, orders for ancillary services and results to create a comprehensive listing of services and outcomes for the	1	2	1
2	Ability to track legal obligations for treating TB clients: PH orders, court orders, by client, including: date of order, date delivered. Ability	2	2	1
3	Ability to interface with Harborview PACS for on-line access to digital radiography images (preferred) or to receive, store and retrieve sca	2	2	2
4	Surveillance: ability to query and report on multiple parameters	1	2	2
5	Ability to tie records of one client to other clients (same as other communicable disease outbreak management tracking needs for sexually t	2	2	1
6	Ability to link, retrieve, organize and achieve data for linked cases	1	2	1
	COMMUNICAABLE DISEASE MANAGEMENT TOTAL POINTS	**9**	**12**	**8**
FAMILY PLANNING				
1	Ability to link all FP encounters, orders for ancillary services and results to create a comprehensive listing of services and outcomes for the	2	2	1
2	Ability to protect access to confidential data	2	2	2
3	Ability to provide alternative identifiers for clients seeking testing to enable them to remain anonymous within the system	0	2	1
4	Decision support: ability to load and access family planning clinical guidelines	2	2	1
5	Ability to print FP patient education materials and document that it was given to the client	2	2	2
6	Ability to support secure messaging	2	0	1
7	Ability to support on-line staff/provider education, to document and track by clinician, type of clinician, education module, org/project, etc	0	2	1
	FAMILY PLANNING TOTAL POINTS	**10**	**12**	**9**
	CLINICAL SPECIALTIES GRAND TOTAL POINTS	**33**	**38**	**24**

STAFF MANAGEMENT

STAFF MANAGEMENT

		1	2	1
	STAFF MANAGEMENT TOTAL POINTS	**1**	**2**	**1**

TECHNICAL ENVIRONMENT

GENERAL SYSTEM FUNCTIONS

1	MULTI-ENTITY	2	2	2
2	Support a Master Patient Index (MPI)	2	2	1
3	TABLES and MASTER FILES	2	2	2
4	CLINICAL ACCESS VIEW	2	1	1
5	CLINICAL DECISION SUPPORT system (CDS)	1	1	1
6	CONTROLLED MEDICAL VOCABULARY (CMV)	1	1	1
7	CLINICAL PATHWAYS and GUIDELINES	1	0	1
8	COST MEASURING and QUALITY ASSURANCE	1	2	1

Business Requirements Scoring

9	INTEGRATED E-MAIL (SECURE CLINICAL MESSAGING)	1	1	1
10	ACCESS (Log- On)	1	1	1
11	SCREEN DISPLAYS	1	1	2
12	DATA ENTRY	1	2	1
13	SCREEN BUILDER	0	0	0
14	REPORT GENERATOR	2	2	2
15	STANDARD REPORTS	1	2	2
	GENERAL SYSTEM FUNCTIONS TOTAL POINTS	**19**	**20**	**19**

Business Requirements Scoring

Business Requirements Scoring

Option 1

		STRENGTHS	?	WEAKNESSES		
				PARTIAL	DEVELOP	DON'T HAVE
CLINICAL OPERATIONS						
PHARMACY						
1	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Prescription Dispensing			1		
2	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Profiles			1		
3	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Pharmacy Purchasing and Materials Management			1		
4	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Pharmacy Inventory Control Functionality			1		
5	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Drug Maintenance			1		
6	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Cash Management			1		
7	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Allergies	2				
8	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Text			1		
9	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Immunizations			1		
10	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Chronic Conditions	2				
11	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Electronic Claims Processing	2				
12	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Alert Codes	2				
13	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Coverage Display					1
14	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Medication Use Management	2				
15	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Medication Administration Record (	2				
16	Ability to support multiple Formularies			1		
17	Ability to Interface to other systems	2				
18	Ability to utilize data from and/or support databases and functions			1		
19	Ability to support printing labels, patient education materials, instructions in multiple languages				1	
	PHARMACY TOTAL POINTS	**14**		**10**	**1**	**1**
INTAKE, TRANSFER, RELEASE						
1	Ability to, in real-time, interface with DAJD system to capture Initial Receiving data	2				
2	Assign Medical Record Number (MR#) for first time offenders	2				
3	Ability to capture, store, modify Initial Receiving Assessment during intake of offenders	2				
4	Based on positive Initial Receiving Assessment responses, application will automatically trigger events	2				
5	Ability to interface with Signature system to assure only one MR# has been assigned to the same individual	2				
6	Ability to provide or interface with a symptom-based decision support module for medical triage to assist clinical staff with pathwa	2				
7	Capacity to capture request for well care visits (well baby, well adult)	2				
8	Capacity to interface or link with King County Mental Health system	2				
9	Ability to interface or link with Washington State Child Profile system for immunizations history and tracking	2				
10	Ability to transfer data to and receive data from Public Health Parent Child Health Track system for field based home visits	2				

11	Ability to produce copies of patient history forms or screens for patient self reporting of history in multiple languages	2			
	INTAKE, TRANSFER, RELEASE TOTAL POINTS	**22**	**0**	**0**	**0**

PROBLEM LIST

1	System maintains a master file of problems	2			
2	System maintains, at a minimum, the following problems	2			
3	Ability to build a Problem List during intake and during stay of offenders		1		
4	Allow authorized users to add problems to problem list	2			
5	Ability to subcategorize problems by status: chronic, acute, recurrent, episodic, special needs	2			
	PROBLEM LIST TOTAL POINTS	**8**	**1**	**0**	**0**

ENCOUNTER

1	Ability to create and modify Assessments that contain items, both table driven (where applicable) and text that comply with Medica	2			
2	Allow user to determine which relevant items collected at a prior point, either during referral, admission or a prior episode of care,	2			
3	Provide means to track medications ordered from physicians outside of system in format that matches internally ordered medicatior	2			
4	Provide the ability to collect comprehensive Clinic Visit (Medical or Dental Diagnostic) information including		1		
5	Provide the ability to collect comprehensive Mental Health Diagnostic information		1		
6	Client Assessments can explicitly be associated to an episode of care	2			
7	Client Assessments can implicitly be associated to an episode of care based on assessment date and episode begin/end dates	2			
8	Assessments are integrated with the Health Treatment Planning and Notes module	2			
9	Assessment results can automatically recommend a diagnosis				1
10	Provide Assessment graphing tool to measure results over time		1		
11	Provide means to indicate persons or disciplines responsible for assessment and automatically e-mail notice of required assessment	2			
12	Provide ability for Assessments to be automatically and flexibly scheduled, to include+A35	2			
13	Enable the design and implementation of custom Assessment tools as determined by JHS. Functionality to include the following	2			
14	Provide ability to print patient educational materials associated with the encounter	2			
15	Provide ability to display and maintain Medical and Mental Health Assessment information	2			
16	Provide ability to build (ideally supply) JHS specific Assessment templates	2			
17	Capability to print patient education materials in multiple languages	2			
18	Ability to maintain a list of all providers actively involved in treating the patient within the last 12 months	2			
19	Ability to link together with each problem internal encounters where this problem was addressed, diagnostic tests ordered, external	2			
20	Ability to provide screening tools and clinical risk assessment calculators for:	2			
	ENCOUNTER TOTAL POINTS	**32**	**3**	**0**	**1**

TREATMENT PLANNING

1	System maintains a Multidisciplinary Treatment Plan Library with distinct sections that can be modified independently by authorize	2			
2	System can incorporate treatment plan standards individualized by system of care, program, team, or individual clinician	2			
3	Based on the Provider Type, the preferred treatment plan library is presented to them	2			
4	Selection of treatment plans is integrated with diagnosis	2			
5	Create individual client treatment plan from the selected library		1		

6	Provide mechanism for assigning responsibility for Treatment Plan section to specific staff or disciplines	2			
7	Provide mechanism for assigning responsibility to update specific section of treatment plan	2			
8	System keeps track of who is responsible for completing/updating which section of Treatment Plan and indicates date of completio	2			
9	When Treatment Plan elements are also gathered automatically from other modules of the system data are shared with Treatment Pl	2			
10	System automatically notifies user when Treatment Plans requires review, as specified by JHS	2			
11	Treatment Plan must include the following elements for viewing, printing, adding, or updating		1		
12	System maintains a JHS defined table of offered interventions	2			
13	System maintains, for each offered intervention, by program	2			
14	Identified interventions results in the forwarding of the intervention to the identified responsible party	2			
15	Display and print on demand updated treatment plan	2			
16	Coordination interventions and their planning between independent systems of care and Departments	2			
	TREATMENT PLANNING TOTAL POINTS	**28**	**2**	**0**	**0**

CLINICAL NOTES and DOCUMENTATION

1	System maintains different note categories		1		
2	System maintains Summary Notes	2			
3	System maintains Order-Related Notes	2			
4	System maintains Incident Notes	2			
5	System provides the capability to capture other types of Notes	2			
6	Ability for disciplines to enter, correct, authenticate notes		1		
7	Ability for disciplines to append authenticated notes	2			
8	The system allows for specific views (i.e. role based displays) via a person's sign on code		1		
9	Print on demand documentation for an individual client over a user-specified time period (e.g., today, week, and month)	2			
10	Ability to provide language to satisfy Medicare requirements for precepting medical students/residents	2			
	CLINICAL NOTES and DOCUMENTATION TOTAL POINTS	**14**	**3**	**0**	**0**

FLOW SHEETS

1	Ability to display Flow Sheet data that contain items, both table driven (where applicable) and text that comply with Medical and M	2			
	FLOW SHEETS TOTAL POINTS	**2**	**0**	**0**	**0**

ORDERS and RESULTS REPORTING

ENTRY of ORDERS

1	Provide a clinically oriented multidisciplinary order entry tool that streamlines the order entry process with the treatment plan	2			
2	Identify physician/provider initiating order, staff entering order, date, and time	2			
3	Ability to enter Orders On-Line and Display or Send Real-time to All Departments	2			
4	Allow selection of orders by service and sub-service (e.g., Administration, Intervention, Laboratory, Pharmacy, and Radiology)	2			
5	Provide a menu display of orders and order panels	2			
6	Provide a system of mnemonics for test ordering				1
7	Provide user-defined order sets and order panels with easy support for additions and deletions from these sets/panels	2			
8	Provide selection of orders	2			

9	Enable user to enter order priority	2			
10	Allow authorized users to change Status	2			
11	Allow user to designate start time and stop time for all timed and continuing orders. Authorized users must be able to override stop	2			
12	Provide ability for order to be marked as "expected to be renewed", with prompts to clinician to renew order at appropriate time	2			
13	System has ability to "know" orders expected to be renewed should appear as medications that the inmate is "on", even between ord	2			
14	Provide inmate schedules and department work lists based on orders placed	2			
15	Allow entering of free text comments with order	2			
16	Provide step-by-step ("Help") guide for Order Entry activities, returning the cursor to the place on the Order Entry screen at which the user left off				1
17	Display possible conflict of current order with previously entered orders including drug incompatibilities, based on user-specified criteria		1		
18	Allow authorized individuals to override order conflicts, and maintain audit trail of these events	2			
19	System automatically identifies and notifies user online		1		
20	Upon attestation of medication order, create Medication Adjustment Note which indicates the order information and includes the re	2			
21	When a medication is ordered that requires associated blood work, system should prompt to automatically write necessary orders ar	2			
22	Indicate verification status of each order including when order was countersigned per provider policy	2			
23	Provide system acknowledgment of acceptance of order	2			
24	Enable user to communicate routine, standing, and selective prior orders on day of client is booked into custody	2			
25	Allow user to bypass menus when entering orders and directly key in desired order information	2			
26	Provide online narrative description of the use of each test, procedure, or intervention as well as any ordering policies and protocols affecting the ordering to assist the clinician				1
27	Identify and report specific procedures in the procedure master file which require verification prior to becoming active				1
28	Allow sensitive orderable items to be flagged as confidential	2			
29	Permit inquiry into the exact status of all orders, by inmate (e.g., ordered, verified, canceled, preliminary report, or final report)	2			
30	Ability to entry prescription refill authorizations	2			
31	Ability to generate work or school notes	2			
32	Ability to capture data and link with Dynacare/Labcorp system for lab orders	2			
	ENTRY of ORDERS TOTAL POINTS	**52**	**2**	**0**	**4**

EDITING of ORDERS

1	Provide automatic edit of all orders for necessary data which must be included at time of entry (e.g., route, dosage, assessment, interactions based on CDS, treatı		1		
2	Display message identifying missing data in the order	2			
3	Display of alert if order varies from guidelines and rules and/or presents safety issue	2			
4	Ability to flag duplicate or conflicting orders	2			
5	Provide order correction mechanism without requiring cancellation and re-entering of entire order, automatically recording date, tin	2			
6	Permit only authorized personnel to cancel orders and automatically notify ancillary area of cancellation	2			
7	Allow for backdating of order times and dates if system has been unavailable. Maintain actual date and time when orders are entere	2			
8	Require inmate identification in order (to avoid processing of order for inmate who is not in system)	2			
9	Allow multiple methods of order entry	2			
	EDITING of ORDERS TOTAL POINTS	**16**	**1**	**0**	**0**

VERIFICATION of ORDERS

1	Prompt user for verification		1		
2	Ability to limit use of abbreviations to those on a list approved by PH		1		
	VERIFICATION of ORDERS TOTAL POINTS	**0**	**2**	**0**	**0**

TRANSMITTAL of ORDERS

1	Orders tracked through processing (e.g. know when Pharmacy receives order and when it has filled Rx)	2			
2	Completion of order documented	2			
3	Alert or message generated if order is not followed through to completion (e.g. patient does not receive/pick-up Rx)		1		
4	Order processing is based on efficient workflow (e.g. tasks sent to appropriate persons and all departments involved in completing t	2			
5	Provides ability to trigger medical necessity criteria	2			
6	Prompt is given for a diagnostic code when order is entered	2			
7	Interfaces with business/financial accounting modules	2			
8	Interfaces with LAB (DynaCare or LabCorps), Pharmacy (FSI), Radiology (Harborview) systems		1		
9	Capability to "explode" orders, generating multiple orders from one request to all appropriate responsible parties	2			
10	Capability to "explode" cancellations to appropriate providers when original order is canceled	2			
11	Provide option of visual or auditory alarm which requires a response on receipt of STAT, ASAP, timed orders, or special instructions				1
12	Provide information online on status of a specific order being processed	2			
13	Flag canceled or held orders with a visual or audible alarm. If order is not canceled at the provider location, also notify the provide	2			
14	Flag any changed order with a visual or audible alarm in the ancillary area				1
15	Retain record of order cancellation to identify who ordered the cancellation and when it was issued	2			
16	Provide an audit trail	2			
17	Display and print on demand an accumulated list of orders for a client for a designated time period	2			
18	Ability to automatically print requisitions and labels in area of required service upon order entry for today's tests and on appropriate	2			
19	Ability to automatically override print requisitions and labels into the area where the order was placed in the system instead of the c	2			
20	Flag STAT, ASAP, timed orders, or special instructions when the requisition prints	2			
21	Ability to flag or add prompts to follow-up and close	2			
	TRANSMITTAL of ORDERS TOTAL POINTS	**34**	**2**	**0**	**2**

SCHEDULING of ORDERS

1	Allow scheduling of one-time and continuing orders	2			
2	Allow scheduling of a test (procedure) when ordering. Notify provider so time and date may be verified. Provide automatic feedba	2			
3	Provide automatic scheduling of tests requiring more than one session for completion	2			
4	Provide authorized individuals with ability to override scheduling constraints	2			
	SCHEDULING of ORDERS TOTAL POINTS	**8**	**0**	**0**	**0**

CANCELLATION, RENEWAL, DISCONTINUANCE of ORDERS

1	Allow online update, cancellation, renewal, reschedule, and discontinuation of order/test. If order/test IS canceled in error, there is	2			
2	Automatically notify appropriate provider(s) online and optionally in print of change(s) in order	2			
3	Notify physician/provider online and optionally in print of need for renewal before expiration of continuing order(s) per provider criteria				1
4	Provide for automatic cancellation of orders upon discharge, release, or death of an inmate	2			

	CANCELLATION, RENEWAL, DISCONTINUANCE of ORDERS TOTAL POINTS	**6**	**0**	**0**	**1**
DISPLAY of ORDERS					
1	Clearly displayed (and printed, if needed) documentation of order	2			
2	Allows multiple views of orders		1		
3	Can be customized to meet JHS needs	2			
4	Order search ability	2			
5	Ability to generate outbound message to other systems when/where needed	2			
6	Ability to perform multiple passes (attempts) for outbound message if acknowledgement not received	2			
7	Ability to Lock Out Ordering (e.g. ARNP not able to order medications for himself)	2			
	DISPLAY of ORDERS TOTAL POINTS	**12**	**1**	**0**	**0**
RETRIEVAL of ORDERS					
1	Display and/or print multiple views of orders	2			
2	Display and/or print list of orders received, completed, canceled, postponed, held, or unreported, in chronological sequence by prov	2			
3	Display and/or print on demand status of order (e.g., routine, ASAP, STAT, scheduled including start time and intervals)	2			
4	Display and/or print on demand orders for clients	2			
	RETRIEVAL of ORDERS TOTAL POINTS	**8**	**0**	**0**	**0**
RESULTS DISPLAY/REPORTING					
1	Ability to Display Results from All Departments (i.e. RAD, LAB, Rx, etc.)	2			
2	Ability to Import all Results not Displayed within Application. Note: will require interfaces with MLAB system for PH laboratory	2			
3	Clearly displayed (and printed, if needed) results	2			
4	Allows multiple views of results		1		
5	Clearly displayed origin for results (where they came from)	2			
6	Date/time stamp for results	2			
7	Results display can be configured by role, by specialty, by location, by date - down to individual level	2			
8	Results outside of normal values are noted through alerts (linked to CDS and CMV)	2			
9	Results not viewed or associated with an action can result in an alert	2			
10	Ability to search results		1		
11	Ability to display interface data as needed (e.g. from other systems)	2			
12	Action taken when viewing result followed – ability to link action to result by provider, patient, date, etc				1
13	Follow-up available for documentation	2			
14	For test results, ability to display range of results in addition to normal/abnormal	2			
	RESULTS DISPLAY/REPORTING of ORDERS TOTAL POINTS	**22**	**2**	**0**	**1**
	ORDERS and RESULTS REPORTING TOTAL POINTS	**158**	**10**	**0**	**8**
CONSENTS, RELEASE of INFORMATION REQUESTS, REFUSALS					
1	Ability to design and implement Consents, Release of Information Requests, Requests for Information, Health Treatment Refusals,	2			
2	Ability to enter multiple electronic signatures via a variety of secure methods	2			
3	Ability to capture/print Authorization For ROI And Disclosure Of Protected Health Information, including	2			

4	Ability to capture/print Immunizations Screening Questions	2			
5	Ability to capture/print Health Memo to Inmates	2			
	CONSENTS, RELEASE of INFORMATION REQUESTS, REFUSALS TOTAL POINTS	**10**	**0**	**0**	**0**
PATIENT EDUCATION					
1	Ability to design and implement Patient Education material (text and pictures) as determined by JHS	2			
2	Incorporates (i.e. ability to import educational materials from other sources) a library of educational material using industry standar	2			
	PATIENT EDUCATION TOTAL POINTS	**4**	**0**	**0**	**0**
REFERRALS					
1	Ability to capture JHS internal program referrals		1		
2	Ability to capture external referrals		1		
3	Ability to support WA State standardized referral format (CHITA)	2			
4	Ability to close a referral	2			
5	Ability to capture and access payor lists of referrals requiring prior authorization	2			
6	Ability to create trend reports for reasons for referrals, referrals by providers, reasons for denials, etc		1		
7	Ability to capture data on referrals to PH programs from other PH programs or from other entities and to track the status and disposition of these referrals to closure			1	
8	Ability to capture data and track referral status for Child and Adult Protective Services referrals			1	
	REFERRALS TOTAL POINTS	**6**	**3**	**2**	**0**
ADMISSION, DISCHARGE, TRANSFER, REVERSAL					
1	Ability to capture, store, modify Admission information	2			
2	Ability to capture, store, modify Discharge information	2			
3	Ability to capture, store, modify Transfer information		1		
4	Allow reversal by authorized user of an admission, discharge, or transfer with appropriate automatic adjustments to statistics and ot	2			
	ADMISSION, DISCHARGE, TRANSFER, REVERSAL TOTAL POINTS	**6**	**1**	**0**	**0**
POPULATION BASED CLINICAL AREAS (REGISTRIES)					
1	Ability to manage POPULATION BASED CLINICAL AREAS (i.e. Registries)		1		
2	Ability to support contact investigations for communicable disease populations	2			
	POPULATION BASED CLINICAL AREAS (REGISTRIES) TOTAL POINTS	**2**	**1**	**0**	**0**
	CLINICAL OPERATIONS GRAND TOTAL POINTS	**306**	**34**	**3**	**10**

CLINICAL SPECIALTIES

PSYCHIATRIC

	PSYCHIATRIC TOTAL POINTS	**0**			

DENTAL

1	Documentation: Periodontal charts; adult and child tooth charts; charting of soft tissue disease management and dental anatomy	2			
2	Decision Support: Ability to support dental triage system to assist nurse on determining need for a dental referral based on informat	2			
3	Patient Education: Ability to provide on-line access to dental patient education materials and ability to print in multiple languages		?		
4	Ability to upload and capture data for field preventive sealant visits	2			

	DENTAL TOTAL POINTS	**6**	**0**	**0**	**0**
OBSTETRICS					
1	Ability to link all OB encounters, orders for ancillary services and results to create a comprehensive listing of services and outcome	2			
2	Ability to track when the pregnancy is completed and the outcome	2			
3	Capture estimated due date and date of last menstrual period	2			
4	Ability to capture HIPAA OB transaction data	2			
	OBSTETRICS TOTAL POINTS	**8**	**0**	**0**	**0**
COMMUNICABLE DISEASE MANAGEMENT					
1	Ability to link all TB encounters, orders for ancillary services and results to create a comprehensive listing of services and outcomes for the episode of care		1		
2	Ability to track legal obligations for treating TB clients: PH orders, court orders, by client, including: date of order, date delivered.	2			
3	Ability to interface with Harborview PACS for on-line access to digital radiography images (preferred) or to receive, store and retri	2			
4	Surveillance: ability to query and report on multiple parameters		1		
5	Ability to tie records of one client to other clients (same as other communicable disease outbreak management tracking needs for se	2			
6	Ability to link, retrieve, organize and achieve data for linked cases		1		
	COMMUNICABLE DISEASE MANAGEMENT TOTAL POINTS	**6**	**3**	**0**	**0**
FAMILY PLANNING					
1	Ability to link all FP encounters, orders for ancillary services and results to create a comprehensive listing of services and outcomes	2			
2	Ability to protect access to confidential data	2			
3	Ability to provide alternative identifiers for clients seeking testing to enable them to remain anonymous within the system				1
4	Decision support: ability to load and access family planning clinical guidelines	2			
5	Ability to print FP patient education materials and document that it was given to the client	2			
6	Ability to support secure messaging	2			
7	Ability to support on-line staff/provider education, to document and track by clinician, type of clinician, education module, org/project, etc				1
	FAMILY PLANNING TOTAL POINTS	**10**	**0**	**0**	**2**
	CLINICAL SPECIALTIES GRAND TOTAL POINTS	**30**	**3**	**0**	**2**

TECHNICAL ENVIRONMENT

GENERAL SYSTEM FUNCTIONS

1	MULTI-ENTITY	2			
2	Support a Master Patient Index (MPI)	2			
3	TABLES and MASTER FILES	2			
4	CLINICAL ACCESS VIEW	2			
5	CLINICAL DECISION SUPPORT system (CDS)		1		
6	CONTROLLED MEDICAL VOCABULARY (CMV)		1		
7	CLINICAL PATHWAYS and GUIDELINES		1		
8	COST MEASURING and QUALITY ASSURANCE		1		
9	INTEGRATED E-MAIL (SECURE CLINICAL MESSAGING)		1		
10	ACCESS (Log- On)		1		

11	SCREEN DISPLAYS		1		
12	DATA ENTRY		1		
13	SCREEN BUILDER				1
14	REPORT GENERATOR	2			
15	STANDARD REPORTS		1		
	GENERAL SYSTEM FUNCTIONS TOTAL POINTS	**10**	**9**	**0**	**1**

Option 2

		STRENGTHS	?	WEAKNESSES		
				PARTIAL	DEVELOP	DON'T HAVE
CLINICAL OPERATIONS						
PHARMACY						
1	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Prescription Dispensing				1	
2	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Profiles				1	
3	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Pharmacy Purchasing and Materials Management				1	
4	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Pharmacy Inventory Control Functionality				1	
5	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Drug Maintenance				1	
6	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Cash Management	2				
7	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Allergies	2				
8	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Text	2				
9	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Immunizations	2				
10	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Chronic Conditions	2				
11	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Electronic Claims Processing	2				
12	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Alert Codes	2				
13	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Coverage Display	2				
14	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Medication Use Management				1	
15	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Medication Administration Record (MAR)	2				
16	Ability to support multiple Formularies	2				
17	Ability to Interface to other systems				1	
18	Ability to utilize data from and/or support databases and functions			1		
19	Ability to support printing labels, patient education materials, instructions in multiple languages	2				
	PHARMACY TOTAL POINTS	**22**		**1**	**7**	**0**
INTAKE, TRANSFER, RELEASE						
1	Ability to, in real-time, interface with DAJD system to capture Initial Receiving data				1	
2	Assign Medical Record Number (MR#) for first time offenders	2				
3	Ability to capture, store, modify Initial Receiving Assessment during intake of offenders	2				
4	Based on positive Initial Receiving Assessment responses, application will automatically trigger events	2				
5	Ability to interface with Signature system to assure only one MR# has been assigned to the same individual	2				
6	Ability to provide or interface with a symptom-based decision support module for medical triage to assist clinical staff with pathways/guidel	2				
7	Capacity to capture request for well care visits (well baby, well adult)	2				
8	Capacity to interface or link with King County Mental Health system				1	
9	Ability to interface or link with Washington State Child Profile system for immunizations history and tracking				1	
10	Ability to transfer data to and receive data from Public Health Parent Child Health Track system for field based home visits	2				

11	Ability to produce copies of patient history forms or screens for patient self reporting of history in multiple languages	2				
	INTAKE, TRANSFER, RELEASE TOTAL POINTS	**16**		**0**	**3**	**0**
PROBLEM LIST						
1	System maintains a master file of problems	2				
2	System maintains, at a minimum, the following problems	2				
3	Ability to build a Problem List during intake and during stay of offenders	2				
4	Allow authorized users to add problems to problem list	2				
5	Ability to subcategorize problems by status: chronic, acute, recurrent, episodic, special needs		?			
	PROBLEM LIST TOTAL POINTS	**8**		**0**	**0**	**0**
ENCOUNTER						
1	Ability to create and modify Assessments that contain items, both table driven (where applicable) and text that comply with Medical and Me	2				
2	Allow user to determine which relevant items collected at a prior point, either during referral, admission or a prior episode of care, can be co	2				
3	Provide means to track medications ordered from physicians outside of system in format that matches internally ordered medications	2				
4	Provide the ability to collect comprehensive Clinic Visit (Medical or Dental Diagnostic) information including	2				
5	Provide the ability to collect comprehensive Mental Health Diagnostic information			1		
6	Client Assessments can explicitly be associated to an episode of care	2				
7	Client Assessments can implicitly be associated to an episode of care based on assessment date and episode begin/end dates	2				
8	Assessments are integrated with the Health Treatment Planning and Notes module	2				
9	Assessment results can automatically recommend a diagnosis			1		
10	Provide Assessment graphing tool to measure results over time	2				
11	Provide means to indicate persons or disciplines responsible for assessment and automatically e-mail notice of required assessment to persor	2				
12	Provide ability for Assessments to be automatically and flexibly scheduled, to include+A35	2				
13	Enable the design and implementation of custom Assessment tools as determined by JHS. Functionality to include the following					1
14	Provide ability to print patient educational materials associated with the encounter	2				
15	Provide ability to display and maintain Medical and Mental Health Assessment information	2				
16	Provide ability to build (ideally supply) JHS specific Assessment templates	2				
17	Capability to print patient education materials in multiple languages	2				
18	Ability to maintain a list of all providers actively involved in treating the patient within the last 12 months	2				
19	Ability to link together with each problem internal encounters where this problem was addressed, diagnostic tests ordered, external referrals	2				
20	Ability to provide screening tools and clinical risk assessment calculators for:	2				
	ENCOUNTER TOTAL POINTS	**34**		**2**	**0**	**1**
TREATMENT PLANNING						
1	System maintains a Multidisciplinary Treatment Plan Library with distinct sections that can be modified independently by authorized users	2				
2	System can incorporate treatment plan standards individualized by system of care, program, team, or individual clinician	2				
3	Based on the Provider Type, the preferred treatment plan library is presented to them	2				
4	Selection of treatment plans is integrated with diagnosis	2				
5	Create individual client treatment plan from the selected library	2				

6	Provide mechanism for assigning responsibility for Treatment Plan section to specific staff or disciplines	2			
7	Provide mechanism for assigning responsibility to update specific section of treatment plan	2			
8	System keeps track of who is responsible for completing/updating which section of Treatment Plan and indicates date of completion or upda	2			
9	When Treatment Plan elements are also gathered automatically from other modules of the system data are shared with Treatment Plan	2			
10	System automatically notifies user when Treatment Plans requires review, as specified by JHS	2			
11	Treatment Plan must include the following elements for viewing, printing, adding, or updating		1		
12	System maintains a JHS defined table of offered interventions	2			
13	System maintains, for each offered intervention, by program	2			
14	Identified interventions results in the forwarding of the intervention to the identified responsible party	2			
15	Display and print on demand updated treatment plan	2			
16	Coordination interventions and their planning between independent systems of care and Departments	2			
	TREATMENT PLANNING TOTAL POINTS	**30**	**1**	**0**	**0**

CLINICAL NOTES and DOCUMENTATION

1	System maintains different note categories	2			
2	System maintains Summary Notes	2			
3	System maintains Order-Related Notes	2			
4	System maintains Incident Notes	2			
5	System provides the capability to capture other types of Notes	2			
6	Ability for disciplines to enter, correct, authenticate notes	2			
7	Ability for disciplines to append authenticated notes	2			
8	The system allows for specific views (i.e. role based displays) via a person's sign on code	2			
9	Print on demand documentation for an individual client over a user-specified time period (e.g., today, week, and month)	2			
10	Ability to provide language to satisfy Medicare requirements for precepting medical students/residents	2			
	CLINICAL NOTES and DOCUMENTATION TOTAL POINTS	**20**	**0**	**0**	**0**

FLOW SHEETS

1	Ability to display Flow Sheet data that contain items, both table driven (where applicable) and text that comply with Medical and Mental He	2			
	FLOW SHEETS TOTAL POINTS	**2**	**0**	**0**	**0**

ORDERS and RESULTS REPORTING

ENTRY of ORDERS

1	Provide a clinically oriented multidisciplinary order entry tool that streamlines the order entry process with the treatment plan	2			
2	Identify physician/provider initiating order, staff entering order, date, and time	2			
3	Ability to enter Orders On-Line and Display or Send Real-time to All Departments	2			
4	Allow selection of orders by service and sub-service (e.g., Administration, Intervention, Laboratory, Pharmacy, and Radiology)	2			
5	Provide a menu display of orders and order panels	2			
6	Provide a system of mnemonics for test ordering	2			
7	Provide user-defined order sets and order panels with easy support for additions and deletions from these sets/panels	2			
8	Provide selection of orders	2			

9	Enable user to enter order priority	2			
10	Allow authorized users to change Status	2			
11	Allow user to designate start time and stop time for all timed and continuing orders. Authorized users must be able to override stop time for	2			
12	Provide ability for order to be marked as "expected to be renewed", with prompts to clinician to renew order at appropriate time	2			
13	System has ability to "know" orders expected to be renewed should appear as medications that the inmate is "on", even between orders	2			
14	Provide inmate schedules and department work lists based on orders placed	2			
15	Allow entering of free text comments with order		1		
16	Provide step-by-step ("Help") guide for Order Entry activities, returning the cursor to the place on the Order Entry screen at which the user left off			1	
17	Display possible conflict of current order with previously entered orders including drug incompatibilities, based on user-specified criteria			1	
18	Allow authorized individuals to override order conflicts, and maintain audit trail of these events				1
19	System automatically identifies and notifies user online	2			
20	Upon attestation of medication order, create Medication Adjustment Note which indicates the order information and includes the reason for	2			
21	When a medication is ordered that requires associated blood work, system should prompt to automatically write necessary orders and make	2			
22	Indicate verification status of each order including when order was countersigned per provider policy	2			
23	Provide system acknowledgment of acceptance of order	2			
24	Enable user to communicate routine, standing, and selective prior orders on day of client is booked into custody	2			
25	Allow user to bypass menus when entering orders and directly key in desired order information	2			
26	Provide online narrative description of the use of each test, procedure, or intervention as well as any ordering policies and protocols affectin	2			
27	Identify and report specific procedures in the procedure master file which require verification prior to becoming active	2			
28	Allow sensitive orderable items to be flagged as confidential	2			
29	Permit inquiry into the exact status of all orders, by inmate (e.g., ordered, verified, canceled, preliminary report, or final report)	2			
30	Ability to entry prescription refill authorizations	2			
31	Ability to generate work or school notes	2			
32	Ability to capture data and link with Dynacare/Labcorp system for lab orders	2			
	ENTRY of ORDERS TOTAL POINTS	**56**	**1**	**2**	**1**

EDITING of ORDERS

1	Provide automatic edit of all orders for necessary data which must be included at time of entry (e.g., route, dosage, assessment, interactions l	2			
2	Display message identifying missing data in the order	2			
3	Display of alert if order varies from guidelines and rules and/or presents safety issue				1
4	Ability to flag duplicate or conflicting orders				1
5	Provide order correction mechanism without requiring cancellation and re-entering of entire order, automatically recording date, time, and p	2			
6	Permit only authorized personnel to cancel orders and automatically notify ancillary area of cancellation	2			
7	Allow for backdating of order times and dates if system has been unavailable. Maintain actual date and time when orders are entered	2			
8	Require inmate identification in order (to avoid processing of order for inmate who is not in system)	2			
9	Allow multiple methods of order entry	2			
	EDITING of ORDERS TOTAL POINTS	**14**	**0**	**0**	**2**

VERIFICATION of ORDERS

1	Prompt user for verification	2			
2	Ability to limit use of abbreviations to those on a list approved by PH				1
	VERIFICATION of ORDERS TOTAL POINTS	**2**	**0**	**0**	**1**

TRANSMITTAL of ORDERS

1	Orders tracked through processing (e.g. know when Pharmacy receives order and when it has filled Rx)	2			
2	Completion of order documented	2			
3	Alert or message generated if order is not followed through to completion (e.g. patient does not receive/pick-up Rx)	2			
4	Order processing is based on efficient workflow (e.g. tasks sent to appropriate persons and all departments involved in completing the order)	2			
5	Provides ability to trigger medical necessity criteria	2			
6	Prompt is given for a diagnostic code when order is entered	2			
7	Interfaces with business/financial accounting modules	2			
8	Interfaces with LAB (DynaCare or LabCorps), Pharmacy (FSI), Radiology (Harborview) systems		1		
9	Capability to "explode" orders, generating multiple orders from one request to all appropriate responsible parties	2			
10	Capability to "explode" cancellations to appropriate providers when original order is canceled	2			
11	Provide option of visual or auditory alarm which requires a response on receipt of STAT, ASAP, timed orders, or special instructions	2			
12	Provide information online on status of a specific order being processed	2			
13	Flag canceled or held orders with a visual or audible alarm. If order is not canceled at the provider location, also notify the provider	2			
14	Flag any changed order with a visual or audible alarm in the ancillary area	2			
15	Retain record of order cancellation to identify who ordered the cancellation and when it was issued	2			
16	Provide an audit trail	2			
17	Display and print on demand an accumulated list of orders for a client for a designated time period	2			
18	Ability to automatically print requisitions and labels in area of required service upon order entry for today's tests and on appropriate day for	2			
19	Ability to automatically override print requisitions and labels into the area where the order was placed in the system instead of the client's registered location				1
20	Flag STAT, ASAP, timed orders, or special instructions when the requisition prints	2			
21	Ability to flag or add prompts to follow-up and close	2			
	TRANSMITTAL of ORDERS TOTAL POINTS	**38**	**1**	**0**	**1**

SCHEDULING of ORDERS

1	Allow scheduling of one-time and continuing orders	2			
2	Allow scheduling of a test (procedure) when ordering. Notify provider so time and date may be verified. Provide automatic feedback of ver	2			
3	Provide automatic scheduling of tests requiring more than one session for completion	2			
4	Provide authorized individuals with ability to override scheduling constraints	2			
	SCHEDULING of ORDERS TOTAL POINTS	**8**	**0**	**0**	**0**

CANCELLATION, RENEWAL, DISCONTINUANCE of ORDERS

1	Allow online update, cancellation, renewal, reschedule, and discontinuation of order/test. If order/test IS canceled in error, there is a simplif	2			
2	Automatically notify appropriate provider(s) online and optionally in print of change(s) in order	2			
3	Notify physician/provider online and optionally in print of need for renewal before expiration of continuing order(s) per provider criteria	2			
4	Provide for automatic cancellation of orders upon discharge, release, or death of an inmate	2			

	CANCELLATION, RENEWAL, DISCONTINUANCE of ORDERS TOTAL POINTS	**8**	**0**	**0**	**0**
DISPLAY of ORDERS					
1	Clearly displayed (and printed, if needed) documentation of order	2			
2	Allows multiple views of orders	2			
3	Can be customized to meet JHS needs	2			
4	Order search ability	2			
5	Ability to generate outbound message to other systems when/where needed	2			
6	Ability to perform multiple passes (attempts) for outbound message if acknowledgement not received	2			
7	Ability to Lock Out Ordering (e.g. ARNP not able to order medications for himself)	2			
	DISPLAY of ORDERS TOTAL POINTS	**14**	**0**	**0**	**0**
RETRIEVAL of ORDERS					
1	Display and/or print multiple views of orders	2			
2	Display and/or print list of orders received, completed, canceled, postponed, held, or unreported, in chronological sequence by provider	2			
3	Display and/or print on demand status of order (e.g., routine, ASAP, STAT, scheduled including start time and intervals)	2			
4	Display and/or print on demand orders for clients	2			
	RETRIEVAL of ORDERS TOTAL POINTS	**8**	**0**	**0**	**0**
RESULTS DISPLAY/REPORTING					
1	Ability to Display Results from All Departments (i.e. RAD, LAB, Rx, etc.)	2			
2	Ability to Import all Results not Displayed within Application. Note: will require interfaces with MLAB system for PH laboratory and Dynacare/Labcorps for contracted la		1		
3	Clearly displayed (and printed, if needed) results	2			
4	Allows multiple views of results	2			
5	Clearly displayed origin for results (where they came from)	2			
6	Date/time stamp for results	2			
7	Results display can be configured by role, by specialty, by location, by date - down to individual level	2			
8	Results outside of normal values are noted through alerts (linked to CDS and CMV)	2			
9	Results not viewed or associated with an action can result in an alert	2			
10	Ability to search results	2			
11	Ability to display interface data as needed (e.g. from other systems)	2			
12	Action taken when viewing result followed – ability to link action to result by provider, patient, date, etc	2			
13	Follow-up available for documentation	2			
14	For test results, ability to display range of results in addition to normal/abnormal	2			
	RESULTS DISPLAY/REPORTING of ORDERS TOTAL POINTS	**26**	**1**	**0**	**0**
	ORDERS and RESULTS REPORTING TOTAL POINTS	**174**	**3**	**2**	**5**
CONSENTS, RELEASE of INFORMATION REQUESTS, REFUSALS					
1	Ability to design and implement Consents, Release of Information Requests, Requests for Information, Health Treatment Refusals, Letters, a	2			
2	Ability to enter multiple electronic signatures via a variety of secure methods	2			
3	Ability to capture/print Authorization For ROI And Disclosure Of Protected Health Information, including	2			

4	Ability to capture/print Immunizations Screening Questions	2			
5	Ability to capture/print Health Memo to Inmates	2			
	CONSENTS, RELEASE of INFORMATION REQUESTS, REFUSALS TOTAL POINTS	**10**	**0**	**0**	**0**
PATIENT EDUCATION					
1	Ability to design and implement Patient Education material (text and pictures) as determined by JHS	2			
2	Incorporates (i.e. ability to import educational materials from other sources) a library of educational material using industry standard technol	2			
	PATIENT EDUCATION TOTAL POINTS	**4**	**0**	**0**	**0**
REFERRALS					
1	Ability to capture JHS internal program referrals	2			
2	Ability to capture external referrals	2			
3	Ability to support WA State standardized referral format (CHITA)			1	
4	Ability to close a referral	2			
5	Ability to capture and access payor lists of referrals requiring prior authorization	2			
6	Ability to create trend reports for reasons for referrals, referrals by providers, reasons for denials, etc	2			
7	Ability to capture data on referrals to PH programs from other PH programs or from other entities and to track the status and disposition of t	2			
8	Ability to capture data and track referral status for Child and Adult Protective Services referrals	2			
	REFERRALS TOTAL POINTS	**14**	**0**	**1**	**0**
ADMISSION, DISCHARGE, TRANSFER, REVERSAL					
1	Ability to capture, store, modify Admission information	2			
2	Ability to capture, store, modify Discharge information			1	
3	Ability to capture, store, modify Transfer information	2			
4	Allow reversal by authorized user of an admission, discharge, or transfer with appropriate automatic adjustments to statistics and other relate	2			
	ADMISSION, DISCHARGE, TRANSFER, REVERSAL TOTAL POINTS	**6**	**0**	**1**	**0**
POPULATION BASED CLINICAL AREAS (REGISTRIES)					
1	Ability to manage POPULATION BASED CLINICAL AREAS (i.e. Registries)	2			
2	Ability to support contact investigations for communicable disease populations	2			
	POPULATION BASED CLINICAL AREAS (REGISTRIES) TOTAL POINTS	**4**	**0**	**0**	**0**
	CLINICAL OPERATIONS GRAND TOTAL POINTS	**344**	**7**	**14**	**6**

CLINICAL SPECIALTIES

PSYCHIATRIC

	PSYCHIATRIC TOTAL POINTS	**0**			

DENTAL

1	Documentation: Periodontal charts; adult and child tooth charts; charting of soft tissue disease management and dental anatomy			1	
2	Decision Support: Ability to support dental triage system to assist nurse on determining need for a dental referral based on information at intake			1	
3	Patient Education: Ability to provide on-line access to dental patient education materials and ability to print in multiple languages	2			
4	Ability to upload and capture data for field preventive sealant visits	2			

	DENTAL TOTAL POINTS	**4**	**0**	**2**	**0**
OBSTETRICS					
1	Ability to link all OB encounters, orders for ancillary services and results to create a comprehensive listing of services and outcomes for the	2			
2	Ability to track when the pregnancy is completed and the outcome	2			
3	Capture estimated due date and date of last menstrual period	2			
4	Ability to capture HIPAA OB transaction data	2			
	OBSTETRICS TOTAL POINTS	**8**	**0**	**0**	**0**
COMMUNICABLE DISEASE MANAGEMENT					
1	Ability to link all TB encounters, orders for ancillary services and results to create a comprehensive listing of services and outcomes for the	2			
2	Ability to track legal obligations for treating TB clients: PH orders, court orders, by client, including: date of order, date delivered. Ability t	2			
3	Ability to interface with Harborview PACS for on-line access to digital radiography images (preferred) or to receive, store and retrieve scan	2			
4	Surveillance: ability to query and report on multiple parameters	2			
5	Ability to tie records of one client to other clients (same as other communicable disease outbreak management tracking needs for sexually tr	2			
6	Ability to link, retrieve, organize and achieve data for linked cases	2			
	COMMUNICABLE DISEASE MANAGEMENT TOTAL POINTS	**12**	**0**	**0**	**0**
FAMILY PLANNING					
1	Ability to link all FP encounters, orders for ancillary services and results to create a comprehensive listing of services and outcomes for the	2			
2	Ability to protect access to confidential data	2			
3	Ability to provide alternative identifiers for clients seeking testing to enable them to remain anonymous within the system	2			
4	Decision support: ability to load and access family planning clinical guidelines	2			
5	Ability to print FP patient education materials and document that it was given to the client	2			
6	Ability to support secure messaging				1
7	Ability to support on-line staff/provider education, to document and track by clinician, type of clinician, education module, org/project, etc	2			
	FAMILY PLANNING TOTAL POINTS	**12**	**0**	**0**	**1**
	CLINICAL SPECIALTIES GRAND TOTAL POINTS	**36**	**0**	**2**	**1**

TECHNICAL ENVIRONMENT

GENERAL SYSTEM FUNCTIONS

1	MULTI-ENTITY	2			
2	Support a Master Patient Index (MPI)	2			
3	TABLES and MASTER FILES	2			
4	CLINICAL ACCESS VIEW		1		
5	CLINICAL DECISION SUPPORT system (CDS)		1		
6	CONTROLLED MEDICAL VOCABULARY (CMV)		1		
7	CLINICAL PATHWAYS and GUIDELINES				1
8	COST MEASURING and QUALITY ASSURANCE	2			
9	INTEGRATED E-MAIL (SECURE CLINICAL MESSAGING)		1		
10	ACCESS (Log- On)		1		

11	SCREEN DISPLAYS		1		
12	DATA ENTRY	2			
13	SCREEN BUILDER				1
14	REPORT GENERATOR	2			
15	STANDARD REPORTS	2			
	GENERAL SYSTEM FUNCTIONS TOTAL POINTS	**14**	**6**	**0**	**2**

Option 3

CLINICAL OPERATIONS

PHARMACY

		STRENGTHS	?	WEAKNESSES		
				PARTIAL	DEVELOP	DON'T HAVE
1	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Prescription Dispensing				1	
2	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Profiles				1	
3	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Pharmacy Purchasing and Materials Management				1	
4	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Pharmacy Inventory Control Functionality				1	
5	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Drug Maintenance				1	
6	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Cash Management				1	
7	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Allergies				1	
8	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Text				1	
9	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Immunizations				1	
10	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Chronic Conditions				1	
11	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Electronic Claims Processing				1	
12	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Alert Codes				1	
13	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Coverage Display				1	
14	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Medication Use Management				1	
15	Ability to efficiently process (i.e. capture, maintain, display, print) data associated with Patient Medication Administration Record (MAR)				1	
16	Ability to support multiple Formularies				1	
17	Ability to Interface to other systems				1	
18	Ability to utilize data from and/or support databases and functions	2				
19	Ability to support printing labels, patient education materials, instructions in multiple languages	2				
	PHARMACY TOTAL POINTS	**4**		**0**	**17**	**0**

INTAKE, TRANSFER, RELEASE

1	Ability to, in real-time, interface with DAJD system to capture Initial Receiving data	2				
2	Assign Medical Record Number (MR#) for first time offenders			1		
3	Ability to capture, store, modify Initial Receiving Assessment during intake of offenders			1		
4	Based on positive Initial Receiving Assessment responses, application will automatically trigger events	2				
5	Ability to interface with Signature system to assure only one MR# has been assigned to the same individual	2				
6	Ability to provide or interface with a symptom-based decision support module for medical triage to assist clinical staff with pathways/guidelines				1	
7	Capacity to capture request for well care visits (well baby, well adult)	2				
8	Capacity to interface or link with King County Mental Health system	2				
9	Ability to interface or link with Washington State Child Profile system for immunizations history and tracking	2				

10	Ability to transfer data to and receive data from Public Health Parent Child Health Track system for field based home visits	2				
11	Ability to produce copies of patient history forms or screens for patient self reporting of history in multiple languages	2				
	INTAKE, TRANSFER, RELEASE TOTAL POINTS	**16**		**2**	**1**	**0**

PROBLEM LIST

1	System maintains a master file of problems				1	
2	System maintains, at a minimum, the following problems				1	
3	Ability to build a Problem List during intake and during stay of offenders				1	
4	Allow authorized users to add problems to problem list				1	
5	Ability to subcategorize problems by status: chronic, acute, recurrent, episodic, special needs		?			
	PROBLEM LIST TOTAL POINTS	**0**		**0**	**4**	**0**

ENCOUNTER

1	Ability to create and modify Assessments that contain items, both table driven (where applicable) and text that comply with Medical and Mental Hea	2				
2	Allow user to determine which relevant items collected at a prior point, either during referral, admission or a prior episode of care, can be continued over to an Assessment			1		
3	Provide means to track medications ordered from physicians outside of system in format that matches internally ordered medications			1		
4	Provide the ability to collect comprehensive Clinic Visit (Medical or Dental Diagnostic) information including			1		
5	Provide the ability to collect comprehensive Mental Health Diagnostic information			1		
6	Client Assessments can explicitly be associated to an episode of care	2				
7	Client Assessments can implicitly be associated to an episode of care based on assessment date and episode begin/end dates	2				
8	Assessments are integrated with the Health Treatment Planning and Notes module				1	
9	Assessment results can automatically recommend a diagnosis			1		
10	Provide Assessment graphing tool to measure results over time	2				
11	Provide means to indicate persons or disciplines responsible for assessment and automatically e-mail notice of required assessment to person or office responsible			1		
12	Provide ability for Assessments to be automatically and flexibly scheduled, to include+A35			1		
13	Enable the design and implementation of custom Assessment tools as determined by JHS. Functionality to include the following			1		
14	Provide ability to print patient educational materials associated with the encounter			1		
15	Provide ability to display and maintain Medical and Mental Health Assessment information	2				
16	Provide ability to build (ideally supply) JHS specific Assessment templates	2				
17	Capability to print patient education materials in multiple languages	2				
18	Ability to maintain a list of all providers actively involved in treating the patient within the last 12 months			1		
19	Ability to link together with each problem internal encounters where this problem was addressed, diagnostic tests ordered, external referrals ordered and status of referrals				1	
20	Ability to provide screening tools and clinical risk assessment calculators for:			1		
	ENCOUNTER TOTAL POINTS	**14**		**11**	**2**	**0**

TREATMENT PLANNING

1	System maintains a Multidisciplinary Treatment Plan Library with distinct sections that can be modified independently by authorized users			1		
2	System can incorporate treatment plan standards individualized by system of care, program, team, or individual clinician			1		
3	Based on the Provider Type, the preferred treatment plan library is presented to them			1		
4	Selection of treatment plans is integrated with diagnosis			1		

5	Create individual client treatment plan from the selected library		1		
6	Provide mechanism for assigning responsibility for Treatment Plan section to specific staff or disciplines		1		
7	Provide mechanism for assigning responsibility to update specific section of treatment plan		1		
8	System keeps track of who is responsible for completing/updating which section of Treatment Plan and indicates date of completion or update		1		
9	When Treatment Plan elements are also gathered automatically from other modules of the system data are shared with Treatment Plan		1		
10	System automatically notifies user when Treatment Plans requires review, as specified by JHS		1		
11	Treatment Plan must include the following elements for viewing, printing, adding, or updating		1		
12	System maintains a JHS defined table of offered interventions		1		
13	System maintains, for each offered intervention, by program		1		
14	Identified interventions results in the forwarding of the intervention to the identified responsible party		1		
15	Display and print on demand updated treatment plan		1		
16	Coordination interventions and their planning between independent systems of care and Departments		1		
	TREATMENT PLANNING TOTAL POINTS	**0**	**16**	**0**	**0**

CLINICAL NOTES and DOCUMENTATION

1	System maintains different note categories		1		
2	System maintains Summary Notes		1		
3	System maintains Order-Related Notes		1		
4	System maintains Incident Notes		1		
5	System provides the capability to capture other types of Notes		1		
6	Ability for disciplines to enter, correct, authenticate notes		1		
7	Ability for disciplines to append authenticated notes		1		
8	The system allows for specific views (i.e. role based displays) via a person's sign on code		1		
9	Print on demand documentation for an individual client over a user-specified time period (e.g., today, week, and month)	2			
10	Ability to provide language to satisfy Medicare requirements for precepting medical students/residents		1		
	CLINICAL NOTES and DOCUMENTATION TOTAL POINTS	**2**	**9**	**0**	**0**

FLOW SHEETS

1	Ability to display Flow Sheet data that contain items, both table driven (where applicable) and text that comply with Medical and Mental Health standards		1		
	FLOW SHEETS TOTAL POINTS	**0**	**1**	**0**	**0**

ORDERS and RESULTS REPORTING

ENTRY of ORDERS

1	Provide a clinically oriented multidisciplinary order entry tool that streamlines the order entry process with the treatment plan		1		
2	Identify physician/provider initiating order, staff entering order, date, and time	2			
3	Ability to enter Orders On-Line and Display or Send Real-time to All Departments	2			
4	Allow selection of orders by service and sub-service (e.g., Administration, Intervention, Laboratory, Pharmacy, and Radiology)		1		
5	Provide a menu display of orders and order panels		1		
6	Provide a system of mnemonics for test ordering				0
7	Provide user-defined order sets and order panels with easy support for additions and deletions from these sets/panels		1		

8	Provide selection of orders		1		
9	Enable user to enter order priority		1		
10	Allow authorized users to change Status				0
11	Allow user to designate start time and stop time for all timed and continuing orders. Authorized users must be able to override stop time for designated orders		1		
12	Provide ability for order to be marked as "expected to be renewed", with prompts to clinician to renew order at appropriate time		1		
13	System has ability to "know" orders expected to be renewed should appear as medications that the inmate is "on", even between orders			1	
14	Provide inmate schedules and department work lists based on orders placed		1		
15	Allow entering of free text comments with order	2			
16	Provide step-by-step ("Help") guide for Order Entry activities, returning the cursor to the place on the Order Entry screen at which the user left off	2			
17	Display possible conflict of current order with previously entered orders including drug incompatibilities, based on user-specified criteria		1		
18	Allow authorized individuals to override order conflicts, and maintain audit trail of these events		1		
19	System automatically identifies and notifies user online		1		
20	Upon attestation of medication order, create Medication Adjustment Note which indicates the order information and includes the reason for the medication change		1		
21	When a medication is ordered that requires associated blood work, system should prompt to automatically write necessary orders and make necessary appointments		1		
22	Indicate verification status of each order including when order was countersigned per provider policy		1		
23	Provide system acknowledgment of acceptance of order		1		
24	Enable user to communicate routine, standing, and selective prior orders on day of client is booked into custody		1		
25	Allow user to bypass menus when entering orders and directly key in desired order information		1		
26	Provide online narrative description of the use of each test, procedure, or intervention as well as any ordering policies and protocols affecting the ordering to assist the clinician		1		
27	Identify and report specific procedures in the procedure master file which require verification prior to becoming active		1		
28	Allow sensitive orderable items to be flagged as confidential		1		
29	Permit inquiry into the exact status of all orders, by inmate (e.g., ordered, verified, canceled, preliminary report, or final report)		1		
30	Ability to entry prescription refill authorizations		1		
31	Ability to generate work or school notes		1		
32	Ability to capture data and link with Dynacare/Labcorp system for lab orders	2			
	ENTRY of ORDERS TOTAL POINTS	**10**	**24**	**1**	**0**

EDITING of ORDERS

1	Provide automatic edit of all orders for necessary data which must be included at time of entry (e.g., route, dosage, assessment, interactions based on CDS, treatment plan)		1		
2	Display message identifying missing data in the order	2			
3	Display of alert if order varies from guidelines and rules and/or presents safety issue		1		
4	Ability to flag duplicate or conflicting orders		1		
5	Provide order correction mechanism without requiring cancellation and re-entering of entire order, automatically recording date, time, and person entering correction		1		
6	Permit only authorized personnel to cancel orders and automatically notify ancillary area of cancellation		1		
7	Allow for backdating of order times and dates if system has been unavailable. Maintain actual date and time when orders are entered		1		
8	Require inmate identification in order (to avoid processing of order for inmate who is not in system)		1		
9	Allow multiple methods of order entry		1		
	EDITING of ORDERS TOTAL POINTS	**2**	**8**	**0**	**0**

VERIFICATION of ORDERS

1	Prompt user for verification		1		
2	Ability to limit use of abbreviations to those on a list approved by PH	2			
	VERIFICATION of ORDERS TOTAL POINTS	**2**	**1**	**0**	**0**

TRANSMITTAL of ORDERS

1	Orders tracked through processing (e.g. know when Pharmacy receives order and when it has filled Rx)		1		
2	Completion of order documented			1	
3	Alert or message generated if order is not followed through to completion (e.g. patient does not receive/pick-up Rx)			1	
4	Order processing is based on efficient workflow (e.g. tasks sent to appropriate persons and all departments involved in completing the order)			1	
5	Provides ability to trigger medical necessity criteria		1		
6	Prompt is given for a diagnostic code when order is entered		1		
7	Interfaces with business/financial accounting modules		1		
8	Interfaces with LAB (DynaCare or LabCorps), Pharmacy (FSI), Radiology (Harborview) systems	2			
9	Capability to "explode" orders, generating multiple orders from one request to all appropriate responsible parties		1		
10	Capability to "explode" cancellations to appropriate providers when original order is canceled		1		
11	Provide option of visual or auditory alarm which requires a response on receipt of STAT, ASAP, timed orders, or special instructions		1		
12	Provide information online on status of a specific order being processed		1		
13	Flag canceled or held orders with a visual or audible alarm. If order is not canceled at the provider location, also notify the provider		1		
14	Flag any changed order with a visual or audible alarm in the ancillary area		1		
15	Retain record of order cancellation to identify who ordered the cancellation and when it was issued		1		
16	Provide an audit trail	2			
17	Display and print on demand an accumulated list of orders for a client for a designated time period		1		
18	Ability to automatically print requisitions and labels in area of required service upon order entry for today's tests and on appropriate day for future orders		1		
19	Ability to automatically override print requisitions and labels into the area where the order was placed in the system instead of the client's registered location		1		
20	Flag STAT, ASAP, timed orders, or special instructions when the requisition prints		1		
21	Ability to flag or add prompts to follow-up and close		1		
	TRANSMITTAL of ORDERS TOTAL POINTS	**4**	**16**	**3**	**0**

SCHEDULING of ORDERS

1	Allow scheduling of one-time and continuing orders	2			
2	Allow scheduling of a test (procedure) when ordering. Notify provider so time and date may be verified. Provide automatic feedback of verification to ordering area		1		
3	Provide automatic scheduling of tests requiring more than one session for completion		1		
4	Provide authorized individuals with ability to override scheduling constraints	2			
	SCHEDULING of ORDERS TOTAL POINTS	**4**	**2**	**0**	**0**

CANCELLATION, RENEWAL, DISCONTINUANCE of ORDERS

1	Allow online update, cancellation, renewal, reschedule, and discontinuation of order/test. If order/test IS canceled in error, there is a simplified way	2			
2	Automatically notify appropriate provider(s) online and optionally in print of change(s) in order		1		
3	Notify physician/provider online and optionally in print of need for renewal before expiration of continuing order(s) per provider criteria		1		

4	Provide for automatic cancellation of orders upon discharge, release, or death of an inmate		1		
	CANCELLATION, RENEWAL, DISCONTINUANCE of ORDERS TOTAL POINTS	**2**	**3**	**0**	**0**
DISPLAY of ORDERS					
1	Clearly displayed (and printed, if needed) documentation of order	2			
2	Allows multiple views of orders		1		
3	Can be customized to meet JHS needs		1		
4	Order search ability		1		
5	Ability to generate outbound message to other systems when/where needed	2			
6	Ability to perform multiple passes (attempts) for outbound message if acknowledgement not received	2			
7	Ability to Lock Out Ordering (e.g. ARNP not able to order medications for himself)		1		
	DISPLAY of ORDERS TOTAL POINTS	**6**	**4**	**0**	**0**
RETRIEVAL of ORDERS					
1	Display and/or print multiple views of orders	2			
2	Display and/or print list of orders received, completed, canceled, postponed, held, or unreported, in chronological sequence by provider		1		
3	Display and/or print on demand status of order (e.g., routine, ASAP, STAT, scheduled including start time and intervals)		1		
4	Display and/or print on demand orders for clients		1		
	RETRIEVAL of ORDERS TOTAL POINTS	**2**	**3**	**0**	**0**
RESULTS DISPLAY/REPORTING					
1	Ability to Display Results from All Departments (i.e. RAD, LAB, Rx, etc.)	2			
2	Ability to Import all Results not Displayed within Application. Note: will require interfaces with MLAB system for PH laboratory and Dynacare/La	2			
3	Clearly displayed (and printed, if needed) results	2			
4	Allows multiple views of results		1		
5	Clearly displayed origin for results (where they came from)	2			
6	Date/time stamp for results	2			
7	Results display can be configured by role, by specialty, by location, by date - down to individual level		1		
8	Results outside of normal values are noted through alerts (linked to CDS and CMV)		1		
9	Results not viewed or associated with an action can result in an alert		1		
10	Ability to search results		1		
11	Ability to display interface data as needed (e.g. from other systems)	2			
12	Action taken when viewing result followed – ability to link action to result by provider, patient, date, etc		1		
13	Follow-up available for documentation	2			
14	For test results, ability to display range of results in addition to normal/abnormal	2			
	RESULTS DISPLAY/REPORTING of ORDERS TOTAL POINTS	**16**	**6**	**0**	**0**
	ORDERS and RESULTS REPORTING TOTAL POINTS	**48**	**67**	**4**	**0**
CONSENTS, RELEASE of INFORMATION REQUESTS, REFUSALS					
1	Ability to design and implement Consents, Release of Information Requests, Requests for Information, Health Treatment Refusals, Letters, and othe	2			
2	Ability to enter multiple electronic signatures via a variety of secure methods	2			

3	Ability to capture/print Authorization For ROI And Disclosure Of Protected Health Information, including	2			
4	Ability to capture/print Immunizations Screening Questions	2			
5	Ability to capture/print Health Memo to Inmates	2			
	CONSENTS, RELEASE of INFORMATION REQUESTS, REFUSALS TOTAL POINTS	**10**	**0**	**0**	**0**

PATIENT EDUCATION

1	Ability to design and implement Patient Education material (text and pictures) as determined by JHS	2			
2	Incorporates (i.e. ability to import educational materials from other sources) a library of educational material using industry standard technology		1		
	PATIENT EDUCATION TOTAL POINTS	**2**	**1**	**0**	**0**

REFERRALS

1	Ability to capture JHS internal program referrals		1		
2	Ability to capture external referrals		1		
3	Ability to support WA State standardized referral format (CHITA)		1		
4	Ability to close a referral	2			
5	Ability to capture and access payor lists of referrals requiring prior authorization		1		
6	Ability to create trend reports for reasons for referrals, referrals by providers, reasons for denials, etc	2			
7	Ability to capture data on referrals to PH programs from other PH programs or from other entities and to track the status and disposition of these referrals to closure		1		
8	Ability to capture data and track referral status for Child and Adult Protective Services referrals		1		
	REFERRALS TOTAL POINTS	**4**	**6**	**0**	**0**

ADMISSION, DISCHARGE, TRANSFER, REVERSAL

1	Ability to capture, store, modify Admission information		1		
2	Ability to capture, store, modify Discharge information		1		
3	Ability to capture, store, modify Transfer information		1		
4	Allow reversal by authorized user of an admission, discharge, or transfer with appropriate automatic adjustments to statistics and other related areas	2			
	ADMISSION, DISCHARGE, TRANSFER, REVERSAL TOTAL POINTS	**2**	**3**	**0**	**0**

POPULATION BASED CLINICAL AREAS (REGISTRIES)

1	Ability to manage POPULATION BASED CLINICAL AREAS (i.e. Registries)		1		
2	Ability to support contact investigations for communicable disease populations	2			
	POPULATION BASED CLINICAL AREAS (REGISTRIES) TOTAL POINTS	**2**	**1**	**0**	**0**

	CLINICAL OPERATIONS GRAND TOTAL POINTS	**104**	**117**	**28**	**0**

CLINICAL SPECIALTIES

PSYCHIATRIC

	PSYCHIATRIC TOTAL POINTS	**0**			

DENTAL

1	Documentation: Periodontal charts; adult and child tooth charts; charting of soft tissue disease management and dental anatomy			1	
2	Decision Support: Ability to support dental triage system to assist nurse on determining need for a dental referral based on information at intake		1		
3	Patient Education: Ability to provide on-line access to dental patient education materials and ability to print in multiple languages	?			

4	Ability to upload and capture data for field preventive sealant visits		1		
	DENTAL TOTAL POINTS	**0**	**2**	**1**	**0**

OBSTETRICS

1	Ability to link all OB encounters, orders for ancillary services and results to create a comprehensive listing of services and outcomes for the episode of care for one pregnancy		1		
2	Ability to track when the pregnancy is completed and the outcome		1		
3	Capture estimated due date and date of last menstrual period		1		
4	Ability to capture HIPAA OB transaction data		1		
	OBSTETRICS TOTAL POINTS	**0**	**4**	**0**	**0**

COMMUNICABLE DISEASE MANAGEMENT

1	Ability to link all TB encounters, orders for ancillary services and results to create a comprehensive listing of services and outcomes for the episode of care		1		
2	Ability to track legal obligations for treating TB clients: PH orders, court orders, by client, including: date of order, date delivered. Ability to flag for isolation requirements		1		
3	Ability to interface with Harborview PACS for on-line access to digital radiography images (preferred) or to receive, store and retrieve scanned digit	2			
4	Surveillance: ability to query and report on multiple parameters	2			
5	Ability to tie records of one client to other clients (same as other communicable disease outbreak management tracking needs for sexually transmitted diseases, pertussis, SARS		1		
6	Ability to link, retrieve, organize and achieve data for linked cases		1		
	COMMUNICABLE DISEASE MANAGEMENT TOTAL POINTS	**4**	**4**	**0**	**0**

FAMILY PLANNING

1	Ability to link all FP encounters, orders for ancillary services and results to create a comprehensive listing of services and outcomes for the episode of care		1		
2	Ability to protect access to confidential data	2			
3	Ability to provide alternative identifiers for clients seeking testing to enable them to remain anonymous within the system		1		
4	Decision support: ability to load and access family planning clinical guidelines		1		
5	Ability to print FP patient education materials and document that it was given to the client	2			
6	Ability to support secure messaging		1		
7	Ability to support on-line staff/provider education, to document and track by clinician, type of clinician, education module, org/project, etc		1		
	FAMILY PLANNING TOTAL POINTS	**4**	**5**	**0**	**0**
	CLINICAL SPECIALTIES GRAND TOTAL POINTS	**8**	**15**	**1**	**0**

TECHNICAL ENVIRONMENT

GENERAL SYSTEM FUNCTIONS

1	MULTI-ENTITY	2			
2	Support a Master Patient Index (MPI)		1		
3	TABLES and MASTER FILES	2			
4	CLINICAL ACCESS VIEW		1		
5	CLINICAL DECISION SUPPORT system (CDS)		1		
6	CONTROLLED MEDICAL VOCABULARY (CMV)		1		
7	CLINICAL PATHWAYS and GUIDELINES		1		
8	COST MEASURING and QUALITY ASSURANCE		1		
9	INTEGRATED E-MAIL (SECURE CLINICAL MESSAGING)		1		

10	ACCESS (Log- On)		1		
11	SCREEN DISPLAYS	2			
12	DATA ENTRY		1		
13	SCREEN BUILDER				1
14	REPORT GENERATOR	2			
15	STANDARD REPORTS	2			
	GENERAL SYSTEM FUNCTIONS TOTAL POINTS	**10**	**9**	**0**	**1**

Stakeholders Meeting – 2/18/2005

Participants:
EHR Steering Committee:
Dorothy Teeter, PH Chief of Health Operations
Bette Pine, JHS Manager
Judy MacCully, JHS Operations Manager
Lee Pollock, JHS EHR Project Manager
Patty Schwendeman, PH MIS Manager
Teri Wiseman-Kuhlman, PH Project/Program Manager
JHS:
Ben Sanders, JHS Medical Director
Brandi DeFazio, JHS Special Projects Manager I
Shawna Harris, JHS Functional Analyst
Steven Kleyn, JHS Research Assistant
Public Health:
Marcy Maurer, PH Special Projects Manager
Wilma Elmore, PH Health Services Administrator
Cristin Burris, PH Project/Program Manager
Linda Lake, PH TB Outbreak Coordinator
Sherman Lohn, PH Health Services Administrator II
Maureen Peterson, PH Program Planner

Objective:
The purpose of the Stakeholders Meeting was to thoroughly analyze each of the three remaining vendor options by reviewing the MAU from different viewpoints within King County Public Health and Jail Health Services. Furthermore, a SWOT Analysis was conducted on each option, and a viability discussion ensued. This discussion led to a recommendation whether to continue communication with each of the remaining vendors.

Methods:
Individuals at the meeting represented a breadth of Public Health divisions, including JHS EHR Implementation Team, Public Health MIS, Public Health Administration, Jail Health Administration, and Executive Steering Committee. Each option was thoroughly analyzed, focusing initially on the weaknesses and threats of working with each vendor. After a dialogue of weaknesses, a discussion of their strengths and opportunities ensued and a full SWOT Analysis was conducted. After all of the options had been thoroughly analyzed, a conversation of viability occurred resulting in recommendations to the EHR Steering Committee.

Results:
The consensus among the Stakeholders was to officially continue communication with each of the three vendors, but with a caveat around options 2 and 3. Option 2 did not include comments in the RFP response regarding their deficiencies, thus much more information would be needed to complete the evaluation. It appeared that Option 3 is still

in development, thus a better sense of their future capability and timeframe is required. Option 1 was clearly the most feasible option at the time of the meeting. Still, the committee decided that Options 2 and 3 could not be eliminated at that point due to the limited number of vendors that responded to the RFP.

Discussion/Analysis:

There was an important conversation around the viability of each of the options. The correctional health experience and size of the company were important factors to the Stakeholders. Furthermore, there was a significant discussion regarding the possibility that Public Health should be the first to implement an EHR, which could then be expanded to include Jail Health at a later date. This option did not make sense, however, considering the financial strains caused by the inefficient, paper-based medical records system in King County's Correctional Facilities and the steps that Jail Health had already taken to attain funding from King County.

Recommendations:

The meeting concluded with the recommendation that Jail Health maintain communication with each of the three remaining vendors. JHS should prepare for the second level review in order to gain a more extensive knowledge of the products and how it will improve business operations and achieve a favorable return on investment.

Option 1 Question/Comment/Follow-Up Grid

Business Requirement Section	Number	Question/Clarification to ask Option 1	Comment Made at the 2/11/05 Meeting	Risk Level of Option 1 Weakness	Scenario Builder
Pharmacy	N/A		This needs to be reviewed in order for us to get a more thorough understanding of strengths/weaknesses/questions		
	N/A		Comment that Pharmacy was Option 1's weakest point		
	#1		Option 1 is not able to alter the billing account the prescription is charged against without altering the clinical record. This is a weakness once a patient is transferred within to Public Health	Medium	
	#2		Option 1 does not have an electronic narcotic count	Low	
			Option 1 PEARL does not automatically receive shipment inventory at the end of the business day	Low	
Intake, Transfer, Release	#1		Need definition of data to be exchanged and and method for data transmission		
	#2	Clarification on how MR# is assigned			
	#6	Clarification on how note-builder works			
Problem List	#3H	Are there any plans for the software to allow the user to print education materials?			
			Their Problem List capabilities is a strength. It allows for a quicker process, and the user will not have to guess about the treatment as currently is the case		
Encounters	#17	We need to clarify with Option 1 that by foreign language, we don't mean windows-based computer languages			
	#4	How does the logic of linking diagnosis with coding work?			
	#6	We need to clarify what we mean by episode of care	It seems as if they are skirting the issue of episode of care by mentioning admission date, chart section, and document type only.		
	N/A	Is PEARL an updated version of what was formerly EMERALD?			
	#13	Shouldn't this be a partial? MS Word doesn't support 4 of required asked: e, g, h, and i.			

Business Requirement Section	Number	Question/Clarification to ask Option 1	Comment Made at the 2/11/05 Meeting	Risk Level of Option 1 Weakness	Scenario Builder
	#15 and 16	Customization is allowed in-house with assessment information? What particular assessment tools are used?	We can build using their programs unique to us		
	#20	Can you do clinical risk assessment calculations with NoteBuilder?			
	#9		The fact that their program does not automatically recommend a diagnosis may actually be a strength		
			Increased customization could lead to difficulty of maintaining version control	Medium	
Treatment Planning	#5	Clarification re: individual client treatment plan from the selected library			
		Are nursing care plans part of treatment planning and are they fully integrated?			
		Triaging Capability?	There are certain elements of triage involved throughout different sections of the business requirements		
	#11		The program will not put summaries of previous assessments in the document	Assess risk	JHS needs to build a scenario re: Triage/Health Assessment
Clinical Notes and Documentation	#1	What does an intervention of notes mean?	Perhaps it is pulling up related notes for a CQI study for a particular intervention		
	#6	Can we have the flexibility to turn clinical support pop-ups on or off? Can we have pop-ups by certain condition or provider	It is low-risk to not have decision support or Controlled Medical Vocabulary pop-ups	Low	
	#8	What is your ability around role-based access?	Weakness to not have role-based access. No ability to customize pages	High Weakness for PH implementation	
	N/A	What if we need to scan an outside patient record?			
Orders & Results Reporting - Entry of Orders	#6		Provide a system of mnemonics for test ordering	Very low	
	#10	You're not answering the question. We're asking about the status of the order			
	#16		We need to see their order-entry capability. They probably should have given themselves a 2 for this		

Business Requirement Section	Number	Question/Clarification to ask Option 1	Comment Made at the 2/11/05 Meeting	Risk Level of Option 1 Weakness	Scenario Builder
	#17	Clarification needed re drug incompatibilities	Drug incompatibilities are specific limitations to a class of drug based on previous problems with that match of drug and patient		1. Patient with reaction to particular class and med ordered 2. Duplication of orders - ability to identify with multiple providers 3. Mechanics on how going to function and viewing abilities 4. Ability to select what info is viewed
	#26		Inability to provide an online narrative description of the use of each test, procedure, or intervention	Low	
	#27	Clarify. There was miscommunication re procedure verification			
Orders & Results Reporting - Editing of Orders	#1		All orders are edited the same way	Low	
	#9	Does your software support PDA's? Remote access handhelds - voice?			
Orders & Results Reporting - Verification of Orders	#1	With given verification of orders, how would system support orders from individuals needing 2nd level signoff? Dual order verification and sign-off?	Do not have dual verification	High	
Orders & Results Reporting - Transmittal of Orders	#3	Please explain more broadly your alert messaging capabilities			Build scenarios around alert messaging capabilities
	#8		We need to have further conversation with them re interfaces with lab, pharmacy, radiology systems		
	#8		We want to use HL7 response. This is a strength		
	#11	Is a message sent to inboxes with high priority? Is that how the urgency is noted?	Not alarmed orders of STAT, ASAP	Assess risk	
	#14	Is a message sent to inboxes with high priority? Is that how the urgency is noted?	Not alarmed orders of STAT, ASAP	Assess risk	
	#3		No alert messaging capabilities	Assess risk	
Orders & Results Reporting - Cancellation, Renewal, Discontinuance of Orders	#3	We need clarification re: capabilities around notification if order needs renewal	The system does not warn providers of expiring orders	High	

Business Requirement Section	Number	Question/Clarification to ask Option 1	Comment Made at the 2/11/05 Meeting	Risk Level of Option 1 Weakness	Scenario Builder
Orders & Results Reporting - Display of Orders	#2	You gave yourself a 1 without any comments. We need clarification as to what you can and cannot do			
Orders & Results Reporting - Results Display/Reporting	#4		We need to be able to display orders and labs linked to diagnosis/problem	High	
	#10	Can you search results via reporting? Clarify how you do this?	Cannot search results by provider. This is a big weakness as it is an important practice management tool	Medium	Build scenarios around searching results
	#12	Is there a behind-the-scenes ability to track who has logged onto patient info?	There is no read receipt available. This is an important practice management tool	Assess risk	
Patient Education	N/A	Clarify that patient education materials can be offered in multiple languages, not windows based computer languages			
Referrals	#1		They gave themselves a 1 here re: ability to automatically generate JHS inter-facility referrals based on positive screening responses	None	
	#2		There are no trigger alerts when predetermined time limits are exceeded	Medium	
	#3	You say you can support WA standard referral format (CHITA). We would like you to prove it.			
	#6		Queries re: trend reports would have to be written	None	
	#7		For them to be in full compliance with our business requirement, they need our modules		
Admission, Discharge, Transfer, Reversal	#3	We need clarification re: transfer requests for approval	PEARL cannot automatically route transfer Requests for Approval	None	We should build a scenario around transfers
Population Based Clinical Areas	#1	We need further clarification re: NoteBuilder's ability to allow users to customize their own assessments			
Dental	#1		Tooth Chart and Microsoft Word are unlikely to work, but we need to see how this will be formatted		
Communicable Disease	#1	We need clarification and another conversation because no comment was given even though they gave themselves a 1			
	#4		Ability to query and report on multiple parameters		Build scenarios around this

Business Requirement Section	Number	Question/Clarification to ask Option 1	Comment Made at the 2/11/05 Meeting	Risk Level of Option 1 Weakness	Scenario Builder
			CD Management - See how piece works on how going to link		
Family Planning	#3		PEARL does not have alternative identifiers	None	
	#7		PEARL does not have online staff education tracking	None	
Staff Management	N/A		The fact that they have this in any form is a big strength/positive		
General System Functions	#4	Please elaborate on VPN requirement to connect to the central database?			
	#2	How does SoundX work and what are the requirements?			
	#8	Please clarify why you gave yourself a 1. There was no comment provided.			
	#9		Unable to conference online or exchange secure e-mail between patient/provider or provider/provider	High	
	N/A		We need to do a more thorough review of this section. Perhaps a subcommittee to do this should be formed		
General Questions		How does the separation of clinical specialties work? Ex: Psych, Dental, CD, OB, Family Planning. [DCHS interface database] - drug and alcohol			

Option 1 SWOT Analysis - Remote Access/ASP Model

Strengths:
Highly customizable - to reflect individual style/preference
24/7/365 Customer Support
Reputable, mid-sized company with a successful history of implementation
Group of physicians assembled to be medical informatics consultants during the implementation and deployment processes

Weaknesses:
Providers are not warned of expiring orders
Unable to conference online or exchange secure e-mail between patient/provider or provider/provider
Cannot display orders and labs linked to diagnosis/problem

Opportunities:
Could pilot this program at Jail Health and then expand it greater Public Health - the capability is there
A previous customer of theirs has successfully implemented their EHR system and improved their practice to the level that they won NCCHC facility of the year - one of JHS's mid-range goal for the KCCF facility

Threats:
The weakness of the communication tools may lead to a deficiency of communication at JHS re: patient information/diagnosis/treatment, etc.
Too many clients to actively support our individual site
Too costly to actively support our site

Option 2 Question/Comment/Follow-Up Grid

Business Requirement Section	Number	Question/Clarification to ask Option 2	Comment Made at the 2/11/05 Meeting	Risk Level of BCA Weakness	Scenario Builder
Pharmacy	N/A		Dean and Anh-Thu need to review this in order for us to get a more thorough understanding of strengths/weaknesses/questions		
Encounters	#13		Option 2 cannot customize Assessment Tools	High	
Orders & Results Reporting - Entry of Orders	#18	We need clarification re: inability to override order conflicts	Cannot override order conflicts	High	
Orders & Results Reporting - Editing of Orders	#3		There is no display of alert if order varies from guidelines and rules and/or presents safety issues	High	
	#4		There is no ability to flag duplicate or conflicting orders	High	
	N/A		It seems as if you must use the system "as is" without any customization	High	
Orders & Results Reporting - Verification of Orders	#2	We need clarification around inability to do this because can't customize or because the system deals with abbreviations in a different way	Inability to limit use of abbreviations to those on a list approved by Public Health	High	
Orders & Results Reporting - Transmittal of Orders	#19	We need further clarification re: what the system can and can't do re: print requisitions override capability	The system cannot override print requisitions and labels into the area where the order was placed in the system instead of the client's registered location	Medium	
Family Planning	#6	Why did you give yourselves a 0 regarding secure messaging? Do you know what this is?			
General System Functions	N/A		There is no Clinical Pathways & Guidelines ability	High	
	N/A		There is no Screen Building ability	High	
	N/A		The ability to customize this system is very limited	High	

Option 2 General Comments

The ability to customize this system is very limited
The size of the company is small: approximately 25 employees
No client is near our site
They seem to be almost a mom and pop shop
Limited experience in the field - CorrecTek only around for 1 year
We would put them on the map
They have no other client near our site, and are based in Kentucky. Communication may be difficult.
They may have very limited resources as evidenced by the incomplete response to the RFP
No comments offered
Our best chance with Option 2 is probably as a development partner
Offering customization and implementation

Option 2 SWOT Analysis

Strengths:

The Architecture is less complex and easier to install and support
The system is well-controlled, no variation is allowed

Weaknesses:

There is no 24-hour help desk
No customizing of screens and assessment tools
Limited correctional experience
No large customers
Limited security that they will be around for a long time

Opportunity:

Maybe an effective development partner
Might be a dynamic group of people

Threats:

They self-scored themselves and gave themselves a good score. Still, how reliable were these scores? We must reference check
Small size of the company
Do they have the expertise to implement this system?
What is their capital position?

Option 3 Discussion

Option 3 is a potential development partner

Pharmacy
Interfaced pharmacy solution

We need to contact the vendor and get more information on how they are going to build the system.

Options:
JHS do own thing

Everyday end user
JHS has the opportunity to be an "alpha test site"
Still, this would be difficult considering the day-to-day activities already involved and how the staffing budget would be impacted.
It takes multiple people to be actively engaged daily in a beta test model. We need something already built that can be customized to fit our needs.

General Discussion

DISCUSSION NOTES

What are our options at this point?
JHS could do their own thing and in the meantime Public Health could work on getting a system.
Weaknesses if JHS doing their own thing: Amount of time and effort needed, especially if under the current time constraints/pressures.
JHS and Public Health could partner with the State Department of Corrections. Ben: State DOC are all basically on their own systems

What is the political environment around the development issue?
Refer onto Steering Committee

What would responses from vendors be if concentrating on all of Public Health instead of just JHS?

Suggestion: start SBP on Public Health as a whole and bring in a "quick fix" vendor for JHS only.

Suggestion: Have more talks with - get more information on their mission and ideas.

Comment: Expectations and needs of both Public Health and JHS are pretty much in alignment.

Comment: 5 out of 20 vendors requested more time. They were only given 4 weeks during the holiday season to respond. Siemens was opposed to the contract amendment.

We do not want something that we cannot customize. All of the vendors we are looking at will return a positive ROI within 3-7 years.

The Jail should move forward with their EHR vendor selection process (Patty). We need to have conversations with vendors and get particular questions answered. We should at least discuss our apprehensions with and . We need to determine a timeframe of when we should weed out the weaker vendors.

Start talks with . Hear what they have to say.

Check costs with - Oracle cost, database cost, other hidden costs? What is the real ROI timeframe after all of the costs are laid on the table.

Check into Clinic Management.

Responses to Additional Business Questions from King County

Option 2

1) It appears your company is small, with approximately 25 employees. You have limited correctional experience, and no experience with a client as large as JHS. Would you characterize this as correct assumptions?
2) Your assumptions are true in that we are a small company with limited correctional experience. This may be perceived as a disadvantage but can actually be very advantageous to our clients. Being a small company we are able to make decisions quickly and to turn on a dime as it were in regard to client needs. Being a small company we avoid large corporate bureaucracies that slow larger companies. Our limited correctional experience may also be perceived as a disadvantage. However it can be to our clients advantage because we come with no preconceived notions. We actually listen to the clients needs and work with them to meet those needs to the betterment of the clients work flow and our software product. Our single largest client to date had a total of 30-40 users to be trained. However they were not our only clients at the time.
3) It appears the system is "rigid" with limited or no "customizing" of screens and assessment tools. Is this correct?
4) This could not be farther from the truth. Our system is extremely flexible and fully customizable. We have user-defined records which allow the end user to define any fields required. We have a Chart interface that works much like the paper chart many are accustomed to which can be customized to mimic your current charts. The chart interface goes even further with “smart tabs” that allow the administrator to customize the chart tabs for individual inmates based on the individual inmates health problems. For example one inmate who has dyslipidemia may have a lipids report tab, while an inmate with diabetes may have a diabetes care tab. We do not try to fit a square peg in a round hole. Your facility though regulated by many of the same entities as other facilities of the same type will still have its own uniqueness. We do not try to conform your facility to our software but rather our software conforms to your needs.

Responses to Additional Business Questions from King County

Option 3

1) ***It appears that many areas of your EHR are still being developed, or would need to be developed to meet the majority of our business needs. Is this correct? If so, by functional area, when do anticipate they will be ready for general release? Do you envision JHS playing a role in the development? If so, please describe.***

The first phase of [redacted]'s Electronic Health Record has been installed in two client sites since Fall 2004. The first phase encompasses intake screenings, medical and mental health encounter record, appointment scheduling, sick call requests, ICD-9, CPT-4, HCPCS, NDC and DSM IV coding, lab tests and immunization records.

The second phase of [redacted]'s Electronic Health Record is currently in development and is due to be released in early Spring 2005. Release dates for further functional modules as well as for the second phase items are listed in the table below.

Electronic Health Records System (second phase currently in development)	**Release Date**
Health Questionnaires	Now released
Health Care Co-payments	April 2005
Medication Administration Record (report)	April 2005
Protocols	April 2005
File Importing (documents, scanned items, images)	April 2005
Electronic Medication Administration Record	April 2005
Dental Encounters (includes graphical charting)	May 2005
Problem Lists	May 2005
Clinician Decision Support System –link to Isabel	April 2005

Functionality beyond that described above will be developed as and when required by existing or new clients. We welcome and encourage participation by our clients in the requirements stage of new functionality. In fact, we believe that this presents an excellent opportunity for King County to participate in the development of a world class medical software package designed specifically for the corrections environment. However, participation is not a requirement for delivery of new functionality.

Seven Year Cost Savings

The overall savings reflection in the cost/benefit analysis 7 years out from implementation is projected to be $1,495.273. This number was arrived at by adding the projected savings in six major areas: medical records staff, nursing staff, pharmacy staff, pharmaceuticals, lab and tests, medical records supplies, and overhead.

	Savings	Reference	Comment	Resultant Savings (7 years)	FTE Impact
Medical Records Staff	10% per year for 3 years – cumulative 30%	Based on the analysis of the Medical Records work processes, it is estimated that Medical Records Staff over a seven year period would spend at least 13,154 hours in functions related to managing the paper record. See Attachment 21.	There is a possibility that the savings would be greater if the Electronic Health Record replaces more medical record functions than anticipated.	$374,024	(6.3)
Nursing Staff	RN Current base 26,000 hours 10% reduction; LPN at 80% reduction of 5,600 hours	Jail Health Services' nurses spend over 26,400 hours annually doing paperwork, charting, and writing in logs and in treatment mgmt. See Attachment 29.	26,400 hours is the sum of JHS RN hours A and D in the attachment.	$397,196	(3.4)
Pharmacy Staff	1 FTE ongoing	A study of the process for writing and filling a non-narcotic prescription (See Attachment 26), which is just a subset of the Jail Health Services Medication Administration process, revealed that there are over 27 key steps involved in filing a new prescription. This activity involves the provider, nurse, pharmacy assistant, and pharmacist.	A review by a cross functional team revealed that the steps removed would reduce the amount of Pharmacy Technician time required on a daily basis.	$57,045	(1.0)
Pharmaceuticals	20% immediate	In a study conducted by Wang (See Attachment 28), an expert panel estimated that alternative drug suggestion reminders would save 15% (range of 5% to 25%) of total drug costs per year.	JHS Medical Director and Sr. Pharmacist confirmed the potential 20% reduction.	$582,759	None
Lab and Tests	20% reduction of Public Health lab budget of $48,000. Could be greater with outside lab impact.	It is estimated that 20% of the lab tests paid for by Jail Health are unnecessarily repeated due to lack of medical information available or inaccurate and incomplete information in the patient's medical	JHS Medical Director confirmed the potential 20%reduction.	$12,161	None

		record.			
Medical Records Supplies		Roughly $18,000 dollars is currently spent annually on materials to make medical records. Computer-generated forms and charts eliminate the need to purchase pre-printed forms.	Source = 2004 cost and quantities as reported by Admin Service Warehouse.	$22,802	None
JHS Overhead	Per FTE – assume 25% of amount budgeted per FTE basis			$49,286	None
Total				**$1,495,273**	

Summary of Expected Cost Benefit
Jail Health EHR

	Year of implementation==>		*1*	*2*	*3*	*4*	*5*	*6*	*7*
Option 1	Immediate 2005	2006	2007	2008	2009	2010	2011	2012	2013
Savings			$630,031	$1,104,168	$1,272,356	$1,324,375	$1,378,785	$1,435,708	$1,495,273
Cost	598,055	1,367,351	533,881	549,898	566,395	583,387	600,888	618,915	637,482
Annual Net Benefit or (cost)	(598,055)	(1,367,351)	$96,150	$554,271	$705,962	$740,989	$777,897	$816,794	$857,791
Annual NPV	(553,755)	(1,172,283)	76,327	407,405	480,466	466,948	453,895	441,288	429,109
Cumulative NPV	(553,755)	(1,726,038)	(1,649,711)	(1,242,306)	(761,840)	(294,892)	159,004	600,292	1,029,401
Annual $2007 equivalent deficit () or surplus (+)					**($335,178)**		**$43,945**	**$145,668**	**$212,602**

King County Cost Benefit Analysis

Form 1/ Summary, Cost Benefit and Cash Flow Analysis Project SKCDPH-JHS Electronic Health Record

9-May-05

Recommended Option (i.e. Option 1)

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	TOTAL
TOTAL OUTFLOWS	598,055	1,367,351	533,881	549,898	566,395	583,387	600,888	618,915	637,482	6,056,251
TOTAL INFLOWS	0	0	630,031	1,104,169	1,272,356	1,324,375	1,378,785	1,435,708	1,495,273	8,640,698
NET CASH FLOW	(598,055)	(1,367,351)	96,150	554,271	705,962	740,989	777,897	816,793	857,791	
Cumulative NPV	(553,755)	(1,726,038)	(1,649,710)	(1,242,305)	(761,839)	(294,890)	159,005	600,293	1,029,402	
Incremental NPV	(553,755)	(1,172,283)	76,327	407,406	480,466	466,949	453,895	441,288	429,109	
Cumulative Costs	NA	1,965,406	2,499,287	3,049,184	3,615,579	4,198,966	4,799,854	5,418,769	6,056,251	
Cumulative Benefits	NA	0	630,031	1,734,200	3,006,556	4,330,932	5,709,717	7,145,425	8,640,698	

Cost of Capital	Breakeven Period - yrs.*		NPV $	IRR %
	Non-Discounted	Discounted		
8.00%			1,029,402	19.63%

* - "Non-Discounted" represents breakeven period for cumulative costs and benefits (no consideration of time value of money).
* - "Discounted" considers effect of time value of money through incremental Net Present Value.

IRR % 3 year	IRR % 5 year	IRR % 7 year
-12.6%	10.6%	19.63%

King County Cost Benefit Analysis

Form 2/ Project Costs by Year

Project SKCDPH-JHS Electronic Health Record

9-May-05

Suggested Format

PROJECT COSTS	Account Codes	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY	LIFETIME TOTAL
Salaries and Wages	51110	246,578	349,929	0	0	0	0	0	0	0		596,507
Employee Benefits	51xxx	73,892	118,976	0	0	0	0	0	0	0		192,868
Supplies	52110	0	0	0	0	0	0	0	0	0		0
EDP Supplies	52212	0	0	0	0	0	0	0	0	0		0
Consulting IT Services	53127	18,520	0	0	0	0	0	0	0	0		18,520
Subcontract IT Services	53179	84,315	84,315	0	0	0	0	0	0	0		168,630
Travel	53310	24,063	0	0	0	0	0	0	0	0		24,063
Printing	53806	0	0	0	0	0	0	0	0	0		0
Training-IT	53813	5,100	59,400	0	0	0	0	0	0	0		64,500
IT - Internal Service	55xxx	0	75,000	0	0	0	0	0	0	0		75,000
Hardware/Software	56740	145,000	302,163	0	0	0	0	0	0	0		447,163
Communication Equipment	56780	0	0	0	0	0	0	0	0	0		0
Capital IT Lease - Principal	57303	0	0	0	0	0	0	0	0	0		0
Capital IT Lease - Interest	57304	0	0	0	0	0	0	0	0	0		0
Advertising	53230	124	0	0	0	0	0	0	0	0		124
Postage	53220	288	0	0	0	0	0	0	0	0		288
Food	52205	175	0	0	0	0	0	0	0	0		175
Contingency (20%)	various	0	377,568	0	0	0	0	0	0	0		377,568
TOTAL COST		598,055	1,367,351	0	0	0	0	0	0	0	0	1,965,406

Note: See Instructions tab for other pertinent accounts that could be added to this list

Form 3/ Summary, Operations Incremental Cost of Project

Project SKCDPH-JHS Electronic Health Record

9-May-05

		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY	TOTAL
OPERATIONS INCREMENTAL COSTS OF PROJECT (Per Form 4 - Column C)												
Salaries and Wages	51110	0	0	116,794	120,299	123,908	127,625	131,454	135,397	139,459		894,935
Employee Benefits	51xxx	0	0	83,281	85,779	88,352	91,003	93,733	96,545	99,441		638,135
Supplies	52110	0	0	0	0	0	0	0	0	0		0
EDP Supplies	52212	0	0	0	0	0	0	0	0	0		0
Consulting IT Services	53127	0	0	178,900	184,267	189,795	195,488	201,353	207,394	213,615		1,370,811
Subcontract IT Services	53179	0	0	0	0	0	0	0	0	0		0
Travel	53310	0	0	0	0	0	0	0	0	0		0
Printing	53806	0	0	0	0	0	0	0	0	0		0
Training-IT	53813	0	0	0	0	0	0	0	0	0		0
IT - Internal Service	55xxx	0	0	0	0	0	0	0	0	0		0
Hardware/Software	56740	0	0	0	0	0	0	0	0	0		0
Communication Equipment	56780	0	0	0	0	0	0	0	0	0		0
Capital IT Lease - Principal	57303	0	0	65,926	67,904	69,941	72,040	74,201	76,427	78,720		505,159
Capital IT Lease - Interest	57304	0	0	0	0	0	0	0	0	0		0
Other (specify)		0	0	0	0	0	0	0	0	0		0
Other (specify)		0	0	0	0	0	0	0	0	0		0
Other (specify)		0	0	0	0	0	0	0	0	0		0
Other (specify)		0	0	88,980	91,649	94,399	97,231	100,148	103,152	106,247		681,804
TOTAL OPERATIONS		0	0	533,881	549,898	566,395	583,387	600,888	618,915	637,482		4,090,845
TOTAL OUTFLOWS		598,055	1,367,351	533,881	549,898	566,395	583,387	600,888	618,915	637,482	0	6,056,251
CUMULATIVE COSTS			1,965,406	2,499,287	3,049,184	3,615,579	4,198,966	4,799,854	5,418,769	6,056,251	6,056,251	

(1) Total Outflows the sum of Fiscal Total Operations and Total Development from Form2.
(2) Total Outflows carried to Form1
Note: See Instructions tab for other pertinent accounts that could be added to this list.

Form 4/ Current versus Proposed Method Operations Costs

SKCDPH-JHS Electronic Health Record

9-May-05

OPERATIONS COSTS	Accounts	Baseline Costs	Additional Costs	Project Cost Savings (See Form 5 Detail)	Post Project Operating Costs	Baseline Costs	Additional Costs	Project Cost Savings (See Form 5 Detail)	Post Project Operating Costs	Baseline Costs	Additional Costs	Project Cost Savings (See Form 5 Detail)	Post Project Operating Costs
		FY-2005				FY-2006				FY-2007			
Salaries and Wages	51110	11,204,002	0	0	11,204,002	11,540,122	0	0	11,540,122	11,886,326	116,794	(210,095)	11,793,025
Employee Benefits	513XX	3,323,667	0	0	3,323,667	3,423,377	0	0	3,423,377	3,526,078	83,281	(113,128)	3,496,231
Other supplies	52XXX	2,105,446	0	0	2,105,446	2,168,609	0	0	2,168,609	2,233,668	0	(286,612)	1,947,056
EDP Supplies	52212	10,000	0	0	10,000	10,300	0	0	10,300	10,609	0	0	10,609
Other contract expense	53XXX	564,031	0	0	564,031	580,952	0	0	580,952	598,380	178,900	(6,790)	770,490
Consulting IT Services	53127	0	0	0	0	0	0	0	0	0	0	0	0
Subcontract IT Services	53179	0	0	0	0	0	0	0	0	0	0	0	0
Travel	53310	2,500	0	0	2,500	2,575	0	0	2,575	2,652	0	0	2,652
Printing	53806	1,000	0	0	1,000	1,030	0	0	1,030	1,061	0	0	1,061
Training-IT	53813	0	0	0	0	0	0	0	0	0	0	0	0
Overhead and other costs	55XXX	3,359,830	0	0	3,359,830	3,460,625	0	0	3,460,625	3,564,444	0	(13,407)	3,551,037
Capital	56XXX	82,148	0	0	82,148	84,612	0	0	84,612	87,150	0	0	87,150
Hardware/Software	56740	0	0	0	0	0	0	0	0	0	65,926	0	65,926
Communication Equipment	56780	0	0	0	0	0	0	0	0	0	0	0	0
Capital IT Lease - Principal	57303	0	0	0	0	0	0	0	0	0	0	0	0
Capital IT Lease - Interest	57304	0	0	0	0	0	0	0	0	0	0	0	0
Op Budget Contingency	59XXX	388,375	0	0	388,375	400,026	0	0	400,026	412,027	0	0	412,027
EHR project contingency	5XXXX	0	0	0	0	0	0	0	0	0	88,980	0	88,980
TOTAL OPERATION COSTS		21,040,998	0	0	21,040,998	21,672,228	0	0	21,672,228	22,322,395	533,881	(630,031)	22,226,244
FTE'S													

OPERATIONS COSTS	Accounts	Baseline Costs	Additional Costs	Project Cost Savings (See Form 5 Detail)	Post Project Operating Costs	Baseline Costs	Additional Costs	Project Cost Savings (See Form 5 Detail)	Post Project Operating Costs	Baseline Costs	Additional Costs	Project Cost Savings (See Form 5 Detail)	Post Project Operating Costs
		FY-2008				FY-2009				FY-2010			
Salaries and Wages	51110	12,242,915	120,299	(394,500)	11,968,714	12,610,203	123,908	(478,338)	12,255,773	12,988,509	127,625	(492,687)	12,623,447
Employee Benefits	513XX	3,631,861	85,779	(212,424)	3,505,216	3,740,816	88,352	(257,566)	3,571,603	3,853,041	91,003	(265,293)	3,678,751
Other supplies	52XXX	2,300,678	0	(455,140)	1,845,537	2,369,698	0	(481,859)	1,887,839	2,440,789	0	(510,163)	1,930,625
EDP Supplies	52212	10,927	0	0	10,927	11,255	0	0	11,255	11,593	0	0	11,593
Other contract expense	53XXX	616,332	184,267	(10,490)	790,108	634,822	189,795	(10,805)	813,811	653,867	195,488	(11,129)	838,226
Consulting IT Services	53127	0	0	0	0	0	0	0	0	0	0	0	0
Subcontract IT Services	53179	0	0	0	0	0	0	0	0	0	0	0	0
Travel	53310	2,732	0	0	2,732	2,814	0	0	2,814	2,898	0	0	2,898
Printing	53806	1,093	0	0	1,093	1,126	0	0	1,126	1,159	0	0	1,159
Training-IT	53813	0	0	0	0	0	0	0	0	0	0	0	0
Overhead and other costs	55XXX	3,671,377	0	(31,614)	3,639,763	3,781,518	0	(43,789)	3,737,730	3,894,964	0	(45,103)	3,849,861
Capital	56XXX	89,765	0	0	89,765	92,458	0	0	92,458	95,231	0	0	95,231
Hardware/Software	56740	0	67,904	0	67,904	0	69,941	0	69,941	0	72,040	0	72,040
Communication Equipment	56780	0	0	0	0	0	0	0	0	0	0	0	0
Capital IT Lease - Principal	57303	0	0	0	0	0	0	0	0	0	0	0	0
Capital IT Lease - Interest	57304	0	0	0	0	0	0	0	0	0	0	0	0
Op Budget Contingency	59XXX	424,387	0	0	424,387	437,119	0	0	437,119	450,232	0	0	450,232
EHR project contingency	5XXXX	0	91,649	0	91,649	0	94,399	0	94,399	0	97,231	0	97,231
TOTAL OPERATION COSTS		22,992,067	549,898	(1,104,169)	22,437,795	23,681,829	566,395	(1,272,356)	22,975,867	24,392,283	583,387	(1,324,375)	23,651,294
FTE'S													

OPERATIONS COSTS	Accounts	Baseline Costs	Additional Costs	Project Cost Savings (See Form 5 Detail)	Post Project Operating Costs	Baseline Costs	Additional Costs	Project Cost Savings (See Form 5 Detail)	Post Project Operating Costs	Baseline Costs	Additional Costs	Project Cost Savings (See Form 5 Detail)	Post Project Operating Costs
		FY-2011				FY-2012				FY-2013			
Salaries and Wages	51110	13,378,164	131,454	(507,468)	13,002,150	13,779,509	135,397	(522,691)	13,392,216	14,192,895	139,459	(538,373)	13,793,981
Employee Benefits	513XX	3,968,632	93,733	(273,252)	3,789,113	4,087,691	96,545	(281,449)	3,902,787	4,210,322	99,441	(289,893)	4,019,870
Other supplies	52XXX	2,514,013	0	(540,146)	1,973,867	2,589,433	0	(571,911)	2,017,522	2,667,116	0	(605,561)	2,061,555
EDP Supplies	52212	11,941	0	0	11,941	12,299	0	0	12,299	12,668	0	0	12,668
Other contract expense	53XXX	673,483	201,353	(11,463)	863,373	693,687	207,394	(11,807)	889,274	714,498	213,615	(12,161)	915,952
Consulting IT Services	53127	0	0	0	0	0	0	0	0	0	0	0	0
Subcontract IT Services	53179	0	0	0	0	0	0	0	0	0	0	0	0
Travel	53310	2,985	0	0	2,985	3,075	0	0	3,075	3,167	0	0	3,167
Printing	53806	1,194	0	0	1,194	1,230	0	0	1,230	1,267	0	0	1,267
Training-IT	53813	0	0	0	0	0	0	0	0	0	0	0	0
Overhead and other costs	55XXX	4,011,813	0	(46,456)	3,965,357	4,132,167	0	(47,850)	4,084,317	4,256,132	0	(49,285)	4,206,847
Capital	56XXX	98,088	0	0	98,088	101,031	0	0	101,031	104,062	0	0	104,062
Hardware/Software	56740	0	74,201	0	74,201	0	76,427	0	76,427	0	78,720	0	78,720
Communication Equipment	56780	0	0	0	0	0	0	0	0	0	0	0	0
Capital IT Lease - Principal	57303	0	0	0	0	0	0	0	0	0	0	0	0
Capital IT Lease - Interest	57304	0	0	0	0	0	0	0	0	0	0	0	0
Op Budget Contingency	59XXX	463,739	0	0	463,739	477,652	0	0	477,652	491,981	0	0	491,981
EHR project contingency	5XXXX	0	100,148	0	100,148	0	103,152	0	103,152	0	106,247	0	106,247
TOTAL OPERATION COSTS		25,124,052	600,888	(1,378,785)	24,346,155	25,877,774	618,915	(1,435,708)	25,060,980	26,654,107	637,482	(1,495,273)	25,796,315
FTE'S													

(1) FY__ Column (c) for each Cost Code carried to Form3

Note: See Instructions tab for other pertinent accounts that could be added to this list.

King County Cost Benefit Analysis

Form 5/ Benefits Cash Flow Analysis

Project SKCDPH-JHS Electronic Health Record

9-May-05
Suggested Format

TANGIBLE BENEFITS	Accounts	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	TOTAL
					BENEFITS						
Hard $											
Revenues (specify)	(account codes)	0	0	0	0	0	0				0
											0
											0
											0
											0
											0
Reimbursements (specify)	(account codes)	0	0	0	0	0	0				0
											0
											0
											0
											0
											0
Cost Reduction (specify) (1)	(account codes)	0	0	0	0	0	0				0
Medical records staff	51110	0	0	45,246	139,809	216,005	222,485	229,160	236,034	243,116	1,331,856
Medical records staff	51300	0	0	24,363	75,282	116,311	119,800	123,394	127,095	130,908	717,153
Nursing staff	51110	0	0	144,147	222,706	229,388	236,269	243,357	250,658	258,177	1,584,701
Nursing staff	51300	0	0	77,617	119,919	123,516	127,222	131,038	134,969	139,019	853,301
Pharmacy staff	51110	0	0	20,702	31,985	32,945	33,933	34,951	35,999	37,080	227,594
Pharmacy staff	51300	0	0	11,147	17,223	17,739	18,271	18,820	19,384	19,966	122,551
Pharmaceuticals	52211	0	0	273,881	435,471	461,600	489,296	518,653	549,773	582,759	3,311,433
Lab and tests	53105	0	0	6,790	10,490	10,805	11,129	11,463	11,807	12,161	74,645
Other (specify)	(account codes)	0	0	0	0	0	0	0	0	0	0
Medical records supplies	52110	0	0	12,731	19,669	20,259	20,867	21,493	22,138	22,802	139,959
JHS overhead	55XXX	0	0	13,407	31,614	43,789	45,103	46,456	47,850	49,285	277,504
											0
											0
											0
Soft $											0
Cost Avoidance (specify)	(account codes)	0	0	0	0	0	0				0
											0
											0
											0
											0
											0
Other (specify)	(account codes)	0	0	0	0	0	0				0
											0
											0
											0
											0
											0
TOTAL INFLOWS		0	0	630,031	1,104,169	1,272,356	1,324,375	1,378,785	1,435,708	1,495,273	8,640,698
CUMULATIVE BENEFITS			0	630,031	1,734,200	3,006,556	4,330,932	5,709,717	7,145,425	8,640,698	

(1) Reflect all Cost Reduction Benefits except Operations reductions (which are reflected in Cost of Operations).
(2) Total Inflows carries to Form1

Jail Health Services
Electronic Health Record System
Example of a Training Approach

Initial End-User Clinical Training Sessions
Users attend an initial "Basics" class. This class consists of 4 hours in a classroom. Up to 20 end users per class in up to ten separate sessions. End-user training is intended for nurses, nursing assistants, physician assistants, receptionists, billing, discharge personnel, etc.

End-User Clinical Training Session
End user classes will be divided up based on user-type. These classes consist of 8 hours in a classroom. Up to 20 end users per class in up to ten separate sessions. End-user training is intended for nurses, nursing assistants, physician assistants, receptionists, billing, discharge personnel, etc.

Physician/Provider Training Session
Train up to 10 physicians/providers per session. Training for physicians/providers will be a 4-hour navigational class and a 4-hour practical application class held at a time and site convenient for the physicians/providers.

System Administrator Training
Train up to five system administrators. The System Administrator Training consists of one five-day classroom training session off site plus one week of on-site training.

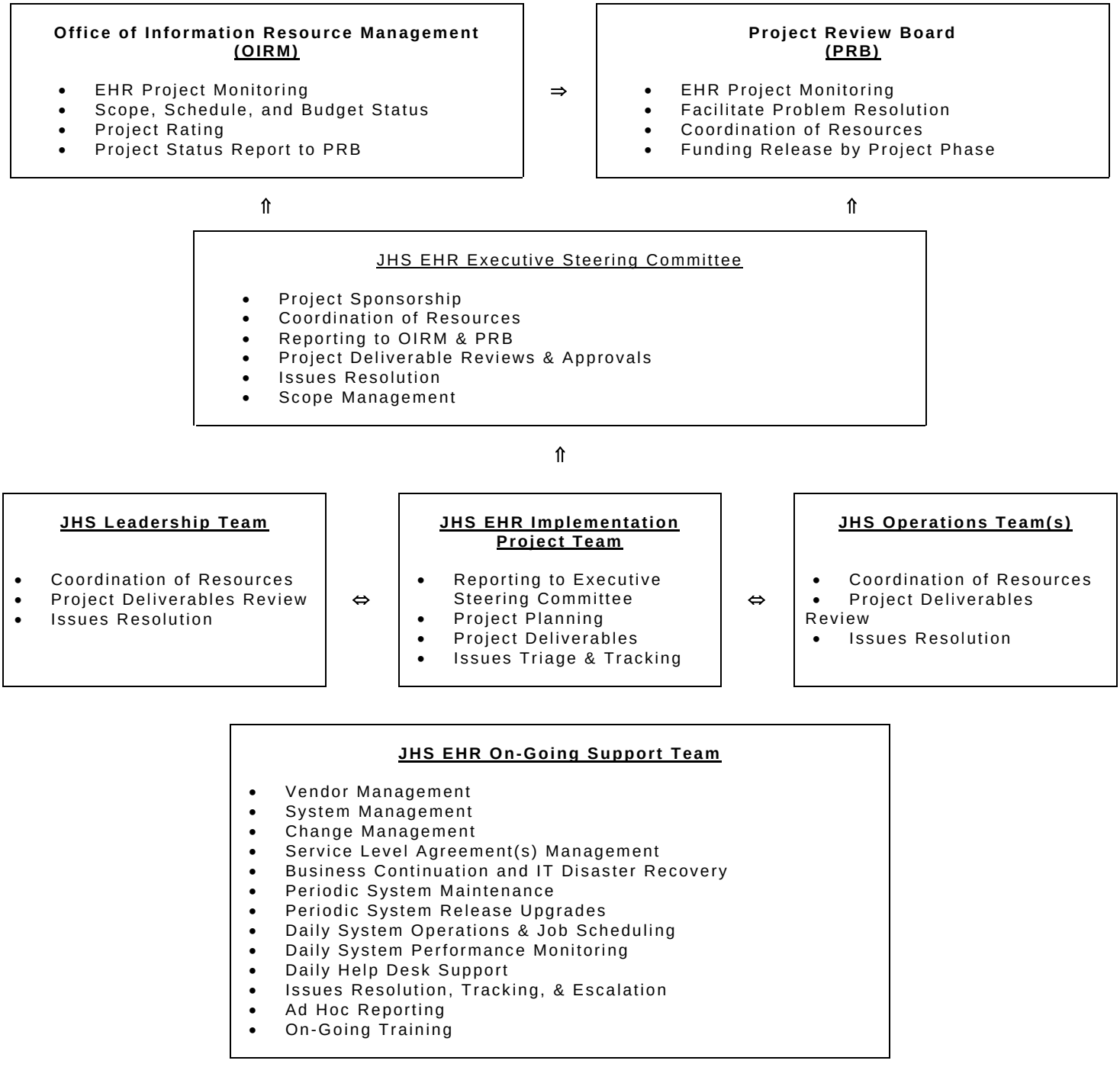
On-Site Training during Go-Live
Provide ten (10) days of on-site training assistance during go-live.

"Train the Trainer" concepts may be employed by the customer for on-going training and for training new users after go-live. Super Users and System Administrators are encouraged to audit classes during the initial training period to be better prepared for training on their own.

Jail Health Services
Electronic Health Record System

Organization and Management Plan

EHR PROJECT GOVERNANCE STRUCTURE
SYSTEM DEVELOPEMT & IMPLEMENTATION



Description of Team Accountability & Activity

JHS EHR Executive Steering Committee

Purpose:

- Provide cross-divisional senior level management oversight to the project.
- Secure cross-divisional resources per Roles and Responsibilities document.
- Approve project deliverables.
- Monitor Project Timeline & Project Plan. Approve adjustments, as required.
- Monitor Project Budget. Obtain additional funding, as required.
- Monitor Issues Log. Solve critical issues, as required.
- Approve modifications to project scope and timeline.
- Ensure OIRM & PRB deliverables are met.

Authority: High level.

- Resolve conflict-ridden issues, as required.
- Champion critical decisions that effect project scope, budget, or timeline to the OIRM & PRB.

Schedule: Twice Monthly.
Minutes: Meeting agendas & minutes will be stored in R: JHS EHRProject\MeetingMinutes\Executive Steering Committee\date.

JHS Leadership Team

Purpose:

- Provide JHS senior level management oversight to the project.
- Secure JHS resources within authority per Roles and Responsibilities document. Identify constraints and alternatives.
- Monitor Project Budget & Operating Budget. Identify constraints and alternatives.
- Monitor Project Timeline & Project Plan. Recommend adjustments, as required.
- Monitor Issues Log. Solve issues, as required.
- Evaluate project deliverables.
- Endorse modifications to project scope and operational impacts.

Authority: Intermediate level.

- Resolve critical issues that fall within the Day-to-Day Operations of JHS.
- Resolve conflicts that do not affect project scope, budget or timeline.
- Endorse recommendations that effect project scope, budget or timeline to the Executive Steering Committee.

Schedule: Twice Monthly.
Minutes: Meeting agendas & minutes will be stored in R: JHS EHR Project\Meeting Minutes\JHS Leadership Team\date.

JHS Operations Team(s)

Purpose:

- Provide JHS operational management oversight to the project.
- Assign JHS resources within authority per Roles and Responsibilities document. Identify constraints and alternatives.
- Monitor Operating Budget. Identify constraints and alternatives.
- Monitor Project Timeline & Project Plan. Recommend adjustments, as required.
- Monitor Issues Log. Resolve issues, as required.
- Evaluate project deliverables.
- Endorse modifications to project scope and operational impacts.

Authority: Day-to-Day Operations Management.

- Resolve minor to intermediate issues that fall within the Day-to-Day Operations of JHS.
- Resolve conflicts that do not affect project scope, budget or timeline.

Schedule: Bi-Weekly (1st and 3rd weeks)

Minutes: Meeting agendas & minutes will be stored in R: JHS EHR Project\Meeting Minutes\JHS OPS Team\date.

JHS EHR Implementation Project Team[i]

Purpose:

- Provide day-to-day Project Management.
- Coordinate resources per Roles and Responsibilities document. Identify constraints and alternatives.
- Create project deliverables. Conduct walk-thru and gain approvals, at appropriate levels.
- Create and monitor Project Timeline and Project Plan. Report project status.
- Monitor Project Budget. Escalate potential overages to JHS EHR Executive Steering Committee.
- Create and monitor Issues Log. Resolve or triage issues, appropriately.
- Identify modifications to project scope and operational impacts. Resolve or escalate appropriately.
- Create agendas and materials for JHS EHR Executive Steering Committee.
- Create and present OIRM & PRB deliverables.

Authority: Day-to-Day Project Management.

- Resolve minor to intermediate issues that fall within the Day-to-Day Operations of JHS and the EHR.
- Resolve conflicts that do not affect project scope, budget or timeline.
- Escalate issues to JHS Operations Team(s), JHS Leadership Team, or JHS EHR Executive Steering Committee, as appropriate.

Schedule: Twice Monthly (alternate weeks of the Executive Steering Committee). Potentially, STAT if a critical issue arises.

Minutes: Meeting agendas & minutes will be stored in R: JHS EHR Project\Meeting Minutes\JHS Implementation Project Team\date.

JHS EHR On-Going Support Team

Purpose:

- Provide daily System Operations & Job Scheduling
- Provide daily System Performance Monitoring
- Provide daily Help Desk Support
- Provide Issues Resolution, Tracking, & Escalation
- Provide Ad Hoc Report Creation, Scheduling
- Perform Vendor Management
- Perform System Management
- Perform Change Management
- Perform Service Level Agreement(s) Management
- Conduct Business Continuation and IT Disaster Recovery
- Schedule periodic System Maintenance
- Schedule periodic System Release Upgrades
- Schedule on-going Training

Authority: Day-to-Day System Management.

- Resolve minor to intermediate issues that fall within the Day-to-Day Operations of JHS and the EHR.
- Escalate issues per Service Level Agreements.

Schedule: Weekly

Minutes: Meeting agendas & minutes will be stored in R: JHS EHR Project\Meeting Minutes\JHS On-Going Support Team\date.

[i] Project Team list of members and roles and responsibilities

JHS Operations Manager:

- Serve on the Steering Committee and provide staffing for Committee
- Role during Project Implementation.
  - Joint responsibility with the EHR Project Manager to ensure successful implementation.
  - Lead Project Implementation primarily from an Operations Perspective.
  - Ensure appropriate level of communications within JHS.
  - Ensure appropriate levels of training.
  - Business Continuation Planning in coordination with IT Disaster/Recovery.
- Role during On-Going Maintenance & Support.
  - EHR On-Going Support Team Manager.
  - On-going vendor relationship.

EHR Project Manager:

- Serve on the Steering Committee and provide staffing for the Committee
- Joint responsibility with the JHS Operations Manager to ensure successful implementation.
- Led Project Implementation primarily from a technical perspective through post-implementation review.
- Adherence to Project Implementation Methodologies.
- Development of Project Plans and Timelines.
- Issues Tracking and Escalation.
- Budget Tracking.
- Resources Management.
- Project Deliverables.
- Create Service Level Agreements.

EHR System Administrator

- System Application and Administration Training (i.e. Vendor Application Certification).
- System Table Builds and On-Going Maintenance.
- Unit Test, Integration Test, System Test & Model Office.
- Training, maybe.
- Change Management from a system perspective.
- System (Application) Security Administration.
- Task Scheduling.
- Report Scheduling.
- System Performance Monitoring.
- Help Desk.
- Liaison to KC IT, the vendor for technical problem escalation.
- User Conferences.

EHR Business Analyst(s)

- Business Analysis and Work Flow Process Re-Engineering

- Business Requirements (on-going improvements)
- Participate RFI/RFP Preparation
- Participate in Vendor Selection
- System Application Training and Administration Training back-up role (i.e. Vendor Application Certification)
- System Table Builds and on-going maintenance
- Test Scripts
- Unit Test, Integration Test, System Test & Model Office
- Change Management from a users perspective
- Policy & Procedure Assurance
- Quality Assurance
- Help Desk
- Liaison to JHS Operations, the vendor for application issues, enhancements
- User Conferences

Training Coordinator

- Assist in developing training curriculum and materials.
- Schedules training.
- Conduct (or assist) in Training.
- Evaluate test scores and report results.
- Develop PC Skills Assessment
- Conduct Assessment
- Prepare report with recommendation
- Schedule, train, certify PC Skill Training

JHS Clinical Team: Super User(s) (10 users)

- Build Business Requirements.
- Participate in vendor evaluations.
- May go on site visit(s). TBD depending on associated costs.
- Receive formal training from the vendor (i.e. will act in Train-the-Trainer role).
- Assist in building as-is processes.
- Assist in developing to-be process flows.
- Assist in building test scripting, and perform testing. Will participate in model office exercise(s).
- Act as first line application support during go-live.

JHS Project Support