

1. RESTRICTIVE MARKINGS DTIC FILE COPY	
2a. SECURITY CLASSIFICATION AUTHORITY Unclassified	
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE	
3. DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release; Distribution unlimited	
4. PERFORMING ORGANIZATION REPORT NUMBER(S) HCA- 102-88	
5. MONITORING ORGANIZATION REPORT NUMBER(S)	
6a. NAME OF PERFORMING ORGANIZATION US Army-Baylor University Graduate Program in Health Care	6b. OFFICE SYMBOL <i>(if applicable)</i> Admin/HSMA-IHC
7a. NAME OF MONITORING ORGANIZATION DTIC ELECTE 22 JAN 1989 S E	
7b. ADDRESS (City, State, and ZIP Code) Ft. Sam Houston, TX 78234-6100	
8a. NAME OF FUNDING/SPONSORING ORGANIZATION	8b. OFFICE SYMBOL <i>(if applicable)</i>
9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER	
8c. ADDRESS (City, State, and ZIP Code)	
10. SOURCE OF FUNDING NUMBERS	
PROGRAM ELEMENT NO.	PROJECT NO.
TASK NO.	WORK UNIT ACCESSION NO.
11. TITLE (Include Security Classification) A STUDY TO ASSESS AND RECOMMEND METHODS TO REDUCE LOOSE PAPERWORK IN THE CLINICAL RECORDS SECTION AT WILFORD HALL USAF MEDICAL CENTER, SAN ANTONIO, TEXAS	
12. PERSONAL AUTHOR(S) CPT Lee N. Garriott	
13a. TYPE OF REPORT Study	13b. TIME COVERED FROM Jul 80 TO Jul 81
14. DATE OF REPORT (Year, Month, Day) Apr 81	15. PAGE COUNT 54
16. SUPPLEMENTARY NOTATION Facilities, Military medicine,	
17. COSATI CODES	18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)
FIELD	GROUP
SUB-GROUP	Health Care, Loose Medical Record Paperwork, (SDU) Air force equipment,
19. ABSTRACT (Continue on reverse if necessary and identify by block number)	
<p>This study addresses the problems caused when excessive loose medical documents (largely laboratory slips and X-Ray reports) are received by the Inpatient Records Section of a one thousand bed USAF teaching hospital each month. It sets forth recommendations to reduce the amount of loose paperwork, as well as methods to improve the ability of Records Section personnel to identify and file it. The functions of a medical record, leadership and qualifications of a facility's medical record administrator, internal workings of an Inpatient Records Section, and medical and nursing staff use of medical records, are also discussed. Keywords:</p>	
20. DISTRIBUTION/AVAILABILITY OF ABSTRACT <input checked="" type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS	
21. ABSTRACT SECURITY CLASSIFICATION	
22a. NAME OF RESPONSIBLE INDIVIDUAL Lawrence M. Leahy, MAJ, MS	22b. TELEPHONE (Include Area Code) (512) 221-6345/2324
22c. OFFICE SYMBOL HSMA-IHC	

**A STUDY TO ASSESS AND RECOMMEND METHODS TO
REDUCE LOOSE PAPERWORK IN THE CLINICAL
RECORDS SECTION AT WILFORD HALL
USAF MEDICAL CENTER
SAN ANTONIO, TEXAS**

By

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**A Problem Solving Project
Submitted in Partial Fulfillment
of the Requirements
for the Degree of
Master of Health Administration**

24 April 1981

89 1 18 038

ACKNOWLEDGMENTS

This study could not have been conducted without the support and cooperation of the staff of Wilford Hall United States Air Force Medical Center.

The frank and open discussion of the challenges facing the Medical Center by all staff members made this research a pleasurable experience.

Finally, special thanks to Mrs. Xenia V. Martinez for her administrative assistance.

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CHAPTER I

INTRODUCTION

Wilford Hall USAF Medical Center (WHMC) is a one thousand bed teaching hospital which conducts a comprehensive program of clinical medicine, professional education, technical training, and clinical research in support of the United States Air Force mission.

Wilford Hall is also the primary Air Force area medical center for twenty-two medical facilities in Texas, New Mexico, Oklahoma, Colorado and Louisiana, and is the world-wide referral facility to all other Air Force medical units including five medical centers and ten regional hospitals.¹

The medical staff is comprised of 143 physicians and approximately 260 residents. These staff members are supported clinically by 400 nurses and 90 Biomedical Science Corps officers. The total number of employees, both military and civilian is approximately 3,500. There are 38 administrative officers assigned to manage the center.²

The work load of the medical center involves approximately 280,000 patient days per year and over 1,000,000 outpatient visits per year.³

While accomplishing this large work load, the medical and administrative staff must work together to assure quality care. Part of the

assurance mechanism is the preparation and maintenance of proper documentation of the care rendered. The Clinical Records Section has an important role in that this section acts as library, repository, and data source for the documentation of care provided to inpatients treated at Wilford Hall USAF Medical Center.

Identification of the Problem

The Inpatient Records Section receives loose paperwork with a range of approximately 1500 to 2500 pieces per month. This is not a problem unique to Wilford Hall USAF Medical Center; however, the volume is unique.⁴ The sources of the loose paperwork are essentially the patient care areas and the Aeromedical Evacuation System. The greatest volume of the paperwork is from the internal patient care areas. The records received on patients being transferred in via the Air Force Aeromedical Evacuation System can usually be identified or sent back to the original medical facility. However, a useful solution to the loose paperwork in general will improve the delinquent record problem also. This analysis will concentrate on the loose paperwork generated within the medical center itself. Further, the problem to be solved is: to devise a method or methods to reduce the amount and/or improve the ability of the records section to identify and file loose paperwork generated in the patient care areas of the medical center.

The analysis has several constraints in terms of acceptable solutions. First, it has been given that additional permanent manpower is not available now or in the foreseeable future. Also, the physical layout of

the records section is virtually fixed for the next 18 months due to a construction project in progress.

The following literature review will discuss a myriad of factors impacting on the effective management of a clinical records section in any hospital. This review provides a data base for future reference during the system analysis stage.

Review of the Literature

Medical records are an important tool in the practice of medicine. They serve as a basis for planning patient care; they provide a means of communication between the physician and other professional groups. Medical records document the course of a patient's illness and treatment and serve as a basis for review, study, and evaluation of the medical care rendered to the patient.

In a larger sense, the medical record is a compilation of data from many sources coordinated into a document available for various uses, personal and impersonal, to serve the patient, the physician, the institution, the science of medicine, and society as a whole.

A medical record department is much more than a repository for records. It is an integral part of the management and patient care functions of the institution. The department must interact with all professional, general service, and administrative areas of the institution in its effort to contribute to the attainment of the institutional goal of providing quality patient care. The medical record department is entrusted with the compiling, storage, retrieval, and security of patient information.

Organization of a Medical Record Department

The medical record department should be organized in such a way so that all affected parties, physicians, patients, and society receive the highest possible level of service required for quality patient care. The type of service provided by the medical record department is contingent on the quality of the information contained within the record and on the accessibility and location of the services of the department. The proper physical location of the medical record department will help facilitate the utilization of the medical record department's services.

Other factors which should be considered when determining the proper location of the medical records department include adequate storage space, provisions for good communication between departments, and an efficient method of transporting the medical records between the various departments.

The space allocations made for the medical record department depend primarily on the volume of records to be processed and stored by the department. Past experience or comparisons with similar institutions provide the best guidelines for establishing space requirements.

When space is limited in such a way as to prevent a centralized location for medical records, provisions should be made to overcome this inconvenience and facilitate the transportation of records to the various areas of the department and help maintain communication channels.

If records must be transported by mechanical means, the feasibility of all such equipment needs careful consideration. Long range plans for

the medical record department, as well as physical design, should be reviewed before deciding on the type of transport system to be used. Some of the most common types include: conveyor belts, dumbwaiters, basket conveyors, and pneumatic tubes. Also, remote dictating equipment has been used successfully by physicians when the location of the medical record department was not easily accessible.⁵

Photocopying equipment is a necessity for the operation of a modern medical record department. The use of such equipment reduces the possibility of errors which are present when nonmechanical means of transcription are used. Copiers should be of the type that will produce clean, clear copies from all types of ink and should be located in easily accessible areas while providing for supervision, so as to limit unnecessary reproduction of confidential material.⁶

Microfilm, as an information recording medium, provides a solution to the problem of providing greater storage protection while at the same time providing efficient means of retrieval.

Administration of the Medical Record Department

Due to the increased emphasis in the recent past of the medical record inpatient care, the role of the medical record administrator has evolved from that of a skilled technician to that of a manager proficient in leadership, organization, planning, and the technology of recording and retrieving information. He must be able to maintain close working relationships with administration, the medical staff, and the personnel

director. As more demands have been made on the role of the medical records administration, qualifications for such positions have also changed.

The medical record department need not necessarily be directed by a Registered Record Administrator. In many instances, an accredited record technician, with consultation access to a Registered Record Administrator, may be employed. The level of education necessary may be a function of size and type of hospital.

Until 1970, work experience and knowledge of certain subjects were the initial requirements for registration as a Registered Records Administrator. Today, educational requirements include a Bachelor's Degree from an institution accredited jointly by the American Medical Association and the American Medical Record Association. The curriculum should include courses in:

. . . anatomy and physiology, medical record science, medical terminology and medical science, organization and management, statistics, data processing, and directed practice in medical record departments. (Huffman, 1972)⁷

Programs for Accredited Record Technicians may be established in junior or associate degree colleges, or in accredited hospitals. Courses of study should include anatomy and physiology, medical record science, medical terminology, as well as a directed practice in a medical record department.⁸

The American Medical Record Association also conducts a correspondence course for medical record personnel who hold a high school diploma and are currently employed in a medical record department.⁹

Accreditation programs have been established by the American Medical Records Association for Registered Record Administrators and Accredited Record Technicians. To qualify for accreditation, individuals must be graduates from an approved program for medical record administrators, or personnel, and have successfully completed an accreditation examination.¹⁰

The major function of the Registered Record Administrator in direct care institutions is that of a department head. The degree and effectiveness of the medical record services are dependent upon the skill in administration of the department head. The Registered Record Administrator serves as liaison with other department heads and provides them with such resources as record forms, record retention, retrieval and the release of information, and educational programs for record personnel, physicians, paramedical personnel, and students.¹¹

Functions of the Registered Record Administrator within the medical record department can be classified under the five basic management functions: planning, organizing, controlling, actuating, and staffing.¹²

Interdisciplinary and Interdepartmental Relationships

The medical record functions as the major tool in the practice of quality medical care. There exists an interlocking relationship between the medical record department and all other departments within the institutions. The activities of a hospital, regardless of its size, may be

separated into two areas: those concerned with the professional care of the patient, and those concerned with the business management of the institution.¹³

The medical record must serve the information needs of the various health care departments.

As a department head, the records practitioner assists the hospital Administrator in making budgetary decisions and equipment purchases for the department. Often, he/she is required to represent administration in court proceedings which involve medical records, and additionally develop, interpret, and implement policies regarding medical records.¹⁴

The largest department in the hospital is Nursing Services. Numerous patient care areas fall within this department and call for a close relationship with the medical records department. Patient medical records are in the hands of Nursing Service throughout the entire stay of the patient. During this stay, the medical record is not only used in recording of direct nursing care; it is also used by allied services such as dietary, pharmacy, and various others in furnishing patient care. Prompt, accurate preparation of the record and its timely delivery to the records department on discharge of the patient is essential. The more understanding of medical records Nursing Services has, the better the cooperation between the two departments.

Laboratory, radiology, physical medicine departments, etc., generate numerous reports which are an integral part of the health record.

The medical record department must understand the problems and delays associated with these special departments in completing these studies and reports. Timely completion of a patient's chart is essential. Through cooperation and mutual understanding of interdepartmental requirements, missing data and delinquent charts can be minimized. ¹⁵

The hospital's general service departments, like the diagnostic and treatment departments, get involved on a daily basis with the medical record department. The identification of the patient on admission, dietary requirements during his stay, proper billing by accounting and compilation of the medical record on discharge are all important steps in providing quality patient care. ¹⁶

Therefore, cooperation between all departments within the institution and the medical record department is imperative. Good public relations are becoming more and more a major concern of hospitals. The medical record department can contribute much to good public relations. Telephone inquiries should be handled expediently and face-to-face patient contact should leave a good impression on the individual. Through the efforts of the medical record department personnel, a favorable impression will be left in the minds of patients, staff, and visitors. ¹⁷

The medical record is primarily a medium of communication among the members of the medical and paramedical staffs caring for patients. The attending physician is primarily responsible for the quality of the medical record. Each entry in the record should be signed by the person making the entry. The medical record must be completed and forwarded to

the medical record department within the time frame decided upon by the hospital.

The problem of completing records is a real one for the physician who is generally overwhelmed with paperwork. The medical records section has the responsibility to monitor physician completion of records and recommend corrective action when delinquency becomes a problem. The medical records personnel, working with providers, attempt to resolve this problem. They cannot, however, be expected to resolve problems alone.¹⁸

The interaction between the professional staff and the medical record department is most often evidenced in the various medical staff committees. The functions of various staff committees are dependent on the medical record. Comprised mostly by physicians, medical record personnel give professional advice to the committee and assist the various departments concerned by selecting medical records as well as statistical data deemed necessary for research and educational projects.¹⁹

Although the medical staff is organized as a self-governing group, the medical record administrator or technician plays an important role in promoting the continuing smooth functioning of medical staff activities. Cooperation among administration, medical staff, and the record department is imperative for the development of a functional medical record system. (American Hospital Association, 1981)²⁰

Accreditation

The medical records department is an integral part of the hospital. As such, its impact on accreditation can be severe. Any hospital wishing recognition of quality services may request a survey by the Joint Commission on Accreditation of Hospitals. Although participation is voluntary, accreditation has become almost compulsory for hospitals if they are to survive. Failure to be accredited is interpreted by the public as providing substandard care.²¹

The medical records services, in principle, are required to maintain records that are documented accurately and in a timely manner. They must be readily accessible and permit prompt retrieval of information, including any statistical data deemed necessary.

An adequate medical record must be maintained on every person who is evaluated or treated as a patient by the hospital. The record must identify the patient, support the diagnosis, justify the treatment, and document the results of that treatment. The records must be confidential, secure, kept up to date, authentic, legible, and complete. Adequate direction, staffing equipment, and space must be provided in order to perform all required functions. Additionally, there must be, in writing, well defined roles of medical record personnel in the overall quality assurance program (i.e., audit, utilization review, and record review) of the institution.²²

The services medical record department is of such importance, that failure to meet the J.C.A.H. requirements will, in most cases, result in

the Accreditation Certificate not being awarded or, at best, a temporary accreditation will be awarded the institution.²³

Future Trends in Medical Record Departments

Today, the majority of medical record systems are manual systems. These systems are time-consuming to maintain, bulky, and in general restricted to the immediate known health of the individual patient. Data maintained in the record is most often used by the medical records department in retrospective analysis of patient care or in after-the-fact compilation of statistical data for research and educational programs.²⁴

With the advent of the computer, medical records are beginning to take on a new look, and medical records departments are having to conform to these changes.²⁵

Storage of infinite amounts of medical data are now a possibility, and instant retrieval of the data is also available. Medical record linkage is becoming a reality. The ability to have access to all medical information on a patient from birth to death is going to place unique requirements on medical records departments. Special equipment and special training will be required.

With over 40% of the reimbursement dollars coming from third party payers, medical record departments are becoming ever more involved in utilization review processes. Quality assurance programs are increasing in scope and numbers, and requests for medical information from outside sources are on the increase.²⁶

To meet these demands, the medical records department will have to become an even more sophisticated and integral part of the organization. Budgetary requirements will increase dramatically to meet equipment needs and to pay for additional personnel skilled in data processing.

Medical records departments will be involved in the analysis of data as it arrives in the medical record, assisting the professional staff in controlling the process of treatment and the returns to health of the patient.

Service to the professional staff has historically been the primary function of the medical records department. Maintaining these records is a complex task requiring skilled personnel who are knowledgeable in the most recent technical innovations pertaining to the transcription, storage and retrieval, and the use of medical records in quality assurance programs.

Every hospital, regardless of size, must periodically evaluate the service the medical records department provides. Factors such as budgetary requirements, staffing mix, and physical requirements must be considered in the review process.

Today, more demands are being placed on the medical records department for statistical data. In the age of computers and data processing, management is expanding the role of the department. No longer is the function of the medical record solely a clinical one.²⁷ It has grown from that of a documenting patient care, to an expanded role serving as a major planning tool for administration in determining future community needs and

the institution's response to these needs, for the medical staff as a reference in the treatment of patients, and for regulatory agencies in evaluating quality assurance.²⁸

Taking these general concepts concerning the function and tasks required of a medical records section, the following systems analysis will evaluate the medical records paperwork flow within Wilford Hall USAF Medical Center by utilizing the following methodology:

Research Methodology

Evaluation and analysis of the problem include inquiry techniques, direct site analysis, flow charts, and research of the supersystem. Also included are discovery statistics and forecasting statistics in order to better predict outcomes and expected payoffs given various assumptions.

During the evaluation and analysis phase, the basic method to be used can best be described graphically with the generic systems analysis model shown below:

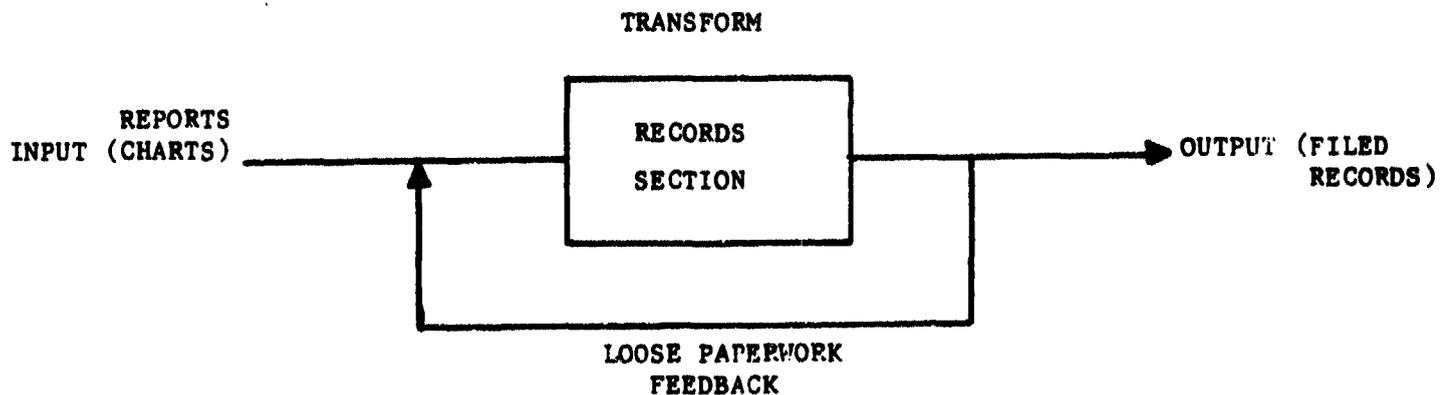


Fig. 1. Systems Analysis Diagram

Given that all systems are themselves part of larger systems, a comprehensive analysis of the paperwork problem as a system will provide adequate insight for resolution of systemic problems as demonstrated in the following discussion.

FOOTNOTES

¹Wilford Hall USAF Medical Center, Commander's Statistical Summary, 1st Quarter 1981 (Lackland AFB, Texas: Department of the Air Force, 1981), pp. 3-25.

²Ibid.

³Ibid.

⁴J. Baillie, "Breaking up the Paper Log-Jam", Hospital Administration in Canada, May 1978, p. 28.

⁵Edna K. Huffman, Medical Record Management, 6th ed. (Berwyn, Ill: Physician's Record Company, 1976), p. 32.

⁶Ibid.

⁷Ibid.

⁸American Hospital Association, Hospital Medical Records (Chicago: American Hospital Association, 1980).

⁹B. Lund, "Some Observations on Medical Records Practice and Training in the U.S.A.", Medical Records (November 1979), pp. 555-559.

¹⁰Ibid.

¹¹Ibid.

¹²Ibid.

¹³Huffman, p. 36.

¹⁴Ibid.

¹⁵Ibid.

¹⁶K. Kohler, "Working with the Medical Staff", Hospital Services Bulletin, 30 September 1978, p. 1-3.

¹⁷Ibid.

¹⁸Ibid.

¹⁹Ibid.

²⁰Joint Commission on Accreditation of Hospitals, Accreditation Manual for Hospitals, 1981 (Chicago: American Hospital Association, 1981), pp. 82-91.

²¹Ibid.

²²Ibid.

²³Ibid.

²⁴William Groves, "A Computerized Chart Management System for Medical Records", Computer Programs Biomed, April 1980, pp. 158-164.

²⁵Ibid.

²⁶Anne R. Somers, Health Care in Transition: Directions for the Future (Chicago: Hospital Research and Educational Trust, 1971), p. 101.

²⁷Groves, p. 161.

²⁸Ibid.

CHAPTER II

DISCUSSION

The magnitude of the excessive unfiled and loose paperwork in the clinical records section has potentially far reaching impact on the entire medical center. The costs associated with improperly maintained records are significant especially to the patient in terms of continuity and quality of care. Poor documentation can result in loss of malpractice suits and loss of hospital accreditation. Given that Wilford Hall USAF Medical Center is a teaching medical center, additional costs are incurred in the form of lost opportunities for conducting research. This discussion in the form of subsystem, system, supersystem description, and analysis will pinpoint weaknesses and recommend system modifications applicable toward rectification of the weaknesses.

Functions of the Clinical Record Section

The clinical (inpatient) records function at Wilford Hall USAF Medical Center is a subordinate section in the Patient Affairs Department. The Inpatient Record Library is managed by a Registered Record Administrator (RRA). The RRA is administratively responsible but has direct access to the Director of Hospital Services for consultation on medical subjects. The RRA has received professional registration status from the American Medical Record Association and is a civilian Air Force employee. The overall organizational chart for the Medical Center is shown in

WILFORD HALL USAF MEDICAL CENTER

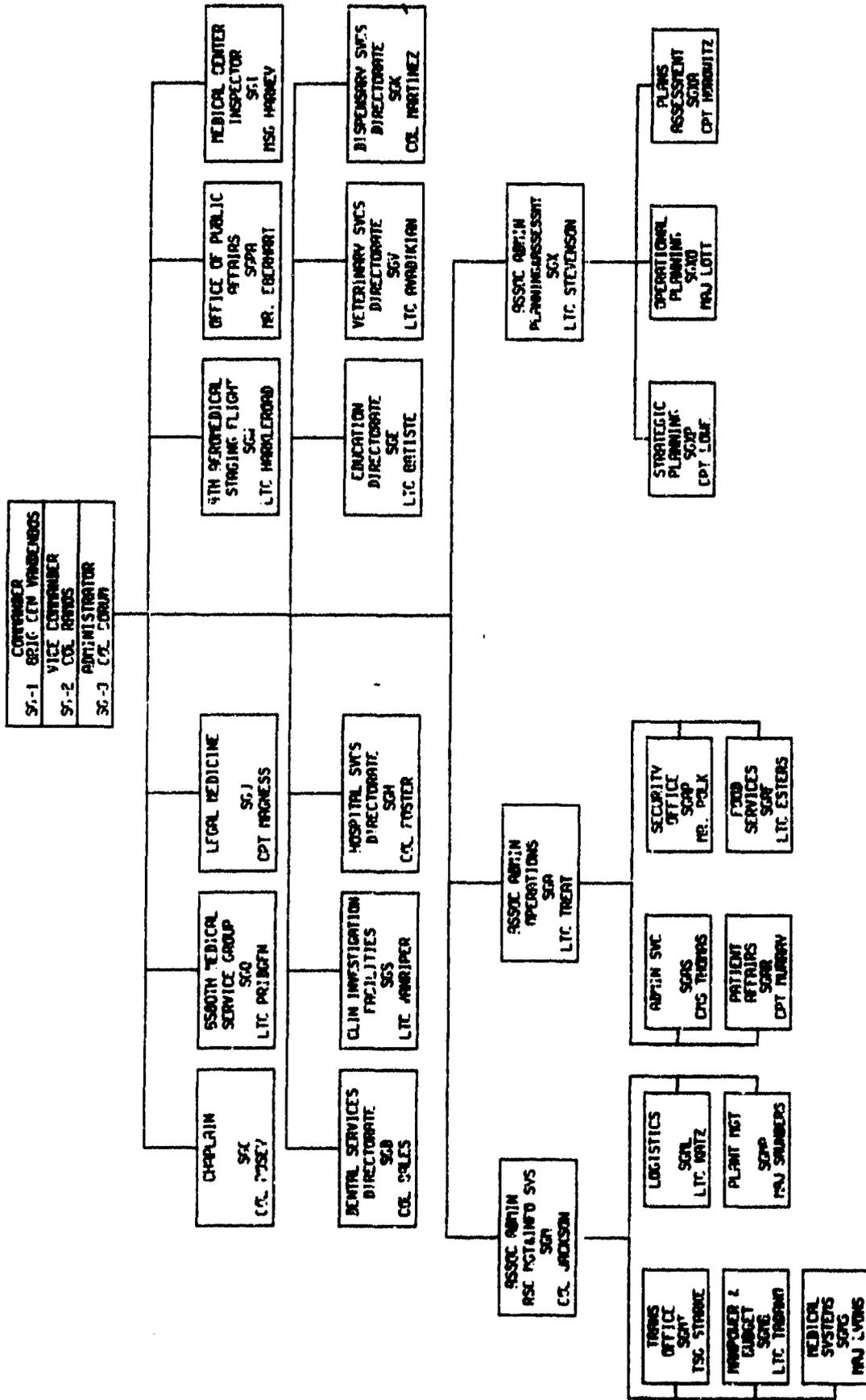


Fig. 2. Medical Center Organizational Chart

DIVISION OF PATIENT AFFAIRS

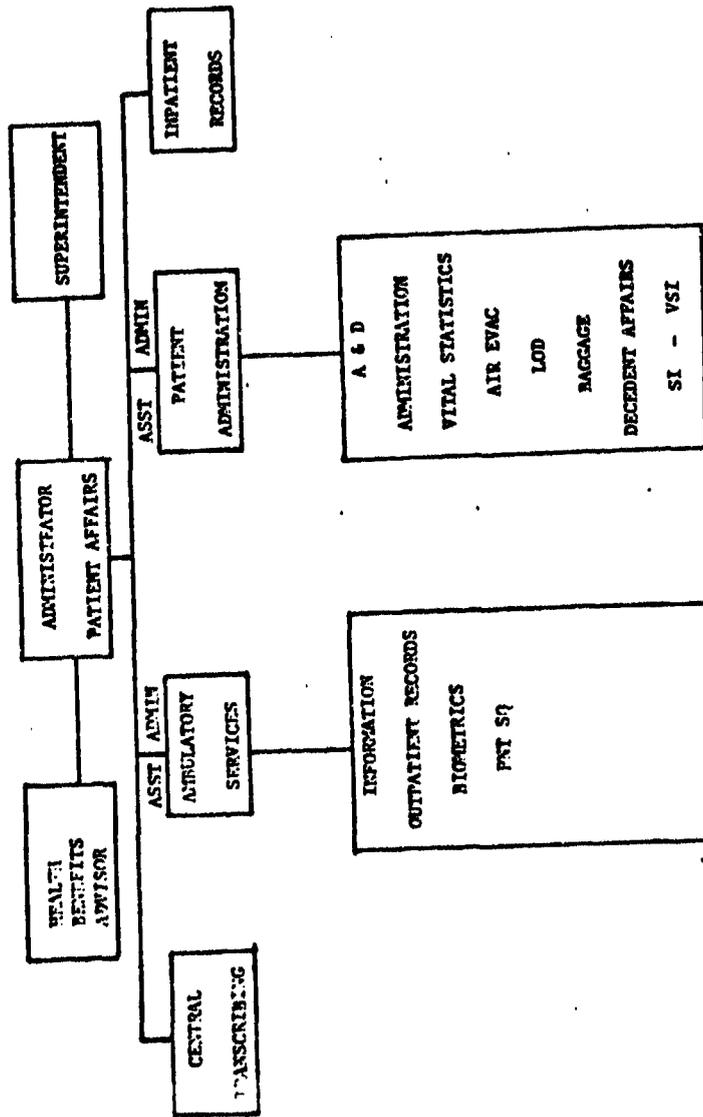


Fig. 3. Patient Affairs Organizational Chart

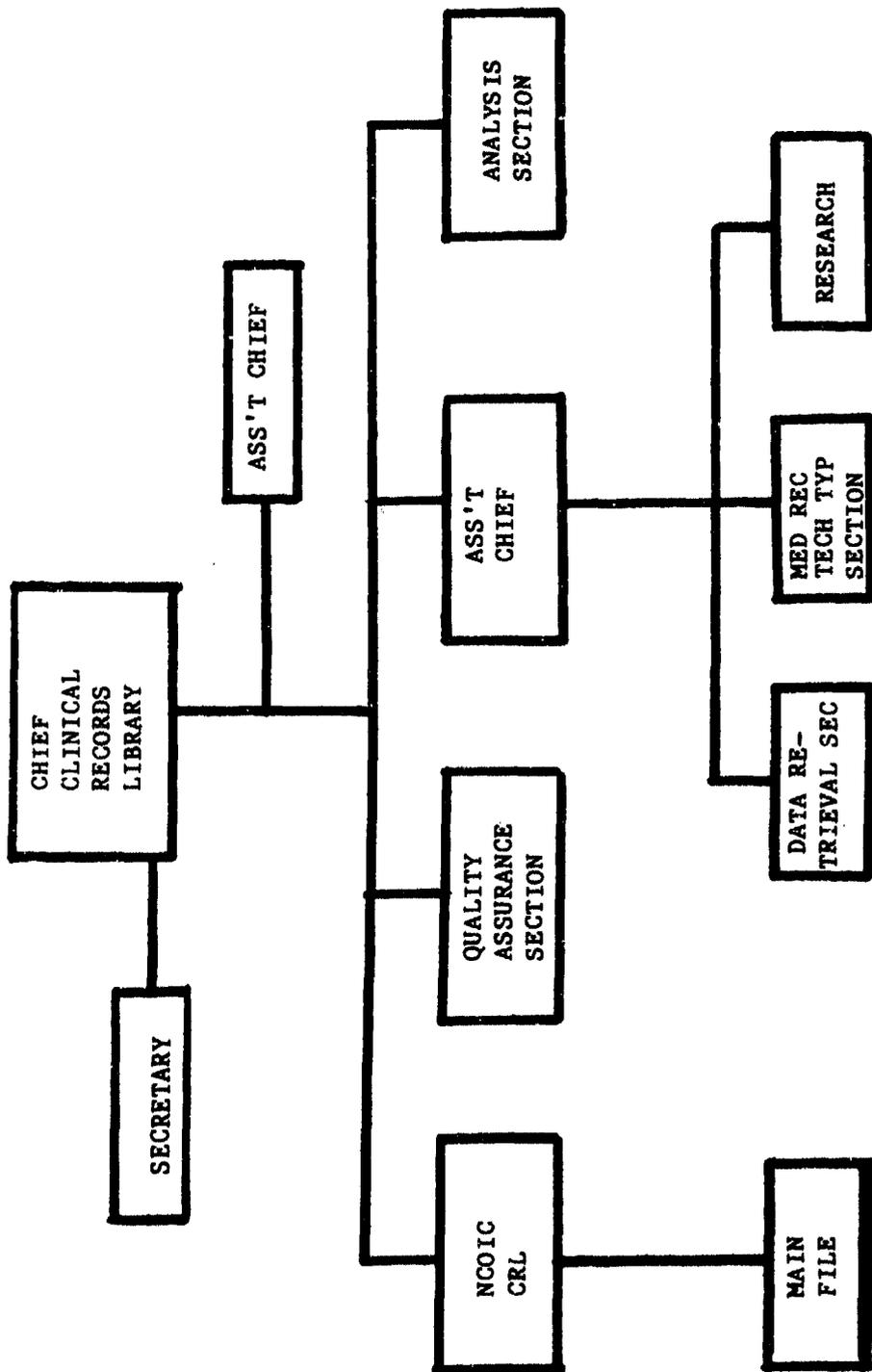


Fig. 4. Clinical Records Organizational Chart

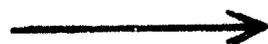
Figure 2; the chart for Patient Affairs is shown in Figure 3; and the organizational chart of the records section is shown in Figure 4.

The records section is the repository of all inpatient records completed at Wilford Hall USAF Medical Center. The library main file holds a total of five years of records on hand. Copy forms and the records are filed in register number sequence. In order to file a complete, correct record, several steps are required. The people accomplishing each step are organized into subsections as shown on Figure 4. The total manpower being utilized to accomplish the workload is 37 people authorized with 32 assigned at the current time.¹ In addition to the assembly, quality control, and filing of records, the section also is involved in extensive data retrieval and reporting for research and management control purposes. However, the great majority of the workload is expended on records maintenance and quality control.

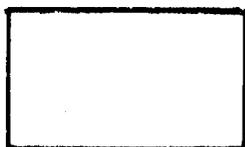
Workload Flow

The flow of a record from the ward to the records section and finally to permanent files is complex. This flow, with decision points and various activities is shown in Figure 6.² The flow chart illustrates the complexity of the work as described below.

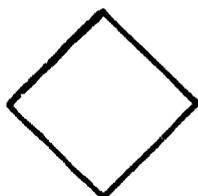
When a patient is discharged, the record is finalized as much as possible by nursing personnel on the ward. The record is then picked up by a floor records clerk who has 48 hours in which to obtain necessary papers, signatures, and notes which may be missing, and then send the



Direction of Flow



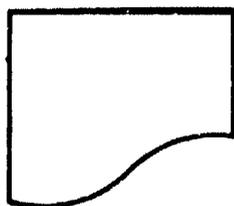
Operation or Processing Function



Decision



Terminal (Start, Stop, Delay)



Document Into

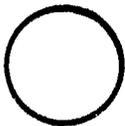
Fig. 5. Flow Chart Symbols



Preparation



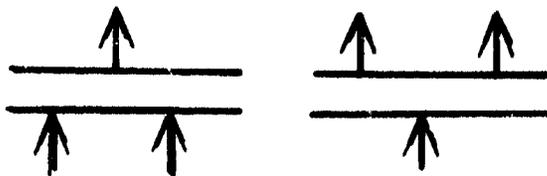
Predefined Process



On-Page Connector



Comment, Annotation



Parallel Modes



Terminal, Stop, or File

Fig. 5a. Flow Chart Symbols

Adapted from
Stephens, et. al.,
p. 28

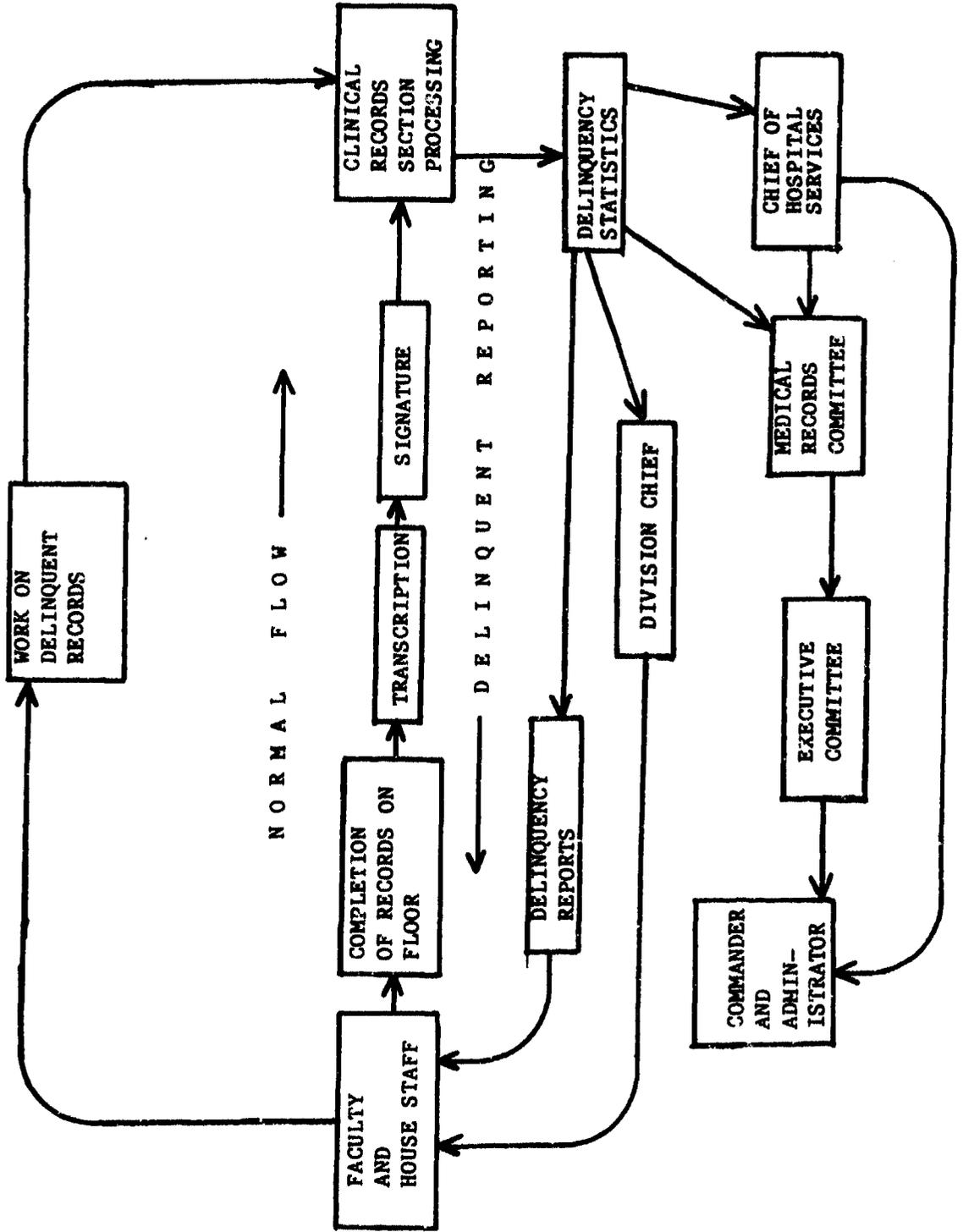


Fig. 6. Clinical Records Content Flow Chart

record to the record section. Coding, quality control auditing, final signatures, and eventual filing of the record is accomplished over a period of several days with the inclusion of loose paperwork as necessary and as time permits.

From this larger system of the medical record flow sequence, we gain an understanding of the interaction; however, in order to reach a better understanding of the real weaknesses, we must view the subsystem of the paperwork flow while the record is on the floor, and eventually how and why the paperwork ends up in the clinical records section.

As we reach for a deeper analysis of the system, it becomes necessary to become more and more detailed. The functional flow of paperwork, as described below, will provide the necessary depth.

Function of the Paperwork System

The Medical Records Section at Wilford Hall USAF Medical Center receives loose paperwork from all patient care areas in the hospital as well as consultant reports from civilian health care providers in the community. Figure 7 is a graphic illustration of the complexity of the problem.

The papers consist of virtually every possible type of form that can be placed in the record. However, the great majority of the loose paperwork appears to be made up of laboratory slips and radiographic reports, although there is a significant amount of other types of loose paperwork.

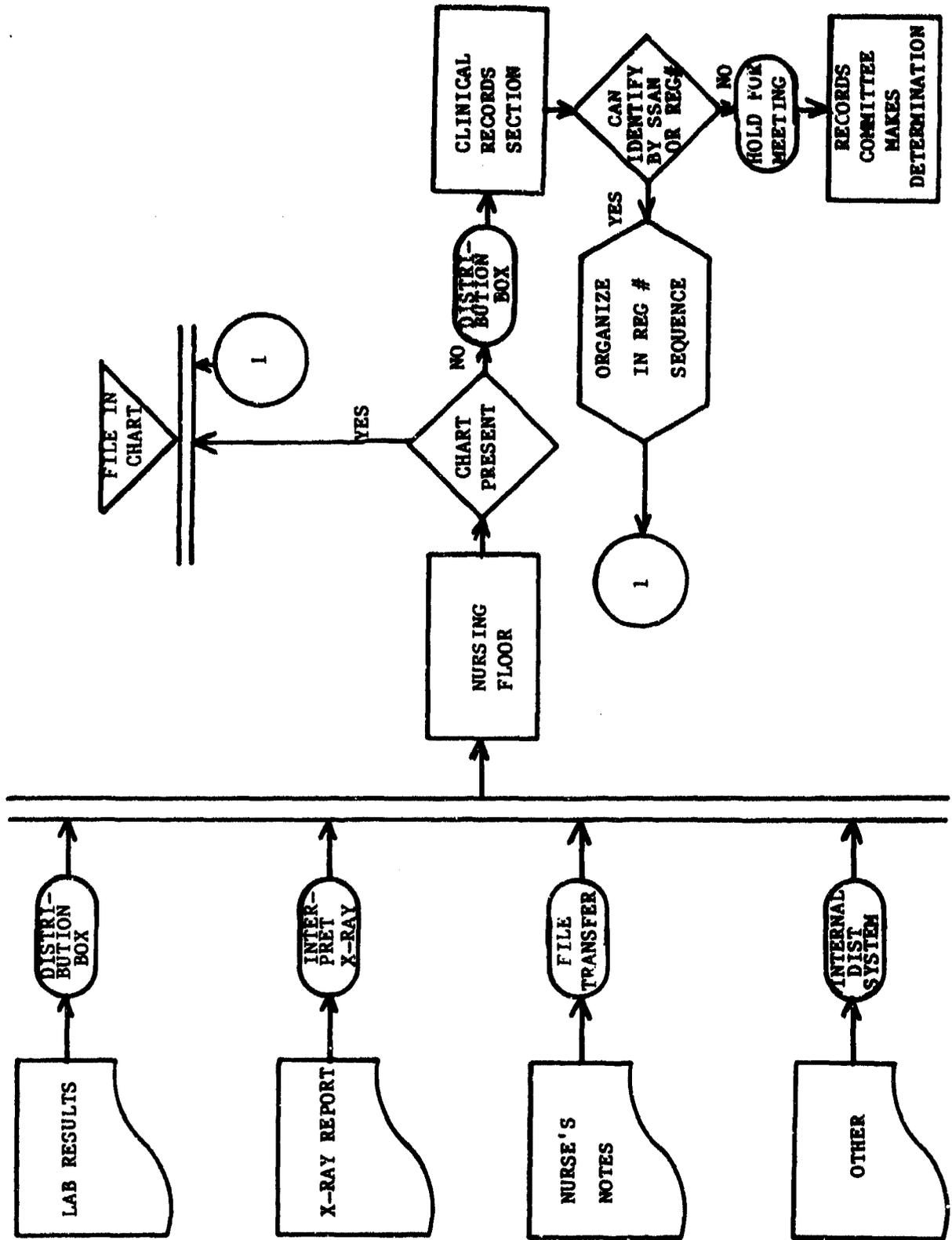


Fig. 7. Loose Paperwork Flow Chart

The amount of paperwork is quite large. Approximately 1500 to 2500 pieces per month arrive in the records section, and the current backlog appears to be approximately 12,000 pieces of loose paperwork.³ In addition, there are approximately 300 records on-hand which are unidentifiable in terms of the register number in the Medical Center and have been transferred in from other medical facilities. A further complication is that there are no personnel specifically assigned to file this paperwork and thus, the total quantity on-hand and unfiled grows larger and larger until it becomes necessary to utilize extreme measures to reduce the amount on-hand.

The personnel assigned to the task of filing papers are members of the "main file" section of clinical records, and their total taskload is extensive. Four personnel are assigned to the main file section, and they maintain the record files which consist of five years of records. This includes filing completed records, pulling and filing for research projects, and maintaining the alphabetic card file on all records. In addition, the main file personnel man the reception desk, answer the telephone, and file loose paperwork. However, there do not appear to be any plans aimed at improving the problem of loose paperwork.

Patient Care Areas

When a patient is admitted, the chart is built, and the documentation of care begins. There are many major and minor sources for the volume of paperwork included in the average inpatient chart, and to list all sources would be of little use. However, the major contributors to the

chart are: (1) nursing personnel, (2) physicians, (3) laboratory data, (4) radiographic data, and (5) electrocardiographic data. During the diagnosis, treatment, and eventual discharge of the patient, it is the responsibility of the nursing personnel on each floor to assure that the chart is complete and up to date. Also, the physician has certain responsibilities which nursing cannot control. A significant portion of the paperwork to be placed in the chart arrives from areas outside the floor, and it becomes the job of the nursing staff to place this data in the record.

Based on research and observation by this author, a considerable portion of the problem of loose paperwork in clinical records originates and is compounded on the health care delivery floor or in ancillary care areas. The following analysis better explains each of the major contributions to the record. Figure 7 illustrates the inputs of the various sections.

Nursing Personnel (See Figure 8)

In the recent past, the nursing staff, composed of registered nurses and medical technicians, assumed the duties of preparing the medical record on the treatment ward. On each ward, the medical technician assigned to do chart work often has direct patient care duties as well. The registered nurse also has patient care duties as well as ward supervision, consultation with physicians, and compliance with administrative requirements.

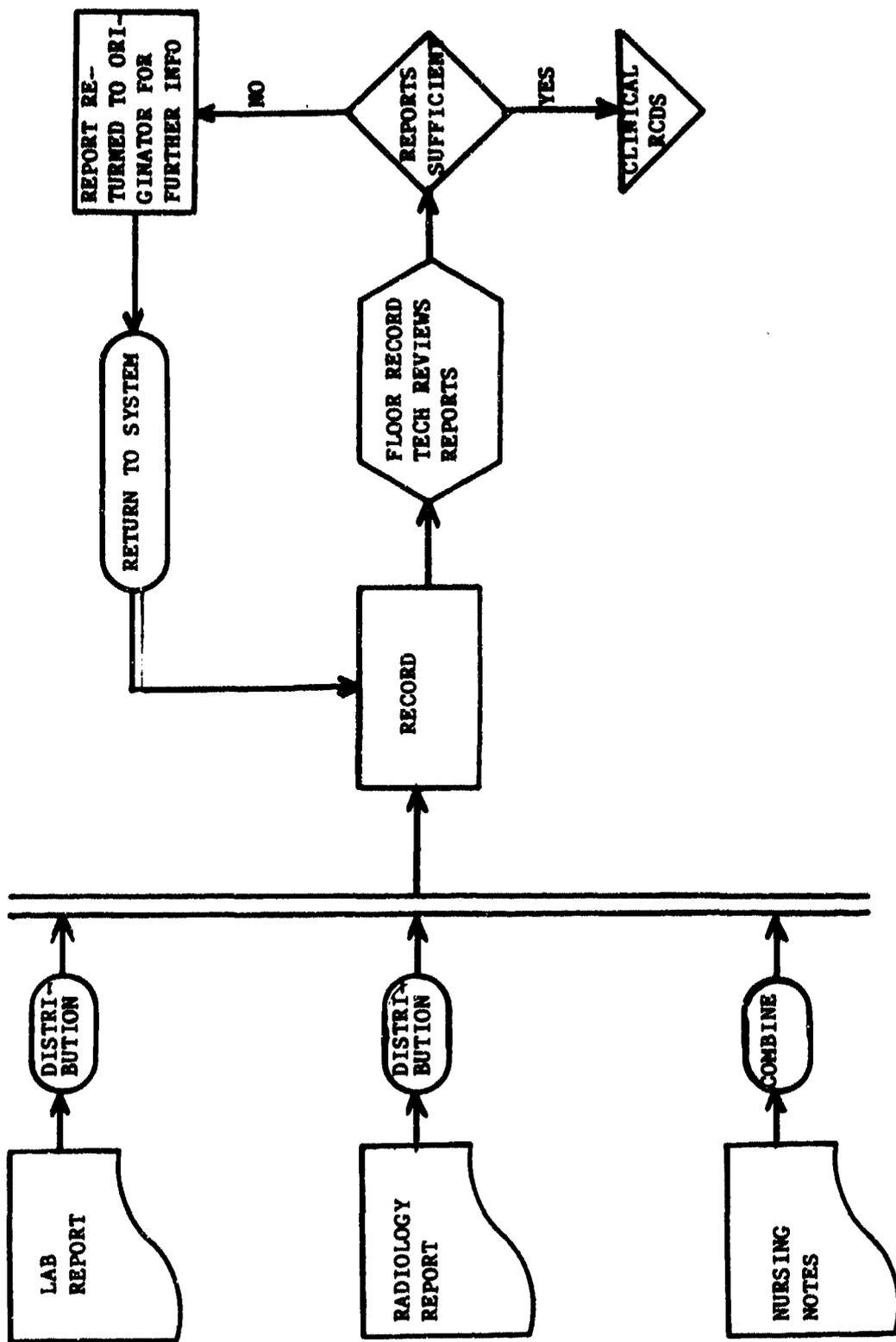


Fig. 8. Flow of Paperwork on Patient Care Floor

The nursing staff on each ward is responsible for admissions, assembly and maintenance of the record, charting and forms preparation, and finalization of inpatient record for disposition of patients. See Figure 8 for this flow.

In that Wilford Hall USAF Medical Center does not use administrative ward clerks, the nursing staff performs the functions normally accomplished by a ward clerk. These functions include:

1. Administrative duties on the inpatient unit other than direct patient care.
2. Patient support, including receiving patients on ward, interviewing patients, and completing admission packets.
3. Maintenance of medical record.
4. Charts, temperatures, pulse, respiration, and blood pressure.
5. Recopies of doctor's orders to patient's record, as required.
6. Perform receptional duties.

In addition, nursing personnel perform all patient care duties necessary.⁴

Physician Staff (See Figure 8)

The major impact the physician has in the chart and record process is to prepare orders, as shown on Figure 8. The physician can have an impact on the late paperwork problem in that usually any tests requested

on the day of discharge usually end up as loose paperwork in the records section. This, apparently, is a function of the size of the medical center; however, this is a contribution to the problem. One other area which contributes to the problem is that often the physician will take a chart to his office in order to complete the past discharge notes. Then, under pressure from various duties, the chart may not be returned in a timely way. This often results in a considerable volume of paperwork accumulating and never getting filed in the record until being sent to the clinical records section. This problem is often compounded by the necessity for residents to have counter-signatures on treatment rendered from a staff member. However, in actuality, the physician staff is only one part of the system disfunction which results in excessive loose paperwork being accumulated in the records section.

Radiology Services (See Figure 9)

The major functions of radiology are to produce medical images utilizing x-rays, gamma rays, ultrasound, thermography, electronic devices, computed tomography, and devices which enhance images or assist in their analysis. Written reports are prepared, and storage of films and interpretations are accomplished.⁵

In that each patient usually receives some form of radiologic service, this section produces a large volume of reports. For various reasons as will be shown in the areas of weakness section of this paper, many reports are not filed in a timely manner and eventually end up in records as loose paperwork.

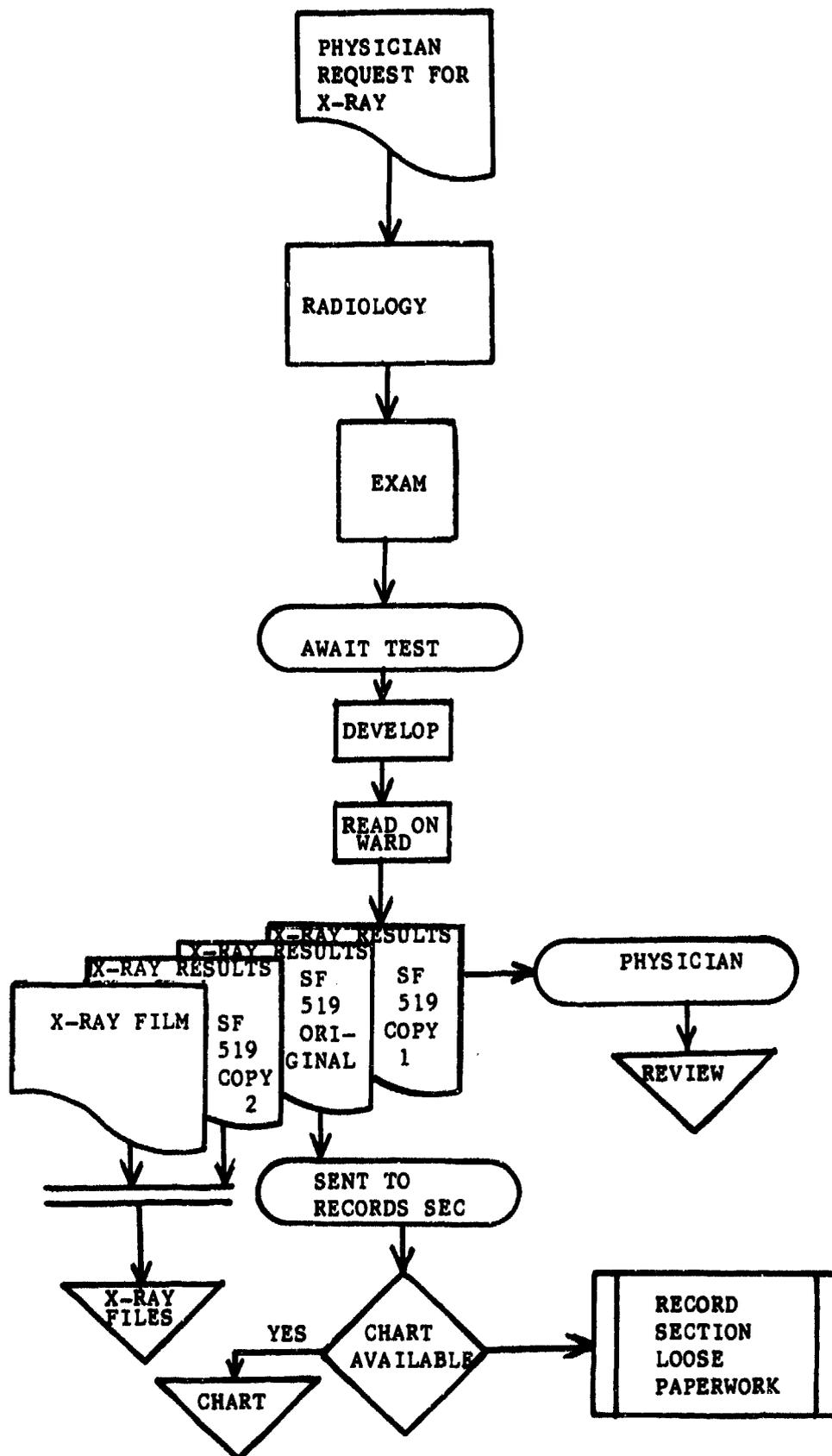


Fig. 9. Radiology Report Flow Chart

Laboratory Services (See Figure 10)

As previously noted, a significant portion of the loose paperwork consists of laboratory reports. The original report is required to be filed in the record, and if this is not done on the floor, the report eventually arrives in the records section.⁶

The laboratory does not deliver laboratory reports to the individual wards on a routine basis. Usually, emergency reports are called to the ward and the backup paperwork is placed in the distribution system to be picked up by key ward personnel. This "batch" system of processing paperwork on the ward leads to severe peaks and valleys in paperwork. This batch process method is the norm, apparently, in the center.

From the analysis, it is apparent that virtually all services which produce reports for file in the chart work on a batch method.

The following section will address the areas of weakness in the system of paperwork management. It should be noted that those weaknesses noted are not applicable to every ward or section but are highly significant to the systematic problem of excessive loose paperwork accumulating in the records section.

Present Weaknesses

The completion of the inpatient chart and medical record is time sensitive in that the record must arrive in the records section within 48 hours of the patient's discharge. Ideally, at the time of discharge, the record should have all notes, reports, and consultations completed and

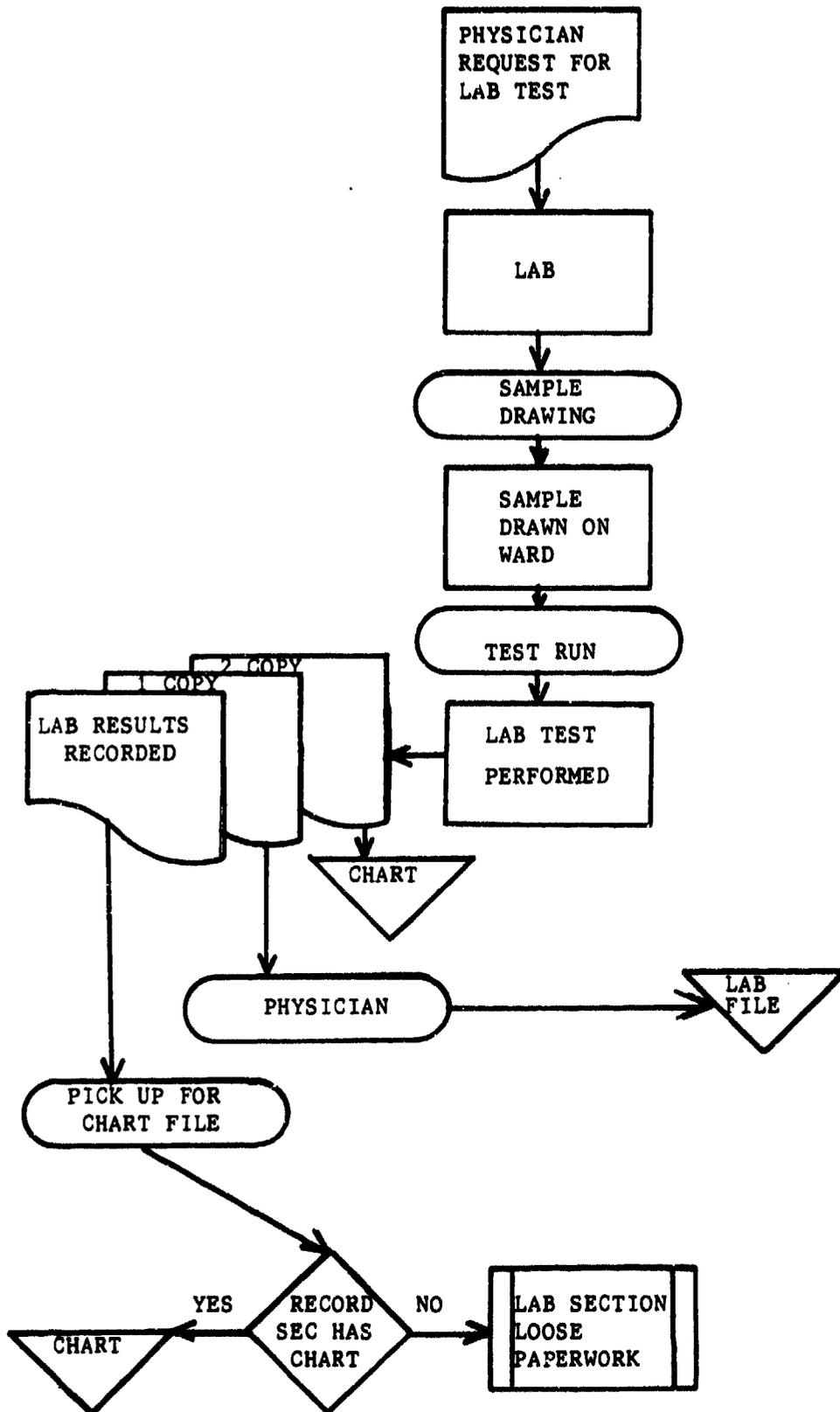


Fig. 10. Laboratory Report Flow Chart

filed. In practice, however, charts are often incomplete at the time of discharge; and due to various delays in the system, the chart may never have all paperwork filed properly.

As illustrated in the preceding flow charts, delays in accomplishing the filing of paperwork are caused by several factors. First, the various ancillary service sections distribute their reports in such a way that excessive delay in the original report reaching the ward is inevitable. For instance, routine laboratory reports are placed in a ward distribution box in the laboratory and are picked up by ward medical personnel, usually once each shift. A similar situation exists in x-ray, except in this section, there is a double loop which causes delay. The radiology department is required to send all films to the ward where the physician is supposed to read them. Then, the film and report is sent back to radiology for file of the film and return of the completed report to the ward for file. This results in lost films, reports, and excessive delays in filing of paperwork in the chart.

Second, all consultations, such as physical therapy, are required to be sent to the ward when treatment is complete or notice of the patient being discharged is received. Often, the notice of discharge is received days after the fact, and the report is sent to the ward, as required. The chart is gone to records and the report is researched, held, and finally sent to the records section. By this time, the record is in suspense and must be pulled, requality-controlled, and thus further delay in completion occurs.

Third, because of the fact that nursing personnel are responsible for the record while it is on the ward, but apparently, are not accountable for the quality of the record sent to clinical records, the level of commitment to record preparation is generally lower than optimum; also, because the nursing staff faces conflicting demands on their time, i.e., patient care versus record maintenance, versus physician consultation, versus ward duties, and so on. The previous analysis demonstrated that nursing personnel do not always file paperwork upon receipt on the ward because of the conflicting demands and the batch nature of paperwork received, as previously noted.

Fourth, as the loose paperwork accumulates on the wards and is delayed further, the only course of action becomes one of "dumping" the papers on the clinical records section. As the point of accumulation, the amount of paperwork received in the record section is staggering. The record function is not staffed to handle such a workload nor, in the opinion of this writer, is it appropriate for the entire system to force the workload onto the records section as is now the case. There is, and always will be, a certain irreducible minimum of paperwork which will end up in the records section but the current amount is unacceptably large.

Fifth and finally, the method of filing the clinical record does not bend itself to efficiently filing loose paperwork. The records are filed by hospital register number and not all paperwork received has this number, such as transferred-in records. The records section must cross-reference the name with the register number which is a very time-consuming

task. Virtually all paperwork has the patient's name and social security number, which does provide a uniform system of identification, and does not have to be cross-referenced if some modification to the method of filing records were to be made.

Essentially, the weaknesses are systemic problems which involve flow of paperwork and rates of receipt at different points in the system.

Summary

To this point, we have discussed the medical record management environment in general with the view of presenting a broad overview of the management environment being investigated.

More detailed discussions and analysis of the clinical record function at Wilford Hall USAF Medical Center was presented from a systems viewpoint with a goal of understanding the flow of activity and recognition of possible weaknesses.

In addition, the process and flow of individual components of the clinical record from initiation of the paperwork to its eventual disposition were analyzed and discussed. Several weaknesses were discovered where delay and systemic confusion compounded and resulted in the excessive amount of loose paperwork arriving regularly in the clinical records section.

In the following section, the conclusions and recommendations appropriate to the study are presented.

FOOTNOTES

¹ Wilford Hall USAF Medical Center, Commander's Statistical Summary, 1st Quarter 1981 (Lackland AFB, Texas: Department of the Air Force), pp. 3-24.

² Spence, Stephens, et. al., "Improving Medical Records Completion at a University Hospital", Medical Record News, June 1980, p. 28.

³ See Appendix A for method use to arrive at this figure.

⁴ U.S. Department of the Air Force, Air Force Regulation 168-4, Administration of Medical Activities (Washington: Government Printing Office, 1980), pp. 7-8 to 7-12.

⁵ Ibid., pp. 6-5 to 6-8.

⁶ Ibid., pp. 8-6 to 8-8.

CHAPTER III

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The research and analysis phases of this study have clarified several areas which are amenable to management action in addressing the problem of loose paperwork in the medical records section.

First, as the various flow diagrams illustrate, virtually every subsystem of the paperwork chain has delays which impede the timely filing of reports on the patient care floor.

Significant factors on the floor itself include a lack of manpower dedicated to the task of continuous record maintenance. Coupled with this, is the factor of conflicting demands on the nursing staff and a relative lack of accountability concerning the preparation of timely and complete records.

In the ancillary services areas, such as the laboratory and radiology department, systemic problems were demonstrated in the smooth, even flow of reports from the section to the wards. The lack of even flow results in large batches of paperwork being received and, in many cases, the pressure of conflicting demands results in paperwork not being filed prior to the patient being discharged. Ultimately, the paperwork ends up in the records section.

The records section itself is being overloaded with the volume of paperwork and is not nor should it be staffed to process such an amount of

paperwork. The immediate problem of filing the backlog requires some special effort in the records section. However, stopping the flow and preventing the system from passing work to the records system is the most profitable method in addressing the problem.

The following recommendations are general in nature and are aimed at addressing those systemic delays previously identified, bearing in mind the given limitations.

Recommendations

In order to reduce the loose paperwork being received in the clinical records section at Wilford Hall USAF Medical Center, the following actions are recommended:

Nursing Services

In that the responsibility for filing paperwork on the ward rests with the Department of Nursing, strong and continued emphasis by senior nursing personnel should be placed on the ward for timely filing of all paperwork arriving on the patient care floor. Serious consideration should be given to developing specific, enforceable guidelines for timely filing and records maintenance activities on each ward. Further, it is recommended that increased emphasis be placed on record maintenance activities being conducted during the 3-11 and 11-7 shifts. Also, in-service training, with emphasis on the medico-legal aspects of complete records, should be considered.

Laboratory Services

Laboratory management should give strong consideration to developing methods whereby test reports could be delivered to each ward on a frequent basis either via the mechanized distribution system, via laboratory personnel who collect specimens, or other systems as appropriate. Any method which reduces the batching of reports for file will, in the judgment of this researcher, reduce the loose paperwork problem.

Radiology Services

The Radiology Services Department could achieve a significant reduction in delay time between the ward and the department if some means of modifying the current system were to be accomplished. It is recommended that serious consideration be given to reducing or eliminating the requirement that radiology results be sent to the ward for interpretation, and then back to the radiology department for processing, and file copies to the wards. There is evidence that significant time savings would be achieved, and thus loose paperwork would be reduced.

Records Section

Increased management emphasis on the loose paperwork problem is indicated. Several methods to reduce the current backlog could be pursued. Volunteers, patient squadron personnel, and details of basic airmen are potential sources of temporary manpower. These could be used to reduce the load and, coupled with improved methods in other areas of the system, the workload could be more closely monitored. When a measure of control is

achieved, particular sections which abuse the system by not performing their filing duties, such as a specific ward or section, could be identified and appropriate action could be taken.

Also, some consideration should be given to devising a method, through the Medical Records Committee for instance, to have Nursing Services provide personnel to work in the records section and file loose paperwork.

Increased emphasis on obtaining the Medical Records Committee's determination and disposition instructions on unidentifiable, loose paperwork should also be pursued.

To finalize, the problem of excessive, loose paperwork in Clinical Records is manageable, but any solution will require close cooperation between sections and a sincere desire on the part of all participants to correct the problem.

APPENDIX

APPENDIX A

STATISTICAL ANALYSIS OF LOOSE PAPERWORK ON HAND

STATISTICAL METHOD UTILIZED TO DETERMINE THE
UNFILED LOOSE PAPERWORK IN THE RECORDS SECTION

During the initial phases of the research, it was necessary to arrive at an estimate of the magnitude of the problem. An approximation of the backlog of loose paperwork was determined to be a valid way to demonstrate the problem.

The following narrative documents the method used to arrive at a valid estimate of the backlog.

The storage area for loose paperwork was observed and measured. At the time there were 235 linear inches of paperwork stacked on shelves. Since the paperwork arrives in the section and is stacked in a random manner, the population was assumed to be normally distributed. That is, thick and thin reports and papers were equally placed throughout the total.

Rather than count all of the papers, or just guess, a statistical estimate was used.

It was decided (researcher's judgment) that 90% confidence that the sample mean (\bar{x}) was ± 3 of the population mean would provide an acceptable estimate of the amount of loose paperwork.

To arrive at an estimate of the standard deviation, successive samples were drawn at random using trial-and-error with Z used to arrive at s and t for determining the appropriate sample size, n .

The data from each successive sample was maintained so that duplicate samples would not be necessary when n was determined. From these trial

samples, calculation of the sample standard deviation was done to arrive at a t value for 90% confidence. Through these trials, an n of 15.36 was determined to be adequate. The following table and calculation illustrate the work.

After two trial samples of 5 inches, each n was estimated to be 15. A further sample of 5 inches was collected, and the standard deviation of the sample was calculated as illustrated below.

Population: (N) = 235 inches of loose paperwork.

Sample (n) = 15 inches of loose paperwork randomly selected.

X = Number of pieces of paperwork found in a 1 inch sample.

	<u>X</u>	<u>X²</u>
	62	3844
	37	1369
	51	2601
	55	3025
	46	2116
	45	2025
	54	2916
	60	3600
	51	2601
	48	2304
	52	2704
	54	2916
	51	2601
	57	3249
	<u>42</u>	<u>1764</u>
TOTAL	765	39,635

$$\bar{x} = 51$$

$$S = \sqrt{\frac{n \sum x^2 - (\sum x)^2}{n(n-1)}}$$

$$S = \sqrt{\frac{15(39635 - 765^2)}{15(15-1)}}$$

$$S = \sqrt{\frac{9300}{210}}$$

$$S = \sqrt{44.2857}$$

$$S = 6.65475$$

Using this S value, the n estimate was validated using $t = 1.761$,
 $S = 6.65475$ with 14 degrees of freedom and $d = 3$.

$$n = \frac{N (t)^2 (S)^2}{d^2 (N-1) + t^2 (\sigma^2)}$$

$$n = \frac{235 (1.761)^2 (6.6548)^2}{3^2 (235-1) + 1.761^2 (6.6548)^2}$$

$$n = \frac{32274.28}{2243.33}$$

$$n = 14.39$$

Thus, fifteen was a valid sample size to meet the accuracy selected.

The final calculation, simply, was to determine the size of the population: Total pieces of paperwork in the population equals

$$\bar{x} (N) = 51 (235) = 11,985 \text{ or approximately } 12,000 \text{ pieces.}$$

SELECTED BIBLIOGRAPHY

BIBLIOGRAPHY

BOOKS AND PERIODICALS

- Affeldt, John E. "Criteria for Evaluating Medical Records," Hospitals, Vol 53, No. 2, (16 Jan 79), p. 29.
- Allen, Robert F., and Dyer, Frank J. "A Tool for Tapping the Organizational Unconscious," Personnel Journal, March, 1980, pp. 192-98, 223.
- Alpander, Guvenc G. "Role Clarity and Performance Effectiveness," Hospital and Health Services Administration 24 (Winter, 1979): 11-25.
- American Hospital Association, Hospital Medical Records, Chicago: American Hospital Association, 1980.
- American Hospital Association, Medical Record Departments in Hospitals, Chicago: American Hospital Association, 1980.
- American Hospital Association, The Management of Hospital Employee Productivity: An Introductory Handbook, Chicago: American Hospital Association, 1973.
- Anderson, J., and J. M. Forsythe, Information Processing of Medical Records, Amsterdam: North Holland Publishing Company, 1970.
- Arnold, Genie and Donald Egger, "The Flow of Charts in One Medical Record Department," Medical Record News, Vol. 49, No. 2 (April 78), pp. 90-93.
- Baillie, J., "Breaking up the Paper Log - Jam", Hospital Administration in Canada, Vol. 20, No. 5 (May 1980), pp. 28-29.
- Bassford, Gerald L. and Harold C. White, "Achieving Results: Leadership Style and Small-Group Effectiveness," Medical Record News, Vol. 49, No. 3 (June 1978), pp. 87-92.
- Burton, Gene E.; Kundtz, Robert; Martin, Gerald; and Pathak, Dev. S. "The Impact of Role Clarity on Job Satisfaction for Hospital Managers," Hospital Topics 58 (January-February 1980): 12-18.
- Collen, Morris F., ed., Hospital Computer Systems, New York: John Wiley and Sons, 1974.

- Dubin, Robert Ed., Human Relations in Administration, Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1968.
- Edwards, Sam A., and Novak, Deborah G., "Statewide Hospital Productivity Center Officers Managerial Expertise, Scientific Standards," Hospital Progress 61 (March 1980): 60-63.
- Epstein, Helen T., "Nominal Group Techniques: Psychosocial and Philosophical Basis for Participative Management Process," Medical Record News, Vol. 49, No. 4 (August 78), pp. 38-44.
- Ewell, Charles, "Productivity," Hospital Forum (September, 1978), pp. 10-12.
- Falk, I.S., "Health Security's Roots in U.S. History," American Federalist, November 1977, pp. 15-22.
- Finnegan, R., "Dual Challenge: Medical Record Continuity and Availability," Journal of the American Medical Record Association, Vol. 51, No. 5, (October, 1980), pp. 28-36.
- Green R., "The Management of Change," Medical Records, Vol. 21, No. 4 (November, 1980), pp. 107-11.
- Groves, William E., "A Computerized Chart Management System for Medical Records," Computer Programs Biomed, Vol. 11, No. 2 (April 1980), pp. 158-64.
- Hayt, Emanuel and Jonathan Hayt, Legal Aspects of Medical Records, Berwyn: Physicians Record Company, 1964.
- Huffman, Edna K., ed. Medical Record Management, 6th ed., Berwyn, Ill.: Physicians Record Company, 1972.
- "Improving Relations with the Medical Staff," Hospital Supervisors Bulletin, (July 1980), pp. 1-5.
- Jehring, John James. The Use of Subsystem Incentives in Hospitals: A Case Study of the Incentive Program at Baptist Hospital, Pensacola, Florida, Madison, Wis.: Center for Productivity Motivation, 1968.
- _____. An Evaluation of the Incentive Program at the Memorial Hospital of Long Beach, Madison, Wis.: Center for Productivity Motivation, 1965.
- Johnson, Olive G. and Carolyn Cave, "Review and Verification of Roles and Functions of Medical Record Personnel," Medical Record News, Vol. 50, No. 3 (June 1979), pp. 25-35.

- Johnston, W. E., "Management Study Sets Medical Records Performance Standards," Hospital Financial Management, Vol. 33 (November, 1979), pp. 42-43, 46.
- Joint Commission on Accreditation, Hospital Survey Profile, Chicago: Joint Commission on Accreditation, 1979.
- Joint Commission on Accreditation, Accreditation Manual for Hospitals, 1981, Chicago: Joint Commission on Accreditation, 1980.
- Joint Commission on Accreditation, Guide to the Organization of a Hospital Medical Record Department, Chicago: Joint Commission on Accreditation, 1980.
- Katzell, Raymond A.; Bienstock, Penny; and Faerstein, Paul H., A Guide to Worker Productivity Experiments in the United States, 1971-75, New York: New York University Press, 1977.
- Kohler, K., "Working with the Medical Staff," Hospital Supervisors Bulletin (September 1978), pp. 1-3.
- Koontz, Harold, and Cyril O'Donnell, Principles of Management, New York: McGraw-Hill Book Company, 1968.
- Lang, Gerald S., and Kenneth J. Dickie, The Practice Oriented Medical Record, Germantown: Aspen Systems Corporation, 1978.
- Lee, Leonard S., "Solving the Shoebox Dilemma," Medical Record News, Vol. 49, No. 2 (April 1978), pp. 76-82.
- Lund, B. "Some Observations on Medical Records Practice and Training in the USA," Medical Records, Vol. 21, No. 1 (February 1980), pp. 6-11.
- McGibony, John R., ed. Principles of Hospital Administration, 2d ed., New York: G.P. Putman's Sons, 1969.
- Metzger, Norman, Personnel Administration in the Health Services Industry: Theory and Practice, New York: Spectrum Publications, Inc., 1975.
- Miller, Dewey R., A Study to Develop a Wage Incentive Program for Medical Record Transcribers at Research Medical Center, Kansas City, Missouri, Unpublished Master's Thesis, Waco, Tex.: U.S. Army-Baylor University, 1974.
- Seawright, L.C. and Paris, D.J., "Ward Clerk Assistance in Completion of Medical Records", Medical Record News, Vol. 47, No. 1 (February, 1976), pp. 39-42.

- Schneider, Don, "Development of a Medical Record Management Control System through a Work Sampling Study," Medical Record News, Vol. 51, No. 3 (June, 1980), pp. 18-24.
- Somers, Anne R., ed., Health Care in Transition: Directions for the Future, Chicago: Hospital Research and Educational Trust, 1971.
- Springer, Eric W., ed. Automated Medical Records and The Law, Pittsburgh: Aspen Systems Corporation, 1971.
- Stephens, Spence, et.al., "Improving Medical Record Completion at a University Hospital," Medical Record News, Vol. 51, No. 3, (June 1980), pp. 25-36.
- Ward, Richard A., The Economics of Health Resources, Reading, Mass.: Addison-Wesley Publishing Co., 1975.
- Weed, Lawrence L., ed., Medical Records, Medical Education and Patient Care, Chicago: Year Book Medical Publishers, Inc., 1971.

GOVERNMENT PUBLICATIONS

- National Center for Productivity and Quality of Working Life, Productivity in the Changing World of the 1980s, Washington, D.C.: Government Printing Office, 1978.
- _____. The Future of Productivity, Washington, D.C.: Government Printing Office, 1977.
- U.S. Department of the Air Force, Air Force Regulation 168-4, Administration of Medical Activities, Washington: Government Printing Office, 1981.
- U.S. Department of Health, Education and Welfare, Public Health Service, Forward Plan for Health FY 1978-82, Washington Government Printing Office, 1976.
- Wilford Hall USAF Medical Center, Commander's Statistical Summary, 1st Quarter, 1981 (Lackland AFB, Texas: Department of the Air Force, 1981).