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A Study to Determine a Viable System for Tracking Outpatient Medical Records at Letterman Army Medical Center

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A two-part study of the Outpatient Medical Records Branch (OMRB) was conducted at Letterman Army Medical Center because of the inability to adequately monitor and track outpatient medical records, as well as because of a Joint Commission finding that records were not being adequately safeguarded. The first part of the study consisted of an examination of how the branch functions internally and how it relates to other areas within the MEDCEN, and a review of three medical record tracking systems (MRTSs) currently used at other hospitals. Those MRTSs that satisfied the basic requirements at LAMC were further reviewed. The second part of the study involved a comparison between and cost analysis of those MRTSs that satisfied the basic LAMC requirements. Two of three record tracking systems that were reviewed satisfied the minimal requirements. Therefore, the deciding factor came down to a simple, straightforward cost comparison. The record tracking system from Current Technologies Concepts (CTC) "Medical Record Automated Chargeout System" proved to be the least expensive system and is recommended for purchase and implementation. Both options (portable and fixed) offered by CTC were less expensive than the systems offered by Intelus. It is anticipated the selected

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system will 1) increase productivity within the OMRB with minimal increase in resources, and 2) improve accountability of outpatient records.

DEPARTMENT OF THE ARMY
LETTERMAN ARMY MEDICAL CENTER
PRESIDIO OF SAN FRANCISCO, CALIFORNIA 94129-6700

REPLY TO
ATTENTION OF:

HSHH-DCA (351-3b)

19 April 1990

MEMORANDUM FOR Residency Committee, US Army-Baylor University Graduate Program in Health Care Administration, Academy of Health Sciences, US Army, Fort Sam Houston, TX 78234-6100

SUBJECT: Graduate Management Project Proposal

1. Enclosed is CPT Jeffrey S. Cook's Graduate Management Project (GMP). I have reviewed the project in detail with CPT Cook, with some minor modification being made as a result. I believe the GMP is well thought out and well written.

2. Although the utility of the project for Letterman Army Medical Center is doubtful in light of our impending phasedown and closure, the project should have value for other medical treatment facilities seeking to improve patient medical record accountability.

Robert B Aasen

ROBERT B. AASEN
Colonel, MS
Deputy Commander for Administration/
Chief of Staff

Encl
as

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91-04199

A STUDY TO DETERMINE

A VIABLE SYSTEM FOR TRACKING OUTPATIENT MEDICAL RECORDS AT LETTERMAN ARMY MEDICAL CENTER

A Graduate Management Project

Submitted to the Faculty of

Baylor University

in Partial Fulfillment of the

Requirements for the Degree

of

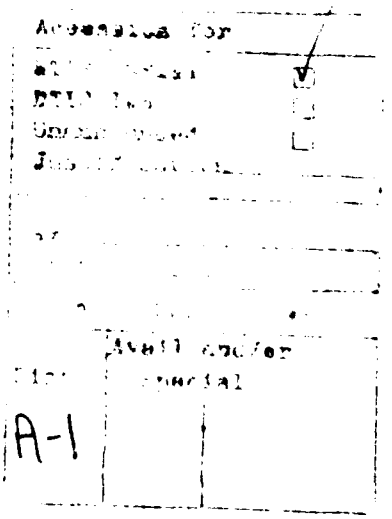
Master of Health Administration

by

Captain Jeffrey S. Cook, MS

April, 1990

RUNNING HEAD: OMRB MRTS



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Abstract

A two part study of the Outpatient Medical Records Branch (OMRB) at Letterman Army Medical Center (LAMC) was conducted because of concerns over its inability to adequately monitor and track outpatient medical records as well as a Joint Commission finding that records were not being adequately safeguarded. The first part of the study consisted of an examination of how the branch functions internally and how it relates to other areas within the MEDCEN and, a review of three medical record tracking systems (MRTSs) currently used at other hospitals. Those MRTSs that satisfied the basic requirements at LAMC were further reviewed. The second part of the study involved a comparison between, and cost analysis of those MRTSs that satisfied the basic LAMC requirements. Two of three record tracking systems that were reviewed satisfied the minimal requirements. Therefore the deciding factor came down to a simple and straightforward cost comparison. The record tracking system from Current Technologies Concepts (CTC) "Medical Record Automated Chargeout System" proved to be the least expensive system and is recommended for purchase and implementation. Both options offered by CTC (portable and fixed) were less expensive than the systems offered by Intelus. It is anticipated that the selected system will 1) increase productivity within the OMRB with minimal increase in resources and 2) improve accountability of outpatient records.

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Introduction

Conditions Which Prompted the Study

Letterman Army Medical Center (LAMC) is a 346 bed, tertiary care teaching hospital, with 49 clinics. LAMC is part of the network of Military Treatment Facilities (MTFs) in the San Francisco/ Oakland Standard Metropolitan Statistical Area (SMSA) and as such has overlapping patient catchment areas. LAMC administrators are concerned that the extensive network of clinics, both within LAMC and external to LAMC, has produced a condition in which current procedures for maintaining accountability of outpatient medical records is inadequate.

Two primary concerns that faced the Outpatient Medical Records Branch (OMRB) at LAMC were 1) increasing productivity within OMRB given that there will be no increase in staff, and 2) improving accountability of outpatient records.

HSC Pam 40-7-5 , Ambulatory Patient Care: Outpatient Medical Records Improvement Actions, provides a series of performance factor ratios that are based on data routinely available or routinely collectable. The ratios provide patient administrators indicators of successful implementation of "good outpatient record practices" as well as providing "data useful in correlating the outpatient records function with direct patient care functions" (HSC, 1885). It was

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expected that a review of performance factor ratios would have indicated the need for improvements in the management of outpatient treatment records. Although, these indicators are no longer formally maintained, the Chief of the OMRB stated that on average there are 500 to 600 records that are overdue to the OMRB and possibly as many as 10% of those records may be lost.

Additionally, the last Joint Commission on Accreditation of Healthcare Organizations (JCAHO) noted as a contingent finding that "... records were carried by patients from the outpatient area to the hospital. Patients also carried records when transferred to another hospital" (JCAHO correspondence to LAMC, 1988). The concern was that the hospital could not adequately safeguard the medical record if patients are given the medical record. Army Regulation (AR) 40-66 Medical Record and Quality Assurance Administration, clearly outlines procedures for signing out the medical record to the patient. However it is incumbent upon the MTF to maintain accountability of these records.

A detailed review of the operating procedures of the OMRB revealed that although a system was in place for monitoring the release of outpatient records from the file room, the system was not able to effectively track records after they were

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signed out from the OMRB file room. Furthermore additional staff was not and would not be made available to effectively perform these tracking functions.

Outpatient records management has been and continues to be a major problem area for medical record managers. In 1981, the U.S. Army Audit Agency (AAA) identified recurring deficiencies in medical records management at many of the Medical Treatment Facilities (MTFs) that were surveyed. Similar problems were disclosed in a number of Health Services Command (HSC) internal reports. Most of the problems were not the result of inadequate policy and procedural guidance, rather the majority of problems occurred because prescribed procedures and controls were not implemented effectively or adequately monitored by medical activities.

Record managers have asserted that inadequate staffing had led to decreased levels of effectiveness and efficiency of the outpatient medical records branch and also severely restricted implementation of management improvement actions (U.S. Army Audit Agency, 1981). Whatever the case may be, it is clear that improvements in outpatient record management need to occur. Increased productivity by record departments can only be considered as part of the answer. Productivity, given a fixed workforce, can be increased by working harder, faster, or smarter. By working the workforce harder the manager may realize increased productivity in the short-run. However this

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strategy can lead to worker burn out and productivity can slip below its original level. The second strategy, working faster, can lead to similar results as working harder. Working faster will probably require a modification to the current process. The final way to improve productivity is to work smarter. This will require the manager to improve or streamline the work process but it is the best method for improving productivity in the long-run. One method of working smarter available to the medical records manager is the automated medical record tracking system (MRTS).

Medical record tracking Systems can save time and money as well as improve record accountability. MRTSs can track medical records throughout the hospital as well as satellite facilities. Automated systems can provide on line answers to questions such as: Where is a medical record now? Where has it been? Where should it go next? Where is it filed?

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Problem Statement

Letterman Army Medical Center (LAMC) currently has no effective means of tracking outpatient records. Due to time and staffing limitations LAMC therefore wishes to implement an existing commercial software package to satisfy this need.

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Literature Review

Typically, the Outpatient Medical Record Branch (OMRB) within U.S. Army Medical Centers (MEDCENs) commonly performs thirteen major functional operations (Department of the Army, 1989). A functional operation can be defined as a special purpose or characteristic process that executes a defined action. For the OMRB, functional operations are common processes used to achieve specific departmental objectives and are characterized by the processes generally performed for patient record development, processing, retention, and retrieval. The management and control of record accessibility and retrieval are two of these thirteen functional operations.

Record control or record management are the procedures used to identify and control the location of patient records. OMRB must be able to locate and retrieve records when they are requested. To achieve constant record accessibility precise tracking of records within and outside the medical record department must be accomplished (Waters and Murphy, 1983).

Medical record tracking systems have been developed in many settings. The purpose for these systems are to identify the exact location of the medical record at any given time. Record locator systems are designed to improve access and retrieval of the medical record by inquiring through patient name or number

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on a display terminal or using other computer-assisted methods. Record locator systems can be coordinated with record request operations for clinic appointments, patient readmission, research studies, and other record requests (Waters and Murphy, 1983).

Although these record systems are automated they still maintain the requirement to be updated as needed. Data entry is the most time consuming portion of any computer operation. The end result, the computers output, is only as good as the input data. Bar coding and forms symbology provide a virtually error free and automated means for inputting data. Bar coded data with an error rate of approximately 1 in 6 million can be considered error free. Bar code scanning can also save time and is 5 to 10 times as fast as key entry (Braun, 1984).

A survey conducted by the American Hospital Association (Longe, 1989) concluded that trends indicate that not only is bar coding being used in hospitals but that its use is growing and will continue to grow. Results indicated that applications in radiology and medical records account for nearly 17% of the current use and 21% of the planned bar code use. Those respondents that responded to the question about the development of software for their bar code application indicated by nearly 4 to 1 that they chose commercial programs over in-house development (Longe, 1989).

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Recent case studies of bar coding in medical records departments have illustrated the use of similar methodologies in their assessment of their medical records department (Mudie, 1988; Stolsky, 1989). The case studies indicated that the process involved in assessing the needs of the records department to implementation of a bar code system took longer than a year and involved the use of work-groups. Longe (1989) recommends that hospitals institute a pilot project involving one application of bar coding, such as medical record tracking, while reviewing other possible applications for bar coding within the hospital. In either case the process used by the hospitals generally remained the same.

Examples of this methodology include the processes followed by Henry Ford Hospital (Mudie, 1988) and at Dartmouth Hitchcock Medical Center (Stolsky, 1989) and include the following:

* Analyze the medical records department's functions and operations to determine if a problem exists and if so identify where the problem exists.

* Determine if the needs of the institution are currently being met.

* Identify the functional requirements of the desired medical record tracking system.

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* Conduct a survey to identify any existing software packages that meet the requirements (and concurrently assess the feasibility of developing the system in-house).

* And finally, implement and test the system (while concurrently training the staff on the new system).

The case studies indicated that the two most common approaches involved the purchase of packaged systems. These packaged systems or "turnkey" systems are gaining in popularity because of the savings that can be realized in the operating budget if hospital does not have to hire or contract for technical design and programming personnel. Two examples of turnkey systems are: 1) purchase the hardware and software from a single vendor and 2) purchase the software from a vendor who then arranges for the hardware from another vendor that they have a contract with. An example of the former is the "ChartFlo" system offered by Intelus. An example of the latter is the "Medical Record Automated Chargeout System" offered by Current Technology Concepts. Although, these systems are "off-the-shelf" it is not uncommon for them to be tailored to meet the specific needs of the purchasing hospital. Both of the aforementioned record tracking systems are bar code-based systems. Common retrieval options for bar code-based record tracking systems include:

* Record location by medical record number

* Record check-out by location

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* Record check-out by physician or employee number
* Record check-in
* Record check-out display by location
* Record check-out display by doctor or employee number

An example of the "ChartFlo" record tracking system can be found in use at Capitol Hill Hospital a 250-bed hospital in Washington, DC. ChartFlo consists of six notebook-sized work stations with attached bar code wands, a central microcomputer base station, and a free-moving bar code wand (Connelly, 1987). Like most systems, ChartFlo, combines the speed and accuracy of bar coding with record tracking software to ensure chart accountability. ChartFlo can track multiple volume records independently within the OMRB and throughout the hospital. The system can provide a wide variety of reports thus eliminating the need for manual logs. ChartFlo's capabilities extend beyond simply tracking record locations and include monitoring record status, managing record deficiencies, and increasing the overall efficiency of the records department (Intelus, 1989).

Bar code-based record tracking systems have shown to be very successful in controlling and tracking medical records. Additionally, improvement in productivity of records departments as a result of bar code-based record tracking systems has been noted (Lach & Longe, 1987 and Mudie, 1988). Military Medical Treatment Facilities have been slow in

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adopting these MRTSs. One major reason has been the promise of an integrated hospital information system that includes a module for bar code-based record tracking. The system is known as the Composite Health Care System (CHCS). The fate of CHCS is still unknown and it could be years before the system (if funded) is fully operational. Due to the uncertain future of CHCS several Military Medical Treatment Facilities have reviewed and purchased interim bar code-based record tracking systems. Madigan Army Medical Center (MAMC), Fort Lewis, Washington, purchased a packaged system called the "Chart Librarian". The Chart Librarian is a bar code-based record tracking system similar to the Medical Record Automated Chargeout System offered by Current Technologies Concepts.

The discussion and product reviews of the systems mentioned in this literature review will be addressed later in this paper.

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Purpose

The purpose of this study was to select the best off-the-shelf automated medical record tracking system for use at Letterman Army Medical Center.

Objective 1

Provide a summary of automated medical record tracking systems that are used in other hospitals (both military and civilian).

Objective 2

Conduct a study of the Outpatient Medical Records Branch (OMRB) at LAMC. This study included:

* a review of existing procedures for medical record management within the branch,
* preparation of a written list of the constraints to insure that required factors (e.g. Army Regulations, HSC Regulations, local policy, JCAHO standards, etc.) are included in the problem identification process,
* preparation of a Data Flow Diagram for the OMRB.

Objective 3

Identify the desired functional requirements of the potential automated medical record tracking system. This was accomplished by:

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* providing written goals and objectives for the medical record tracking systems, (this should specify the operational objectives)
* recording the description of the criteria for the objectives so that the expected performance for each objective was specified, and
* developing examples of system outputs (include these in the documentation for the performance specifications).

Objective 4

Compare existing off-the-self software packages using developed criteria. To do this a list of bar code based MRTSs was extracted from the American Hospital Association's (AHA) directory of bar code users (Longe, 1989). The comparison of the systems included:

* determining which packages satisfied the functional requirements. Where the functional requirements were determined by the OMRB.
* reviewing the hardware requirements (i.e. system compatibility with Zenith computers), and
* providing a cost comparison for each system.

Objective 5

Provide conclusions and recommendations based on the results of the previous four objectives.

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Criteria

1. The determination of satisfying the functional requirements was made based upon each system's ability to meet certain mandatory requirements (i.e. Could the system: use bar code scanners as a means of data entry, provide on-line information on record locations, produce specified management reports, etc.)

2. Software packages must by compatible with the Zenith computers used throughout LAMC.

3. The cost comparison of each system will be measured in terms of implementation costs of the system.

Assumptions

1. The scope of operations for the OMRB will not change during the course of this project.

2. LAMC will not be scheduled to receive any automated system that performs a medical record tracking function.

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3. Funds will be available to purchase the recommended system.

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Limitations

1. Retrieval of records management indicators (HSC PAM 40-7-5) was limited due to the lack of historical data.

2. The cost analysis did not reflect the value/benefit of any features that exceeded the minimal functional requirements (i.e. the least expensive system that meets the minimal requirements would be the system of choice). This may have lead to the exclusion of a more capable or otherwise possibly superior system on the basis of cost alone.

3. The vendors willingness to provide comprehensive data on cost was limited due to the nature of the request (i.e. assistance for an academic paper).

Methods and Procedures

Methods

This Graduate Management Project involved a two part study. The first part consisted of a study of the OMRB at LAMC. This required an examination of the branch's functional operations. These functional operations are the common processes used to achieve the branch's specific objectives and are characterized by the processes generally performed for patient record development, processing, retention, and retrieval. This analysis was then used as the foundation on which the requirements for a MRTS were laid. The second part involved a comparison of three bar code-based record tracking systems. The three MRTSs were compared against a checklist of the desired functions of a record tracking system. This checklist was developed by the OMRB. All of the MRTS satisfied the functional requirements and a cost analysis of each system was completed to determine the most cost effective system. The selection of a MRTS was then be based on the cost analysis (i.e. the least expensive MRTS was chosen).

Procedures

Management Summary

A comprehensive literature review was conducted to examine the uses of computerized medical records tracking systems with specific interest in outpatient records. The

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literature that was reviewed included existing case studies involving computerized record tracking; current articles on bar coding in the health care industry; vendor brochures and product reviews. The literature review served two primary purposes. First it identified MRTS for review and consideration. And second, it helped to develop the methodology for selecting the most feasible MRTS.

Conduct a Study of the OMRB

The study of the OMRB began with an initial investigation to clarify the problem. To accomplish this a thorough review of the OMRB was required. This review included familiarization of both internal and external policies that impact on the organization and operation of the OMRB.

The first step was to identify the policies, sometimes referred to as constraints, that formed the boundaries and establish the rules and regulations, both organizational and legal, that impact on the OMRB. This included HSC and Army regulations, JCAHO standards, hospital and departmental Standing Operating Procedures (SOPs), and to a lesser degree the budgetary limitations and organizational boundaries. Consideration was also given to the goals and objectives of the current medical record management system.

The second step required an examination of the OMRB current operations. This involved spending time in the OMRB and observing the daily operations. Based on these observations

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and with the assistance of the Chief, OMRB a Data Flow Diagram (DFD) was developed. A Data Flow Diagram is a structured analysis and design tool that can be used in lieu of, or in association with, information-oriented and process-oriented systems flowcharts. The DFD is a network that describes the flow of data and the processes that change, or transform, data throughout a system. It is constructed by using four basic symbols that represent data sources, data flows, data transformations, and data storage (Gore and Stubbe, 1983).

Defining the Desired System

The performance of the desired system had to be defined. To accomplish this task it had to be broken down into three separate components: First, the goals and objectives of the MRTS had to be clearly stated. Second, the criteria for the objectives had to be specified and recorded. Third, the systems outputs had to be described.

Feasibility Analysis

Existing off-the-shelf software packages were selected as candidates and then described. The list of candidate systems was extracted from the AHA's directory of bar code users, specifically from bar code applications in medical records. One of the candidates came from a list of US Army MEDCENs using record tracking systems. This list was supplied by the US Army Patient Administration and Biostatistics Agency. Each description of the candidates included a brief discussion of

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the systems software capabilities as well as the hardware requirements and configuration. Systems that were said to satisfy the objectives of the desired system objectives, as conceived by the OMRB, were considered for further review. Table 5 is a matrix that illustrates how the various systems compared with the OMRB goals of the desired system (i.e. the ability to meet the functional requirements).

The selection of the most feasible system was made on the basis of cost. Cost worksheets were completed for each of the proposed tracking systems. Each of the three vendors supplied two separate proposed configurations. Cost information from these six cost worksheets was then extracted and compared to one another as illustrated in table 6.

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Discussion

Outpatient Medical Records Branch

This discussion includes a brief overview of the organization and functions of the OMRB and is followed by a more in-depth examination of the day to day operations. Daily operations can be segmented into four separate activities: 1) records processing, 2) request for records, 3) documents filing, and 4) records retrieval.

Organization

The OMRB is organized to operate in two shifts--the day shift and the evening shift. The Day shift functions include document filing, reception processing, outpatient record control, and patient eligibility verification and billing. The Evening shift functions include record refiling and appointment processing. Both shifts report to the chief of the OMRB, and the Chief, OMRB reports to the Chief of the Patient Administration Division.

Functions

Health Services Command Regulation 10-1, Organizations and Functions Policy, (Department of the Army, 1989) assigns responsibility to the OMRB for the following functions:

1. Manages health record (HREC) and outpatient treatment record (OTR) operations and personnel in the hospital and in all Troop Medical Clinics and health clinics functioning as elements of the installation-wide primary care and community medicine.

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2. Provides technical assistance in medical records management for clinics at other installations in the Health Service Area.

3. Maintains a nominal cross-index file for those records filed by terminal digit.

4. Prepares patient recording cards for all patients and monitors maximum utilization by patients and staff.

5. Operates a records control program to ensure the deliver, return, and follow-up of records removed from the records room.

6. Coordinates with the military personnel support activities on matters pertaining to HREC processing for incoming and departing members and periodic HREC inventories.

7. Coordinates with professional staff on the screening of incoming HRECs.

8. Specialized management of records containing sensitive medical data or for personnel in special category programs.

9. Reviews HRECs and OTRs to ensure complete identification data, complete entries, and the proper filing of forms.

10. Provides assistance to the medical records administration branch in coordinating support of ambulatory medical care evaluations and documentation reviews of HRECs and OTRs.

11. Manages civilian employee outpatient medical records when not accomplished by an Occupational Health Clinic (OHC). Technical assistance is provided when the records are maintained by the OHC

12. Provides assistance to the medical service accountable officer in initiating outpatient care payment/reimbursement as appropriate.

13. Performs DEERS eligibility requirements in accordance with Department of Defense (DOD) regulations and instructions.

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Records Processing

In general there are three different types of medical records maintained by the OMRB. These are the medical records pertaining to active duty members, referred to as the health record (HREC); records pertaining to nonactive duty beneficiaries (dependents and retired) commonly referred to as outpatient treatment records (OTR), and the medical records of civilian employees which are designated as Civilian Employee Medical Records (CEMR). Throughout this paper the term "record" will be used when referring to all categories of records maintained in the OMRB unless specifically noted otherwise.

Health Records

Newly assigned Active Duty personnel are required to turn in their HREC to the post Consolidation of Military Personnel Activities (COMPACT), along with their Personnel Records, at the time they in-process. If the Active Duty service member does not have a HREC, a temporary HREC is made, and then a new HREC, as needed, in accordance with paragraph 5-8, AR 40-66. The HREC is then sent to the OMRB where it is filed according to the Terminal Digit Filing system. All incoming HRECs are screened by the Physical Examination Section. HRECs for personnel that are members of the Personnel Reliability Program

(PRP) are managed separately in accordance with applicable regulations.

A list of the Active Duty members who have a HREC on file in the OMRB is maintained in nominal and numerical form and is updated weekly. The names of the new members are entered on the Tri-Military Information System (TRIMIS), and a PRC normally made at this time.

When an Active Duty member out-processes, he picks up his HREC at the patient reception window (located in the main lobby of the second floor). At that time he is required to complete DA Form 3705 (Receipt for Outpatient Treatment/Dental Records) and a copy of his Permanent Change of Station (PCS) orders are attached. The DA Forms 3705 that have accumulated in the OMRB are processed as follows:

* The departing member's identifying data and destination is entered on the TRIMIS comment screen

* The member's name, Family Member Prefix (FMP), and Social Security Number (SSN) are entered as a loss on the LAMC 888 (Outpatient Medical Records worksheet).

* The member's clearance form is then initialed in the appropriate block, and the member is reminded that Military Personnel Office (MILPO) will not complete their part of the out-processing procedure unless member turns over the HREC to the MILPO.

Outpatient Treatment Records

The Outpatient Treatment Record (OTR) is initiated for each patient treated as an outpatient at a US Army medical and

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dental treatment facility for whom an HREC is not prepared. After being initiated, the OTR is kept in the OMRB.

To ensure that the patients's record is complete, the OMRB ensures that when a patient changes residences the OTR is transferred to next Medical Treatment Facility (MTF). Transfer to the gaining MTF can occur in several different ways. The most common ways involve either mailing the OTR or hand carrying the OTR. OTRs that are hand-carried will be in the possession of authorized adults only. The patient signs for the OTR on DA Form 3705 (Receipt for Outpatient Treatment / Dental Records). In the case of minors the parent or legal guardian must sign for the OTR. An adult's OTR is not released to another patient unless the patient has provided signed authorization for the release of the OTR.

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Civilian Employee Medical Record

The Civilian Employee Medical Record (CEMR) is initiated under the following circumstances:

* When the Chief, Preventive Medicine Service (Occupational Health) forwards a copy of the Standard Form (SF) 177 or other documents to be included in an occupational health record.

* When a new civilian employee undergoes a pre-employment physical examination and requests a CEMR and Patient Recording Card.

* When the Civilian Personnel Office (CPO) forwards medical documents of a civilian employee transferred to the Presidio of San Francisco (PSF) and a CEMR is not on file with the OMRB.

The CEMR is filed in a DA Form 3444 cover (Treatment

Record) and is identified as an outpatient treatment record. Black tape is placed over the "S" block on the right edge of the cover, and the tape for the current year placed over the "R" block. Additionally, the cover is stamped "CIVILIAN EMPLOYEE MEDICAL RECORD".

Employees that are also a military dependent are considered to have "dual status" and as such have a "Dual Status" label affixed on the cover their CEMR and OTR. Additionally, the CEMR will have the employee's own SSN preceded with a FMP of 00.

When the employee resigns, retires, is terminated, or is separated for other reasons, the Chief, Technical Services Branch, Civilian Personnel Office, informs the OMRB of the action. The OMRB then pulls the file, enters the employee's name, FMP, and SSN on the LAMC Form 888 (Outpatient Medical Records Worksheet) as a loss, and then forwards the CEMR to the Chief, Technical Services Branch at the Civilian Personnel Office. The Civilian Personnel Office then forwards the CEMR to the Federal Records Center.

Civilian Emergencies

Records on civilian emergencies brought to the Letterman Emergency Room, records are started based upon the name of the patient and their own SSN. When the SSN is not available

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records are started using an artificial number. Additionally, the Family Member Prefix shown both on the record and the patient roster will be "98".

Foreign Nationals

The records of foreign Nationals and their dependents are initiated based on the name and serial number shown on the sponsor's identification card. The serial number is modified to resemble that of the SSN used by U.S. personnel.

Public Health Service Officers

The OMRB also maintains the records of Officers of the U.S. Public Health Service. Their records are prepared similar to the records maintained for dependents and retirees, and the tape over the "S" block on the DA Form 3444 (Treatment Record) is black. These records are filed with the dependent and retiree OTRs.

Temporary Records

Records are initiated for documents reflecting the treatment of authorized beneficiaries for whom no outpatient record can be found. If the patient is found to be on the alphabetical roster and there is no outcard, or no record in file, a record is initiated and marked "Temporary". Patients not found on the roster, but who are eligible for care will have a permanent record started.

Requests for Records

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Requests for records can be separated into four different categories. The first category are those requests generated from the Patient Appointing System (PAS) and these account for the largest percentage of requests. The second category are those requests that are generated from clinics not using the PAS. The third category of requests are generated from the patients or the sponsors of the patients. The final category of requests represents all other requests not previously mentioned. Examples of this category include requests from the MEDCEN Medical Claims Judge Advocate, MEDCEN Risk Manager, and the Patient Administration Division (PAD).

All individuals that request care at LAMC are required to present identification to prove eligibility. The Armed Forces Identification Card, DD Form 2A, or the Uniformed Services Identification Card, DD Form 1173, generally are prima facie evidence for eligibility. However there are three instances that require verification of eligibility. The first is when a prospective patient requesting the record does not have a valid identification card. The second is when a LAMC staff member questions the patients eligibility and requests that a Defense Enrollment Eligibility Reporting System (DEERS) check be made. The third, and final instance, is when the OMRB evening shift prints the list of scheduled appointments prior to pulling the records.

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After eligibility has been established the records are then pulled and the location of where the record is charged out to is annotated on the Chargeout Card, Optional Form 23. The Chargeout Card is completed and placed in a plastic sleeve on the shelf replacing the record.

Patients that are picking up their records to take out of the MEDCEN must complete the Receipt for Outpatient Treatment/Dental Records, DA Form 3705. Active Duty sponsors that are undergoing a Permanent Change of Station (PCS) may pick up their own record and that of their dependent children, but not that of their spouse without written authorization. In the case of a soldiers separation from the service his or her record remains the property of the government, but individuals may requests copies of their records through the PAD Correspondence Branch.

Retirees who are moving to another location may pick up their records, and those of their dependents, with proper authorization.

Outpatient Records Retrieval

The record is considered overdue if it is not returned to the OMRB within five calendar days of the chargeout. The day of chargeout is counted as day one. AR 40-66, paragraph 4-6(3) states: "Records sent to in-house clinics will be returned the same day as the clinic visit However, if the record is transferred to another clinic for consultation the following

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day, a change-of-charge will be sent to the record custodian in lieu of the record." Thus the need for a retrieval system was established. The manual record retrieval system is manpower intensive and requires constant monitoring. The monitoring is somewhat facilitated through the use of colored chargeout holders. A different colored chargeout holder is used from 0730 to 2400 hours on each day of the week as depicted in Table 1.

Table 1 Chargeout Holders

DAY	COLOR
1. MONDAY	BLUE
2. TUESDAY	YELLOW
3. WEDNESDAY	GREEN
4. THURSDAY	RED
5. FRIDAY, SATURDAY, SUNDAY	ORANGE

For example, on Friday records that were charged-out on Monday with the blue chargeout holders will have been out 5 working days and are due back to the OMRB. Retrieval action begins on day 5. After the record has been out for five days the out-holder is pulled and the contents are transferred to clear out-holders and refiled. All colored out-holders are pulled and transferred the day before the color is used. The clear out-holders are kept in file for 30 calendar days from the chargeout date unless the record returns. Retrieval

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procedures are outlined in Table 2. Although the procedures outlined in the table refer to the OTR they hold true for all records overdue to the OMRB.

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TABLE 2
LAMC OMRB
Outpatient Treatment Records Retrieval Procedures

Calendar day 1-5: OTR chargeout and chargeout device maintained in colored out-holder.

Calendar day 5: (1) Contents of colored out-holders are transferred to clear out-holders.
(2) Start on or add to, list of overdue records: (Patient Name/FMP/Last four of sponsor's SSN/ location where record has been charged out to/Provider/ Date charged out and for Military members, Military unit.) The list is made manually or entered into OMRB computer files.

Calendar day 5-30: (1) Filers make visits to clinics in an attempt to retrieve records and requests LAMC Form 181, Change-of-Charge, if the record is needed longer.
(2) Send a list of patients with overdue OTRs to Chiefs of clinics and services requesting their assistance in retrieving the records.
(3) After first retrieval attempt, send LAMC FL 27 to sponsor believed to be hand-carrying the record, and put a copy in the clear out-holder.
(4) Make a weekly follow-up visit until calendar day 30.
(5) Record all retrieval attempts
(6) Check files of DA Forms 3705 and DD Form 887. If the patient has left PSR for another duty station drop the patient from the roster and mail any loose medical forms to the Commander of the gaining unit.

Calendar day 30: (1) Remove contents of clear out-holders.
(2) Drop patient names if only the chargeout cards are in the file.
(3) Make temporary record if necessary
(4) Drop patient names on any DA Form 3705 that is past the chargeout period set by the patient, and file the DA Form 3705. If the patient still has time to return the record, return the DA Form 3705 to the clear out-holder to file.

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Development of Functional Requirements

Goals and objectives of MRTS

The goal of a record tracking system is to improve record accountability and increase productivity of those workers in the OMRB. LAMC needs a system that will provide centralized, reliable record location information together with control practices and procedures to maintain the integrity of the system.

To achieve this stated goal, the OMRB devcloped a set objectives. The first objective was to choose a record tracking system that could satisfy the constraints placed on the OMRB. The constraints were developed by extracting applicable regulations, policy, and procedures that impact on the OMRB. The second objective was to develop the functional requirements for the system. Because LAMC was going with a package system it was decided that a review of the common capabilities of record tracking systems was in order. The third and fourth objectives where tied to productivity. The third objective called for a record tracking system that was bar code-based, and if possible portable. And the fourth objective called for the system to be able to produce reports that could facilitate the records retrieval process as well as produce reports that could aid management in making policy decisions about outpatient records management.

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Criteria for assessing the Objectives

In order to assess the objectives, criteria were chosen that were thought to best represent what the desired record tracking system could accomplish. These criteria are expressed in Table 3. Additionally, to facilitate the assessment of the objectives the original five objectives where redefined to fit into three broad categories: record tracking and accountability, productivity enhancements, and management reports.

Table 3
Desired functions of the MRTS

Uses both keyboard and bar code readers as a means of data entry.
Provides on-line current record location information for each active folder
Provides on-line prior record location information for each active folder
Tracks multiple folders for each patient separately
Indicates that a folder is lost
Adds a temporary folder to the data base until the lost folder is located
Generates bar code labels for folders of new patients
Adds additional folders to the data base when a thick chart is divided into volumes
Deletes folders from the data base
Prints bar code labels in batch or demand modes
Generates reports for:
* lost records
* lost records located by the system through record activity
* records overdue to be returned to the OMRB
* customized reports
* Memorandum to clinic, provider, or patient that the record is overdue

These criteria then served as the checklist for assessing the record tracking systems ability for satisfying the objectives.

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Description of Systems Outputs

The system should be capable of displaying on line record locations both current and prior. The following are examples of the fields that would be useful to have displayed during a query of a records location:

* physical location
* requester
* needed data (appointment data)
* request type
* record movement date and time
* Master Problem List (yes or no)
* open field (defined by the user)
* open field (defined by the user)

These fields would be in addition to the normal demographic fields for example: Name, SSN and FMP.

The system should also be capable of producing record tracking reports. Examples of these reports include:

* Overdue records by Clinic, Provider, Patient or other
* Summary of overdue records at all locations
* Records in transit to a location outside of LAMC
* Records that have been retired (stored separately)

The overdue record reports should be available both in detail and summary form. Also the records manger should be able to specify for each clinic, provider or patient the timeframe in

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which the records are considered late. This would enable the records manager to proactively manage the entire overdue record process.

A pull list should also be generated for those clinics not on the Central Appointments patient appointing system.

Productivity reports would also useful. Productivity reports offer the OMRB an efficient and accurate means of measuring productivity on a regular basis. These reports would be useful for personnel evaluations and could also be helpful in the identification of systemic problems.

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Feasibility Analysis

Selection of MRTSs for Review

The record tracking systems that were reviewed were identified primarily through two sources. The first source, Ms. Fran Mandel, US Army Patient Administration System and Biostatistics Activity (PASBA), provided the names of two MEDCENs that were using bar code-based record tracking systems: Walter Reed Army Medical Center (WRAMC) and Madigan Army Medical Center (MAMC). The decision was made to go only with MAMC's record tracking system for the following reasons: 1) WRAMC's system included inpatient, dental and radiology records, 2) numerous attempts to contact the vendor were unsuccessful, and 3) vendors for the system purchased by MAMC were available in the Bay Area. The system installed at MAMC

is called the "Chart Librarian" and it was a combined venture with Alps Systems (software) and NCR (hardware). The second source Ms. Karen Longe, formerly with the American Hospital Association, provided the names of three civilian hospitals: Capitol Hill Hospital, Washington, DC; Dartmouth-Hitchcock Medical Center, Hanover, NH; and Henry Ford Hospital and Medical Center, Detroit, MI.

Ms. Longe identified these hospitals as good sources because of the wealth of information they could provide on bar code-based record tracking systems. Henry Ford Hospital and Dartmouth-Hitchcock both were offered as case studies on how to select and implement a record tracking system. Interestingly, both hospitals chose to develop the record tracking programs in-house, and they both chose the same vendor for the bar code hardware--Intermec. For packaged systems Intermec works with Current Technologies Concepts (CTC). Intermec supplies the hardware and CTC provides the software. On the other hand, Capitol Hill Hospital's went with a packaged arrangement called "ChartFlo" by Intelus. The MRTS and the associated vendors are depicted in Table 4.

Table 4
MRTSs selection

MRTS	Vendor Software/Hardware
Chart Librarian	Alps Systems/NCR
Medical Record Automated Chargeout System	CTC/Intermec
ChartFlo	Intelus

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Description of Candidate MRTSs

Chart Librarian

Type of Configuration:
Software: Bar-code-base record tracking system

Hardware: Two approaches:
A. Uses fixed Data Collection Terminals (with bar code wand) that linked to a personal computer in the medical records department.

B. Uses portable Data Collection Terminals (with bar code wand) that linked to a personal computer in the medical records department.

The chart Librarian is a bar code-based computer system that automates record and chart management. The Chart Librarian, by Alps Systems, is the software portion of a packaged deal that is being offered by NCR. NCR supplies the hardware (the Data collection terminals). The Chart Librarian is described as two systems in one, the Data Collection part which processes the data input using bar code reader wands and the Interactive part which allows labels and reports to be printed as well as performing many database maintenance functions.

The data collection portion requires no interaction once it has been started on the computer and it will continue to process input from the bar code reader wands until it is terminated. As is common with all bar code-based programs data are inputted through the use of transaction codes.

The interactive portion is designed using a series of menu screens from which options are selected. Menus are organized with a tree structure. That is to say that from the main menu the user selects options that branch to other menus and then those menus selected branch to yet another set of menus.

Some of the features of the system are as follows:

Record Tracking: Provides on-line record tracking information for both the past and current location.

Chart History: Provides the history of the records activity as it moves from location to location. The feature has the potential of requiring a tremendous amount of disk space and therefore may be limited by the storage capability of the computer.

Pre-assigned transactions codes: This allows for easy and standard data entry.

Interfaces with other computers: Existing databases can be downloaded into Chart Librarian saving time and money if you had to "rekey" existing data.

Report Production: Produces several reports including Chart Location, Delinquent Chart Report, Chart Activity Report, Chart Inactivity Report, Chart Request report, Chart Master List, Chart Activity Master List, and the Chart Request Master List.

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Support: With purchase of the package both technical support and training are provided (fixed amount) and maintenance support is also provided for a fixed timeframe (e.g. 40hrs)

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The Medical Record Automated Chargeout System.

Type of Configuration:

Software: Bar-code-base record tracking system

Hardware: Two approaches

A. PC based system using a server and Local Area Network to access Zenith PCs. Hand-held bar code readers interface with Zenith PCs.

B. PC based system using the Local Area Network to access to a "Transaction Manager". Does not require interface with office based Zenith PCs.

The Medical Record Automated Chargeout System (MRACS) is a bar-code-based system for use in medical records management. The software is produced by Irie Computer and sold by CTC, an authorized reseller of software systems produced by Irie Computer. The system runs on personal computers and can also be installed to operate on a local area network. All functions are menu-driven with on-line help readily available. The system produces the bar codes, maintains the data base, produces reports, and offers multi-level password protection.

The system can use either contact wands or low-power noncontact laser and infrared scanners. To use the system the user scans the bar code label and indicates the location (unit, site, name) receiving the medical record. If a bar code

label does not exist for a medical record then the system can produce a label at the same time the records is charged out.

Some of the features of the system are as follows:

Record tracking: Provides on-line record tracking information including the record location, requester, and record movement data.

Multiple records tracking: Is capable of tracking multiple records for each patient separately.

Expandable system: The system is expandable by simply adding additional workstations and bar code readers as the need arises.

Interfaces with other computers: The system can send and receive data from existing mainframe and computer systems. Data may also be read into spreadsheets and database software programs.

Support: CTC will install the system and train the staff. Additionally several long term support packages are available, including on-site and telephone hotline support. CTC will also customize the system to meet the specific needs of the hospital.

<u>ChartFlo.</u>

Type of Configuration:

Software: Bar-code-base record tracking system

Hardware: Two approaches

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1. Base Station (At&T 3B) using Local Area Network to access Zenith PCs. Hand-held bar code readers interface with Zenith PCs.

2. Base Station (AT&T 3B) using Local Area Network to access to Laptop Workstations.

ChartFlo is a bar-code-based computer system that automates all aspects of record and chart management. The system can automatically track locations, monitor record status, manage the record deficiency process, as well as produce a series of management reports. Based on the requirements provided by the OMRB, the description of the system will be limited to record tracking and the production of management reports. Furthermore the management reports will be limited to record tracking reports.

ChartFlo combines bar code technology with notebook-sized terminals (or laptop computers) and modular software. This enables every location where a record processing activity occurs to record the location and status of the record by simply running the bar code reading wand over the record's bar code label and entering a few key strokes. ChartFlo can provide the following information on-line: Where is a medical record now? Where has it been? Where should it go next? and Where is filed?

ChartFlo's record tracking features are:

Work tracking: This feature allows an individual from any workstation to check the location of the record as well as

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the status of the record. For the outpatient record this could include the a query of the status of the records Master Problem List.

Automated check-in and check-out: With this feature ChartFlo automatically tracks the records as they enter or leave the clinic or OMRB. This feature does away with the need to maintain the manual system currently used by the OMRB.

Tracks multiple volumes of individual charts: This allows for the tracking of multiple volumes of records and multiple locations.

Automated pull requests: ChartFlo can print an advance pull request in the medical records department. The system also permits record reservations and produces prioritized waiting lists for records that are not currently available.

Manages multiple-clinic appointments: When a patient has appointments at more than one clinic the system can be used to control the delivery of the record to each clinic in the required sequence.

Record tracking reports: The system produces numerous tracking reports such as:

* Overdue records by service or location
* Summary of overdue records at all locations
* Records filed with open deficiencies
* Pull lists in Terminal Digit Order
* STAT pull requests
* Records checked out of the OMRB by specified timeframe

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* Records checked out to a particular service or location
* Listing of temporary records
* Records in transit to a location
* Records to be pulled for retirement
* Archived records report (records stored in different location

Ease of use: Each workstation can be tailored to meet the specific needs of the individual clinic. The system uses prompts and menus to help the user and documentation is provided.

Support: Intelus will analyze the specific needs of the institution and recommend the exact ChartFlo configuration. Installation, On-site training, users manuals, and post-installation support are all provided by Intelus. Additionally, the Intelus specialists can interface ChartFlo with existing Hospital Information Management Systems.

Comparison of Candidate MRTSs

Function.

Table 5 illustrates how the candidate MRTSs compared to one another with respect to each candidate's ability to satisfy the prescribed objectives. The results show two of three candidates meet the minimum level of acceptance. The Chart Librarian failed to meet the minimum level of acceptance. The Chart Librarian, although sold as a record tracking system, actually functions more like a inventory manager.

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Table 5
MRTS Functions Matrix

FUNCTIONS	SYSTEMS		
	Chart Librarian	MRACS	ChartFlo
Uses both keyboard and bar code readers as a means of data entry.	YES	YES	YES
Provides on-line current record location information for each active folder	NO	YES	YES
Provides on-line prior record location information for each active folder	NO	YES	YES
Tracks multiple folders for each patient separately	YES	YES	YES
Indicates that a folder is lost	YES	TES	YES
Adds a temporary folder to the data base until the lost folder is located	YES	YES	YES
Generates bar code labels for folders of new patients	YES	YES	YES
Adds additional folders to the data base when a thick chart is divided into volumes	YES	YES	YES
Deletes folders from the data base	YES	YES	YES
Prints bar code labels in batch or demand modes	YES	YES	YES
Generates reports for:			
* lost records	YES	YES	YES
* lost records located by the system through record activity	YES	YES	YES
* records overdue to be returned to the OMRB	YES	YES	YES
* customized reports	NO	YES	YES
* Memorandum to clinic, provider, or patient that the record is overdue	NO	YES	YES

Cost.

Table 6 provides a summary of the cost data for each candidate system. The "cost worksheets" can be found at Appendix D.

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Table 6.
Cost Comparison of MRTSs

	MRACS A	MRACS B	ChartFlo (A&B)
Hardware	42,342	22,977	45,000
Software	15,900	15,900	45,000
Maintenance	8,249	6,239	5,400
Total Cost	$66,491	$45,116	$95,400

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Conclusions and Recommendations

Conclusions

The purpose of this study was to select the best off-the-shelf automated medical record tracking system for use at Letterman Army Medical Center. As stated in the Introduction to the paper there were assumptions that had to be made and limitations that had to be accepted. Given acceptance of the assumptions and limitations this allowed for the simplification of a very complicated and potentially drawn out process. As the literature indicated similar projects at other hospitals took nearly a year to complete and involved the use of project teams and in some cases, outside consultants. The literature also re-enforced the belief that bar code-based record tracking systems where far better than other automated record tracking systems and superior to manual tracking methods (Lach & Longe, 1987; Mudie, 1988; and Longe, 1989).

The study of the OMRB revealed that the manual records retrieval system was inadequate. The Chief, OMRB, estimated that the total number of records overdue to the OMRB at any one time ran as high as 600 records. A printout of the overdue records on 11 April, 1990, revealed that there were a total of 605 records that were overdue to the OMRB (see Appendix E). To retrieve records the OMRB must send record clerks to the various locations indicated on the printout. Even this does

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not guarantee the return of the record to the OMRB because records are sometimes sent to other locations without notifying the OMRB of the change of location.

Due to constraints--time and the decision to go with an off-the-shelf package--the development of the desired functional requirements had to be based on common features normally associated with bar code-based record tracking systems. Therefore the functional requirements were defined by two constraints: 1) the needs of the OMRB, and 2) the availability of bar code-based record tracking systems available for comparison. Although this may be considered a weakness in the study it should be noted that market factors have been a strong force in maintaining some degree of parity.

The comparison of the record tracking systems revealed that two of the three systems met the minimum level of acceptance of the desired system. The results from table 5 illustrate that the Chart Librarian failed to meet the prescribed functional requirements. The Chart Librarian was unable to provide the on-line location of the record. In fact the Chart Librarian can be described more along the lines of a record inventory program rather than record tracking program despite the fact that it is described as the latter. The remaining two systems-Medical Record Automated Chargeout System (CTC) and ChartFlo (Intelus)--were then compared against one another of the basis of cost (table 6). Thus on the basis of

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the cost comparison the MRACS was the least expensive of the proposed systems. Specifically, CTC's proposal for fixed terminals (proposal B) was least expensive system proposed. In either case CTC's proposals were the least expensive options.

Recommendation

The findings and conclusions of the study support the purchase of bar code-based record tracking system. Specifically the system by fixed MRACS by CTC is recommended. This system meets (and actually exceeds) the base line criteria proposed by the OMRB. Due to the fact that both of the systems offered by CTC were less expensive than the systems offered by Intelus it might prove useful to identify those clinics, or other areas of the hospital that would benefit from a portable data terminal (i.e. the "Trakker"). Any combination of portable and fixed data terminals would still be less expensive than the ChartFlo system from Intelus.

The MRACS record tracking system will be able provide the OMRB with a system that can provide substantial dividends in the form of better record accountability and increased productivity. However the system can only be as good as its weakest link. In this case the weakest link might very well be the personnel that use the system. In order to maximize the potential of MRACS, all personnel that will have direct contact working with the system should receive training prior to going live with the system. This training should also include a

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session devoted entirely to showing the worker how the system will help him or her in the performance of his or her job. Additionally, the Public Affairs Office should be used to inform the staff as well as the patients on the benefits of such a system. If patients begin to have faith in the ability of the OMRB to maintain an accurate account of the location of their records we may see more patients returning their records to its rightful location--the OMRB.

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Document Filing
Health Record Processing
Outpatient Records Retrieval

Vendor Material:
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Appendix A

DEFINITIONS

Bar Code Symbol: A group of bar code characters which forms a complete, scannable entity. The actual characters are groups of lines that represent a particular number, letter, punctuation mark or other symbol arranged according to the rules of a particular symbology. (Intermec glossary)

Composite Health Care System (CHCS): A hospital information system intended to integrate current, as well as new, information systems.

Data Flow Diagram: A network that uses special symbols to describe the flows of data and the processes that change, or transform data throughout a system. (Gore & Stubbe)

Defense Enrollment Eligibility Reporting System (DEERS): A Congressionally-mandated Department of Defense program which maintains enrollment and confirms eligibility for everyone entitled to the benefits programs of the Uniformed Services.

Family Member Prefix (FMP): Two digit number that identifies the status of an individual. e.g. 20 Active duty Army; 30 Dependent of Active Duty Army.

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Forms Symbology: The structural characteristics of bar code symbols. Bar code symbologies specify exact combinations of bar and space widths. e.g. Code 39 is the symbology accepted by the Health Industry Business Communications Council (HIBCC).

Functional Requirements: Specified functions or task that are required of the system to complete.

Medical Record Tracking Systems (MRTS): Any system that records the location of a record at a given time. In the past this definition applied to manual systems; however today the term commonly refers to automated systems.

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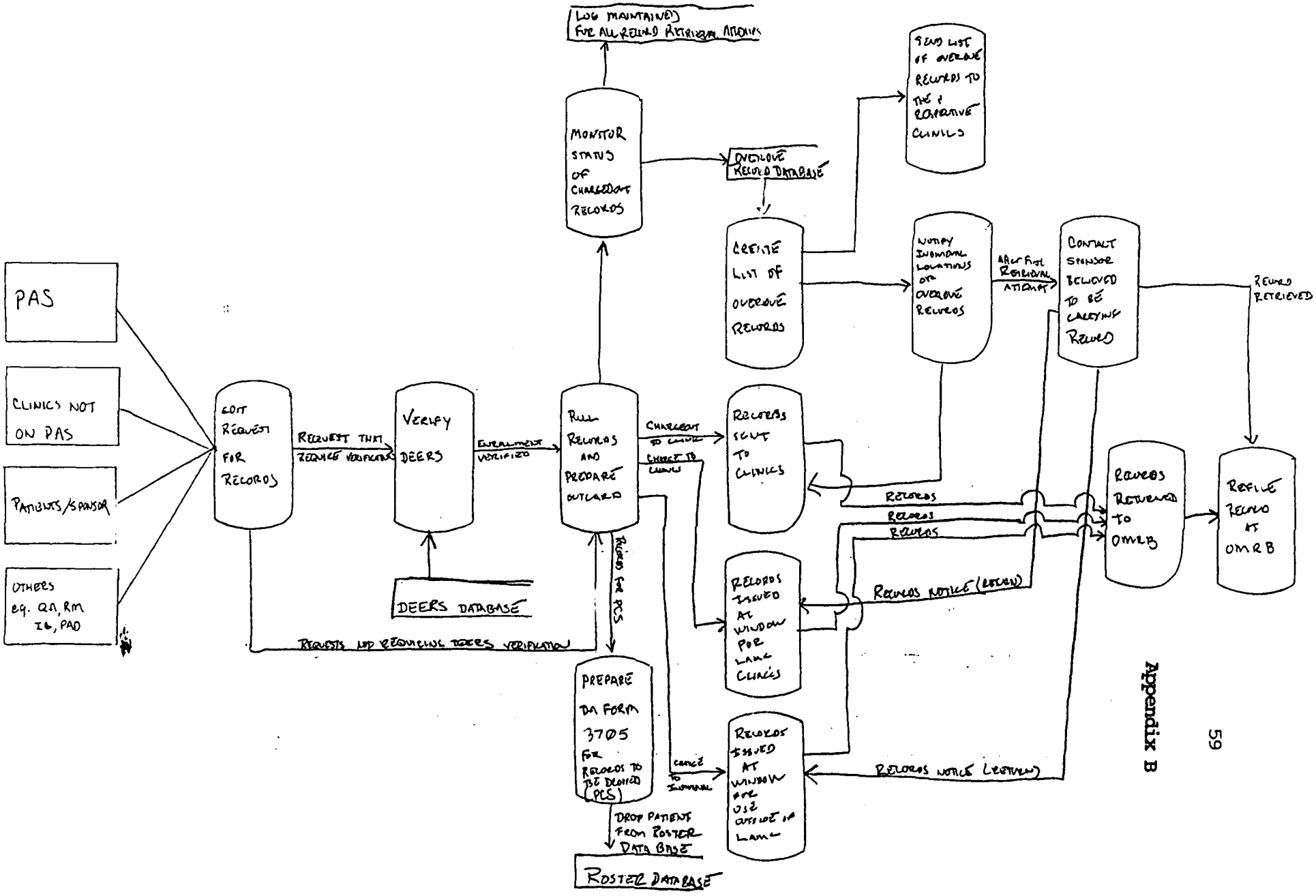

DATA FLOW DIAGRAM FOR LAMC OMRB.
PROCESSES COVERED: RECORD REQUEST, RECORD ISSUE, AND RECORD RETRIEVAL

Appendix B

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Appendix C

PRODUCT DESCRIPTION WORKSHEET

Product Name: Chart Librarian

Vendor's Name and Address:
NCR

San Francisco, California

Phone: (415) 885-3500

Type of configuaration
Software: Bar-code-base record tracking system

Hardware: Two approaches:
A. Uses fixed Data Collection Terminals (with bar code wand) that linked to a personal computer in the medical records department.

B. Uses portable Data Collection Terminals (with bar code wand) that linked to a personal computer in the medical records department.

Discription: The chart Librarian is a bar code-based computer system that automates record and chart management. The Chart Librarian, by Alps Systems, is the software portion of a packaged deal that is being offered by NCR. NCR supplies the hardware (the Data collection terminals). The Chart Librarian is described as two systems in one, the Data Collection part which processes the data input using bar code reader wands and the Interactive part which allows labels and reports to be printed as well as performing many database maintenance functions.

The data collection portion requires no interaction once it has been started on the computer and it will continue to process input from the bar code reader wands until it is terminated. As is common with all bar code-based programs data are inputted through the use of transaction codes.

The interactive portion is designed using a series of menus screens from which options are selected. Menus are organized with a tree structure. That is to say that from the main menu the user selects options that branch to other menus and then those menus selected branch to yet another set of menus.

Some of the features of the system are as follows:
Record Tracking: Provides on-line record tracking information for both the past and current location.

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Chart History: Provides the history of the records activity as it moves from location to location. The feature has the potential of requiring a tremendous amount of disk space and therefore may be limited by the storage capability of the computer.
Pre-assigned transactions codes: This allows for easy and standard data entry.
Interfaces with other computers: Existing databases can be downloaded into Chart Librarian saving time and money if you had to "rekey" existing data.
Report Production: Produces several reports including Chart Location, Delinquent Chart Report, Chart Activity Report, Chart Inactivity Report, Chart Request report, Chart Master List, Chart Activity Master List, and the Chart Request Master List.
Support: With purchase of the package both technical support and training are provided (fixed amount) and maintenance support is also provided for a fixed timeframe (e.g. 40hrs)

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PRODUCT DESCRIPTION WORKSHEET

Product Name: MEDICAL RECORD AUTOMATED CHARGEOUT SYSTEM

Vendor's Name and Address:
Current Technology Concepts
1101 Sibley Memorial Highway, Suite 600
St. Paul, Minnesota 55118

Phone: (800) 777-6796

Type of Configuration:
Software: Bar-code-base record tracking system

Hardware: Two approaches
1. PC based system using a server and Local Area Network to access Zenith PCs. Hand-held bar code readers interface with Zenith PCs.

2. PC based system using the Local Area Network to access to a "Transaction Manager". Does not require interface with office based Zenith PCs.

Description: The Medical Record Automated Chargeout System is a bar-code-based system for use in medical records management. The software is produced by Irie Computer and sold by CTC, an authorized reseller of software systems produced by Irie Computer. The system runs on personal computers and can also be installed to operate on a local area network. All functions are menu-driven with on-line help readily available. The system produces the bar codes, maintains the data base, produces reports, and offers multi-level password protection.

The system can use either contact wands or low-power noncontact laser and infrared scanners. To use the system the user scans the bar code label and indicates the location (unit, site, name) receiving the medical record. If a bar code label does not exist for a medical record then the system can produce a label at the same time the records is charged out.

Some of the features of the system are as follows:
Record tracking: Provides on-line record tracking information including the record location, requester, record movement data.
Multiple records tracking: Is capable of tracking multiple records for each patient separately.
Expandable system: The system is expandable by simply adding additional workstations and bar code readers as the need arises.

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Interfaces with other computers: The system can send and receive data from existing mainframe and computer systems. Data may also be read into spreadsheets and database software programs.
Support: CTC will install the system and train the staff. Additionally several long term support packages are available, including on-site and telephone hotline support. CTC will also customize the system to meet the specific needs of the hospital.

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PRODUCT DESCRIPTION WORKSHEET

Product Name: ChartFlo

Vendor's Name and Address:
Intelus
3204 Tower Oaks Blvd.
Rockville, MD 20852

Phone: (800) 228-6363

Type of Configuration:
Software: Bar-code-base record tracking system

Hardware: Two approaches
1. Base Station (At&T 3B) using Local Area Network to access Zenith PCs. Hand-held bar code readers interface with Zenith PCs.

2. Base Station (AT&T 3B) using Local Area Network to access to Laptop Workstations.

Description: ChartFlo is a bar-code-based computer system that automates all aspects of record and chart management. The system can automatically track locations, monitor record status, manage the record deficiency process, as well as produce a series of management reports. Based on the requirements provided by the OMRB the description of the system will be limited to record tracking and the production of management reports. Furthermore the management reports will be limited to record tracking reports.

ChartFlo combines bar code technology with notebook-sized terminals (or laptop computers) and modular software. This enables every location where a record processing activity occurs to record the location and status of the record by simply running the bar code reading wand over the record's bar code label and entering a few key strokes. ChartFlo can provide the following information on-line: Where is a medical record now? Where has it been? Where should it go next? and Where is filed?

ChartFlo's record tracking features are:
Work tracking: This feature allows an individual from any workstation to check the location of the record as well as the status of the record. For the outpatient record this could include the a query of the status of the records Master Problem List.

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Automated check-in and check-out: With this feature ChartFlo automatically tracks the records as they enter or leave the clinic or OMRB. This feature does away with the need to maintain the manual system currently used by the OMRB.
Tracks multiple volumes of individual charts: This allows for the tracking of multiple volumes of records and multiple locations.
Automated pull requests: ChartFlo can print an advance pull request in the medical records department. The system also permits record reservations and produces prioritized waiting lists for records that are not currently available.
Manages multiple-clinic appointments: When a patient has appointments at more than one clinic the system can be used to control the delivery of the record to each clinic in the required sequence.
Record tracking reports: The system produces numerous tracking reports such as:

* Overdue records by service or location
* Summary of overdue records at all locations
* Records filed with open deficiencies
* Pull lists in Terminal Digit Order
* STAT pull requests
* Records checked out of the OMRB by specified timeframe
* Records checked out to a particular service or location
* Listing of temporary records
* Records in transit to a location
* Records to be pulled for retirement
* Archived records report (records stored in different location

Ease of use: Each workstation can be tailored to meet the specific needs of the individual clinic. The system uses prompts and menus to help the user and documentation is provided.
Support: Intelus will analyze the specific needs of the institution and recommend the exact ChartFlo configuration. Installation, On-site training, users manuals, and post-installation support are all provided by Intelus. Additionally, the Intelus specialists can interface ChartFlo with existing Hospital Information Management Systems

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Appendix D

COST WORKSHEET

VENDOR: Current Technologies Concepts (CTC) and INTERMEC

	PRICE
SOFTWARE: CTC	
Medical Record Automated Chargeout System	$15,900
HARDWARE: INTERMEC	
30 ea Portable Data Acquisition Device 9440B Trakker Bar Code Reader with 64k memory, ni-cad battery, display stainless steel bar code wand powerpack, and user program.	40,410
1 ea Demand Bar Code Printer 8625M for Piggyback labels with HIBCC label program	1,890.
1 ea Thermal printer Cable	42.
MAINTENANCE:	$8,248
TOTAL	$66,491

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COST WORKSHEET

VENDOR: Current Technologies Concepts (CTC) and INTERMEC

	PRICE
SOFTWARE: CTC	
Medical Record Automated Chargeout System	$15,900
HARDWARE: INTERMEC	
30 ea Transaction Manager May be programmed to prompt, collect, format, and transmit transacrtions to host computer. 64k, display	19,635
30 ea Transaction Manager User's Manuals.	675
30 ea powerpack for Transaction Manager. 120 VAC, 60 Hz for use with wand.	735
1 ea Demand Bar Code Printer 8625M for Piggyback labels with HIBCC label program	1,890
1 ea Thermal printer Cable	42
MAINTENANCE:	6,239
TOTAL	$45,116

"REPRODUCED AT GOVERNMENT EXPENSE"

COST WORKSHEET

VENDOR: INTELUS

	PRICE
SOFTWARE: INTELUS	
ChartFlo	$45,000
HARDWARE: INTELUS	
1 ea Base station	
30 ea Hand-held Bar code readers	
Back up tape	
1 ea Printer	$45,000
MAINTENANCE:	
12% per year of the system price	$5,400
TOTAL	$95,400

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COST WORKSHEET

VENDOR: INTELUS

	PRICE
SOFTWARE: INTELUS	
ChartFlo	$45,000
HARDWARE: INTELUS	
1 ea Base station	
30 ea Laptop workstations	
Back up tape	
1 ea Printer	$45,000
MAINTENANCE:	
12% per year of the system price	$5,400
TOTAL	$95,400

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Appendix E

OVERDUE RECORDS LIST

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OVERDUE

April 11, 1990 at 10:02 a.m.

NAME	SSAN	FMP	CLINIC	PROVIDER	DATE
	1200	30	AIM		5MAR90
	2200	20	GYN	LANGER	26FEB90
	4000	20	OPTHALOGY		08MAR90
	4800	20	ORTHO		06FEB90
	6300	30	INT MED		5MAR90
	9100	30	DIETICIAN		08MAR90
	9700	30	IMC	GOLDSMITH	26FEB90
	0501	IMC	BROWN		06MAR90
	1801	30	ENT		06MAR90
	1801	20	FMAS	PHYLLIS	22FEB90
	3801	30	SC		06MAR90
	5301	30	CARDIOLOGY		28FEB90
	2302	30	SURGERY		5MAR90
	2603	20	ENT		5MAR90
	3503	20	CARDIO	RX	02MAR90
	5403	30	INTERNAL MED		28FEB90
	8403	30	DIET CLINIC		5MAR90
	8803	AD	SC		01MAR90
	8903	30	GASTRO		5MAR90
	0004	GYN			27FEB90
	0504	20	WI	NAIK	06MAR90
	1504	30	OPTHAL	GOLDMAN	02MAR90
	5104	30	OPTHAL	KARREN	23FEB90
	7004	20	2C	TOM	27FEB90
	9404	20	OPTH		5FEB90
	9404	20	OPTHAL	GOLDMAN	02MAR90
	0305	AD	ORTHO		9MAR90
	4605	30	CARDIOLOGY		28FEB90
	0906	20	4EAST	BROOKS	02MAR90
	2306	30	NEUROLOGY	DIAZ	01MAR90
	3206	30	UROLOGY		7MAR90
	6106	02	PEDS		01MAR90
	8706	30	W/IN		7MAR90
	9706	30	I D	BALES	27FEB90
	1207	20	WI		27FEB90
	3307	20	NEUROLOGY		5MAR90
	4207	30	9EAST		5MAR90
	5207	20	CARDIO	STEIMAN	9MAR90
	5507	02	PT		20FEB90
	9107	30	IMC	BALL	08MAR90
	0808	20	HAND		27FEB90
	3008	30	DERMATOLOGY		28FEB90
	4808	RET	S/C		7MAR90
	5608	30	IMMUN		7MAR90
	5808	30	OB-GYN		28FEB90
	6708	20	I/D	BALES	02MAR90
	6908	RET		W/IN	7MAR90
	7208	RET	NEUC		7MAR90
	8008	30	ER		03MAR90
	8408	20	EKG		27FEB90
	8908	20	PHYSICAL EXAMS		21FEB90
	0909	30	GYN		5MAR90
	2309	03	PEDS		13FEB90
	2409	30	ORTHO		7MAR90
	3109	30	OPTOMETRY	TOM	08MAR90
	4209	30	ORTHC		27FEB90

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NAME	SSAN	FMP	CLINIC	PROVIDER	DATE
	9409	30	IMC		7MAR90
	2610	20	SK		02FEB90
	3610	AD	LAB		9MAR90
	7910	30	WI		08MAR90
	8010	01	PEDS		05FEB90
	9410	20	AHC		28FEB90
	1511	20	SICK CALL		21FEB90
	2711	AD	POR		08MAR90
	6511	40	IMC		9MAR90
	6811	20	IMC	CLARK	9MAR90
	9111	03	PEDS		27FEB90
	9111	20	GYN		27FEB90
	1012	20	SURGICAL CLINIC		5MAR90
	6112	30	NEUROLOGY		08MAR90
	1713	20	ORTHO	VALLIER	06MAR90
	1813	20	WALK IN CLINIC		8MAR90
	2613	20	ORTHOPEDICS	DOUGHERTY	01MAR90
	3713	30	CARDIO		9MAR90
	3814	30	EYE CLINIC		01MAR90
	9714	30	TB		7MAR90
	1115	20	ER	BERNHARD	9MAR90
	3215	30	IMC		01MAR90
	3715	30	WI		26FEB90
	5015	AD	AUDIOLOGY	MUELLER	08MAR90
	6915	30	AIM		7MAR90
	7715	AD	AIM		31JAN90
	4516	30	HAND CL		7MAR89
	5216	01	AUDIOLOGY	THOMA	01MAR90
	5216	20	NEUROLOGY	FOSMIRE	08MAR90
	6016	30	IMC	LUNSBURY	20FEB90
	6816	20	WALKIN		9MAR90
	6916	20	UROL	IRBY	9MAR90
	1517	20	UROLOGY		28FEB90
	2217	30	WI		01MAR90
	3217	20	UROLOGY		28FEB90
	4917	30	WI		28FEB90
	7417	AD	I/D	BALES	02MAR90
	8217	20	ORTHO		02MAR90
	9317	20	NEPHRO	WHITAKER	27FEB90
	1618	AD	OBAR		08MAR90
	2118	20	AIM		02MAR90
	3518	20	PEDS		01MAR90
	6718	30	GYN		7MAR90
	6718	20	OHC		12MAR90
	9818	20	ORTHO		9MAR90
	5019	02	PED		5MAR90
	5219	02	PEDIATRICS		28FEB90
	5319	20	UROLOGY		5MAR90
	5619	20	ORTHO		08MAR90
	8219	20	GYN		12MAR90
	8819	20	DERM	MADDOX	02MAR90
	2820	20	ER		02MAR90
	3120	20	PHARMACY		21FEB90
	3120	30	I/D	BALES	02MAR90
	5520	30	ENDO		28FEB90
	6420	30	AIM		7MAR90
	9220	20	SCREENING		5MAR90

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NAME	SSAN	FMP	CLINIC	PROVIDER	DATE
	0621	20	OPTOMETRY		5MAR90
	1621	20	9E		27FEB90
	2821	20	7WEST		5MAR90
	4021	20	7 WEST	LANCUE	08MAR90
	4821	62	OPTOM		9MAR90
	7821	20	ER	MAISEL	20FEB90
	9021	20	CARDIO	RX	02MAR90
	9221	30	AIM		28FEB90
	0722	20	SC		06MAR90
	3022	30	ER		02MAR90
	3622	30	UROLOGY	IRBY	02MAR90
	8322	20	BNOC 3 MONTHS		5MAR90
	0823	20	SC		06MAR90
	2523	20	POR		9MAR90
	6223	30	HYPERTENSION		28FEB90
	7024	20	RISK MGMT		26FEB90
	8624	20	OPTHAL OR OPTOM	8MAR90	
	0625	20	POD	PULIG	20FEB90
	0725	20	SICK CALL		28FEB90
	4225	03	PEDIATRICS		5MAR90
	7025	30	SYN		01MAR90
	7525	30	DERMS		01MAR90
	2826	20	9W		27FEB90
	4826	20	UROLOGY		28FEB90
	5026	20	WI		6FEB90
	6426	20	CARDIO		02MAR90
	9626	AD	PHYS		28FEB90
	3127	20	ORTHO	LADOUCEUR	9MAR90
	3327	20	07W		28FEB90
	3827	02	PEDIATRICS		28FEB90
	6527	20	IMC		20FEB90
	7627	RET	AUDIO		7MAR90
	8527	RET	UROL		7MAR90
	8827	30	WALKIN		9MAR90
	9227	20	ORTHOPEDICS		14FEB90
	0928	30	WI		28FEB90
	2428	30	AIM		28FEB90
	4528	20	AUDIO	THOMA	27FEB90
	5828	20	4E	KRUGER	9MAR90
	6528	20	WI		08MAR90
	6928	30	DERM		02MAR90
	7028	30	ER	MAISEL	08MAR90
	7428	20	NEPHRO	LINDBERG	27FEB90
	8428	02	PEDIATRICS		28FEB90
	9928	01	ORTHO		01MAR90
	9928	20	AIM		5MAR90
	0029	RET	GI		7MAR90
	0029	20	ORTHO		01MAR90
	0829	30	ER		7MAR90
	4529	20	CARDIOLOGY		01MAR90
	6029	30	4EAST	KRUGER	02MAR90
	6529	RET	FMAS		7MAR090
	0230	30	PLASTIC SURG		26FEB90
	3030	20	ER	FARMER	1 MAR90
	3230	30	IMC		9MAR90
	8930	30	OPHTHAL	WALTERS	27FEB90
	0431	30	SENSURG		7MAR90

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NAME	SSAN	FMP	CLINIC	PROVIDER	DATE
	1131	31	ENDO	BOHEN	9MAR90
	3731	20	AIM	ROSE	08MAR90
	3731	30	ORTHOPEDICS	ANDERSON	08MAR90
	5831	30	AIM		28FEB90
	7231	30	IMC		5MAR90
	1332	AD	WALKIN		9MAR90
	1532	20	CARDIO	KUFS	27FEB90
	3632	AD	IMMUN		7MAR90
	4332	RET	FMAS		7MAR90
	6132	AD	IMC		7MAR90
	6732	30	NEUOSURGERY		26FEB90
	7532	20	ER	MAISEL	01MAR90
	8732	AD	S/C		7MAR90
	4733	20	IMC		27FEB90
	6933	30	FMAS		7MAR90
	9233	20	ORTHO		06M,AR9
	0535	20	TOTAL JOINT	GALVIN	09MAR90
	0735	02	OB-GYN		5MAR90
	0935	30	BERNHARD	ER	27FEB90
	6035	20	AIM	EKSTRAND	27FEB90
	0636	04	OPTOM		7MAR90
	2736	20	CARDIO	PARIS	26FEB90
	2836	30	ORTHO	T. JNT PREOP	9MAR90
	4136	20	FMAS	PHYLLIS	22FEB90
	9436	AD	IMMUN		7MAR90
	0237	20	OPTH		25FEB90
	0437	30	GYN	SAVAGE	27FEB90
	2237	30	SURG		7MAR90
	2837	30	OPTHOLOGY		08MAR90
	2937	20	DERM		26FEB90
	5737	30	ALLERGY	BRANCH	08MAR90
	0238	20	4EAST	FINK	02MAR90
	0438	20	NEUROLOGY	KINNAMAN	08MAR90
	1338	30	ORTHO		27FEB90
	6338	04	ALLERGY		27FEB90
	9838	20	AIM		28FEB90
	9938	AD	WI		01MAR90
	9639	20	AIM	TIGHE	27FEB90
	0540	20	GYN		5MAR90
	4540	20	PODA		02MAR90
	6840	20H	OCH	TYE	13FEB90
	7540	30	IMC		9MAR90
	0341	20	7 WEST		01MAR90
	0641	30	ER		28FEB90
	5941	20	WALK IN CLINIC		5MAR90
	6641	30	ORTHO		01MAR90
	7241	20	TO PATIENT		12MAR90
	8341	20	OPTOMETRY		12MAR90
	2142	02	ORTHO	LADOUCEUR	26FEB90
	4042	20	AIM		5MAR90
	7042	30	AIM	TIGHE	27FEB90
	7842	01	ENT		12MAR90
	1243	20	WI	02MAR90	
	1643	30	WALK IN CLINIC		5MAR90
	5443	AD	SK		9MAR90
E	5943	30	7 WEST	LANEVE	08MAR90
	7243	20	SC		27FEB90

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NAME	SSAN	FMP	CLINIC	PROVIDER	DATE
	6744	30	SC		01MAR90
	9144	30	OCC HEALTH		01MAR90
	9844	20	CARDIO	HEPPNER	06MAR90
	3845	30	W/IN		7MAR90
	4245	20	DERMS	MADDOX	01MAR90
	6445	20	AIM	ROSE	08MAR90
	9645	04	G6YN		27FEB90
	1546	20	SICK CALL		28FEB90
	8146	20	AIM	TIGHE	27FEB90
	9346	20	IMMUNIZATION		28FEB90
	1847	RET	OPTH		7MAR90
	2147	30	ORTHO		27FEB90
	3647	30	ER		9MAR90
	1748	30	GYNECOLOGY		12MAR90
	2348	20	GYN		27FEB90
	4048	50	INTERNAL MEDIC	RAMSEY	02MAR90
	4748	20	CARDIOLOGY	WINSLOW	08MAR90
	6448	03	PEDS		27FEB90
	7048	30	SURG PROC		28FEB90
	9448	20	AIMS		12MAR90
	1349	20	GYN		02MAR90
	2249	30	GYN		26FEB90
	2949	30	SURG CLINIC		12MAR90
	4549	20	UROL		27FEB90
	5349	30	NEUROLOGY	KINNAMAN	08MAR90
	6349	30	NEUROLOGY	FOSMIRE	08MAR90
	9449	20	RADIO		27FEB90
	0550	01	PEDS		5MAR90
	0550	02	PEDS		5MAR90
	1550	30	WALKIN		2MAR90
	2650	30	TB		7MAR90
	3650	20	RENAL		06MAR90
	3750	30	RADIOLOGY		22FEB90
	4350	20	UROLOGY	IRBY	02MAR90
	4350	20	OPTHAL	GOLDMAN	2MAR90
	7350	30	CARDIOLOGY		01MAR90
	8550	20	DENTAL CLINIC		4MAR90
	9150	20	AIM		12MAR90
	1051	30	4EAST	FINK	02MAR90
	1451	20	ER		23FEB90
	5451	RET	FMAS		7MAR90
	6951	20	WI		05MAR90
	865.	30	ER	MAISEL	01MAR90
	0052	20	10 WEST		09MAR90
	3252	30	SC		05MAR90
	4052	20	AIM		21FEB90
	7952	01	PEDS		01MAR90
	9652	30	ORTHO		7MAR90
	1153	AD	EBAR		08MAR90
	1453	30	OPTHAL		01MAR90
	3853	01	PED		05MAR
	4153	30	OPHTHALMOLOGY		28FEB90
	5953	20	CARDIC		5MAR90
	6953	20	FMAS	PHILLIPS	21FEB90
	1954	30	OPTOM		06MAR90
	2254	02	ORTHO,PEDS		9MAR90
	3054	RET	FMAS		7MAR90

"REPRODUCED AT GOVERNMENT EXPENSE"

NAME	SSAN	FMP	CLINIC	PROVIDER	DATE
	3354	30	VASCULAR SURG		12MAR90
	6254	20	WI		05MAR90
	6754	20	SURG CL.		02MAR90
	8154	01	PEDS		7MAR90
	0255	20	OPTOM	EXTERN	02MAR90
	0955	20	TOTAL JOINT	GALVIN	02MAR90
	3855	20	IMMUNIZATIONS		28FEB90
	4455	AD	AUDIOLOGY	BRYANT	15FEB90
	4655	30	FMAS	PHYLLIS	22FEB90
	5055	30	AIM	ROSE	08MAR90
	7155	20	THYROID		12MAR90
	8055	20	EYE CLINIC		01MAR90
	9855	30	ORTHO		02MAR90
	2056	30	FMAS	PHYLLIS	22FEB90
	3256	20	UROLOGY	IRBY	02MAR90
	3556	20	DERM		01MAR90
	3556	20	ENT		01MAR90
	4056	20	CARDIOLOGY	KIRSCH	08MAR90
	4456	20	6W	CARDS	9MAR90
	5456	30	CARDIO		05MAR90
	8356	30	FMAS	PHYLLIS	22FEB90
	8856	20	FMAS	PHYLLIS	22FEB90
	9456	20	IMC		02MAR90
	9556	AD	DERM	FINDLAY	9MAR90
	9756	30	AIM		5MAR90
	0157	01	8 WEST		01MAR90
	0457	20	VASCULAR SURG		12MAR90
	4057	20	NEUROLOGY		28FEB90
	7357	RET	UROLOGY		7MAR90
	9057	AD	EBAR		08MAR90
	9757	30	NUTRITION		28FEB90
	0058	30	AIM		7MAR90
	1158	20	FMAS	PHYLLIS 22FE	
	2058	30	IMC	CLARK	06MAR90
	2558	01	PEDS	MALIGA	06MAR90
	2558	02	PEDS	MALIGA	06MAR90
	3258	30	CARDIO	KIRSCH	06MAR90
	4158	01	OTOLARYNGOLOGY		12MAR90
	5258	02	PEDS		12MAR90
	6158	20	ORTH		12MAR90
	7458	20	9WEST		27FEB90
	8258	20	FMAS	PHYLLIS	22FEB90
	9258	30	ORTHOPEDICS		28FEB90
	0859	01	WI		01MAR90
	4159	20	CARDIOLOGY		28FEB90
	6359	01	PEDS		06MAR90
	6459	30	WI		01MAR90
	7059	30	AIM		28FEB90
	7559	30	IMC	TATUM	9MAR90
	8759	30	PLASIC SURG		05MAR
	8859	30	IMC		7MAR90
	8959	30	GS	PORTER	01MAR90
	9059	20	ORTHOPEDICS		28FEB90
	9059	30	INTERNAL MED		28FEB90
	0960	20	WI	HALIS	01MAR90
	1560	20	HAND CLINIC		12MAR90
	1860	RET	ENT		7MAR90

"REPRODUCED AT GOVERNMENT EXPENSE"

NAME	SSAN	FMP	CLINIC	PROVIDER	DATE
	3160	30	THYROID	BOHEN	
	5760	RET	AIM/LAB		7MAR90
	6060	30	ER		28FEB90
	0261	30	IMC		NOW
	1861	30	UROLOGY		28FEB90
	2261	30	7W	RICHARDS	9MAR90
	2761	30	ALLERGIC		01MAR90
	5461	30	KNEE CLINIC		08MAR90
	6261	20	IMC		2MAR90
	6261	20	AIM		02MAR90
	7861	20	AIM		22FEB90
	8961	20	GYN		06MAR90
	9861	02	PEDS		06MAR90
	2262	30	PEDS		27FEB90
	3862	20	DERM	FINDLAY	06MAR90
	4062	20	PLAST		9FEB90
	4262	20	WALK IN CLINIC		12MAR90
	5562	30	ALLERGY	BRANCH	22FEB90
	5862	20	ER		03MAR90
	8862	20	ULTRA SOUND		21FEB90
	1063	30	AIM		7MAR90
	4063	30	PHYS		7MAR90
	5163	30	DERMATOLOGY		28FEB90
	5763	20	WALKIN	NAIL	9MAR90
	8063	20	ICU		12MAR90
	8363	20	INTERNAL MED		21FEB90
	8963	30	FMAS		7MAR90
	0264	30	HEMA	CORNETT	06MAR90
	1264	30	NEUROLOGY		21FEB90
	2264	02	PEDS		9MAR90
	2264	AD	WI		01MAR90
	6464	30	DERMATOLOGY		28FEB90
	7964	AD	IMC		01MAR90
	1264	30	HEMA	CORNETT	06MAR90
	1865	20	7WEST.		27FEB90
	2665	20	WI		01MAR90
	3165	20	HE		12MAR90
	4465	20	SCREENING		5MAR90
	6665	20	SCREENING		5MAR90
	7965	20	10WEST		27FEB90
	1566	30	UROLOGY		12MAR90
	3166	20	AUDIOLOGY		28FEB90
	5766	AD	ORTHO		01MAR90
	1466	20	HEM		9MAR90
	1066	30	PAD		06MAR90
	1667	20	OPTOMETRY	LOTT	01MAR90
	1667	30	DERM	EXTERN	02MAR90
	1667	AD	7 WEST		06MAR90
	1668	20	MINOR SUR		5MAR90
	1668	AD	AIM		01MAR90
[redacted]					[redacted]

"REPRODUCED AT GOVERNMENT EXPENSE"

3478	20	2C		28FEB90
6878	20	UROLOGY		28FEB90
7478	20	FMAS		12MAR90
8178	20	VASCULAR, SURG		12MAR90
9978	20	SCREENING		5MAR90
0579	30	GS	PORTER	01MAR90
0679	30	GYN	DAVIS	22FEB90
2179	AD	PT		7MAR90
2979	20	DERMATOLOGY		28FEB90
4279	20	FAD	LOTT	06MAR90
6079	20	UROLOGY		28FEB90
6379	30	DERM		02MAR90
1580	20	IMC	CLARKSAYLES	
6880	20	ER		02MAR90
0581	30	IMC	BROWN	05MAR90
3381	RET	ER		7MAR90
6081	20	SURG		9MAR90
1182	20	SICK CALL		24NOV87
3382	20	PHYSICAL		14FEB90
5282	20	INTERNAL MED		12MAR90
5282	20	IMC		28FEB90
5382	20	AIM		28FEB90
6282	20	UROLOGY		28FEB90
8582	30	DERM		06MAR90
1683	20	AIM		02MAR90
3083	20	4E	PHILLIPS	2MAR90
6183	20	AUDIOLOGY		12MAR90
6383	30	UROLOGY		02MAR90
0184	02	PEDS		5MAR90
0184	01	PEDS		9MAR90
1784	20	SURG		7MAR90
4884	30	FMAS		7MAR90
6784	20	DERM		05MAR90
7684	20	OPTHAL		02MAR90
0485	20	GI		27FEB90
2885	20	FMAS	PHYLLIS	22FEB90
3985	20	6 WEST		01MAR90
5585	20	ER		06MAR90
6585	20	URO		27FEB90
6985	20	UROL		05MAR90
7185	20	WES GEN SURG		7MAR90
9985	AD	P.T.		23FEB90
0286	20	SICK CALL		28FEB90
2886	20	8WEST		27FEB90
5786	20	SURGERY CLINIC		12MAR90
8786	20	MSG TRAPPING		16FEB90

"REPRODUCED AT GOVERNMENT EXPENSE"

0987	RET	GYN		7MAR90
0987	20	RHEUMATOLOGY		12MAR90
5087	20	ORTHO	DOUGHERTY	27FEB90
5387	30	NEURO	FOSMIRE	26FEB90
5387	20	UROLOGY		12MAR90
6287	20	VAS SURG		05MAR90
7787	20	AIM	ECKSTRAND	27FEB90
8787	AD	LOAR		08MAR90
9687	RET	FMAS		7MAR90
4488	01	PEDS		01MAR90
4688	20	OPTHAL		27FEB90
4888	20	CARDIOLOGY		28FEB90
4888	30	AIM		28FEB90
5988	20	GENERAL SURGERY		28FEB90
1789	20	GENERAL SURGERY		21FEB90
4489	30	PHY MED		7MAR90F
4989	20	UROLOGY	SQUITERI	02MAR90
5289	AD	AIM		08MAR90
8389	30	TOTAL JOINT	GALVIN	09MAR90
0490	30-	MINOR SURG		5MAR90
1090	AD	WI		08MAR90
1590	20	ALLERGY		5MAR90
2990	20	AIM		5MAR90
3990	20	UROL	IRBY	9MAR90
4090	30	CARD		7MAR90
4390	20	IMMUNIZATION		12MAR90
4790	30	FMAS		7MAR90
5590	20	FMAS	PHLLIS	22FEB90
5690	62	PEDS		06MAR90
6190	30	GYN		08MAR90
7190	20	QA		26FEB90
8390	30	AIM		7MAR90
0291	20	SCREENING		5MAR90
2491	30	WI		23FEB90
3091	RET	FMAS		7MAR90
6491	20	OPTHAL		02MAR90
7891	20	OPTOM		23FEB90
1192	20	AIM	JACOBS	08MAR90
4692	03	PEDS		02MAR90
6192	01	PEDIATRICS	ENG	08MAR90
6492	30	INT MED	BALL	27FEB90
6992	20	OPTHALMOLOGY	ARTEBERRY	08MAR90
0593	RET	TB		7MAR90
0893	20	COPIES		16FEB90
2193	30	PAD		01MAR90
2693	20	SCREENING		5MAR90
3493	01	PEDS		27FEB90
5293	30			02MAR90
6493	AD	ER	MAISEL	09MAR90
7593	30	OPTOM	EXTERN	06MAR90
2794	30	OPHTHAL		23JAN90
3094	20	OHC		4MAR90
4294	01	PEDS		08MAR90
7294	AD	SURG CL		7MAR90
8394	20	PAD	LOTT	27FEB90
9994	20	SCREENING		5MAR90
2095	20	7WEST		06MAR90

"REPRODUCED AT GOVERNMENT EXPENSE"

3795	20	SICK CALL		28FEB90
6195	AD	S/C		7MAR90
6295	20	7WEST	LANEUI	02MAR90
0996	30	IMC	BROWN	08MAR90
2296	05	PEDS		06MAR90
2296	04	PEDS		06MAR90
2296	02	PEDS		06MAR90
2296	03	PEDS		06MAR90
4296	30	ORTHO		7MAR90
1597	20	NEUROLOGY		08MAR90
4797	30	AIM		26FEB90
7397	20	4EAST	PHYILLIS	02MAR90
8397	30	ENT	WONG	26FEB90
9097	40	ER		06MAR90
9797	AD	IMC	MCDOWELL	01MAR90
1598	20	DERMATOLOGY		28FEB90
1898	30	DERM		7MAR90
1898	30	IMC	CLARK	08MAR90
2198	20	ORTHO		01MAR90
3498	20	HAND SURG	ICOCHEA	27FEB90
4498	30	ER		27FEB90
5198	30	AIM	JACOBS	22FEB90
5898	30	ENT		28FEB90
7498	03	SC		27FEB90
7498	03	OPHTHAL	HUNTER	27FEB90
7898	30	DERM		01MAR90
7898	30	DERMS	MADDOX	08FEB90
8398	20	SW		20FEB90
8898	03	GYN	NORTH	08MAR90
3399	20	POD		06MAR90
6699	20	OCC. HLTH	VALLER	23FEB90
I/DX	20	6234	BALES	02MAR90
XXXX	20	IMMUN		28FEB90
XXXX				

"REPRODUCED AT GOVERNMENT EXPENSE"

TOTALS:

Printed 603 of the 605 records.

PRIMARY SORT FIELD: unsorted

SELECTION CRITERIA:
All records