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Scheduling Operative Surgical Services to Recover CHAMPUS Surgical Procedures at Blanchfield Army Community Hospital, Fort Campbell, Kentucky.

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Blanchfield Army Community Hospital is a Gateway to Care site and began its efforts to reduce CHAMPUS costs in FY 92. This study sought to determine the best method for scheduling operative surgical services at the hospital in order to maximize the recovery of operative surgical cases previously performed under CHAMPUS. The objectives of this study were achieved by determining the current method of allocating and scheduling operating room time, by determining what procedures are done with the hospital's operating room versus those done under CHAMPUS, and then determining the time and costs associated with these two sets of procedures. A distribution of operating room utilization by surgical service was produced. Finally, a revised surgical schedule was created, with the use of an integer linear program, to determine the best mix of surgical service procedures to schedule within the operating room in order to maximize the recapture of CHAMPUS costs.

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CHAMPUS, Surgical Scheduling, Linear Programming, MEPRS, PASBA
FASS, Gateway to Care

N/A	N/A	N/A	UL

SCHEDULING OPERATIVE SURGICAL SERVICES TO RECOVER CHAMPUS SURGICAL PROCEDURES AT BLANCHFIELD ARMY COMMUNITY HOSPITAL, FORT CAMPBELL, KENTUCKY

A Graduate Management Project

Submitted to the Faculty of

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In Partial Fulfillment of the

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of

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ABSTRACT

Blanchfield Army Community Hospital (BACH) is a designated Gateway to Care site and began its formal efforts to reduce Civilian Health and Medical Program for the Uniformed Services (CHAMPUS) costs in FY92. In the area of surgery (operating room), the CHAMPUS "alternate use" projects in FYs 90 and 91, and the Gateway to Care initiative in FY92, concentrated on decreasing the number of Non-Availability Statements (NAS) issued for operative surgical procedures within the capabilities of the BACH staff and facility. The money saved by eliminating the costs associated with these services previously accomplished under CHAMPUS was used to hire additional staff, purchase additional equipment and supplies, and provide for ancillary services so that surgical procedures previously done under CHAMPUS could be done within the MTF instead of at a civilian facility. These projects and initiatives have thus far been successful. Achieving savings of similar magnitude will be more difficult in the future as the utilization of the BACH operating room increases. This study sought to determine the best method for scheduling operative surgical

services at BACH in order to maximize the recovery of operative surgical cases previously performed under CHAMPUS.

The objectives of this study were achieved by determining the current method of allocating and scheduling operating room time, by determining what procedures are done within the BACH operating room versus those done under CHAMPUS, and then determining the time and costs associated with these two sets of procedures. A distribution of operating room utilization by surgical service was produced. Finally, a revised surgical schedule was created, with the use of an integer linear program, to determine the best mix of surgical service procedures to schedule within the BACH operating room in order to maximize the recapture of CHAMPUS costs.

INTRODUCTION

Background

BACH is a 241-bed, community hospital located at Fort Campbell, Kentucky, home of the 101st Airborne Division (Air Assault). The Fort Campbell installation is located in sections of north-central Tennessee and south-central Kentucky, but the hospital is located entirely within the state of Tennessee. The modern physical plant was built in 1982, and replaced the previous cantonment style hospital which had been in use since World War II. The facility's medical service region encompasses the entire state of Tennessee and the twelve southwestern counties of Kentucky. The average daily census during FY92 was approximately 125.

In an effort to reduce the rise of costs associated with medical care provided under the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS), the Department of Defense (DoD) established a Coordinated Care Program (CCP) in FY 92. The U.S. Army Medical Department's (AMEDD) plan to implement the CCP is called Gateway to Care. Although not all U.S. Army Medical Treatment Facilities (MTFs) initially participated in Gateway to Care, Blanchfield

Army Community Hospital (BACH) was designated as a Gateway to Care site, and began its formal efforts to reduce CHAMPUS costs in FY92.

Prior to the formalization of managed or coordinated care under the Gateway to Care program, BACH identified three major treatment areas as having potential for cost savings. These areas were surgical (operating room) services, obstetrics, and mental health (psychiatry). Each of these areas were targeted for CHAMPUS "cost containment" or "alternate use" projects in fiscal years 90 and 91. Under this concept, permission was granted to BACH from Health Services Command (HSC) to use funds normally reserved for CHAMPUS to augment and improve the MTF's ability to provide inpatient care in the three identified areas (United States Army, Health Services Command, 1990). Since this project concentrates on operating room scheduling and is not concerned with the obstetrics or mental health initiatives, further details on these two latter initiatives will not be discussed.

In the area of surgery (operating room), the CHAMPUS "alternate use" projects in FYs 90 and 91, and the Gateway to Care initiative in FY92, concentrated on

decreasing the number of Non-Availability Statements (NASs) issued for operative surgical procedures which were within the capabilities of the BACH staff and facility. The money saved by eliminating the costs associated with these services previously accomplished under CHAMPUS was used to hire additional staff, purchase additional equipment and supplies, and provide for ancillary services so the procedures could be done within the MTF instead of at a civilian facility. The Gateway to Care operating room (OR) initiative for FY 93 relies on this same basic "recapturing" concept.

The success of these projects and initiatives thus far is evident as shown in Table 1.

Table 1: Summary of Initiative Success to Date

	NAS	CASES	$	%
90	313	3,246	3.1M	23%
92	220	4,266	1.75M	21%

As can be seen, since FY90, the year considered the base year for comparison, the number of surgical NASs has decreased, the number of surgical cases performed

has increased, the amount spent on CHAMPUS surgical procedures has dropped, and the operating room accounts for a smaller share of the total CHAMPUS budget at BACH.

The goal for the FY93 operating room initiative is to continue to recapture appropriate surgical NASs (those which the BACH staff and facility are capable of performing), reduce the amount of CHAMPUS costs attributable to the operating room, and to expand the capability of the BACH operating room to complete more surgical cases within the BACH operating room. (United States Army, Blanchfield Army Community Hospital, FY93 Gateway to Care Implementation and Business Plan).

Conditions Which Prompted the Study

Although savings were realized in the first several years of the operating room initiative, achieving savings of a similar magnitude will be more difficult in the future as the utilization of the BACH operating room increases. In order for the operating room initiative to continue to be successful, the staff at BACH must have information with which to make two basic decisions. First, the staff must be able to make an informed decision regarding which surgical cases

warrant priority for recapture. Secondly, they must know the best way to schedule the available time in the operating room to handle the workload associated with these recaptured cases.

The criteria for recapturing surgical cases in the past was based on an average cost per admission. Thus the goal was to decrease the aggregate number of NASs issued by surgical service (i.e. orthopedics, general surgery, etc.), without necessarily distinguishing between high and moderate cost cases. This was done primarily because sophisticated data regarding CHAMPUS costs simply was not available. With the recent availability of an automated CHAMPUS claims database known as the Financial Analysis Support System (FASS), however, the staff at BACH can now determine how much a particular surgical procedure costs if done in a local civilian hospital under the CHAMPUS program.

Problem Statement

Determine the best method for scheduling operative surgical services at Blanchfield Army Community Hospital in order to maximize the recovery of operative surgical cases previously performed under the Civilian Health and Medical Program for the Uniformed Services

(CHAMPUS).

Literature Review

Magerlein & Martin (1978) conducted a review of research efforts undertaken between 1961 and 1977 on the subject of surgical demand scheduling. Their's is a seminal article, as it is referenced in many other articles on the subject. They discussed scheduling by describing the process in two distinct phases. The first phase involves scheduling the patients in advance for surgery on a specific date, either by using a non-blocked (first-come, first-served) rationale, or through block scheduling. The second phase involves placing the scheduled cases into a by-room sequence.

According to the authors, advance scheduling is done using available operating room time only as a constraint, or by considering available operating room time as well as other constraints such as available post-operative beds, nursing and operating room staff, and equipment availability. In general, the research done on non-blocked systems indicated high variability in utilization rates, high cancellation rates, disparity in operating room time among surgical services, long waiting lists for surgery, and a higher

than desired rate of labor overtime required to complete the daily load of cases. The studies cited, however, were generally short in duration, and the variables used to describe the scheduling process were limited to phenomena occurring within the operating room itself only, and did not consider other hospital-wide factors. In theory, block scheduling minimized the problems associated with non-blocked scheduling. The authors pointed out a lack of blocked scheduling systems actually implemented as a result of the reported research findings. The authors stressed the importance of estimating procedure time for the success of both scheduling systems. Time estimates are obtained from surgeon estimates, estimates of operating room scheduling personnel, or by historical averages. As reported in the article, the majority of hospitals surveyed in the literature use time estimates, and not historical averages. None of the three modes of estimating time were held out by the research as being more accurate or valid.

Faulconer (1983) suggests a block surgical scheduling system helps alleviate the conflicts which arise when surgical time is allocated on a non-rational

or preferential basis. She describes the general steps required in order for a block scheduling system to be instituted. A point made by Faulconer not found in other articles I reviewed was her preference for the use of an operating room committee. The committee functions as an interdisciplinary decision-making body, which theoretically represents the interests of the medical and nursing staffs and the hospital. Such a committee hypothetically decreases the usual controversy surrounding policy-making with regard to operating room scheduling.

Wilson (1984) reviews various techniques to consider in order to manage the operating room more effectively. In her discussion of scheduling she proposes the best way to allocate rooms is through a block system by surgical specialty as opposed to physician name. She makes some valid points while comparing operating room work to a manufacturing machine shop; however, her analysis does not go into any depth regarding how to go about implementing such a scheduling system.

Hackey, Casey, & Narasimhan (1984) describe their research into their facility's scheduling policy. They

determined a block scheduling policy was superior to the current first-come, first-served approach at the hospital. However, due to reasons unspecified, the current system could not be changed. Their solution was to design a modified-block schedule in which cases were scheduled on a first-come, first-served basis, but were arranged within blocks of time, with long cases (90 minutes or more) scheduled in the morning blocks, and short cases (less than 90 minutes) were scheduled following the long blocks and in any schedule gaps. After the revised scheduling policy was instituted, they observed fewer scheduling problems, a lower variance in actual case time (vs. expected time), and higher satisfaction among physicians and operating room staff.

Drier, Van Winkle, & Wetchler (1984) present the block scheduling process used successfully in a hospital-based ambulatory surgery center. The authors found physicians who were originally skeptical of the value of a block schedule (versus a first-come, first-served approach they were more accustomed to), found it easier to schedule both surgery and clinic hours as a result of the different mode of scheduling. Benefits

were also realized through increased operating room staff satisfaction, and more efficient room and ancillary equipment utilization. Although the article dealt specifically with ambulatory surgery, the elective nature of ambulatory and the majority of non-ambulatory cases provide a basis for comparison, and lend credence to his theory suggesting the same scheduling process can be used for both categories of surgical procedure.

Nathanson (1984) reports on the advantages of using automation in the scheduling process. According to the author, the crucial element of information required for efficient scheduling is an accurate prediction of surgical case length (in minutes), which in turn is used to develop the surgical schedules. Once there is less variation in these predictions, fewer backlogs will occur, physicians will have more confidence in the schedule, and convincing physicians to accept start times later in the day will become easier. The author cites the use of microcomputers to gather information on surgical case length, by physician and procedure, which is then used to compute expected case length for planning purposes. A limit to

utilization efficiency is conceded, however, as a trade-off must occur between the needs of the hospital (high operating room utilization), and the needs of the physician (a convenient operating room and clinic weekly schedule).

Rose & Davies (1984) detail their efforts in the area of surgical time estimation. Their work is important in validating the use of estimates and methods to employ in determining how much time to allocate to a surgical block based on historical knowledge of procedures performed. Instead of using an average time, the authors found by employing a formula (referred to as a loading standard) which uses minimum and maximum procedure times, as well as mean times, a more accurate prediction of procedure duration could be obtained.

Przasnyski's (1986) article reviewed the literature available regarding operating room scheduling. He found most articles dealt with operating room utilization, operating room cost containment, the planning and organization of a operating room department, scheduling operating room resources, and the actual scheduling of operating room

cases. From his extensive review of articles on the subject published between 1963 and 1986, Przasnyski made several conclusions. First, block scheduling is preferred over a first-come, first-served approach, because it reduces competition among physicians, reduces the need to schedule far in advance, lowers the rate of canceled cases, and overall leads to better operating room utilization. Secondly, he asserted any changes to operating room scheduling must be done with both quantitative, technical information, and qualitative information gained through including the entire operating room team in the process. Finally, he offered specific research needing to be accomplished to gain more knowledge of the subject.

Slezak (1986) describes the process the author underwent in implementing an automated surgical scheduling and utilization system. Of note is the underlying fact that Slezak's facility uses a modified-block surgical scheduling system. The author found through the use of an automated system a higher utilization rate, a more equitable booking system, and better visibility over operating room processes.

Another case for automated operating room

scheduling is made by Gordon, Paul, Lyles, & Fountain, (1988). Their observations focus on a computerized system developed at Johns Hopkins in 1983. The system included software which provided data used in daily operating room management, and long-term scheduling. The software also provided a means to perform retrospective reviews of scheduling accuracy.

Lowery & Martin (1989) performed a study at two Veterans Administration Hospitals. Their article dealt mainly with the effect of advance notification and scheduling, and not so much the type of scheduling (blocked vs. non-blocked). However, they found, through linear regression analysis, operating room utilization at the test hospital increased following the implementation of an advanced centralized surgical block scheduling system supervised by a scheduling coordinator. Concurrently, they found the operating room utilization rate at the control hospital decreased during the same period of time.

Generally the literature supports the hypothesis that advance surgical scheduling utilizing some form of a block schedule enhances the utilization of the operating room. The literature cited discusses in

detail the problems inherent in managing an operating room, and suggests ways to remedy the problem. Little solid empirical evidence exists, especially concerning the implementation of a block scheduling system in a facility which previously used a different method to schedule surgical procedures.

The importance of procedure length estimation is reiterated several times in the literature. As will be seen, this issue is addressed in this research project.

From the literature review, the objectives of this study were narrowed in order to support the problems which led to the study being proposed, and to conform with those variables studied in previous research efforts.

Purpose

The purpose of this Graduate Management Project (GMP) was to determine how to improve the scheduling of operative surgical services in order to recover CHAMPUS surgical procedures at Blanchfield Army Community Hospital. The objectives of the GMP were: 1) describe in detail the current method of scheduling surgical procedures, 2) describe how current BACH operating room time is allocated to each surgical service, 3) describe

the surgical procedures performed within the BACH operating room by procedure type, frequency, mean time, and operative service, 4) describe which procedures performed within the BACH operating room are also performed under CHAMPUS by procedure type, frequency, and CHAMPUS claim cost, and 5) using linear programming, validate the current operating room scheduling process or recommend changes to the process, in order for it best support the Gateway to Care operating room initiative.

METHODS AND PROCEDURES

Study Design

The study design can best be characterized as descriptive in nature. Essentially, the intent of the study was to determine the who, what, when, where, and how of operating room scheduling at BACH as it relates to the Gateway to Care initiative. Although no formal hypothesis testing was undertaken, the univariate question posed was, "Can the current system be improved?"

Data Sources and Collection

Data for this project was obtained from both primary and secondary sources. Primary source data was

obtained through both observational and interrogative means. Primary source data consisted entirely of information regarding the current method of scheduling services. It was obtained through interviews conducted with the Chief, Department of Surgery; Chief, Operating Room Nursing Service; Chief, Anesthesiology, the various surgery service secretaries and clerks, and with the operating room receptionist. Any available Standard Operating Procedures (SOPs) were also reviewed for pertinent information. Secondary sources were used for the balance of the data gathering and are described in the following paragraphs.

Operating Room Log. Data required to describe the procedures done within the operating room was obtained from the automated operating room log. Data from the study period (1 November 1991 through 31 October 1992) was abstracted for analysis. The information obtained included the title of the procedure performed, the amount of time taken to perform the procedure, and the service assignment (i.e. ortho, ENT, etc.) of the physician performing the procedure. The costs associated with each procedure were obtained from the sources described below.

Financial Analysis Support System (FASS). Data to describe which procedures done in the BACH operating room were also performed under CHAMPUS was obtained through the FASS. The FASS is an outgrowth of the Tri-Service CHAMPUS Statistical Database Project. It is an adjudicated CHAMPUS claims database which contains information regarding claims paid for episodes of care rendered by a CHAMPUS provider (Coordinated Care Data Dictionaries, 1992). Through FASS, costs for CHAMPUS medical care within BACH's 40-mile catchment area (as defined by zip code) can be obtained. These costs can be sorted a myriad of ways.

Medical Expense and Performance Reporting System (MEPRS). The MEPRS is the source for detailed cost and workload information for military hospitals. It allocates the costs of ancillary (pharmacy, radiology, laboratory) and support (laundry, utilities, maintenance) to four major areas in the hospital: inpatient care, outpatient care, dental care and special programs. Costs for ancillary services are directly stepped-down based upon the amount of work performed for the work center. Costs for support services are apportioned to the various work centers

within each of the above four areas based upon the work center's share of the total. As a result, operating costs can be determined, to a certain degree of accuracy, down to the service level.

Patient Administration Systems and Biostatistics Activity (PASBA). The operating room log did not contain codes for the procedures performed. However, the records of all surgical cases were coded in the Patient Administration Division at BACH and sent to the Patient Administration Systems and Biostatistics Activity (PASBA), Fort Sam Houston. Data regarding the International Classification of Diseases, 9th Revision, Clinical Modification, Volume 3 (ICD-9-CM) codes for all procedures performed within the BACH operating room during the study period was obtained from PASBA.

Data Analyses

Information from all of the above secondary sources were merged into one database. The ICD-9-CM codes were used as a primary sort field for the database and for abstracting information from FASS. The codes and procedure descriptions obtained from PASBA were matched with procedure descriptions from the operating room log in order to determine the correct

procedure codes for all procedures accomplished in the BACH operating room during the study period.

Once all procedures done in the BACH operating room were coded, the ICD-9-CM codes were entered into FASS. An average claim amount was determined for each ICD-9-CM coded procedure. The average claim amount was added to the information already obtained regarding the various operative procedures performed in the BACH operating room.

All procedures done under CHAMPUS (as retrieved from FASS) were assigned to the surgical service which would have done the procedure had it been done within BACH.

Once the database was completed, summary information was generated which indicated the total number of each type of procedure performed, the mean time for each type of procedure, the total number of cases performed by a service, and the total amount of operating room time used by a surgical service during the year. Additional descriptive statistics were performed to depict the operation of the operating room for the 12-month study period, including detailed information at the surgery service level.

Inputs to the scheduling process were determined using the data outlined in the previous paragraphs. Procedures done previously under CHAMPUS with a higher cost per procedure than those procedures previously done within the BACH operating room were classified as potential candidates for recapture. All available operating room time was used to build the schedule.

Integer Linear Program

In order to actually build the surgical schedule, a quantitative management approach known as linear programming was used. Linear programming is essentially a mathematical method for solving problems associated with resource consumption (Levin & Kirkpatrick, 1978). The resources consumed by running an operating room include personnel salaries, equipment and supplies, and actual operating room time (hours available). These resources can often represented in costs by dollars per procedure.

From an institutional standpoint, operating room resources may also be viewed in terms of opportunity costs. When a physician is in the operating room, there is an opportunity cost associated with the clinic patients the physician is not able to see. If the

physician works solely in the operating room, a backlog of patients for clinic visits will develop which is not desirable from a quality or cost standpoint.

Another example of opportunity costs involve the setting in which operative procedures are performed. Patients requiring surgery may receive care either at BACH, or they may be disengaged to CHAMPUS. Obviously, if all surgical patients were disengaged, physicians would be able to see clinic patients exclusively. However, as explained earlier, the goal of the operating room Gateway to Care initiative is to recapture as many operative procedures as possible, thereby saving money.

It is obvious several alternative courses of action exist when scheduling procedures in the operating room. The share of operating room time allocated to each surgical service can vary, as can the mix of procedures within each service's allocated time.

The goal of linear programming is to find an optimal solution to the resource allocation problem. The optimal solution is expressed as the problem's objective function. Although there may be several ways to formulate an objective function for any given

problem, each iterative process may have only one objective function. In other words, it is not possible to both maximize and minimize in the same problem, or to maximize or minimize more than one resource or cost during each iteration.

For this project, the goal was to find an optimal mix of surgical services (and associated procedures) to include in the surgical schedule in order to minimize cost. Each surgical service is a variable in the objective function equation. Each variable has a cost coefficient. The cost coefficient for this problem was determined by subtracting the average CHAMPUS cost for the procedures in each surgical service from MEPRS cost for each surgical service, as shown in Table 2.

Table 2: Computation of Objective Function Coefficients

	MEPRS COST PER CASE	CHAMPUS COST PER CASE	NET COST PER CASE
GEN	$3,675.33	$10,095.38	-6,420.05
OPHTH	1,960.02	3,206.80	-1,246.78
ORAL SURG	4,645.66	4,667.32	- 21.66
ENT	1,648.30	2,954.36	-1,306.06
GYN	1,886.68	3,943.91	-2,057.23
OB	12,589.94	3,422.64	+9,167.30
ORTHO	2,971.93	8,015.37	-5,043.44
POD	1,589.34	4,667.32	-3,077.89
UROL	3,482.50	1,032.80	+2,449.70

Each of the variables (surgical services) were matched up with their respective cost coefficients. The resulting objective function is shown below.

```
min z = -6,420.05 GEN -1,246.78 OPHTH
-21.66 ORAL SURG -1,306.06 ENT
-2,057.23 GYN +9,167.30 OB
-5,043.44 ORTHO -3,077.89 POD
+2,449.70 UROL
```

Objective Function

Every objective function is subject to limitations or constraints. For instance, if the objective function were to minimize the costs associated with the operating room, this goal would be subject to a minimum level of output or a maximum cost. Constraining this problem's objective was the maximum number of hours which could be scheduled during any given week. The mean time of each service's procedures was included in the constraint equation as shown below:

```
+2.15 GEN +1.58 OPHTH +3.23 ORAL +1.56
ENT +1.62 OB +1.52 GYN +2.12 ORTHO +1.98
POD +2.12 UROL ≤ +181.5
```

Constraint Equation

Bounds were placed on the number of procedures to schedule for each service. The lower bound represented the minimum number of procedures to be scheduled in order to maintain the expertise of the clinicians and to avoid a rising surgical case backlog. The upper bound represented the maximum number of procedures the surgical service could perform in the operating room without causing undue hardship to the clinic schedule (ie. excessive backlogs of appointments). The computation of these bounds is included in Table 3.

Table 3: Computation of Bounds

	A		B		C		D		E		F		G		H		I
GEN:	13	/	4	=	3.25	x	7.9	=	25.68	/	2.15	=	12	x	1.5	=	18
OPH:	3	/	4	=	.75	x	7.9	=	5.93	/	1.58	=	4	x	1.5	=	6
ORAL:	7	/	4	=	1.75	x	7.9	=	13.83	/	3.23	=	4	x	1.5	=	6
ENT:	6	/	4	=	1.50	x	7.9	=	11.85	/	1.56	=	8	x	1.5	=	12
OB:	3	/	4	=	.75	x	7.9	=	5.93	/	1.62	=	4	x	1.5	=	6
GYN:	8	/	4	=	2.00	x	7.9	=	15.80	/	1.52	=	10	x	1.5	=	15
ORT:	19	/	4	=	4.75	x	7.9	=	37.53	/	2.12	=	18	x	1.5	=	27
POD:	4	/	4	=	1.00	x	7.9	=	7.90	/	1.98	=	4	x	1.5	=	6
UROL:	4	/	4	=	1.00	x	7.9	=	7.90	/	2.12	=	4	x	1.5	=	6

A: Room Days Available Per Month (4-5-5-5-4 schedule)
B: Number of weeks in average month
C: Room Days Available Per Week
D: Average Hours Available Per Day
E: Hrs Available Per Week
F: Mean Time Per Procedure
G: Minimum Number of Procedure Per Week (Lower Bound)
H: Workload Max Factor (Arbitrary)
I: Maximum Number of Procedures Per Week (Upper Bound)
(In reality determined by physicians)

The problem was solved using a software package known as Quantitative Systems for Business Plus, version 2.0 (Chang and Sullivan, 1991). The methodology essentially duplicated that used by Kennedy (1992) in a similar project.

The formulation of the problem is as follows:

$$\text{minimize } z = \sum_{j=1}^{n} v_j x_j$$

subject to

$$\sum_{j=1}^{n} d_j x_j \leq C$$

where

- j - surgical service
- v_j - net cost of a procedure
- x_j - number of procedures performed within surgical service j, and $0 \leq x_j \leq b_j$ where $(b_j \leq C/d_j)$ and integer
- d_j - mean procedure duration of service j
- C - total time available to schedule surgical procedures during an average week

The linear program model produced a schedule for the BACH operating room. The schedule assumed four operating rooms operating on Monday and Friday, and five operating rooms operating on Tuesday, Wednesday

and Thursday. The rooms operated for eight hours a day, with the exception of Wednesday, during which 7.5 hours were available. This amounted to 181.5 hours available for scheduling.

Validity and Reliability

This project relied on data from four different sources: the operating room log, FASS, MEPRS, and PASBA. This section will discuss the validity and reliability concerns of each data set in turn.

The first data source was the automated operating room log. As described earlier, the operating room log captures the following information about the procedures being performed: the title (name) of the procedure performed, the amount of time taken to perform the procedure, and the service assignment (i.e. ortho, ENT, etc.) of the physician performing the procedure. The automated operating room log was assumed to be both reliable and valid. There is one clerk in the operating room who inputs the data into the automated log. This clerk did not change during the study period, nor was the clerk absent for any protracted periods of time. The procedure names were given to her by the surgeons performing the procedures. The

registered nurse in the operating room in which the procedure was performed noted the beginning and ending times of the procedures and provided these times to the operating room clerk. The assignment of the physician was easily known by the physician's specialty, and did not fluctuate. Thus, the operating room log accurately measured and collected the type of information it is designed to measure - it was valid. It was reliable in that the same accurate information was gathered over time.

The source of CHAMPUS data was FASS. As explained earlier, the FASS is a method for retrieving information from the repository of CHAMPUS claims information. Data included in the claims database is derived directly from the third-party intermediary used by CHAMPUS to pay claims. Although the data is sorted to facilitate retrieval by episode of care, no other data manipulation is conducted. From this standpoint, the data is reliable. The validity of the data relies entirely upon the claims submission process. CHAMPUS care providers have three years to submit claims for services rendered. Since an episode of care is considered complete only when all claims have been

submitted against it, it is possible for some episodes in the database to be incomplete. This constitutes a challenge to the validity of FASS data. Unfortunately, except for physically querying the patient, there is no way to know if an episode is complete or not. For this project, however, this potential weakness is mitigated somewhat by the fact that the period under study ended in Oct 1991, and the data was not retrieved until December 1992. For the purposes of this study, the FASS data was assumed to be valid.

The third data source was MEPRS. There are two sides to the MEPRS equation: workload and expenses. The reliability of the workload data is dependent upon the submission of information by the various work centers in the hospital. BACH has standing policies concerning the accurate and timely submission of workload data. These policies are backed up by training during personnel inprocessing and by continuing education classes. The expense portion is calculated using standard step-down procedures. For these reasons, MEPRS was considered to be reliable.

MEPRS data was also considered to be valid. It is

a Department of Defense program which has been continually improved since its implementation in 1980. The data has been analyzed by the tri-services (Army, Air Force and Navy) and continues to be used for budgeting and decision-making.

The fourth and final data source was PASBA. An ICD-9-CM procedure summary was obtained from PASBA. This report was based upon information sent from the medical records coders at BACH, who assign an ICD-9-CM code to each procedure performed in the BACH operating room. The ICD-9-CM summary obtained from PASBA was also assumed to be both reliable and valid. Because of the specific instances and rules set up in the ICD-9-CM code book, a procedure would be coded the same way over time, regardless of who did the actual coding. Thus, the coding of operating room procedures done at BACH were stable, accurate and precise. Additionally, the level of competence required to work as a medical records coder lends further credence to the assumption of reliability with regard to the PASBA data.

These four sources provided data which was incorporated in the master database. Although data was drawn from each source and matched by ICD-9-CM code, no

other manipulations occurred. Thus the integrity of the data was maintained even though the identity was lost after being merged.

In summary, data from each source was both reliable and valid individually, and after being combined in a database. With the exception of the automated operating room log, each data source is continually examined externally for both reliability and validity, and is regulated for use by the Department of Defense.

Assumptions

The following assumptions were made during this study:

1. There were more procedures under CHAMPUS during the study period than there is capacity to perform in house.

2. Not all procedures which the staff is capable of doing in house could have actually been done in house due to staff shortages, TDYs, or an unacceptably long waiting list for certain procedures.

3. Resources are too scarce to do all procedures in house.

4. A certain base level of procedures must be

performed to maintain the competency and professional skills of the surgical staff.

Ethical Considerations

Since this study did not involve any direct data gathering from respondents in the form of an official survey or questionnaire, the amount of protective steps required are limited. No information was obtained from patients. Thus, consent was not required. Names were not gathered or used anywhere in the study. All data gathering and manipulation was done in keeping with the best interests of the patients and staff at BACH.

RESULTS

Current Method of Scheduling Procedures

The Generic Schedule

The operating room schedule is currently prepared jointly by the Chief of the Operating Room Nursing Service and the Chief of Anesthesiology. The operating room schedule is sent out three weeks in advance. Each surgical service schedules patients for surgery based upon physician availability, and patient priority.

A generic monthly schedule is included as Appendix B. Procedures are scheduled in the operating room between the hours of 0730 and 1530 (8 hours) every

day except Wednesday. On Wednesdays, procedures are scheduled between the hours of 0800 and 1530 (7-1/2 hours). Procedures are scheduled in four rooms on Mondays and Fridays, and in five rooms Tuesday through Thursday. This figure was computed as shown in Table 4.

Table 3: Computation of Available Operating Room Hours

Day	Table Rms		Hrs		Days		Hrs Avail
MON/FRI	4	x	8	x	8	=	256
TUES/THUR	5	x	8	x	8	=	320
WED	5	x	7.5	x	4	=	150
							726

Figure 1 shows the percentage of time allocated to each service based upon the generic schedule, and the percentage of time actually used during the study period. Times shown are a percentage of the total.

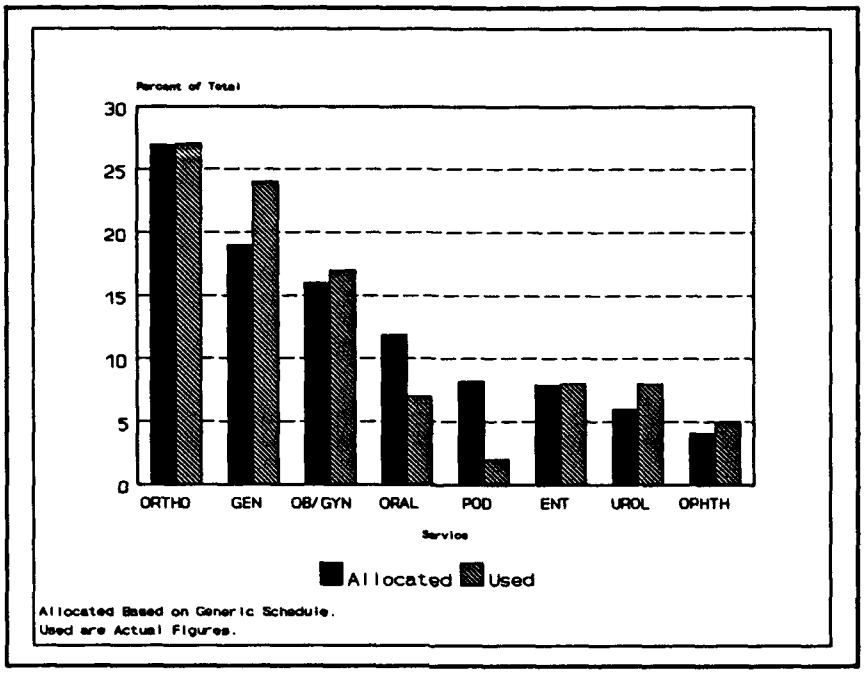

Figure 1: OR Hours Allocated vs. Used

Based on the generic (4-5-5-5-4) schedule, a total of 726 hours are available each month. The distribution of operating room hours is shown at Figure 2. This chart shows the number of hours used by each service for the entire period of the study, and the percentage of the total attributable to each service.

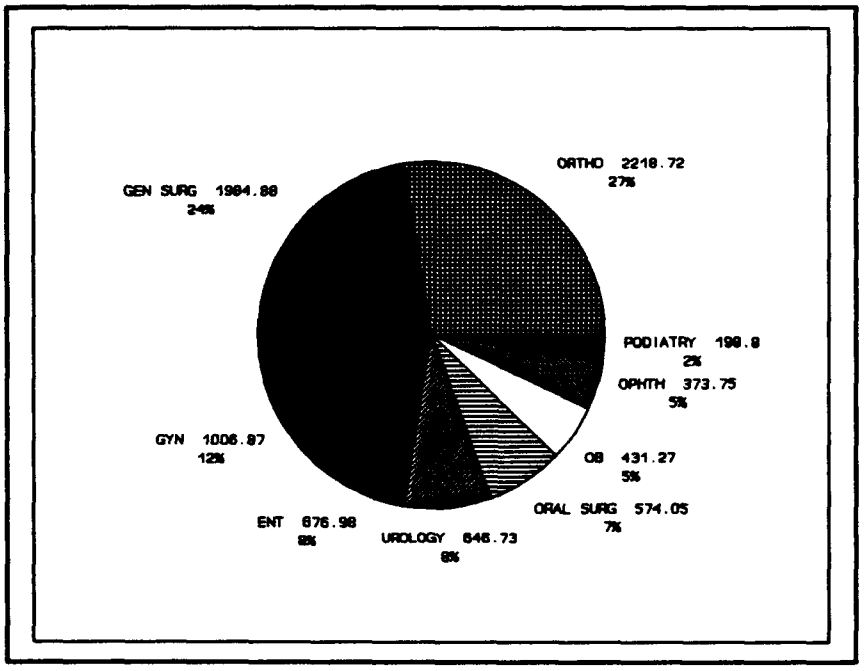

Figure 2: Distribution of Operating Room Hours By Service

Within the Operating Room

Operative procedures are currently scheduled using a personal computer. The system is operated by the operating room receptionist. The system resides in a data base management package called Filepro 16 Plus.

The main operating room file consists of a 1872 byte record indexed by the patient Social Security Number and the Patient Name. Searches can be done on

either of these fields. The file is linked via a key field called Index Supply Code, which will automatically print a list of supplies needed by the surgeon for the procedure.

There are four screens associated with each record. Screen one contains the basic patient information, surgical procedures and surgeons. Screen 2 contains information associated with the anesthetist and anesthesia. Screen three contains information on the scrub nurses, and drains and lab specimens. Finally, screen 4 contains information on the circulating nurses, and any complications incurred during the operation.

In order to schedule procedures in the operating room, the surgical services send requests to the operating room receptionist. The requests are annotated on an Operation Request and Work Sheet (DA Form 4107) or buck slip (see Figure 3). The operating room receptionist transcribes the information from the buck slip into the database, and gives the patient a date for surgery.

On the day prior to surgery, the anesthesiologist and operating room nursing supervisor provide staffing

Put DA Form 4107 On this page

schedules to the operating room receptionist, who adds the names to the data base. Once the surgery is completed, the operating room receptionist enters information such as actual case length (minutes), complications and other details.

The system has the ability to print many reports. A listing and description of these reports is contained at Appendix C.

Within the Surgical Clinics

With the exception of the Urology Service, each surgical service generally schedules surgical procedures in the same manner. The buck slip is either partially or completely filled out by the receptionist or the physician. In all cases except Urology, the receptionist carries the buck slip to the operating room receptionist. The responsibility for estimating case length varies from department to department.

In the Urology Service, physicians fill out a buck slip and the receptionist enters the information directly into the schedule database. Urology is a test service for entering information on-line into the scheduling database. Under this plan, the clinic loads the information including procedure, surgeon name, date

of surgery, the patient's age and SSN, and the ward information. The clinic can also order the cases on-line.

Allocation of Time

Operating room time is generally allocated based upon historical information. Although the generic schedule serves as a guide, it is altered on a weekly basis based upon the current requirements of each of the services. Although they are not considered an official hospital committee, an active dialogue is maintained among the service chiefs, the chief of surgery, the chief of the operating room nursing service and the chief of anesthesiology in order to insure time is judiciously allotted.

Description of BACH Procedures

A detailed summary of the procedures performed by each service is contained in Appendix D. This summary is sorted by average case time. Displayed are the ICD-9-CM codes for each procedure, the procedure name, the frequency with which each procedure was performed during the study period, and the average time it took to perform the procedures. A similar summary of procedures performed is sorted by case frequency and is

included as Appendix E. The distribution of operating room procedures by service is illustrated in Figure 4.

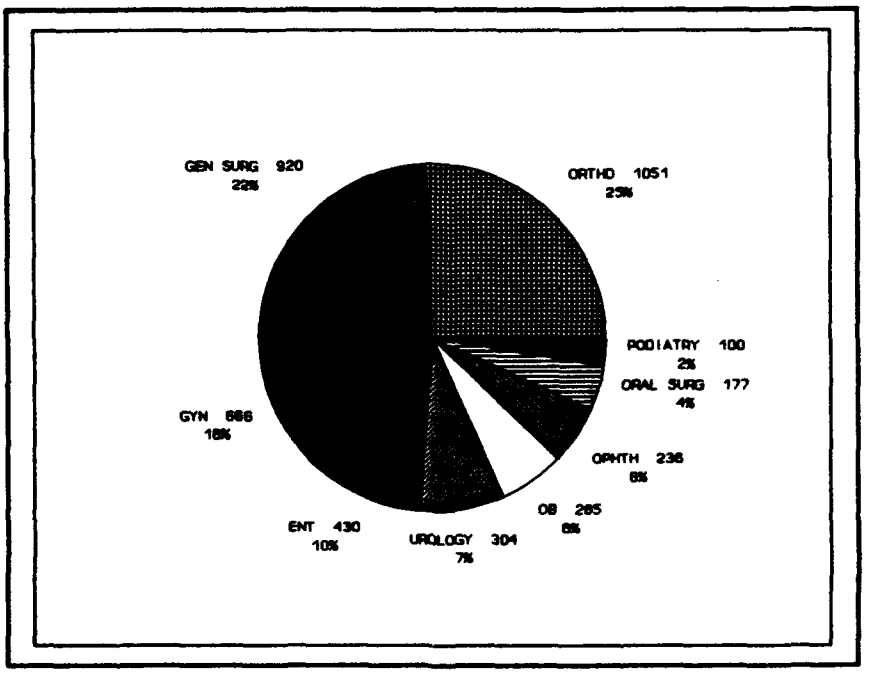

Figure 4: Distribution of Operating Room Procedures by Service

This graph shows the total number of cases each surgical service performed within the BACH operating room during the period of the study. Also shown is the service's share, by percentage, of the total number of procedures performed.

A summary of average procedure times for all of the services is shown at Figure 5. This chart simply

indicates how long, on average, a surgical procedure took to complete, and is categorized by surgical service.

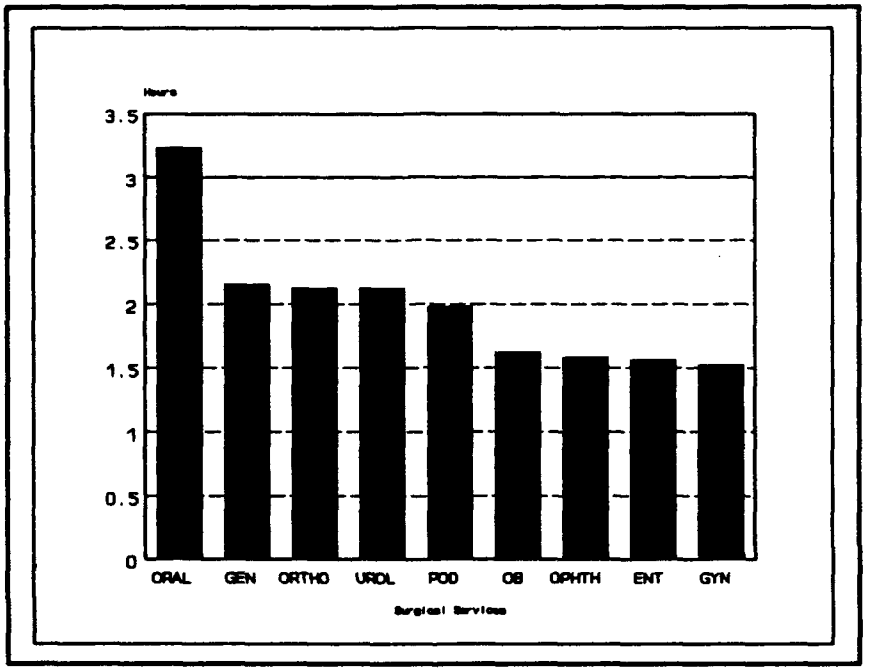

Figure 5: Average Procedure Time by Service

Figure 5 indicated a global mean procedure time for each service. For each of these means, a variance and standard deviation was also calculated. These calculations are included as Appendix F. Another measure of central tendency, the median, as well as another measure of dispersion, the range, were calculated. A summary of these statistics is included as Figures 6 and 7.

	MEAN	MEDIAN
ENT	1:20	1:45
OPHTH	1:32	1:40
GEN SURG	2:12	1:53
UROL	2:00	2:08
GYN	1:31	1:58
OB	1:39	1:20
ORTHO	2:06	2:00
ORAL SURG	3:10	3:09
POD	1:57	1:58

Figure 6: Measures of Central Tendency

	RANGE	VARIANCE	STD DEV
ENT	3:53	1682.44	41.00
OPHTH	1:12	1751.47	41.85
GEN SURG	4:00	2172.73	46.61
UROL	4:26	2335.5	48.33
GYN	2:26	1131.72	33.64
OB	1:00	1073.87	32.76
ORTHO	3:15	1984.28	44.54
ORAL SURG	5:02	2456.21	49.56
POD	1:39	1108.17	33.29

Figure 7: Measures of Dispersion

Description of CHAMPUS Procedures

A summary of procedures performed both in the BACH operating room and under CHAMPUS is included as Appendix G. It is interesting to note only 84 procedures out of a total of 602 overlapped between the BACH operating room and CHAMPUS.

Costs

Costs per procedure were computed for both categories of costs - MEPRS and CHAMPUS. The average cost per procedure are compared graphically in Figure 8.

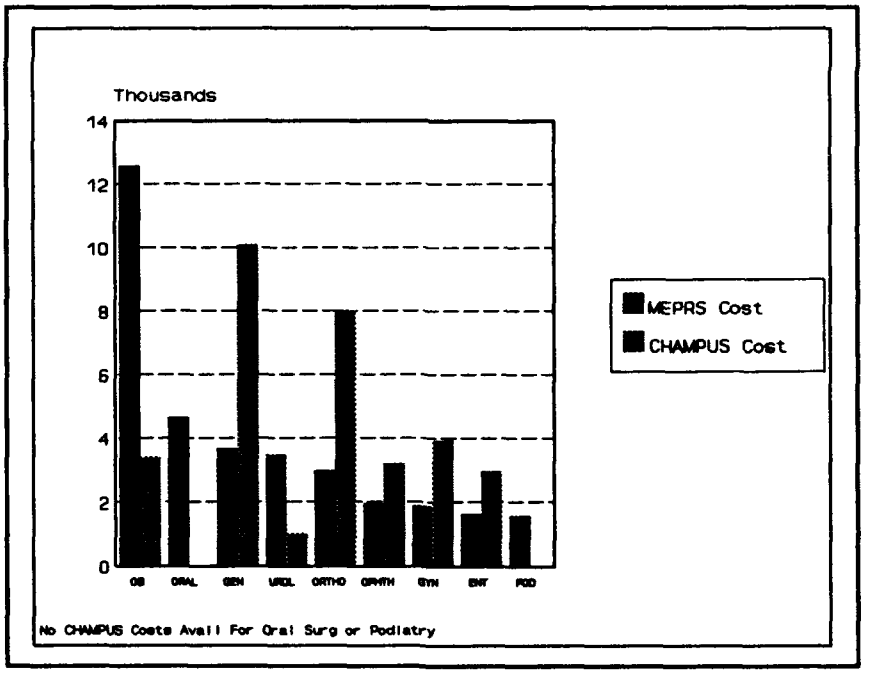

Figure 8: Average Cost Per Procedure

Costs for performing procedures within the BACH operating room were obtained from MEPRs. Results of the MEPRS data analysis are illustrated in Table 5.

Table 5: Summary of MEPRS Costs

	MEPRS		
	TOTAL EXP.	#CASES	COST PER CASE
GENERAL SURGERY	$3,381,300	920	$3,675.33
OPHTHALMOLOGY	462,565	236	1,960.02
ORAL SURGERY	822,283	177	4,645.66
ENT	708,770	430	1,648.30
GYNECOLOGY	1,256,527	666	1,886.68
OBSTETRICS	3,336,333	265	12,589.94
ORTHOPEDICS	3,123,499	1051	2,971.93
PODIATRY	158,934	100	1,589.34
UROLOGY	776,598	304	3,482.50
TOTAL	14,026,809	4149	3,380.77

Costs associated with procedures performed by a CHAMPUS providers were obtained from FASS. Results of the FASS data analysis are illustrated in Table 6.

Table 6: Summary of CHAMPUS Costs

	FASS (CHAMPUS)		
CASE	TOTAL EXP.	#CASES	COST PER
GENERAL SURGERY	$504,768.76	50	$10,095.38
OPHTHALMOLOGY	3,206.80	1	3,206.80
ORAL SURGERY	No Data Available		
ENT	26,589.26	9	2,954.36
GYNECOLOGY	122,261.19	31	3,943.91
OBSTETRICS	944,649.30	276	3,422.64
ORTHOPEDICS	208,399.72	26	8,015.37
PODIATRY	No Data Available		
UROLOGY	90,886.04	88	1,032.80
TOTAL	1,900,761.00	481	3,951.69

Integer Linear Program

The results of the linear program model are shown in Table 7.

Table 7: Results of Linear Program Model

SURGICAL SERVICE	OPTIMAL PROCEDURES TO SCHEDULE PER WK
GEN SURG	18
OPHTH	4
ORAL SURG	4
ENT	10
OB	4
GYN	15
ORTHO	27
POD	6
UROL	4

DISCUSSION

Current Method of Scheduling Procedures

The generic schedule

The schedule currently used by the BACH OR can be most appropriately described as a modified block schedule. As suggested by Wilson (1984), the schedule blocks are allocated by service not physician. Blocks are set aside on the schedule for services, but there is no inter-block scheduling taking place among the services. The system seems to enjoy the advantages of blocked system reported by Magerlein & Martin (1978). The surgical services scheduling procedures within the BACH operating room have generally level utilization in that they use what they are allocated, and only a few of the services noted a backlog of surgical cases greater than 30-days.

The schedule is not prepared by a committee, as recommended by Faulconer (1983), however, in conversations with the surgeons and operating room staff there seemed to be very little dysfunctional about the manner in which the schedule is currently being prepared. This matter could be revisited in the future should problems arise as utilization increases.

Within the Operating Room

As summarized in the literature review, several authors including Gordon, Paul, Lyles & Fountain (1988), Nathanson (1984), Rose & Davies (1984), and Slezak (1986) are proponents of automated scheduling systems. Currently, the computer is used both to schedule and to maintain data regarding operating room procedures. The system is not being used to gather detailed information about two crucial dimensions required for accurate scheduling: case length and physician history. More in depth information is needed about the duration of each procedure. Currently, all procedure time is attributed to the primary procedure being done. In addition, average procedure times by physician are not being used to schedule cases. There is also no evidence that reports from the operating room computer are being used by any of the surgical service chiefs for management purposes.

Within the Clinics

As described earlier, each clinic has different ways for filling out the buck slip and delivering it to the operating room. The most promising method exists within the Urology service where scheduling is done on-

line with the operating room computer through a Local Area Network (LAN).

A detail which is disturbing is the method of estimating case time. This differs from clinic to clinic. Several authors including Magerlein & Martin (1978), Nathanson (1984) and Rose and Davies (1984) stress the importance of accurate time estimates. As demonstrated in this project, information resides within the operating room database with which accurate estimates of case length can be made. Providing information to the surgical clinics to use in making time estimates, or making the operating room receptionist/scheduler solely responsible for estimating case length - based on historical data - would be an painless way to easily improve the utilization of the operating room.

Allocation of Time

The allocation of operating room time based upon historical information works well from a professional standpoint. Observations of conversations and meetings during the data collection period indicated little conflict with the allocation of operating room time. From an organizational standpoint, however, the use of

more data concerning utilization and cost may provide a more rational basis for allocating time.

Description of BACH Procedures

The distribution of procedures performed in the operating room indicate the surgical services can be categorized as either high-volume users (orthopedics, general surgery, gynecology, ENT) or low-volume users (urology, obstetrics, ophthalmology, oral surgery, and podiatry). The high-volume users account for almost 75% of all procedures performed in the operating room and 71% of the total time allocated. This relationship exists to a lesser degree when examining mean procedure duration times. However, oral surgery, a low-volume user, had by far the highest mean time (n=177). General surgery (n=920) and orthopedics (n=1051) were ranked 2nd and 3rd respectively for mean time. Gynecology, a high-volume user, had the shortest mean procedure time (n=666).

A relationship between case frequency and time can also be seen. Generally, each surgical service spent 70% of total operating room time performing only 25% of the total number of different procedures. In other words, the majority of time was spent performing

repetitive, high-volume type cases (PE tubes for ENT, hernia repair for general surgery, knee arthroscopy for orthopedics). This information is valuable as a management tool, as more focused attention can be given to a smaller category of procedures, yielding less schedule variation.

The computed mean procedure duration times had, in most cases, significant variation. However, these variations were relatively stable across the surgical services. Nevertheless it is a challenge to schedule surgical cases when historically, the mean time is only 1-1/2 hours but the standard deviation is 33 minutes, as was the case with gynecology. Those services with longer mean procedure duration times had somewhat higher standard deviations, however, the ratio of the two measures remained approximately the same. Measurements of standard deviation for all of the services ranged from 32 minutes (obstetrics) to 49 minutes (oral surgery).

Description of CHAMPUS Procedures

As mentioned earlier, the percentage of shared procedures, those procedures done both within the BACH operating room and under CHAMPUS during the study

period, amounted to only 84 out of 602 different procedure categories. Surprising as it may seem, this fact supports the success of the operating room initiative in recapturing cases.

With the exception of urology, obstetrics, and gynecology, those procedures which were performed under CHAMPUS were generally of low volume (one to three cases during the 12-month period). Possible explanations for the variations mentioned above are provided in the following paragraph.

As stated earlier, the period under study extended from 1 November 1991 to 31 October 1992. During this period a phenomenon known at BACH as "Operation Baby Storm" occurred. Similar to previous redeployments, the number of pregnancies at Fort Campbell skyrocketed following the return of the installation's soldiers from Operations Desert Shield/Storm in the spring of 1991. The capacity of the obstetrics service was exceeded approximately nine months later and many prospective new mothers were disengaged to CHAMPUS to deliver their babies. This explains the high number of deliveries and cesarean sections. Similarly, the number of circumcisions performed under CHAMPUS

attributable to the urology service corresponds to these children born under CHAMPUS, as does the number of tubal ligations and total abdominal hysterectomies attributable to the gynecology service.

Costs

The cost figures obtained from MEPRS relate the costs attributable to each surgical service for performing work in the operating room. Each surgical service also incurs costs for operating a clinic, but these costs were not included in the total expense figure. Correspondingly, any expenses incurred within the clinic which were directly attributable to a surgical case are not reflected in this total expense figure, but would instead fall out as a clinic expense. The cost per case was arrived at be simply dividing the total expense figure by the number of cases.

The CHAMPUS total expense figure was drawn from FASS. The ICD-9-CM code was used as a key field to delineate an episode of care. All institutional (i.e. hospital) expenses and physician fees imputed to the episode of care were included in a total cost figure. Again, the cost per case was determined by dividing the total expense figure by the number of cases.

Direct comparisons between MEPRS and CHAMPUS costs must be undertaken with caution. First, the MEPRS figures do not include clinic visits associated with a surgery; the CHAMPUS figures do since any pre-operative and post-operative physician office visits are attributable to one episode of care. Additionally, inherent in the CHAMPUS figure is a given level of profit for the provider, which theoretically is not present in the MEPRS figure. Despite these factors, however, a rudimentary comparison can be made to determine which avenue of care provision is most cost-effective.

In order to obtain cost coefficients for the objective function variables in the linear program, the CHAMPUS cost per case was subtracted from the MEPRS cost per case. In most cases, to varying degrees, the result was a negative number, indicating the CHAMPUS cost was greater than the MEPRS cost. In two cases (obstetrics and urology), however, the MEPRS cost was more. From the MEPRS perspective, this result may indicate a high amount of overhead or underutilization of the operating room based upon expenses. From the standpoint of CHAMPUS, this may indicate outlier cases

of exceptionally low cost. It is difficult to draw any reliable conclusions without further investigation. However, it is important to note the CHAMPUS cost sample size for urology (n=88) was low, while that for obstetrics (n=276) was higher and hypothetically more reliable. For the purposes of this project, no changes were made to these net cost figures before including them in the linear program.

Integer Linear Program

As one would assume, the linear program results indicated a higher scheduling rate for those services with a greater negative difference between MEPRS and CHAMPUS costs. For obstetrics and urology which had greater MEPRS costs, the optimal scheduling figure was computed to be equal to the lower bound. Since the numbers convey a continuing marginal loss situation for obstetrics and urology, if scheduling were done completely upon the basis of cost, both of these services would be discontinued.

However, the linear program solution serves only as a recommended optimal solution based on quantitative data. When making actual scheduling decisions, other factors such as military readiness, physician

recruitment and retention, graduate medical education, and family member requirements must be considered. The bounds must be continually monitored for appropriateness. Changes in staffing levels, variations in the volume of clinic visits, and the available of functioning equipment all limit the number of surgical procedures which can be accomplished during the week.

Limitations

As discussed previously, the ability to directly compare MEPRS and CHAMPUS data constitute a limitation of this study. Although not a question of validity, since the two methodologies do not account for precisely the same expenses, some irregularities will naturally occur.

Recommendations for Further Study

A trial of the linear program would be beneficial to test the model's outcome in practice. Simulations are effective for generating estimates, but actually applying the model's results would elicit difficulties unimagined when formulating or simulating the model.

Although discussed in the literature, the rearranging of procedures within blocks based upon

their mean duration times was not undertaken in this project. This would involve experimenting with scheduling cases on a first-come, first-served basis, shortest-case-first basis, longest-case-first basis, etc.. This undertaking would be very worthwhile in subsequent studies, since the literature cites improvements in utilization and staff morale, and decreases in cancellations as a result of modifying scheduling routines.

Another aspect not considered was the cancellation of cases. This phenomenon is a reality of the operating room and should be considered when making decisions regarding scheduling policy.

Finally, the use of a loading standard instead of the classic mean time, as advocated by Rose & Davies (1984) in future studies may yield more accurate and less variable estimates of procedure duration times.

CONCLUSIONS AND RECOMMENDATIONS

There are no glaring systemic problems with the current method of scheduling services. Few complaints from the staff were heard regarding the current scheduling procedures. However the literature review

and discussions with staff members provide some recommendations for improvement, especially in light of increasing operating room utilization.

The staff should consider the formalization of a scheduling committee made up of representatives from the operating room nursing service, anesthesia, the surgical services, nursing wards, and the intensive care unit. This interdisciplinary group could avoid potential problems with the scheduling process before they occur.

The operating room staff should expand the use of the microcomputer to capture and report more detailed information including mean procedure duration times by physicians, and duration times by individual procedures when more than one procedure (i.e. appendectomy and tonsillectomy) are performed during one episode. The reports from this enhanced system should then be provided to the surgical service chiefs for them to consider when estimating procedure length and scheduling procedures.

Expand the use of on-line scheduling from the clinics. If the trial in the urology service is successful, the study should be expanded to the other

services and standardized. Changes to the schedule could be done quicker, and the clinics could have instant access to the continually updated database.

Allocation of surgical time should be done on a historical basis. During the study period, three of the four high-volume users (orthopedics, general surgery, gynecology) used more time than they were allocated. Three of the five low-volume users (obstetrics, oral surgery, and podiatry) used less time than they were allocated.

In view of the results of the cost analysis, the staff should investigate the inputs into MEPRS, especially for obstetrics and urology. It is possible workload is not being accounted for completely, or there is an underutilization of available resources. Aside from the usefulness of MEPRS data in making scheduling and recapturing determinations, decisions regarding staffing and budgeting levels for BACH are made according to these figures, so they need to be accurate.

Notwithstanding its simplicity, the linear program technique demonstrated in this project solved a complex resource allocation problem in a short time on a simple

personal computer. Its usefulness should be incorporated into scheduling decisions on an ongoing basis.

As a result of this research, the personnel involved in making decisions regarding the scheduling of operative procedures have more information with which to make these decisions. A different scheduling scheme than that currently used was generated which maximized the ability of the surgical services to recapture CHAMPUS cases. Although the results are based strictly upon surgical cases done in BACH's catchment area population, some generalization can be made to other military hospitals of similar size, market and case mix.

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Appendix A

Terms and Definitions

Army Medical Department (AMEDD): The branch of the U.S. Army which has organizational control over all medical facilities and personnel.

Blanchfield Army Community Hospital (BACH): The U.S. Army Activity located at Fort Campbell, KY; the site of the study.

Civilian Health and Medical Program of the Uniformed Services (CHAMPUS): An entitlement program administered by the Department of Defense which permits family members of active duty military personnel, and retirees and their family members to receive health care from a civilian provider.

Coordinated Care Plan (CCP): The Department of Defense's mechanism for implementing principles of managed care.

Financial Analysis Support System (FASS): An adjudicated CHAMPUS claims database which contains information regarding claims paid for episodes of care rendered by a CHAMPUS provider

Fiscal Year (FY): The operating period of Department of Defense agencies. The period runs from 1 October through 30 September.

Health Services Command (HSC): A major command of the U.S. Army responsible for the operation of all U.S. Army Medical and Dental treatment facilities within the continental United States.

International Classification of Diseases, 9th Revision, Clinical Modification, Volume 3 (ICD-9-CM): A method of classifying both inpatient and operative procedures, and diagnoses.

Medical Expense Performance Reporting System (MEPRS): The source for detailed cost and workload information for military hospitals. It allocates the costs of

ancillary (pharmacy, radiology, laboratory) and support (laundry, utilities, maintenance) to four major areas in the hospital: inpatient care, outpatient care, dental care and special programs.

Non-Availability Statement (NAS): A memorandum issued to a family member of an active duty military person, or to a retiree and their family member which allows them to receive care under CHAMPUS. A NAS is required for all inpatient procedures and selected outpatient procedures.

Generic Operating Room Schedule

	MONDAY 4 Rms/8 Hrs	TUESDAY 5 Rms/8 Hrs	WEDNESDAY 5 Rms/7.5 Hrs	THURSDAY 5 Rms/8 Hrs	FRIDAY 4 Rms/8 Hrs
W	GEN SURG	GEN SURG	GEN SURG	GEN SURG	GEN SURG
E	ORTHO (2)	ORTHO	ORTHO (2)	ORTHO	ORTHO
E	OB-GYN	OPHTH	OB-GYN	UROLOGY	ENT
K		UROLOGY	ENT	OB-GYN	OB-GYN
		ORAL SURG	ORAL SURG	ORAL SURG	POD
1					
W	GEN SURG (2)	GEN SURG	GEN SURG	GEN SURG	ORTHO (2)
E	ORTHO	OB/GYN	ORTHO (2)	ORTHO (2)	OB/GYN
E	OB-GYN	OPHTH	OB-GYN	ORAL SURG	ENT
K		UROLOGY	ENT	POD	POD
		ORAL SURG	ORAL SURG		
2					
W	GEN SURG	GEN SURG	GEN SURG	GEN SURG	GEN SURG
E	ORTHO (2)	ORTHO	ORTHO (2)	ORTHO	ORTHO
E	OB-GYN	OPHTH	OB-GYN	UROLOGY	ENT
K		UROLOGY	ENT	OB-GYN	OB-GYN
		ORAL SURG	ORAL SURG	ORAL SURG	POD
3					
W	GEN SURG (2)	OB/GYN	GEN SURG	GEN SURG	ORTHO (2)
E	ORTHO	ORTHO	ORTHO (2)	ORTHO (2)	OB/GYN
E	OB-GYN	OPHTH	OB-GYN	ORAL SURG	ENT
K		UROLOGY	ENT	POD	POD
		ORAL SURG	ORAL SURG		
4					

Appendix C

Operating Room Automated Scheduling System Reports

1. **Operating Room Schedule:** Printed a day in advance, sorts by room to be used, and time scheduled. Prints patient name, SSN, age, ward, surgeons, and anesthetists.

2. **Physician/Patient Summary:** For any given date range, and sorted by physician. The report details the patient name, surgery date, septic, and procedure. Sub-totals are printed for each septic category and for the total number of hours the surgeon used.

3. **Clinic Summary:** For any given date range, and sorted by clinic, the report sub-totals and grand-totals the patients by category (active duty, retired, etc.), type of surgery (routine, emergency), and total episodes for nurses, anesthetists, and surgeons.

4. **Ward Summary:** For any given date ranges and sorted by ward, the report prints patient name, SSN,age, ward, surgeons, and surgery.

5. **Clinic List:** For any given date range, and sorted by clinic, the report details the clinic, surgeon, patient name, surgery date, and procedure. Sub-totals are printed for each clinic for the total number of hours used.

6. **Pending Surgeries:** For any given date range, and sorted by patient name, the report prints the name, SSN, and date of surgery.

7. **Operating Log Sheet:** For any given date range, this report prints all the detail information from all four entry screens for any completed surgery. This report serves as the reference and record for the operating room.

8. **Operating Room Utilization Report:** Sorted and sub-totaled by clinic, this report gives statistics on hours assigned, used, TSA hours, overtime hours, emergency hours, percentages of total hours used, and number of cases by category. Episodes are totaled for nurses, anesthetists, and surgeons. A fiscal comparison of the past five years by month of the total number of cases performed is also included.

7. **Operating Log Sheet:** For any given date range, this report prints all the detail information from all four entry screens for any completed surgery. This report serves as the reference and record for the operating room.

8. **Operating Room Utilization Report:** Sorted and sub-totaled by clinic, this report gives statistics on hours assigned, used, TSA hours, overtime hours, emergency hours, percentages of total hours used, and number of cases by category. Episodes are totaled for nurses, anesthetists, and surgeons. A fiscal comparison of the past five years by month of the total number of cases performed is also included.

9. **Tissue Summary:** For any given date range, prints the number of surgeries with tissue samples and the number with other lab.

10. **Anesthesia Summary:** For any given date range, the report sub-totals the number of each type of anesthesia used (general, local, etc.).

Appendix D

Operating Room Report by Average Time

ENT SERVICE

CODE	PROCEDURE	CASES	TOTAL TIME	AVE TIME
2001	PLACEMENT PE TUBES	131	97:09	0:44
2239	BILATERAL ANTROSTOMIES & TURBINATE	1	0:45	0:45
2592	FRENULECTOMY	4	3:20	0:49
2717	REDUCTION OF NASAL FRACTURE	3	2:35	0:51
2171	CLOSED REDUCTION OF NASAL FRACTURE	7	6:10	0:52
201	REMOVAL OF PE TUBES	8	7:05	0:53
3142	DIRECT LARYNGOSCOPY	15	8:10	1:12
2723	BCCA LIP BIOPSIES	1	1:15	1:15
282	TONSILLECTOMY AND ADENOIDECTOMY	92	122:46	1:19
286	ADENOIDECTOMY	3	4:15	1:25
4222	ESOPHAGOSCOPY WITH BIOPSY	6	10:30	1:45
2161	TURBINECTOMY, CRYOTHERAPY,	2	4:05	2:02
2188	SEPTORHINOPLASTY	47	100:05	2:07
1829	EXCISION RIGHT EAR CYST- EXTERNAL	4	8:35	2:09
2184	REVISION RHINOPLASTY	2	4:30	2:15
9999	OTHER	80	199:24	2:29
2260	FESS, POLYPECTOMY	15	43:15	2:52
1952	LEFT TYMPANOPLASTY, RIGHT PE TUBE	9	43:05	4:47
END OF SERVICE		430	676:59	1:34

OPHTHALMOLOGY SERVICE

CODE	PROCEDURE	CASES	TOT TIME	AVE TIME
1511	IO RECESSION OS	21	31:15	1:29
1513	MR RECESSION OU	30	45:45	1:31
1369	ECCE WITH IOL OD	89	138:55	1:33
9999	OTHER	80	129:40	1:37
1132	EXCISION PTERYGIUM OD WITH GRAFT	16	28:10	1:45
END OF SERVICE		236	373:45	1:35

GENERAL SURGERY SERVICE

CODE	PROCEDURE	CASES	TOT TIME	AVE TIME
4222	ESOPHAGOSCOPY WITH BIOPSY	3	2:55	0:58
4901	I & D OF PERIANAL ABSCESS	2	2:30	1:15
6373	VASECTOMY	3	3:45	1:15
4881	INCIS/DRAIN PERIRECTAL ABSCESS	9	11:40	1:18
8512	RIGHT BREAST BIOPSY	32	41:50	1:18
4951	LATERAL INTERNAL SPHINCTEROTOMY	5	6:35	1:19
8511	RIGHT NEEDLE LOCAL BREAST BIOPSY	38	51:25	1:21
4516	EGD & ESOPHAGEAL DILATION	2	2:48	1:24
4946	HEMORRHOIDECTOMY, LAT INTERNL	30	47:05	1:34
6621	LAPAROSCOPIC TUBAL LIGATION	4	6:40	1:40
8541	PROPHYLACTIC RIGHT MASTECTOMY	10	17:45	1:46
5359	UMBILICAL HERNIA REPAIR	33	59:20	1:48
5300	LEFT INGUINAL HERNIA REPAIR	164	294:38	1:48
470	APPENDECTOMY	64	121:03	1:53
3859	LIG/STRIPPING OF VARCOSE VEINS	21	45:50	2:10
9999	OTHER	277	617:42	2:13
5310	BILAT INGUINAL HERNIA REP	13	29:30	2:16
5421	DIAGNOSTIC LAPAROSCOPY	6	14:40	2:27
5351	INCISIONAL HERNIA REPAIR	7	17:25	2:29
5123	LAPAROSCOPIC CHOLECYSTECTOMY	99	276:45	2:48
5411	LAPAROTOMY	47	135:47	2:53
5122	CHOLECYSTECTOMY	28	83:40	2:59
8545	RT MODIFIED RADICAL MASTECTOMY	10	34:40	3:28
4576	SIGMOIDECTOMY	6	25:00	4:10
4610	COLOSTOMY CLOSURE	6	26:25	4:24
5732	CYSTOLITHOLAPAXY, BLADDER BX	1	7:30	7:30
END OF SERVICE		920	1984:53	2:09

UROLOGY SERVICE

CODE	PROCEDURE	CASES	TOT TIME	AVE TIME
640	CIRCUMCISION	14	16:52	1:12
633	EXCISION LEFT SPERM GRANULOMA	2	2:35	1:17
595	ANTERIOR URETHROPEXY	50	77:50	1:33
5732	CYSTOLITHOLAPAXY, BLADDER BX	27	44:30	1:39
5631	RIGHT URETEROSCOPY, PLACEMENT OF	9	15:30	1:43
631	HYDROCELECTOMY	39	69:55	1:47
634	EPIDIDYMECTOMY	7	13:09	1:52
5359	UMBILICAL HERNIA REPAIR	1	2:10	2:10

CODE	PROCEDURE	CASES	TOT TIME	AVE TIME
623	ORCHIECTOMY	9	20:20	2:15
602	TURP	34	78:43	2:19
5845	HYPOSPADIAS REPAIR	6	14:05	2:21
625	ORCHIOPEXY	5	12:40	2:31
5300	LEFT INGUINAL HERNIA REPAIR	7	17:45	2:32
9999	OTHER	85	222:50	2:37
6497	INFLATIBLE PENILE PROSTHESIS	3	8:45	2:55
[illegible]51	LEFT NEPHRECTOMY	1	3:25	3:25
604	RADICAL RETROPUBIC PROSTATECTOMY	5	25:40	5:07
END OF SERVICE		304	646:44	2:07

GYNECOLOGY SERVICE

CODE	PROCEDURE	CASES	TOT TIME	AVE TIME
6621	LAPAROSCOPIC TUBAL LIGATION	176	178:10	1:00
6959	SUCTION D&C	104	105:15	1:00
690	D&C	48	53:38	1:07
6639	POST PARTUM TUBAL LIGATION	48	58:40	1:13
6669	RIGHT SALPINGOOPHERECTOMY	1	1:15	1:15
740	C-SECTION	6	8:55	1:29
672	COLD KNIFE CONE BIOPSY	13	19:25	1:29
7179	DRAINAGE & REPAIR VULVAR HEMATOMA	1	1:30	1:30
5421	DIAGNOSTIC LAPAROSCOPY	81	123:40	1:31
7124	EXCISION LEFT BARTHOLIN CYST	2	3:10	1:35
9999	OTHER	22	35:05	1:35
6561	LEFT SALPINGECTOMY	3	5:45	1:55
653	OVARIAN CYSTECTOMY	2	3:55	1:57
675	MCDONALDS CERCLAGE	2	4:00	2:00
5411	LAPAROTOMY	23	46:40	2:01
7071	REPAIR VAGINAL LACERATION	3	6:20	2:06
700	CULDOCENTESIS	33	72:39	2:12
470	APPENDECTOMY	1	2:20	2:19
7051	POSTERIOR REPAIR, MARSHALL MARCHETTI	4	9:25	2:21
7073	REPAIR VAGINAL/RECTAL LACERATION	1	2:30	2:30
6564	BILATERAL SALPINGO-OOPHORECTOMY	3	7:55	2:38
684	TOTAL HYSTERECTOMY, A & P REPAIR	84	239:30	2:51
595	RETROPUBIC URETHRAL SUSPENSION	5	17:10	3:25
END OF SERVICE		666	1006:52	1:31

OBSTETRIC SERVICE

CODE	PROCEDURE	CASES	TOT TIME	AVE TIME
9999	OTHER	11	10:15	0:55
675	MCDONALDS CERCLAGE	8	7:45	0:58
6959	SUCTION D&C	12	12:29	1:02
6639	POST PARTUM TUBAL LIGATION	24	25:55	1:04
6621	LAPAROSCOPIC TUBAL LIGATION	4	4:40	1:10
700	CULDOCENTESIS	1	1:30	1:30
6909	D&C	3	4:45	1:34
7070	REPAIR OF VAGINAL LACERATION	1	1:35	1:34
7071	REPAIR VAGINAL LACERATION	1	1:45	1:45
740	C-SECTION	200	360:34	1:48
END OF SERVICE		265	431:13	1:37

ORTHOPEDIC SERVICE

CODE	PROCEDURE	CASES	TOT TIME	AVE TIME
7756	RECONSTRUCTION HAMMER TOES 2-3-4	3	1:50	0:36
7769	EXCISION BILATERAL OSTEOPHYTES LITTLE	1	0:50	0:49
7788	EXCISION TUMOR 4TH TOE RIGHT FOOT	1	0:55	0:55
8201	RELEASE PROXIMAL TRIGGER FINGER LEFT	24	29:55	1:15
8314	LEFT LEG ANT COMPARTMENT FASCIOTOMY	2	2:35	1:17
7764	EXCISION CYST RIGHT HAND	81	108:02	1:19
7868	PIN REMOVAL RIGHT FOOT	4	5:20	1:19
7763	EXCISION SUBACEOUS CYST RIGHT FOREARM	9	12:10	1:21
7768	EXCISION EXOSTOSIS BILAT GREAT TOES	30	41:15	1:22
7766	EXCISIONAL BIOPSY OF MASS LEFT KNEE	9	13:30	1:30
7902	CLOSED REDUCTION LEFT FOREARM	2	3:05	1:32
7767	EXCISION OF OSSICLE RIGHT	8	12:30	1:33
7753	RIGHT CARPAL TUNNEL RELEASE	101	169:16	1:40
7909	CLOSED REDUCTION/ORIF LEFT ANKLE	22	37:15	1:41
8029	DIAGNOSTIC ARTHROSCOPY, REMOVAL	1	1:45	1:45
7761	EXCISION BULLET RIGHT SHOULDER	2	3:30	1:45
7765	EXCISION OSTEOCHONDROMA LEFT FEMUR	2	3:30	1:45
7863	HARDWARE REMOVAL RIGHT FOREARM	8	14:35	1:49
7869	HARDWARE REMOVAL RIGHT ANKLE	17	31:55	1:52
7907	CLOSED REDUCTION/PERCUTANEOUS PINNING	2	4:00	2:00
7867	REMOVAL RETAINED SCREW RIGHT ANKLE	9	18:00	2:00
7903	CLOSED REDUCTION/PINNING RIGHT WRIST	2	4:05	2:02
7760	EXOSTECTOMY RIGHT BIG TOE	11	23:00	2:05
9999	OTHER	111	237:49	2:08

CODE	PROCEDURE	CASES	TOT TIME	AVE TIME
8027	LEFT ANKLE RECONSTRUCTION	4	8:39	2:09
8026	ARTHROSCOPY LEFT KNEE	401	901:30	2:15
8364	REPAIR PALMAR PLATE RIGHT MID FINGER	15	34:30	2:18
7781	MUMFORD PROCEDURE LEFT SHOULDER	7	16:35	2:22
8183	RECONSTRUCTION LEFT SHOULDER	22	53:12	2:25
7866	PIN REMOVAL LEFT KNEE, OPEN REDUCTION	7	17:00	2:25
8628	I & D ABSCESS RIGHT KNEE	27	65:40	2:25
7865	HARDWARE REMOVAL LEFT FEMUR, REMOVAL	8	20:25	2:33
7901	CLOSED REDUCTION LEFT SHOULDER	2	5:30	2:45
7864	HARDWARE REMOVAL RIGHT WRIST	1	2:45	2:45
7914	ORIF RIGHT RADIUS AND THUMB	5	14:35	2:55
8021	RIGHT SHOULDER ARTHROSCOPY	24	71:35	2:58
7937	ORIF 5TH METATARSAL RIGHT FOOT	21	62:50	2:59
8182	LEFT SHOULDER ARTHROSCOPIC BANKART	13	42:25	3:15
8193	ANTERIOR CAPSULORRHAPHY LEFT SHOULDER	1	3:20	3:19
7932	LEFT ULNA ORIF W/ RT ILIAC BONE GRAFT	12	41:15	3:26
8010	ARTHROTOMY & MANIPULATION UNDER	2	7:10	3:35
7936	ORIF LEFT FIBULA	1	3:45	3:45
7939	ORIF RIGHT	13	52:55	4:04
7916	ORIF LEFT TIBIAL PLATEAU FRACTURE	3	12:30	4:10
END OF SERVICE		1051	2218:43	2:06

ORAL SURGERY SERVICE

CODE	PROCEDURE	CASES	TOT TIME	AVE TIME
7530	SURGICAL REMOVAL BONE PLATES X 3	1	0:00	0:00
7110	SURGICAL REM IMPACTED 3RD MOLARS	66	113:48	1:43
7130	SURGICAL REMOVAL OF INVERTED MESIODENS	3	5:35	1:51
7452	ENUCLEATION OF CYST AREA TOOTH #19	2	4:20	2:10
7282	PLACEMENT OF DENTAL IMPLANTS	14	34:55	2:29
7400	SURGICAL EXCISION RIGHT SUBLINGUAL	2	5:05	2:32
9999	OTHER	6	15:15	2:32
7855	BILATERAL TMJ ARTHROSCOPY	5	14:05	2:49
7610	PANENDOSCOPY	25	83:40	3:21
2001	PLACEMENT PE TUBES	2	7:50	3:55
7721	BLSS	17	77:30	4:33
7260	SURGICAL CLOSURE SOFT PALATE	3	14:50	4:56
7285	CRANIAL BONE GRAFT TO MAXILLA	2	11:00	5:30
7711	3PC LEFORT, GENIOPLASTY	29	186:10	6:25
END OF SERVICE		177	574:03	3:14

PODIATRY SERVICE

CODE	PROCEDURE	CASES	TOT TIME	AVE TIME
9828	REMOVAL OF FOREIGN BODIES RIGHT FOOT	2	2:15	1:07
7868	PIN REMOVAL RIGHT FOOT	1	1:15	1:15
7758	ARTHROPLASTY 3-5 DIGITS LEFT FOOT	20	29:43	1:29
7867	REMOVAL RETAINED SCREW RIGHT ANKLE	4	7:10	1:47
9999	OTHER	25	45:03	1:48
7768	EXCISION EXOSTOSIS BILAT GREAT TOES	10	19:17	1:55
7760	EXOSTECTOMY RIGHT BIG TOE	3	6:30	2:10
7752	AUSTIN OSTEOTOMY WITH HERBERT SCREW	16	35:10	2:12
7759	BUNIONECTOMY, ARTHROPLASTY 5TH DIGIT	5	13:00	2:36
7937	ORIF 5TH METATARSAL RIGHT FOOT	2	5:25	2:42
7753	RIGHT CARPAL TUNNEL RELEASE	6	16:25	2:44
8027	ARTHROSCOPY	6	17:35	2:55
END OF SERVICE		100	198:48	1:59

Appendix E

Operating Room Report by Case Frequency

ENT SERVICE

CODE	PROCEDURE	CASES	TOT TIME	AVE TIME
2001	PLACEMENT PE TUBES	131	97:09	0:44
282	TONSILLECTOMY AND ADENOIDECTOMY	92	122:46	1:19
9999	OTHER	80	199:24	2:29
2188	SEPTORHINOPLASTY	47	100:05	2:07
3142	DIRECT LARYNGOSCOPY	15	18:10	1:12
2260	FESS, POLYPECTOMY	15	43:15	2:52
1952	LEFT TYMPANOPLASTY, RIGHT PE TUBE	9	43:05	4:47
201	REMOVAL OF PE TUBES	8	7:05	0:53
2171	CLOSED REDUCTION OF NASAL FRACTURE	7	6:10	0:52
4222	ESOPHAGOSCOPY WITH BIOPSY	6	10:30	1:45
1829	EXCISION RIGHT EAR CYST-EXTERNAL	4	8:35	2:09
2592	FRENULECTOMY	4	3:20	0:49
286	ADENOIDECTOMY	3	4:15	1:25
2717	REDUCTION OF NASAL FRACTURE	3	2:35	0:51
2161	TURBINECTOMY, CRYOTHERAPY	2	4:05	2:02
2184	REVISION RHINOPLASTY	2	4:30	2:15
2723	BCCA LIP BIOPSIES	1	1:15	1:15
2239	BILATERAL ANTROSTOMIES & TURBINATE	1	0:45	0:45
END OF SERVICE		430	676:59	1:34

OPHTHALMOLOGY SERVICE

CODE	PROCEDURE	CASES	TOT TIME	AVE TIME
1369	ECCE WITH IOL OD	89	138:55	1:33
9999	OTHER	80	129:40	1:37
1513	MR RECESSION OU	30	45:45	1:31
1511	IO RECESSION OS	21	31:15	1:29
1132	EXCISION PTERYGIUM OD WITH GRAFT	16	28:10	1:45
END OF SERVICE		236	373:45	1:35

GENERAL SURGERY SERVICE

CODE	PROCEDURE	CASES	TOT TIME	AVE TIME
9999	OTHER	277	617:42	2:13
5300	LEFT INGUINAL HERNIA REPAIR	164	294:38	1:48
5123	LAPAROSCOPIC CHOLECYSTECTOMY	99	276:45	2:48
470	APPENDECTOMY	64	121:03	1:53
5411	LAPAROTOMY	47	135:47	2:53
8511	RIGHT NEEDLE LOCAL BREAST BIOPSY	38	51:25	1:21
5359	UMBILICAL HERNIA REPAIR	33	59:20	1:48
8512	RIGHT BREAST BIOPSY	32	41:50	1:18
4946	HEMORRHOIDECTOMY, LATERAL INTERNAL	30	47:05	1:34
5122	CHOLECYSTECTOMY	28	83:40	2:59
3859	LIGATION/STRIPPING OF VARICOSE VEINS	21	45:50	2:10
5310	BILATERAL INGUINAL HERNIA REPAIR	13	29:30	2:16
8545	RT MODIFIED RADICAL MASTECTOMY	10	34:40	3:28
8541	PROPHYLACTIC RIGHT MASTECTOMY	10	17:45	1:46
4881	INCISION/DRAINAGE PERIRECTAL ABSCESS	9	11:40	1:18
5351	INCISIONAL HERNIA REPAIR	7	17:25	2:29
4576	SIGMOIDECTOMY	6	25:00	4:10
4610	COLOSTOMY CLOSURE	6	26:25	4:24
5421	DIAGNOSTIC LAPAROSCOPY	6	14:40	2:27
4951	LATERAL INTERNAL SPHINCTEROTOMY	5	6:35	1:19
6621	LAPAROSCOPIC TUBAL LIGATION	4	6:40	1:40
4222	ESOPHAGOSCOPY WITH BIOPSY	3	2:55	0:58
6373	VASECTOMY	3	3:45	1:15
4516	EGD & ESOPHAGEAL DILATION	2	2:48	1:24
4901	I & D OF PERIANAL ABSCESS	2	2:30	1:15
5732	CYSTOLITHOLAPAXY, BLADDER BX	1	7:30	7:30
END OF SERVICE		920	1984:53	2:09

UROLOGY SERVICE

CODE	PROCEDURE	CASES	TOT TIME	AVE TIME
9999	OTHER	85	222:50	2:37
595	ANTERIOR URETHROPEXY	50	77:50	1:33
631	HYDROCELECTOMY	39	69:55	1:47
602	TURP	34	78:43	2:19
5732	CYSTOLITHOLAPAXY, BLADDER BX	27	44:30	1:39
640	CIRCUMCISION	14	16:52	1:12
623	ORCHIECTOMY	9	20:20	2:15
5631	RIGHT URETEROSCOPY	9	15:30	1:43

CODE	PROCEDURE	CASES	TOT TIME	AVE TIME
634	EPIDIDYMECTOMY	7	13:09	1:52
5300	LEFT INGUINAL HERNIA REPAIR	7	17:45	2:32
5845	HYPOSPADIAS REPAIR	6	14:05	2:21
625	ORCHIOPEXY	5	12:40	2:31
604	RADICAL RETROPUBIC PROSTATECTOMY	5	25:40	5:07
6497	INFLATIBLE PENILE PROSTHESIS	3	8:45	2:55
633	EXCISION LEFT SPERM GRANULOMA	2	2:35	1:17
5551	LEFT NEPHRECTOMY	1	3:25	3:25
5359	UMBILICAL HERNIA REPAIR	1	2:10	2:10
END OF SERVICE		304	646:44	2:07

GYNECOLOGY SERVICE

CODE	PROCEDURE	CASES	TOT TIME	AVE TIME
6621	LAPAROSCOPIC TUBAL LIGATION	176	178:10	1:00
6959	SUCTION D&C	104	105:15	1:00
684	TOTAL HYSTERECTOMY, A & P REPAIR	84	239:30	2:51
5421	DIAGNOSTIC LAPAROSCOPY	81	123:40	1:31
6909	D&C	48	53:38	1:07
6639	POST PARTUM TUBAL LIGATION	48	58:40	1:13
700	CULDOCENTESIS	33	72:39	2:12
5411	LAPAROTOMY	23	46:40	2:01
9999	OTHER	22	35:05	1:35
672	COLD KNIFE CONE BIOPSY	13	19:25	1:29
740	C-SECTION	6	8:55	1:29
595	RETROPUBIC URETHRAL SUSPENSION	5	17:10	3:25
7051	POSTERIOR REPAIR, MARSHALL MARCHETTI	4	9:25	2:21
6564	BILATERAL SALPINGO-OOPHORECTOMY	3	7:55	2:38
6561	LEFT SALPINGECTOMY	3	5:45	1:55
7071	REPAIR VAGINAL LACERATION	3	6:20	2:06
7124	EXCISION LEFT BARTHOLIN CYST	2	3:10	1:35
675	MCDONALDS CERCLAGE	2	4:00	2:00
653	OVARIAN CYSTECTOMY	2	3:55	1:57
470	APPENDECTOMY	1	2:20	2:19
7179	DRAINAGE & REPAIR VULVAR HEMATOMA	1	1:30	1:30
7073	REPAIR VAGINAL/RECTAL LACERATION	1	2:30	2:30
6669	RIGHT SALPINGOOPHERECTOMY	1	1:15	1:15
END OF SERVICE		666	1006:52	1:31

OBSTETRIC SERVICE

CODE	PROCEDURE	CASES	TOT TIME	AVE TIME
740	C-SECTION	200	360:34	1:48
6639	POST PARTUM TUBAL LIGATION	24	25:55	1:04
6959	SUCTION D&C	12	12:29	1:02
9999	OTHER	11	10:15	0:55
675	MCDONALDS CERCLAGE	8	7:45	0:58
6621	LAPAROSCOPIC TUBAL LIGATION	4	4:40	1:10
6909	D&C	3	4:45	1:34
700	CULDOCENTESIS	1	1:30	1:30
7070	REPAIR OF VAGINAL LACERATION	1	1:35	1:34
7071	REPAIR VAGINAL LACERATION	1	1:45	1:45
END OF SERVICE		265	431:13	1:37

ORTHOPEDIC SERVICE

CODE	PROCEDURE	CASES	TOT TIME	AVE TIME
8026	ARTHROSCOPY LEFT KNEE	401	901:30	2:15
9999	OTHER	111	237:49	2:08
7753	RIGHT CARPAL TUNNEL RELEASE	101	169:16	1:40
7764	EXCISION CYST RIGHT HAND	81	108:02	1:19
7768	EXCISION EXOSTOSIS BILAT GREAT TOES	30	41:15	1:22
8628	I & D ABSCESS RIGHT KNEE	27	65:40	2:25
8021	RIGHT SHOULDER ARTHROSCOPY	24	71:35	2:58
8201	RELEASE PROXIMAL TRIGGER FINGER LEFT	24	29:55	1:15
8183	RECONSTRUCTION LEFT SHOULDER	22	53:12	2:25
7909	EUA CLOSED REDUCTION/ORIF LEFT ANKLE	22	37:15	1:41
7937	ORIF 5TH METATARSAL RIGHT FOOT	21	62:50	2:59
7869	HARDWARE REMOVAL RIGHT ANKLE	17	31:55	1:52
8364	REPAIR PALMAR PLATE RIGHT MID FINGER	15	34:30	2:18
8182	LEFT SHOULDER ARTHROSCOPIC BANKART	13	42:25	3:15
7939	OPEN REDUCTION INTERNAL FIXATION	13	52:55	4:04
7932	LEFT ULNA ORIF W/ RT ILIAC BONE GRA	12	41:15	3:26
7760	EXOSTECTOMY RIGHT BIG TOE	11	23:00	2:05
7766	EXCISIONAL BIOPSY OF MASS LEFT KNEE	9	13:30	1:30
7763	EXCISION SUBACEOUS CYST RIGHT FOREARM	9	12:10	1:21
7867	REMOVAL RETAINED SCREW RIGHT ANKLE	9	18:00	2:00
7767	EXCISION OF OSSICLE RIGHT	8	12:30	1:33
7863	HARDWARE REMOVAL RIGHT FOREARM	8	14:35	1:49
7865	HARDWARE REMOVAL LEFT FEMUR, REMOVAL	8	20:25	2:33
7866	PIN REMOVAL LEFT KNEE, OPEN REDUCTION	7	17:00	2:25

CODE	PROCEDURE	CASES	TOT TIME	AVE TIME
7781	MUMFORD PROCEDURE LEFT SHOULDER	7	16:35	2:22
7914	ORIF RIGHT RADIUS AND THUMB	5	14:35	2:55
8027	LEFT ANKLE RECONSTRUCTION	4	8:39	2:09
7868	PIN REMOVAL RIGHT FOOT	4	5:20	1:19
7916	ORIF LEFT TIBIAL PLATEAU FRACTURE	3	12:30	4:10
7756	RECONSTRUCTION HAMMER TOES 2-3-4	3	1:50	0:36
8010	ARTHROTOMY & MANIPULATION UNDER	2	7:10	3:35
7907	CLOSED REDUCTION/PERCUTANEOUS PINNING	2	4:00	2:00
7903	CLOSED REDUCTION/PINNING RIGHT WRIST	2	4:05	2:02
7902	CLOSED REDUCTION LEFT FOREARM	2	3:05	1:32
7901	CLOSED REDUCTION LEFT SHOULDER	2	5:30	2:45
7761	EXCISION BULLET RIGHT SHOULDER	2	3:30	1:45
7765	EXCISION OSTEOCHONDROMA LEFT FEMUR	2	3:30	1:45
8314	LEFT LEG ANT COMPARTMENT FASCIOTOMY	2	2:35	1:17
8193	ANTERIOR CAPSULORRHAPHY LEFT SHOULDER	1	3:20	3:19
8029	DIAGNOSTIC ARTHROSCOPY	1	1:45	1:45
7769	EXCISION BILATERAL OSTEOPHYTES	1	0:50	0:49
7788	EXCISION TUMOR 4TH TOE RIGHT FOOT	1	0:55	0:55
7864	HARDWARE REMOVAL RIGHT WRIST	1	2:45	2:45
7936	ORIF LEFT FIBULA	1	3:45	3:45
END OF SERVICE		1051	2218:43	2:06

ORAL SURGERY SERVICE

CODE	PROCEDURE	CASES	TOT TIME	AVE TIME
7110	SURGICAL REM IMPACTED 3RD MOLARS	66	113:48	1:43
7711	3PC LEFORT, GENIOPLASTY	29	186:10	6:25
7610	PANENDOSCOPY	25	83:40	3:21
7721	BLSS	17	77:30	4:33
7282	PLACEMENT OF DENTAL IMPLANTS	14	34:55	2:29
9999	OTHER	6	15:15	2:32
7855	BILATERAL TMJ ARTHROSCOPY	5	14:05	2:49
7260	SURGICAL CLOSURE SOFT PALATE	3	14:50	4:56
7130	SURGICAL REMOVAL OF INVERTED MESIODENS	3	5:35	1:51
7285	CRANIAL BONE GRAFT TO MAXILLA	2	11:00	5:30
7452	ENUCLEATION OF CYST AREA TOOTH #19	2	4:20	2:10
7400	SURGICAL EXCISION RIGHT SUBLINGUAL	2	5:05	2:32
2001	PLACEMENT PE TUBES	2	7:50	3:55
7530	SURGICAL REMOVAL BONE PLATES X 3	1	0:00	0:00
END OF SERVICE		177	574:03	3:14

PODIATRY SERVICE

CODE	PROCEDURE	CASES	TOT TIME	AVE TIME
9999	OTHER	25	45:03	1:48
7758	ARTHROPLASTY PIPJ 3-5 DIGITS L FOOT	20	29:43	1:29
7752	AUSTIN OSTEOTOMY WITH HERBERT SCREW	16	35:10	2:12
7768	EXCISION EXOSTOSIS BILAT GREAT TOES	10	19:17	1:55
7753	RIGHT CARPAL TUNNEL RELEASE	6	16:25	2:44
8027	ARTHROSCOPY	6	17:35	2:55
7759	BUNIONECTOMY & ARTHROPLASTY 5TH DIGIT	5	13:00	2:36
7867	REMOVAL RETAINED SCREW RIGHT ANKLE	4	7:10	1:47
7760	EXOSTECTOMY RIGHT BIG TOE	3	6:30	2:10
7937	ORIF 5TH METATARSAL RIGHT FOOT	2	5:25	2:42
9828	REMOVAL OF FOREIGN BODIES RIGHT FOOT	2	2:15	1:07
7868	PIN REMOVAL RIGHT FOOT	1	1:15	1:15
END OF SERVICE		100	198:48	1:59

Appendix F

Operating Room Variance Report

ENT SERVICE

CASES	CODE	MEAN	SQ TOT	VAR	STD DEV
4	1829	2.15	4669.00	1167.25	34.14
9	1952	4.78	73446.00	8160.67	90.33
131	2001	.73	102665.00	783.70	27.99
8	201	.88	8147.00	1018.38	31.91
2	2161	2.03	2813.00	1406.50	37.50
7	2171	.87	998.00	142.57	11.94
2	2184	2.25	0.00	0.00	0.00
47	2188	2.12	74798.00	1591.45	39.89
1	2239	.75	.00	.00	0.00
15	2260	2.87	31645.00	2109.67	45.93
4	2592	.82	1654.00	413.50	20.33
3	2717	.88	1318.00	439.33	20.96
1	2723	1.25	0.00	0.00	0.00
92	282	1.33	53248.00	578.78	24.05
11	286	1.10	12275.00	1115.91	33.40
15	3142	1.20	24950.00	1663.33	40.78
6	4222	1.75	16300.00	2716.67	55.12
80	9999	1.48	327984.00	4099.80	64.02
438		1.34	736910.00	1682.44	41.01

OPHTHALMOLOGY SERVICE

CASES	CODE	MEAN	SQ TOT	VAR	STD DEV
16	1132	1.77	20650.00	1290.63	35.92
89	1369	1.55	68826.00	773.33	27.80
21	1511	1.45	29816.00	1419.81	37.68
30	1513	1.92	48915.00	1630.50	40.37
80	9999	1.62	245140.00	3064.25	55.35
236		1.58	413347.00	1751.47	41.85

GENERAL SURGERY SERVICE

CASES	CODE	MEAN	SQ TOT	VAR	STD DEV
21	3859	2.16	48800.00	2323.81	48.20
3	4222	.97	1517.00	505.67	22.48
2	4516	1.40	6962.00	3481.00	59.00
6	4576	4.16	4250.00	708.33	26.61
6	4610	4.40	11471.00	1911.83	43.72
64	470	1.88	169387.00	2646.67	51.44
9	4881	1.11	10356.00	1150.67	33.92
2	4901	1.25	450.00	225.00	15.00
30	4946	1.57	31155.00	1038.50	32.22
5	4951	1.32	2320.00	464.00	21.54
28	5122	2.98	81998.00	2928.50	54.11
99	5123	2.80	204531.00	2065.97	45.45
164	5300	1.80	135632.00	827.02	28.75
13	5310	2.27	11658.00	896.77	29.95
7	5351	2.48	13672.00	1953.14	44.19
33	5359	1.80	47612.00	1442.79	37.98
47	5411	2.88	188330.00	4007.02	63.30
6	5421	2.45	10324.00	1720.67	41.48
1	5732	7.50	0.00	0.00	0.00
3	6373	1.25	650.00	216.67	14.71
4	6621	1.66	1650.00	412.50	20.31
38	8511	1.35	29223.00	769.03	27.73
32	8512	1.30	13178.00	411.81	20.29
10	8541	1.77	12505.00	1250.50	35.36
10	8545	3.47	15920.00	1592.00	39.89
277	9999	2.22	947533.00	3420.70	58.48
920		2.15	2001084.00	2172.73	46.60

UROLOGY SERVICE

CASES	CODE	MEAN	SQ TOT	VAR	STD DEV
7	5300	2.53	13693.0	1956.14	44.22
1	5359	2.16	0.00	0.00	0.00
1	5551	3.42	0.00	0.00	0.00
9	5631	1.73	30901.00	3433.44	58.59
27	5732	1.65	57307.00	2122.48	46.07
6	5845	2.35	10971.00	1828.50	42.76
50	595	1.55	42990.00	859.80	29.32
34	602	2.32	71367.00	2099.03	45.81

CASES	CODE	MEAN	SQ TOT	VAR	STD DEV
5	604	5.12	26515.00	5303.00	12.82
9	623	2.25	7525.00	836.11	28.91
5	625	2.52	3685.00	737.00	27.14
39	631	1.78	66256.00	1698.87	41.21
2	633	1.28	113.00	56.50	7.57
7	634	1.87	5733.00	819.00	28.61
14	640	1.20	5402.00	385.86	19.64
3	6497	2.92	1050.00	350.00	18.70
85	9999	2.62	366485.00	4311.59	65.66
304		2.12	709993.00	2335.50	48.32

GYNECOLOGY SERVICE

CASES	CODE	MEAN	SQ TOT	VAR	STD DEV
1	470	2.32	1.00	1.00	1.00
23	5411	2.02	30573.00	1329.26	36.45
81	5421	1.52	129441.00	1598.04	39.97
5	595	3.42	14375.00	2875.00	53.61
2	653	1.95	1513.00	756.50	27.50
3	6561	1.92	8550.00	2850.00	53.38
3	6564	2.63	2217.00	739.00	27.18
176	6621	1.00	74200.00	421.59	70.53
48	6639	1.22	11172.00	232.75	15.25
1	6669	1.25	0.00	0.00	0.00
13	672	1.48	5778.00	444.46	21.08
2	675	2.00	3200.00	1600.00	40.00
84	684	2.85	253244.00	3014.81	54.90
48	6909	1.00	30234.00	629.88	25.09
104	6959	1.00	60075.00	577.64	24.03
33	700	2.20	53467.00	1620.21	40.25
4	7051	2.35	6669.00	1667.25	40.83
3	7071	2.10	868.00	289.33	11.00
1	7073	2.50	0.00	0.00	0.00
2	7124	1.58	50.00	25.00	5.00
1	7179	1.50	0.00	0.00	0.00
6	740	1.48	14871.00	2478.50	49.78
22	9999	1.58	53225.00	2419.32	49.18
666		1.52	753723.00	1131.72	33.64

OBSTETRIC SERVICE

CASES	CODE	MEAN	SQ TOT	VAR	STD DEV
4	6621	1.16	300.00	75.00	8.66
24	6639	1.06	4889.00	203.71	14.27
8	675	.97	4447.00	555.88	23.57
3	6909	1.57	7803.00	2601.00	51.00
12	6959	1.03	13653.00	1137.75	33.73
1	700	1.50	0.00	0.00	0.00
1	7070	1.57	1.00	1.00	1.00
1	7071	1.75	0.00	0.00	0.00
200	740	1.80	236232.00	1181.16	34.36
11	9999	.92	17250.00	1568.18	39.60
265		1.62	284575.00	1073.87	32.76

ORTHOPEDIC SERVICE

CASES	CODE	MEAN	SQ TOT	VAR	STD DEV
101	7753	1.66	154726.00	1531.94	39.14
3	7756	.60	2468.00	822.67	28.68
11	7760	2.08	26725.00	2429.55	49.29
2	7761	1.75	1800.00	900.00	30.00
9	7763	1.35	4789.00	532.11	23.06
81	7764	1.32	72469.00	894.68	29.91
2	7765	1.75	450.00	225.00	15.00
9	7766	1.50	1650.00	183.33	13.53
8	7767	1.55	5942.00	742.75	27.25
30	7768	1.37	15695.00	523.17	22.87
1	7769	.82	1.00	1.00	1.00
7	7781	2.37	5043.00	720.43	26.84
1	7788	.92	0.00	0.00	0.00
8	7863	1.82	9473.00	1184.13	34.41
1	7864	2.75	0.00	0.00	0.00
8	7865	2.55	14457.00	1807.13	42.51
7	7866	2.42	44675.00	6382.14	79.88
9	7867	2.00	29000.00	3222.22	56.76
4	7868	1.32	2904.00	726.00	26.94
17	7869	1.87	36933.00	2172.53	46.61
2	7901	2.31	11250.00	5625.00	75.00
2	7902	1.53	1013.00	506.50	22.50
2	7903	2.03	313.00	156.50	12.50
2	7907	2.00	450.00	225.00	15.00
22	7909	1.68	71637.00	3256.23	57.06

CASES	CODE	MEAN	SQ TOT	VAR	STD DEV
5	7914	2.92	5600.00	1120.00	33.46
3	7916	4.16	50.00	16.67	4.08
12	7932	3.43	48077.00	4006.42	63.29
1	7936	3.75	0.00	0.00	0.00
21	7937	2.98	39671.00	1889.10	43.46
13	7939	4.06	51803.00	3984.85	63.12
2	8010	3.58	800.00	400.00	20.00
24	8021	2.97	68291.00	2845.46	53.34
401	8026	2.25	877081.00	2187.23	46.76
4	8027	2.15	1103.00	275.75	16.60
1	8029	1.75	0.00	0.00	0.00
13	8182	3.25	28200.00	2169.23	46.57
22	8183	2.42	34744.00	1579.27	39.74
1	8193	3.32	1.00	1.00	1.00
24	8201	1.25	7425.00	309.38	17.58
2	8314	1.28	13.00	6.50	2.54
15	8364	2.30	48080.00	3205.33	56.61
27	8628	2.42	91225.00	3378.70	58.12
111	9999	2.13	269451.00	2427.49	49.26
1051		2.06	2085478.00	1984.28	44.54

ORAL SURGERY SERVICE

CASES	CODE	MEAN	SQ TOT	VAR	STD DEV
2	2001	3.92	800.00	400.00	20.00
66	7110	1.73	74100.00	1122.73	33.50
3	7130	1.85	2218.00	739.33	27.19
3	7260	4.93	7718.00	2572.67	50.72
14	7282	2.48	20249.00	1446.36	38.03
2	7285	5.50	450.00	225.00	15.00
2	7400	2.53	1513.00	756.50	27.50
2	7452	2.16	3200.00	1600.00	40.00
25	7610	3.35	104205.00	4168.20	64.56
29	7711	6.42	133775.00	4612.93	67.91
17	7721	4.55	61473.00	3616.06	60.13
5	7855	2.82	1670.00	334.00	18.27
6	9999	2.53	23379.00	3896.50	62.42
176		3.23	434750.00	2456.21	49.56

PODIATRY SERVICE

CASES	CODE	MEAN	SQ TOT	VAR	STD DEV
16	7752	2.20	14594.00	912.13	30.20
6	7753	2.73	2071.00	345.17	18.57
20	7758	1.40	6475.00	323.75	17.99
5	7759	2.60	2570.00	514.00	22.67
3	7760	2.16	4850.00	1616.67	40.20
10	7768	1.92	11879.00	1187.90	34.46
4	7867	1.78	2126.00	531.50	23.05
1	7868	1.25	0.00	0.00	0.00
2	7937	2.70	6613.00	3306.50	57.50
6	8027	2.92	7175.00	1195.83	34.58
2	9828	1.12	113.00	56.50	7.51
25	9999	1.80	52351.00	2094.04	45.76
100		1.98	110817.00	1108.17	33.28

Appendix G

FASS (CHAMPUS) Summary

ORTHOPEDIC SERVICE

CODE	PROCEDURE	CASES	TOT COST	AVE COST
331	SPINAL TAP	2	$22,471.82	$11,235.91
7737	OTH DIV OF TIBIA AND FIBULA	1	$6,184.01	$6,184.01
7761	EXC LES OR TIS OF SCAP/CLAV	1	$4,940.53	$4,940.53
7869	REM IMPL DEV OTHER	1	$29,009.00	$29,009.00
7934	OPEN RED FX PHAL HAND INT FIX	1	$2,840.49	$2,840.49
7936	OPEN RED FX TIB/FIB INT FIX	1	$3,227.92	$3,227.92
8026	ARTHROSCOPY OF KNEE	1	$3,947.03	$3,947.03
8051	EXC OF INTERVERTEGRAL DISC	4	$37,102.89	$9,275.72
806	EXC OF SEMILUNAR CART KNEE	1	$3,360.42	$3,360.42
8145	OTH REP CRUCIATE LIGAMENTS	3	$40,524.40	$13,508.13
8182	REP REC DISLOCATION - SHOULDER	1	$6,877.38	$6,877.38
8201	EXPLOR TENDON SHEATH - HAND	1	$2,131.95	$2,131.95
8313	OTHER TENOTOMY	1	$3,833.80	$3,833.80
835	BURSECTOMY	1	$2,652.37	$2,652.37
8363	ROTATOR CUFF REPAIR	1	$4,610.20	$4,610.20
8385	OTH CHG IN MUSC/TENDON LENGTH	5	$34,685.51	$6,937.10
TOTAL		26	$208,399.72	$8,015.37

GENERAL SURGERY SERVICE

CODE	PROCEDURE	CASES	TOT COST	AVE COST
3129	OTH PERM TRACHEOSTOMY	1	$76,242.89	$76,242.89
3327	CLOSED ENDOSCOPIC BIOP - LUNG	1	$20,152.64	$20,152.64
3404	INS INTERCOSTAL CATH - DRAIN	1	$4,484.21	$4,484.21
3491	THORACENTESIS	1	$6,476.98	$6,476.98
370	PERICARDIOCENTESIS	1	$7,314.64	$7,314.64
3891	ARTERIAL CATHETERIZATION	1	$37,008.70	$37,008.70
3893	OTH VENOUS CATHETERIZATION	2	$11,169.76	$5,584.88
4131	BIOPSY OF BONE MARROW	1	$3,344.43	$3,344.43
4461	SUTURE - LACERATION OF STOMACH	1	$28,862.75	$28,862.75
4513	OTH ENDOSCOPY - SMALL INTEST	1	$2,795.03	$2,795.03
4523	COLONOSCOPY	1	$4,552.74	$4,552.74
4525	CLSD ENDO BIOP - LGE INTESTINE	2	$11,107.49	$5,553.75
4562	OTH PART RES - SMALL INTESTINE	1	$30,301.36	$30,301.36

CODE	PROCEDURE	CASES	TOT COST	AVE COST
4572	CECECTOMY	1	$19,336.71	$19,336.71
4576	SIGMOIDECTOMY	1	$30,491.79	$30,491.79
4652	CLOSURE STOMA LGE INTESTINE	1	$7,260.57	$7,260.57
470	APPENDECTOMY	3	$6,993.42	$2,331.14
4901	INCISION OF PERIANAL ABSCESS	1	$3,401.41	$3,401.41
5122	CHOLECYSTECTOMY	1	$14,016.27	$14,016.27
5123	LAPAROSCOPIC CHOLECYSTECTOMY	1	$14,408.85	$14,408.85
5312	BILAT REP IND INGUINAL HERNIA	2	$7,527.80	$3,763.90
540	INCISION ABDOMINAL WALL	1	$10,771.92	$10,771.92
5411	EXPLORATORY LAPAROSCOPY	2	$28,793.47	$14,396.74
5421	LAPAROSCOPY	4	$11,567.41	$2,891.85
545	LYSIS OF PERITONEAL ADHESIONS	2	$13,711.68	$6,855.84
8532	BILATERAL REDUCT MAMMOPLASTY	3	$28,272.68	$9,424.23
8541	UNILATERAL SIMPLE MASTECTOMY	1	$4,081.74	$4,081.74
8604	OTH INC W/DRAIN SKIN & TISSUE	2	$10,620.44	$5,310.22
8611	BIOPSY - SKIN & SUBCUT TISSUE	1	$5,987.32	$5,987.32
8622	EXC DEBRID WOUND INFECT/BURN	1	$12,713.55	$12,713.55
8626	LIGATION - DERMAL APPENDAGE	1	$568.48	$568.48
863	OTH EXC DEST LESION TISS SKIN	2	$9,486.39	$4,743.20
8659	SUTURE SKIN/SUBCU TISS OTHER	2	$5,156.79	$2,578.40
8669	OTH SKIN GRAFT OTH SITES	1	$13,363.70	$13,363.70
8689	OTH REP/RECONST SKIN/SUBCU TIS	1	$2,422.75	$2,422.75
TOTAL		50	$504,768.76	$10,095.38

ENT SERVICE

CODE	PROCEDURE	CASES	TOT COST	AVE COST
193	OTH OP OSSICULAR CHAIN	1	$3,722.21	$3,722.21
194	MYRINGOPLASTY	1	$3,867.57	$3,867.57
2001	MYRINGOTOMY W/INSERT OF TUBE	3	$5,085.89	$1,695.30
2049	OTH MASTOIDECTOMY	1	$5,153.19	$5,153.19
222	INTRANASAL ANTROTOMY	1	$2,280.20	$2,280.20
2239	OTH EXT MAXILLARY ANTROTOMY	1	$4,366.05	$4,366.05
282	TONSILLECTOMY W/O APPENDECTOMY	1	$2,114.15	$2,114.15
TOTAL		9	$26,589.26	$2,954.36

OPHTHALMOLOGY SERVICE

CODE	PROCEDURE	CASES	TOT COST	AVE COST
1449	OTH SCLERAL BUCKLING	1	$3,206.80	$3,206.80
TOTAL		1	$3,206.80	$3,206.80

UROLOGY SVC

CODE	PROCEDURE	CASES	TOT COST	AVE COST
5674	URETERONEOCYSTOSTOMY	1	$38,347.53	$38,347.53
602	TRANSURETHRAL PROSTATECTOMY	1	$7,877.45	$7,877.45
640	CIRCUMCISION	86	$44,661.06	$519.31
TOTAL		88	$90,886.04	$1,032.80

GYNECOLOGY SERVICE

CODE	PROCEDURE	CASES	TOT COST	AVE COST
654	UNILAT SALPINGO/OOPHORECTOMY	2	$15,740.72	$7,870.36
6561	REMOVAL BOTH OVARIES/TUBES	1	$4,687.10	$4,687.10
6591	ASPIRATION OF OVARY	1	$4,600.12	$4,600.12
6639	OTH BILAT DEST/OCC FALLOP TUBE	9	$18,811.95	$2,090.22
6662	SALPINGECTOMY W/REM - TUB PREG	1	$3,468.79	$3,468.79
672	CONIZATION OF CERVIX	2	$3,717.69	$1,858.85
675	REPAIR OF INTERNAL CERVICAL	2	$7,677.27	$3,838.64
684	TOTAL ABDOMINAL HYSTERECTOMY	12	$59,113.20	$4,926.10
6909	OTH DILATION/CURRET - UTERUS	1	$4,444.35	$4,444.35
TOTAL		31	$122,261.19	$3,943.91

OBSTETRIC SERVICE

CODE	PROCEDURE	CASES	TOT COST	AVE COST
721	LOW FORCEPS OP W/EPISIOTOMY	2	$2,454.26	$1,227.13
7271	VACUUM EXTRACTION W/EPISIOTOMY	38	$111,592.08	$2,936.63
7279	OTHER VACUUM EXTRACTION	24	$76,135.70	$3,172.32
734	MEDICAL INDUCTION OF LABOR	2	$4,050.30	$2,025.15

CODE	PROCEDURE	CASES	TOT COST	AVE COST
7359	OTH MANUALLY ASSISTED DELIVERY	49	$150,376.79	$3,068.91
736	EPISIOTOMY	36	$96,595.63	$2,683.21
740	CLASSICAL CESAREAN SECTION	1	$5,058.03	$5,058.03
741	LOW CERVICAL CESAREAN SECTION	109	$461,810.79	$4,236.80
751	DIAGNOSTIC AMNIOCENTESIS	2	$3,176.23	$1,588.12
7551	REP CUR OB LACERATION - CERVIX	1	$2,507.50	$2,507.50
7561	REP CUR OB LAC - BLAD/URETHRA	1	$2,508.75	$2,508.75
7569	REPAIR OTHER CUR OB LACERATION	11	$28,383.24	$2,580.29
TOTAL		276	$944,649.30	$3,422.64