Audit of the Information System of the Division of Community Hospitals
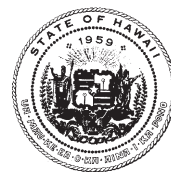
A Report to the
Governor
and the
Legislature of
the State of
Hawai‘i

THE AUDITOR
STATE OF HAWAI‘I

Office of the Auditor

The missions of the Office of the Auditor are assigned by the Hawai'i State Constitution (Article VII, Section 10). The primary mission is to conduct post audits of the transactions, accounts, programs, and performance of public agencies. A supplemental mission is to conduct such other investigations and prepare such additional reports as may be directed by the Legislature.

Under its assigned missions, the office conducts the following types of examinations:

1. Financial audits attest to the fairness of the financial statements of agencies. They examine the adequacy of the financial records and accounting and internal controls, and they determine the legality and propriety of expenditures.

2. Management audits, which are also referred to as performance audits, examine the effectiveness of programs or the efficiency of agencies or both. These audits are also called program audits, when they focus on whether programs are attaining the objectives and results expected of them, and operations audits, when they examine how well agencies are organized and managed and how efficiently they acquire and utilize resources.

3. Sunset evaluations evaluate new professional and occupational licensing programs to determine whether the programs should be terminated, continued, or modified. These evaluations are conducted in accordance with criteria established by statute.

4. Sunrise analyses are similar to sunset evaluations, but they apply to proposed rather than existing regulatory programs. Before a new professional and occupational licensing program can be enacted, the statutes require that the measure be analyzed by the Office of the Auditor as to its probable effects.

5. Health insurance analyses examine bills that propose to mandate certain health insurance benefits. Such bills cannot be enacted unless they are referred to the Office of the Auditor for an assessment of the social and financial impact of the proposed measure.

6. Analyses of proposed special funds and existing trust and revolving funds determine if proposals to establish these funds are existing funds meet legislative criteria.

7. Procurement compliance audits and other procurement-related monitoring assist the Legislature in overseeing government procurement practices.

8. Fiscal accountability reports analyze expenditures by the state Department of Education in various areas.

9. Special studies respond to requests from both houses of the Legislature. The studies usually address specific problems for which the Legislature is seeking solutions.

Hawai'i's laws provide the Auditor with broad powers to examine all books, records, files, papers, and documents and all financial affairs of every agency. The Auditor also has the authority to summon persons to produce records and to question persons under oath. However, the Office of the Auditor exercises no control function, and its authority is limited to reviewing, evaluating, and reporting on its findings and recommendations to the Legislature and the Governor.

THE AUDITOR
STATE OF HAWAI'I
Kekuanao'a Building
465 S. King Street, Room 500
Honolulu, Hawai'i 96813

OVERVIEW

Audit of the Information System of the Division of Community Hospitals

Summary

The State Auditor initiated this audit to assess the current condition of the information system of the Division of Community Hospitals. In our 1992 study of the division, we had found that poor management, inadequate staffing, and an insufficient budget had led to a failing information system. This time, despite our prior recommendations and the division's expenditure of more than $15 million for the Community Hospitals' Information Processing System (CHIPS), we found the system still fraught with problems. CHIPS is incomplete, fragmented, still poorly managed, and without clear direction.

The importance of an effective information system cannot be overemphasized. It stores vital patient and hospital data needed for processing into useful information and reports such as timely and accurate billings to patients and insurance companies, medical and demographic reports, and financial statements. Without an effective information system, revenues can be lost, costs difficult to control, and information essential to make sound decisions will not be available.

The division began the CHIPS project in 1986 as a statewide, integrated system to automate financial and operational information for its 13 hospitals. By 1991, only seven of the 13 hospitals used CHIPS for certain functions. As CHIPS became ridden with operating problems, the division conducted an evaluation of CHIPS, assessed its future information system requirements, and developed a plan to meet those future needs. The plan was to improve the existing information system and provide the hospitals and division office with access to the system. Although system improvements were made in 1993, we found that the information system continues to fall far short of its intended goal of a standardized statewide integrated information system.

The division administration failed to effectively manage the development of its information system. Problems identified in our 1992 audit have not been effectively addressed. Important documentation is lacking or poorly maintained. State planning guidelines are not followed. The division also failed to conduct a post-installation evaluation of the system to ensure operational efficiency and failed to monitor the total costs of the CHIPS project.

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System implementation is also fragmented. Various computer software packages are being used at different hospitals. Billing for long term care and rural hospitals remains primarily a manual process. Hospital and division administrators are unable to readily determine essential financial information such as cash on hand, fund balances, and the aging of receivables.

In addition, problems that prompted the recent improvements continue to plague the hospitals. Less than one year after the improvements were made, the system is again out of disk storage space and is not adequately maintained. Insufficient training on the system continues to be a problem for hospital staff.

Recommendations and Response

We recommend that the deputy director of community hospitals attend to some key tasks. These include the hiring of a full-time trained and qualified data processing manager. Also, the division should assess the status of the current system, perform a comprehensive post-installation evaluation of the system to meet its objectives, complete projects to increase revenues, establish a software use and acquisition policy, analyze its storage capacity problem, and develop a course of action. The division should establish procedures to monitor the information system's financial status and ensure that state guidelines are followed. Finally, the division should ensure that hospital personnel are adequately trained to operate and maintain the computer system.

The division responded that it recognizes and acknowledges the report as a valid review of its information system and will use the report to improve. However, the deputy director noted that in spite of major inefficiencies and difficulties, the division's information system has improved. He believes hospital staff should be commended for their work under trying circumstances. The deputy director also stated that, while some progress has been made in the areas of revenue enhancements, electronic billing, collecting past due accounts, and disk space capacity, the division will carefully consider and actively follow up on our recommendations.

The deputy director has committed to correcting some of the "bureaucratic and environmental factors" which have led to the problems with the information system. He also noted that the current administration is committed to develop a more autonomous, independent, flexible, and competitive public corporation for the community hospitals. We however emphasize that the problems we found are the result of poor management. Transferring the problem-ridden information system to a new entity will not solve the problems. Improvements in the system must take place even apart from any consideration of a change in structure.

Marion M. Higa
State Auditor
State of Hawaii

Office of the Auditor
465 South King Street, Room 500
Honolulu, Hawaii 96813
(808) 587-0800
FAX (808) 587-0830

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A Report to the
Governor
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Hawaii

Submitted by

THE AUDITOR
STATE OF HAWAII

Foreword

This is a report of our audit of the information system of the Division of Community Hospitals. The audit updates our 1992 examination of the information system. The audit was conducted pursuant to Section 23-4, Hawaii Revised Statutes, which requires the State Auditor to conduct post audits of all departments, offices, and agencies of the State.

We wish to express our appreciation for the cooperation and assistance extended to us by the officials and staffs of the division of community hospitals, individual hospitals, and the Department of Health.

Marion M. Higa
State Auditor

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Chapter 1

Introduction

This audit was conducted pursuant to HRS 23-4 (a), which requires the State Auditor to conduct postaudits of the transactions, accounts, programs, and performance of all departments, offices, and agencies of the State.

The State Auditor initiated this audit to examine the Division of Community Hospitals' information system. We conducted a management and financial study of the division in 1992 and found that despite a cost of over $11 million, the Community Hospitals' Information Processing System (CHIPS) did not generate financial and operational information needed to manage the hospitals.[1] We also found poor management, inadequate staffing, and an insufficient budget contributed to CHIPS' problems.

Background

The State established the Division of Community Hospitals to "plan, construct, improve, manage, control, and operate public health facilities."[2] The division consists of 13 hospitals and medical centers and is managed by a deputy director and a division administrative office. The director of health designated the deputy director to maintain quality patient care; establish policy; and plan, operate and manage the Division of Community Hospitals. The division administrative office is responsible for facilitating the management of hospitals.

The division manages 12 individual hospitals and one satellite medical clinic differentiated by the kinds of services they provide and the level of care required by their patients. These sites are listed below:

Acute Care Facilities	Location	Bed Space
Hilo Medical Center*	Hawaii	274
Maui Memorial Hospital*	Maui	180
Kauai Veterans Memorial Hospital	Kauai	44
Kona Community Hospital	Hawaii	75

*acute and long term care provided

Long Term Care Facilities	Location	Bed Space
Maluhia Hospital	Oahu	158
Leahi Hospital	Oahu	192
Kula Hospital	Maui	105
Samuel Mahelona Memorial Hospital	Kauai	82

Rural Facilities		
Honokaa Hospital	Hawaii	30
Hana Medical Center*	Maui	0
Ka'u Hospital	Hawaii	15
Kohala Hospital	Hawaii	26
Lanai Community Hospital	Lanai	14

* Hana Medical Center is treated as a satellite of Maui Memorial Hospital.

Acute care facilities provide full medical services such as surgical, medical, and critical care; obstetrics; pediatrics; psychiatric treatment; and physical and occupational therapy. Long term care facilities consist of intermediate care and skilled nursing facilities that provide differing levels of medical and therapeutic care for the elderly or the chronically ill. Rural centers are primarily skilled nursing facilities that may provide limited acute care and/or longer term care for the elderly or the chronically ill.

In 1994, the hospitals had operating revenues of $181 million and required general fund support of $23 million. Operating expenses for the same year totaled $207 million.

Background of the CHIPS project

In 1986, the division began the CHIPS project to automate hospital financial and operational systems. CHIPS was envisioned as a state-wide integrated hospital information system serving 13 hospitals on five islands through three regional processing centers. The three data processing sites and the units they were to support are noted below:

Site	Location	Units supported
A	Oahu	Division office
		Maluhia Hospital
		Leahi Hospital
		Kauai Veterans Memorial Hospital
		Samuel Mahelona Memorial Hospital

B   Hawaii   Hilo Medical Center
                            Kona Community Hospital
                            Ka'u Hospital
                            Honokaa Hospital
                            Kohala Hospital

C   Maui   Maui Memorial Hospital
                            Kula Hospital
                            Lanai Community Hospital
                            Hana Medical Center

An information system collects data, stores and updates the data, processes data into information, and presents useful information to users. In a hospital information system, data collected includes patient information such as name, sex, date of birth, billing address, and medical insurance. Data also would include length of stay, hospital services provided, and medications and supplies used by the patient. The data is stored and updated in the system. Periodically the data is processed into user information. This information is provided in various forms such as billings to insurance companies, billings to patients, patient demographic reports, and financial statements and records.

Ineffective patient accounting and financial reporting contributed to lost revenues and an inability to collect accounts receivable. CHIPS was begun to improve patient accounting and financial reporting, and to provide greater managerial control and efficiency of operations, improve delivery of patient care, promote physician satisfaction, and enhance the image of the state hospital facilities. We conservatively estimate from our review of available records that CHIPS and related costs have exceeded $15 million since the inception of the project.

The three sites became operational by late 1988 and by 1991, seven of the thirteen hospitals used CHIPS for certain hospital functions. CHIPS became problem-ridden and experienced a series of operating problems. In 1990, the division contracted a consultant to evaluate CHIPS and assess the division's future information system needs.

The division, with the help of its consultant, developed and published its 1991-95 Distributed Information Processing and Information Resource Management (DIPIRM) plan, which was approved by the Department of Budget and Finance in May 1991. The DIPIRM assessed the division's existing system, analyzed the information processing needs of the division and of the hospitals, and presented a long term strategy for overall information processing.

The DIPIRM recommended replacing the recently acquired CHIPS computer equipment and computer programs with more advanced

versions because of the system's problems and limitations. The DIPIRM also envisioned that the new equipment and software would be made available to the 13 hospitals and the division office.

In 1993, the division acquired new computer equipment and software and determined that two processing sites could handle the workload of the three original sites. The Oahu processing center was eliminated leaving the two data processing sites at Maui Memorial Hospital and Hilo Medical Center.

The information system has yet to reach its intended goal of being available to all hospitals and the division office. Of the thirteen hospitals, only eight are connected to one of the two data processing sites.

Objectives

1. Describe and assess the Division of Community Hospital's information system.

2. Evaluate the adequacy of the Division of Community Hospital's ability to provide management with information that is accurate, relevant, timely, and complete.

3. Make recommendations as appropriate.

Scope and Methodology

We reviewed the division's information system, with a focus on the extent to which the system is meeting the electronic data processing goals established in the DIPIRM. We visited all 13 facilities and the division administrative office in Honolulu. We examined the division's strategic plans for data and financial information processing, status reports, correspondence and communications files, purchase orders, contracts, and accounting reports.

We interviewed hospital administrators, hospital department directors, and staff at the division office. We also reviewed policies and procedures for the division's financial information system, financial reports, plans, and communications between the division's administrative office and individual hospitals.

Our work was performed from January 1995 through July 1995 in accordance with generally accepted government auditing standards.

Chapter 2

Findings and Recommendations

In this chapter we examine the management and implementation of the Division of Community Hospitals' information system. We also report on the status and adequacy of the information system and note continuing problems with the system.

Summary of Findings

1. The division administration has failed to effectively manage the development of its information system. Important documentation is lacking or poorly maintained and State planning guidelines are not followed.

2. System implementation is fragmented. Various computer software packages are being used at different hospitals and billing for long term care and rural hospitals is still primarily a manual process.

3. Problems that prompted the purchase of new computer equipment and software still plague the hospitals. Less than one year after the new equipment and software became operational, the system is again running out of storage space and is not adequately maintained. Insufficient training continues to be a problem.

Division Administration Failed to Manage the Development of the Information System

The division's information system falls far short of its original goal of a standardized state-wide integrated information system.

Instead, hospitals are still collecting and processing data manually; using a combination of manual and computer processing; or collecting and processing data using piecemeal multiple computer and software systems. Promised efficiencies and operating improvements have not occurred. Patient accounting and billing problems persist and revenues are being lost.

Management failed to implement recommendations in our 1992 report. It did not have adequate controls to properly develop the system. Further it did not follow State guidelines for developing information systems.

Failure to implement recommendations of previous report

The division has not effectively addressed problems with its information system identified in 1992. In our previous study, we found that the division had implemented CHIPS without sufficient management oversight.[1] The system did not give the division office or the hospitals

financial information needed to manage the facilities in a businesslike way.[2] The division did not have a staff member with the qualifications, responsibility, and authority to make decisions and be accountable for CHIPS. We recommended that the deputy director of the division appoint a permanent qualified person to manage CHIPS, its personnel, program, and costs. We also recommended that this person ensure appropriate management controls and reporting procedures are in place to monitor CHIPS' financial status, expenditures, budget assessment and projections, and usefulness for managing the community hospitals.

In the present audit, we found that a manager was appointed, but the division made little effort to ensure that the person carried out the duties and functions of the position in a responsible manner. This one individual was burdened with many duties and responsibilities unrelated to the management of CHIPS. Additional duties included conducting studies, overseeing hospital accreditation, contracting physicians, drafting requests for proposals for office space, setting hospital rate increases, and tracking legislation. As a result, the CHIPS administrator was unable to manage and implement the division's information system as planned. Eventually the CHIPS administrator left the position and a new administrator has not been hired. A full-time CHIPS administrator is needed to ensure the information system functions smoothly.

Controls were inadequate

Adequate controls include use of and adherence to work plans, clear and concise documentation summarizing project status, cost monitoring, and post implementation evaluation. We found the division did not ensure these were done.

No evidence of work plans

The division could have used work plans to manage the implementation of the project but did not do so. Work plans clearly describe and justify work to be done, and how and when the work will be done. Work plans form the basis for credible cost estimates, an achievable schedule, well-understood assignments, and clear expectations of what is to be accomplished. We found no comprehensive, formal planning documents that met the criteria of sound work plans.

Successful implementation depends on the judicious use of resources to ensure that the work is done correctly and in a timely manner. Management is unable to monitor and control a project if work plans are unavailable. Management exercises control by measuring project status against project plans. If there is a disparity, the project manager can take corrective action to readjust the plan or the work by providing more staff or guidance. Lack of controls over the project were exacerbated by the absence of work plans.

Insufficient project documentation

Adherence to work plans also would have enabled the division to monitor its progress in installing the new computer equipment and software. We found no evidence that the division effectively monitored the project.

The division began installing the new computer equipment and software in 1993 and involved the software vendor; the equipment vendor; a consulting firm; personnel from Maui, Kona, and Hilo hospitals; and staff from division administration. We found no clear, concise documents summarizing the progress of the project. Such documentation could have been used by the division to control the implementation of the project.

We could not track the division's progress in installing the new equipment and software and transferring existing data to the new equipment. Information about the system had to be pieced together from meeting minutes, undated memos, and various files.

We found discussions on the project in division staff meeting and administrator meeting minutes and undated memorandums. In these documents, there was insufficient detail to provide the reader with project status, time frames, budget expenditures, and problems encountered. We also found relevant documents in the CHIPS administrator's file labeled "moses"; some undated, others untitled, making it difficult to decipher project status.

To ensure that management is adequately informed of project status on a day-to-day basis, project documentation should be maintained in an orderly fashion. Documentation should identify the tasks to be performed, the linkage between tasks, and a timeline for completion of tasks. Task documentation informs management of the work in progress, collection of pertinent data, and completion of tasks and baselines for the next task. Orderly documentation makes it possible for new staff to continue a project at any given phase.

Division failed to track the cost of the system

Our prior study found that no one tracked and reported the costs of the CHIPS project. The division's management responsibility should include the tracking of the total expenditures of the information system project. In our 1992 report, the division acknowledged its responsibility for managing CHIPS' financial status. We found, however, that the division has not established a policy for doing so. Consequently, the total cost of the CHIPS system has not been identified. We commented on this deficiency in our prior report and conservatively estimated the total project costs at $11 million through June 1990.

Based upon our review of contracts and the DAGS inventory list, we estimate that since our 1992 report, the division has spent more than $4 million dollars on the system. Total expenditures are estimated to be a minimum of $15 million.

Post-installation review is needed

Post-installation evaluation of a computer information system is a critical step to ensuring that the system is operating effectively. After the system has been installed and operational for several months, a re-examination is needed to determine how well the system meets its original objectives and cost/benefit justifications, and to ensure that the system continues to meet user needs. The re-examination would also determine whether changes or enhancements are required to improve or prolong the useful life of the system. The division has not conducted a post-installation evaluation of the overall system. As a result, the division does not have an inventory of problems that can be evaluated and used to plan corrective actions.

Non-adherence to State guidelines

The division also failed to follow State system development guidelines. SDM/Structured methodology is an application development tool used to guide the development process and produce documentation at the end of the project. The Department of Budget and Finance's Information and Communications Services Division requires the use of this methodology for application systems development. The division failed to follow this methodology.

SDM guides the development effort with step-by-step descriptions of tasks to be performed, how they are to be documented and provides guidelines on estimating costs and time for their completion. When properly followed, SDM ensures that the system is built in the best way possible, satisfies user needs, meets objectives, and helps management control the development such that time limitations and budget constraints are met. SDM also guides the maintenance, enhancements, or modifications to systems in response to design changes, service requests, or governmental regulations. The project could have been effectively controlled had the division administration followed these required guidelines.

System Implementation is Fragmented

The information system has not been fully put into operation. Some elements of the system have been put into place while much of the system objectives are still unmet.

The DIPIRM plan was to establish three data processing centers to meet the information needs of all 13 hospitals and the division's

administrative office. Although some hospital operations, such as admitting and billing, have improved at some hospitals, patient accounting has not been fully computerized, revenue enhancement capabilities have not been completed, implementation of clinical and other support software is incomplete and inconsistent, and general accounting functions are still being performed manually.

Patient accounting is not automated at all hospitals

The information system is designed to automate patient accounting functions so that patient services are properly recorded; patients and third party payors are accurately billed for the services; and collections and patient accounts receivable are properly tracked. However, this function has not been fully automated.

All hospitals must use a uniform billing claim (UB-92) to ensure payment from third-party payors such as Hawaii Medical Services Association (HMSA), Medicaid, and Medicare. Patient demographic data, diagnostic information, and descriptions of charges and services are just some of the required data on the UB-92. If data on the UB-92 is inaccurate, third-party payors may refuse or delay payments for the services. The system was supposed to network patient information throughout patient care departments and integrate this with patient accounting. Patient data entered into the system would be processed properly and accurately and proper UB-92 billing forms would be prepared.

Five hospitals are not connected at all to a data processing center, nor do they have any other automated system networking their patient information to ensure proper billings. Maluhia, Leahi, Kohala, Honokaa, and Lanai Hospitals capture patient information on manually prepared forms, which are then copied and distributed to relevant departments. Patient information is then manually inputted into a personal computer used to print their UB-92 claim forms. Repetitive manual transcription of patient data not only is an inefficient use of hospital personnel, it also increases the possibility of improper UB-92 forms.

And even hospitals that are automated still have to perform several manual processes to bill Medicaid for services to long term care patients.

Long term care billing is inefficient

Medicaid requires that charges for room and board and routine services be billed separately from other ancillary services provided. Therefore, billing procedures for long term care patients differ substantially from that of acute care billing. The new system is primarily geared for acute care billing and does not efficiently bill for long term care patients.

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A total of 65 percent of the division's bed capacity accommodates long term care patients. Almost all of the hospitals must deal with the problem of manually separating charges for long term care patients. For the two largest acute care hospitals, Hilo Medical Center and Maui Memorial Hospital, these billings constitute a large portion of outstanding accounts receivable.

Revenue enhancement projects not done

The hospital division could increase revenues by following through on two specific goals of the system. The goals were to file billing claims using electronic media and assist medical records departments in identifying the most effective assignment of diagnostic related grouping of patient charges. These goals have not been achieved.

Inability to file claims using electronic media

The 1991-95 DIPIRM plan identified the need for the division to participate in electronic media claims (EMC) submissions to HMSA, the hospitals' largest third-party payor of claims. This service provides a means for hospitals to transmit claims on electronic media, by magnetic tape, diskette or directly by dial-up-lines. According to HMSA, nearly all hospitals in Hawaii are active participants of EMC submissions.

Cost savings and improved cash flows that could result from using electronic media claims have not been realized. Hospitals must still file claim forms that cost money to purchase, sort, collate, and mail. Further, using printed forms instead of electronic media lengthens the amount of time it takes to collect the amounts billed. EMC cuts the payment time in half because manual processing avoids such steps as claims review, data entry, and mailing statements.

Diagnostic related grouping of charges is still done manually

In 1983 the federal government created the prospective payment system to reduce Medicare costs. The system established standardized reimbursement rates regardless of the hospital's cost. Medicare sets a reimbursement rate for each medical procedure grouping, or diagnostic related group (DRG). If the reimbursement rate is higher than the hospital costs, hospitals may keep the difference. If their costs are greater, however, hospitals must absorb the loss.

The division recognized the need to automate the grouping of diagnostic rates to maximize reimbursements. Hilo and Maui were provided with computer software that would enable their computers to group diagnostic rates that would achieve the highest possible reimbursements for services.

Hilo Medical Center cannot use the software. Modifications made to Hilo's computer system made the software no longer usable. As a result, coding and grouping at Hilo Medical Center are done manually. Maui Memorial Hospital uses the software provided but not on the main computer. Instead, the hospital uses the software on a separate personal computer and staff manually repeat the input of patient information, which is already on the main computer, before the software can perform the coding and grouping functions. Other hospitals that do the grouping do so manually.

Considerable staff time is spent reviewing patient charges and grouping them so that the billings can be prepared. Not only is this a time consuming process, there is no assurance that the charges are grouped such that revenues are maximized. At the Maui Memorial Hospital, the assurance that the charges are grouped properly to maximize revenues is lessened because of the manual efforts required to input the data to a separate computer. Failure to ensure that revenues are maximized can result in lost revenues.

Implementation of clinical and other support service software is incomplete and inconsistent

The installation and use of planned clinical and support services computer software have not been completed. Clinical and support services software was intended to provide hospital management with accurate information and support for such activities as laboratory, operating room, and pharmacy services. Many hospital departments still collect and process these data manually even though the hospital has the capability to do it on the computer. We also found that comparable departments of different hospitals use completely different software applications or they use the same application to different degrees.

This has resulted in different degrees of information availability at the hospitals. Consistent, reliable information is not available. Also the lack of computer software compatibility jeopardizes the ability to transfer information within the system. These problems are exacerbated by a lack of divisional policy to ensure computer system compatibility and a hospital's independent acquisition of computer software.

No policy to ensure software compatibility

The division administration attempted to standardize software purchases to control costs. However, the division has no formal policy governing the purchase of software to ensure compatibility with existing systems. In effect, individual hospitals have no guidelines for acquiring software.

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Independent acquisition of software

Maui Memorial Hospital's Quality Assurance Department uses a computer software package known as MAXSYS. The software was purchased by the hospital's auxiliary group at the request of the hospital. The purchase was not subject to review or approval by the division office. After purchasing it, the department finds the software incapable of using the data on the main computer system and other user problems.

Data must be manually inputted into the MAXSYS software and the department reported that 20 percent of the data entered was inaccurate, causing additional review and staff time to correct it. Now the department estimates it needs $64,800 per year to pay for additional staff to operate MAXSYS, and $38,000 to link MAXSYS to the main system. These additional costs might have been avoided had the purchase gone through normal channels of review and approval.

Financial accounting functions are still performed manually

Five hospitals--Maluhia, Leahi, Lanai, Honokaa, and Kohala Hospitals-- do not have automated systems for managing their accounts receivable and general ledger. They continue to perform most of their financial accounting functions manually. Also, Maluhia and Leahi's accounts receivable functions are completely manual. While Maluhia produces an aged trial balance once every six months on Lotus, Leahi can track its receivables only by adding individual balances on color coded index cards.

Where operational, the automated financial accounting system produces standard financial statements including balance sheets, expense reports, schedules of revenue deductions, other revenue deductions, patient service revenues, profit and loss statements, aged trial balances, and detailed trial balance statements. All of these reports need to be produced timely to be of use to management. Because of the time required to prepare these reports manually, they are often not prepared. As a result, management does not have access to financial information needed to evaluate operating results against operating costs.

The New Computers Have Many of the Same Problems As the Old

In their 1993-1995 Biennium Budget testimony, Hilo Medical Center and Kona Community Hospital requested funds in excess of $1 million to support the following improvements in their information system:

- Increase storage capacity to allow implementation of additional software packages to enhance operations and to improve processing/ response time and

- Technical assistance to ensure that the conversion covers all technical specifications, thus minimizing disruption of all operations.

Even though new computer equipment and software have been purchased and installed at Hilo Medical Center and Maui Memorial Hospital, both are faced with a lack of disk storage capacity and the need for outside technical assistance to update the system software. In addition, necessary technical training of hospital staff has not been adequate.

System disk space capacity is still a problem

With the older computer equipment and software, Hilo and Maui data centers suffered from slow system response time. Response time is the length of time it takes a user to input a piece of data or review existing data before the user can input or review the next piece of data. Hilo also experienced periods when the computer simply would not function. Both of these problems were caused by a lack of computer disk storage space. The new computer equipment and software were supposed to relieve this problem. Although response time has improved, the hospitals are again having disk capacity shortage problems.

Hilo Medical Center and Maui Memorial Hospital report disk storage utilization are now at 94% and 84% of capacity, respectively. Disk storage utilization above 80% of capacity can result once again in slower response times and periods when the computer cannot be used. The current storage capacity problem results from poor planning for the new computer equipment and software.

When the new equipment and software were installed, certain patient information would not transfer to the new computer system. This made the transfer of all information impossible and resulted in the loss of some detailed patient billing information. In order to preserve the old information, the division decided to keep both the old and the new patient billing information and computer software on the new computers. This was not intended when the new equipment was purchased. The new computer equipment was expected to have sufficient disk storage space for the foreseeable future. Hospitals are now asking for permission to purchase expensive additional disk storage hardware to increase capacity.

The division reports that it does not have any idea as to how long the old information and software will be kept on the computers, but intends to request additional funds to purchase more disk space. It might be more cost effective to simply remove the old patient information and software to free up storage space on the existing disks.

Necessary changes need to be installed

The software manufacturer periodically sends technical change notices to correct software problems. The notices are actually changes to the computer software that must be installed in the system. These changes

are necessary for proper and efficient computer software operation. They sometimes correct errors or "bugs" found in the software. To insure continued support of the software, the vendor requires all changes to be installed.

When it purchased the software, the division had two options: (1) contract with software vendors to install the changes, or (2) install the changes with division staff. Software vendors expressed their concern with division's ability to properly install the changes. The division chose to have its staff install the changes — in spite of vendors' concerns.

Hospital staff still do not have the technical expertise required to properly install the changes (a process that can take up to two full days). Hilo's data processing personnel attempted to install one change, but this effort resulted in a system lock-up. Since then, the hospitals have not attempted to install any of the changes received. As a result, the software contains uncorrected "bugs" and is not operating as it should. The hospitals must now pay the software vendor nearly $80,000 to install technical changes.

Division has not provided adequate training

Hospital staff have not received the training they need to operate the information system. In 1989, the vendor of CHIPS reported to the division that hospital staff indicated a need for additional training. In this audit, hospital staff again indicated a need for additional training. We found that the division has no policy on providing appropriate training to hospital personnel on the use of the computer system. Hospital staff's inability to install technical changes is a clear example of one type of training needed. Users of financial information also need training. We found that the Hilo business office has yet to generate timely standard accounting reports because staff are unsure how to make the system provide accurate reports.

The division needs to provide additional training for hospital personnel. Such training should be specific and appropriate to ensure that staff are qualified to operate and maintain the system.

Conclusion

The division lacks a state-wide integrated standardized information system. Its information system has been poorly managed and State development guidelines have not been followed. Documentation on system development and installation is lacking and the information system is fragmented. Its future direction is unclear. The division still needs a data processing manager to plan, control, and set direction.

More importantly, the division administration must ensure that staff have the skills to use the information system and work towards providing all hospitals with an automated information system.

Recommendations

1. The deputy director of the division of community hospitals should hire a full-time data processing manager.

2. The division should assess the status of the current information system by:

   a. performing a post-implementation review of the information system to determine whether it meets its original objectives;

   b. implementing and completing revenue enhancement projects;

   c. establishing a policy for software use and acquisition by the hospitals to ensure compatibility with the direction of the information system;

   d. analyzing the two computer centers' capacity problem and the costs/benefits of keeping the old systems on the new computers; and

   e. developing a course of action to continue the automation of hospitals information processing.

3. The division should establish management controls to:

   a. monitor the information system's financial status, expenditures, and budget assessments;

   b. ensure that work done as a result of the assessment of the system follows State guidelines.

4. The division should also ensure that hospital personnel are adequately trained to operate and maintain the computer system.

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Notes

Chapter 1

1. Hawaii, The Auditor, *Study of the Division of Community Hospitals*, Report No. 92-6, Honolulu, January 1992.

2. Section 323-62, HRS.

Chapter 2

1. Hawaii, The Auditor, *Study of the Division of Community Hospitals*, Report No. 92-6, p. 5.

2. Ibid., p. 12.

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Response of the Affected Agency

Comments on Agency Response

We transmitted a draft of this report to the Department of Health on September 26, 1995. A copy of the transmittal letter to the Department of Health is included as Attachment 1. The response of the Department of Health is included as Attachment 2.

The Deputy Director of Community Hospitals, responding for the department, recognized and acknowledged the report as a valid review of its information system and will use the report to improve its system. However, the deputy director noted that in spite of major inefficiencies and difficulties, the division's information system has produced some impressive achievements and hospital staff should be commended for their work under trying circumstances. The deputy director also stated that, while some progress has been made in the areas of revenue enhancements, electronic billing, collecting past due accounts, and disk space capacity, the division will carefully consider and actively follow up on our recommendations.

The deputy director has committed to correcting some of the "bureaucratic and environmental factors" which have led to the problems with the information system. He noted that the current administration is committed to develop a more autonomous, independent, flexible, and competitive public corporation for the community hospitals. We emphasize, however, that a viable information system is absolutely essential even under the current organizational structure of the community hospitals. The problems we found are the result of poor management. Transferring the problem-ridden information system to a new entity will not resolve the problems. Improvements in the system must take place even apart from any consideration of a change in structure.

STATE OF HAWAII
OFFICE OF THE AUDITOR
465 S. King Street, Room 500
Honolulu, Hawaii 96813-2917
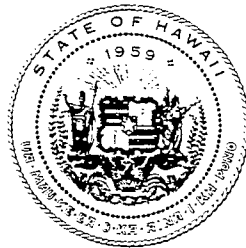
MARION M. HIGA
State Auditor

(808) 587-0800
FAX: (808) 587-0830

September 26, 1995

The Honorable Lawrence Miike, M.D.   *C O P Y*
Director of Health
Department of Health
Kinau Hale
1250 Punchbowl Street
Honolulu, Hawaii 96813

Dear Dr. Miike:

Enclosed for your information are three copies, numbered 6 to 8 of our draft report, *Audit of the Information System of the Division of Community Hospitals*. We ask that you telephone us by Thursday, September 28, 1995, on whether or not you intend to comment on our recommendations. If you wish your comments to be included in the report, please submit them no later than Thursday, October 5, 1995.

The Governor, and presiding officers of the two houses of the Legislature have also been provided copies of this draft report.

Since this report is not in final form and changes may be made to it, access to the report should be restricted to those assisting you in preparing your response. Public release of the report will be made solely by our office and only after the report is published in its final form.
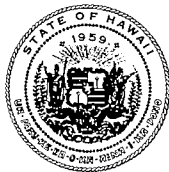
Sincerely,

Marion M. Higa
State Auditor

Enclosures

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

LAWRENCE MIIKE
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801

In reply, please refer to:
File:

October 4, 1995

BK-95-230

RECEIVED

Ms. Marion Higa, State Auditor
Office of the Legislative Auditor
465 South King Street, Room 500
Honolulu, Hawai'i   96813

Oct 5 4 21 PM '95

OFC. OF THE AUDITOR
STATE OF HAWAII

Dear Ms. Higa:

We have reviewed your draft on the "Audit of the Information Systems of the Division of Community Hospitals" report to the Legislature and would like to thank you for your telling assessment and for the opportunity to comment on the findings.

We recognize and acknowledge many of the shortcomings outlined in your report and will use this report, along with our internal reviews, to improve our system. The weaknesses of our Information System are admittedly one of the Division's most serious and frustrating problems and we recognize that renewed priority must be placed in this area. So, we will take your report as a challenge and guide toward improvements.

At the outset, we would like to make two overall comments:

1)   In spite of major inefficiencies and difficulties, our system has produced some impressive achievements:

   o   The Community Hospitals system generates 240,000 patient bills a year.

   o   The Community Hospitals system generated and collected revenues in excess of $180 million last fiscal year.

   o   Since 1990, the Community Hospitals have increased their revenue collections by 75 percent (FY-1990: $104,000,000; FY-1995: $187,000,000).

   o   The Community Hospitals have decreased their general fund subsidy from $24 million in FY-1993 to $0 in FY-1996.

Our system works, though not as efficiently and effectively as it should. Like many public organizations of our type, we operate with less than optimum resources and less than optimum system support.

Our hospital staff deserves support and commendation for the job they have been doing under trying circumstances. Audit reports typically indicate that the water glass is half-empty, while our hospital administrators and staff, given a half-empty or half-full glass by their predecessors, the Legislature, and historical/social/geographic "accident", must struggle to fulfill ever-burdensome hospital operating needs with such resources as may be found in the half-empty/half-full glass.

2) The State Hospital system must change. It cannot survive in its present form, especially with our current information system. As such, this Administration, from the Governor to the Director of Health on down to the Hospital administrators, has committed itself to develop a more autonomous, more independent, more flexible, and more competitive Public Corporation for Community Hospitals as outlined by the Legislature in Act 266, 1994.

We are using State Legislative Auditor reports from 1971 to 1992 and other reports to correct some of the bureaucratic and environmental factors which have lead to the problems with our Information System. Please note that never before in State history has a high level commitment been made from the Governor on down for a Public Corporation for Community Hospitals such as we will propose to the 1996 Legislature.

Aside from the past faults of planning and system design, the crux of our difficulties have been in implementing solutions to the problems which are all too apparent to anyone who has worked with our hospitals. We hope to free the hospitals of the numerous time-consuming, sometimes onerous though well-intended requirements of various "alphabet soup" government agencies (DOH ASO, HISO, DB&F, DAGS, DHRD, AG, etc.).

The audit findings must be viewed from the perspective that operating our hospitals, which comprise the fifth largest hospital system in the country, is remarkably difficult.

During the six months I have been with the hospital system, some
progress has been made. The area of revenue enhancements cited in
your report has been a priority area. Electronic transfer of
billing is being installed and tested. We have received software
from HMSA to allow our hospitals to file our Medicare and Medicaid
claims electronically. This will decrease collection turn-around
time and improve cash flow. We are also in the process of
acquiring equipment to allow the Collections Unit of the Attorney
General's office to access patients' records to better collect past
due accounts. The critical problem of lack of system disc storage
capacity at Hilo and Maui was resolved with additional disc space
installed at Hilo and old patient data deleted from the system at
Hilo and Maui, as your report recommends, giving them about 30
percent available capacity.

We appreciate the highlighting of the need for a full-time
Information System Director because this is another priority. We
have been in recruitment for a DPSA (Data Processing) VI and DPSA
IV since last year. Unavailability of qualified applicants, job
and reduction-in-force freezes have delayed our efforts. Our job
classification system which classifies a DPSA VI as a SR-26 with an
entry salary of $39,624 per year is another problem. As a reminder
of our problems in the personnel area, as of less than one month
ago, the DPSA VI position was possibly going to be filled by a
person not of our choosing because of the reduction-in-force
"bumping", and the DPSA IV position was just filled this week by a
reduction-in-force "bump".

In closing, this critical report is a valid review of an
information system wrought with problems struggling to improve
itself within a system with built-in obstacles but in hopes of more
positive organizational circumstances within which to grow given
the possibilities of the proposed Public Corporation for Community
Hospitals.

Thank you again for allowing us to comment on this report. Your
final recommendations will be carefully considered and actively
followed up.

Sincerely,

BERTRAND KOBAYASHI, Ph.D.
Deputy Director for Community Hospitals