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**ABSTRACT**

> Liver transplantation has become a therapeutic modality for treatment of end-stage liver disease. The number of liver transplants performed in America has seen a steady increase over the past 10 years as has the patient survival rates. The cost associated with liver transplantation is expensive by any standard. The U.S. Government is currently paying a large portion of the costs associated with liver transplants being performed on eligible Department of Defense (DOD) beneficiaries in civilian hospitals under the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS). What costs are included in the liver transplant cost equation depend largely on who or what organization is doing the analysis. The exact costs associated with the CHAMPUS funded liver transplants are very difficult to determine as only part of the total liver transplantations costs are identified under the liver transplantation code. The WHMC Commander believes WHMC can perform liver transplant operations at a lower cost to the government than what CHAMPUS pays. This cost comparison determined what medical care was included in the CHAMPUS cost figure for 34 liver transplant patients and determined the costs of identical services performed on 4 WHMC liver transplant patients. This retrospective study concluded that WHMC can perform liver procedures at a lower cost to the government than what the government pays for under CHAMPUS.

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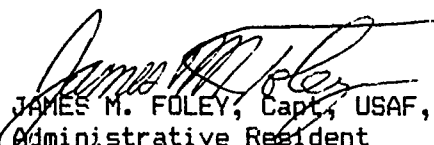
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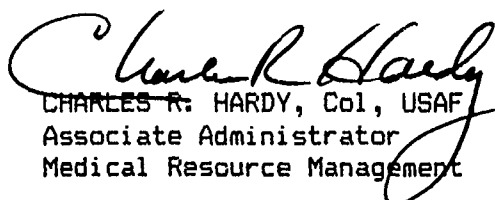
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I have reviewed and approved Capt Foley's GMP. I am forwarding his GMP for your review and approval.

  
CHARLES R. HARDY, Col, USAF, MSC  
Associate Administrator  
Medical Resource Management

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"REPRODUCED AT GOVERNMENT EXPENSE"

A STUDY TO COMPARE LIVER TRANSPLANTATION COSTS

A Graduate Management Project

Submitted to the Faculty of

Baylor University

In Partial Fulfillment of the

Requirements for the Degree

of

Master of Health Administration

by

Captain James M. Foley, MSC, USAF

July 1950

Running Head: LIVER TRANSPLANTATION COSTS

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## ABSTRACT

Liver transplantation has become a therapeutic modality for treatment of end-stage liver disease. The number of liver transplants performed in America has seen a steady increase over the past 10 years as has the patient survival rates. The cost associated with liver transplantation is expensive by any standard. The U.S. Government is currently paying a large portion of the costs associated with liver transplants being performed on eligible Department of Defense (DOD) beneficiaries in civilian hospitals under the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS). What costs are included in the liver transplant cost equation depend largely on who or what organization is doing the analysis. The exact costs associated with the CHAMPUS funded liver transplants are very difficult to determine as only part of the total liver transplantations costs are identified under the liver transplantation code. The WHMC Commander believes WHMC can perform liver transplant operations at a lower cost to the government than what CHAMPUS pays. This cost comparison determined what medical care was included in the CHAMPUS cost figure for 34 liver transplant patients and determined the costs of

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identical services performed on 4 WHMC liver transplant patients. This retrospective study concluded that WHMC can perform liver procedures at a lower cost to the government than what the government pays for under CHAMPUS.

## CHAPTER I

## INTRODUCTION

Conditions Which Prompted the Study

The medical community has made tremendous advancements, especially in the last 100 years, that have prolonged and improved the quality of life. Many of these great medical advancements are relatively new and, by economic standards, expensive (Evans, 1989). The liver transplant is one such procedure. This procedure is a "last ditch" effort to save the lives of patients with terminal or end-stage liver disease. Liver transplants are now covered by many health insurance plans including Medicaid and the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS).

Currently there is no ongoing liver transplant program/service provided at any Department of Defense (DOD) medical facility although some liver transplants have been performed in United States Air Force (USAF) and U.S. Army hospitals. The primary prohibiting factors why this service has not been provided in military hospitals is the high cost and high usage of resources involved with a liver transplant procedure.

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Nonetheless, the commanding officer of the Wilford Hall USAF Medical Center (WHMC) felt it was clearly appropriate to begin offering this service to authorized beneficiaries. A proposal to open a liver transplant service was submitted to the USAF Surgeon General (USAF/SG) for approval under the Congressional Efficiency Add Initiative program. The Congressional Efficiency Add Initiative program, basically, is an attempt to recapture CHAMPUS dollars by providing medical services at cost that is less than the reimbursable amount allowed by CHAMPUS. The USAF/SG tentatively disapproved the request based on cost data provided by WHMC which implied it was more cost effective to pay for liver transplants under CHAMPUS than if WHMC opened a liver transplant service. After further review and analysis by WHMC staff, it appeared the CHAMPUS cost data provided to the USAF/SG was incomplete and not truly reflective of actual costs in providing liver transplants. It was felt by many at WHMC that a well detailed cost analysis project/study would unquestionably show that performing liver transplants at WHMC would be less expensive than what it costs the government under CHAMPUS.

Background on WHMC and the Liver Transplantation Service

WHMC is the largest medical treatment facility in the USAF in terms of size (beds and square footage), patient census, outpatient visits, personnel assigned, and just about every other category. The main facility was designed and built as a 1009 bed medical center, but presently operates at just over 800 beds. The medical center employs over 4,100 personnel (military and civilian) in providing its beneficiaries medical care in over 135 medical specialty areas. The mission at WHMC is to: "...ensure maximum wartime readiness by providing both a worldwide tertiary referral center and operating a comprehensive community health care system for active duty and other beneficiaries. In addition, it is responsible for conducting war readiness training, health care education and clinical investigation." (WHMC Qtr Sum, 1989).

The entire medical center complex consists of 42 buildings totaling approximately 1.6 million square feet. The patient workload at this large medical center is, to say the least, awesome. For instance, in 1989, WHMC averaged, each month, 75,322 outpatient visits, 1,997 patients admissions, 615,398 laboratory

tests performed, 172,879 prescriptions filled, 43,567 radiology procedures, and 1,151 surgical procedures. The Operations and Maintenance budget for FY89, not including the pay and benefits of the active duty personnel assigned to the medical center, was \$85,515,000. It costs \$103,535 each day just for medical supplies.

#### Statement of the Management Question

The problem of this study is to determine if WHMC can perform liver transplants at a lower cost to the government than what it costs the government to pay for these procedures performed in civilian hospitals under CHAMPUS.

#### Review of the Literature

The first human liver transplant was performed by Dr. Thomas E. Starzl at the University of Colorado on March 1, 1963 (Plevak Southorn, Narr, & Peters, 1989; Starzl et al., 1982). Unfortunately the patient died as did the next six liver transplant patients (Starzl et al., 1982). The first extended patient survival was finally achieved on the 8th patient who lived for more than a year following a liver transplant on July 23, 1967 (Starzl et al., 1982).

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Many advancements were made with liver transplantations over the years that had a positive impact on patient survival rates. There was a notable improvement in patient survival rates from 1967 until 1980, but short term mortality rates (1-5 years) continued to remain high (Starzl et al, 1985). The most significant development affecting patient survival rates, however, was the introduction of the drug cyclosporine in 1980 (Evans & Manninen, 1988; Starzl et al., 1982; Starzl, Demetris, & Van Thiel, 1989). Starzl et al (1989) note the importance of cyclosporine when they state: "The development of cyclosporine has been the single most important factor in making liver transplantation practical" (p. 1094). The number of liver transplant operations, however, continued to increase slowly over the years although the patient survival rate showed tremendous improvements (Evans, 1984; Iwatsuki et al, 1988; Starzl et al, 1982).

Two main reasons for the slow advancement in the number of liver transplant operations appear to be the high cost of the procedure and reluctance of many insurance companies to provide coverage for this procedure. The cost of a liver transplantation was

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expensive and liver transplantation was still considered an experimental procedure until the mid-1980s (Luebs, 1985). Therefore, many insurance companies, including the federal programs (Medicare, Medicaid, and CHAMPUS) used the "experimental procedure" title as a way to disallow patient claims (Luebs, 1985; Sebesin, Williams, & Evans, 1988). Luebs (1985) notes:

With the good news of new life, there was the fiscal reality. Each patient with a liver transplant had a hospital bill amounting to approximately \$100,000....many third party health insurance payors were looking for a way to avoid payment of these large bills, and they had no trouble finding the loophole. Since the procedure was still considered experimental, third party payors such as the federal Medicare program, many state Medicaid programs, commercial insurance companies, and some Blue Cross plans, used that loophole to avoid payment. (p. 402)

The tremendous cost of a liver transplant was one of the main reasons for the slow increase in this procedure as many patients simply could not afford to pay and insurance companies did not cover the procedure

(Luebs, 1985; Sebesin et al, 1988). The preoperative, operative, and postoperative (inpatient) care for a liver transplant patient is one of the most costly medical procedures and the most expensive solid organ transplant procedure (Evans, 1985; Fackelmann, 1985; Luebs, 1985). The expensive costs and inability of citizens to privately foot the bill for liver transplant operations has, no doubt, contributed in keeping the number of liver transplantations to a level much lower than the patient demand/need (Evans, 1989). Sebesin et al (1988) note:

Hepatic transplantation, although often spectacularly successful, is a costly form of therapy for a number of chronic, debilitating, and fatal hepatic diseases. The thousands of individuals who could benefit from the procedure, the cost involved, and the limited reimbursement make economic considerations a legitimate topic of societal debate (p. 334).

In 1983 the National Institutes of Health (NIH) Consensus Conference on Liver Transplantation determined that liver transplantation was a therapeutic modality for terminal liver disease (Luebs, 1985). Following the

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NIH Consensus Conference, liver transplantation was no longer considered an experimental procedure by the U.S. Government (Luebs, 1985; Sebesin et al, 1988). This action allowed reimbursement for liver transplantations under the Medicare and Medicaid programs thus making this procedure accessible to millions of people (Sebesin et al, 1988). More and more civilian health insurance companies were also covering this procedure for their beneficiaries. Not surprisingly, the number of liver transplantations started to climb steadily as did the number of liver transplant centers (Evans, 1984).

The literature also indicates that the costs associated with an individual liver transplantation procedure has risen sharply over the years at one medical facility, yet another medical facility showed a decrease in costs (Luebs, 1985; Williams, Vera, & Evans, 1987). Overall, the total average first year costs for a liver transplant patient was estimated to be \$130,000 (range \$68,000 - \$238,000) in 1985 (Evans, 1986). The cost varies significantly from facility to facility and patient to patient (Chu, Cotter, & Hamilton, 1988; Evans, 1985; Grygar, 1990; HIAA, 1989; Luebs, 1985; Rauch, 1989). Perhaps this is because many factors can

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be entered into or omitted from the cost equation. For instance, some sources only estimated the operative (including professional) and inpatient costs associated with liver transplants (Grygar, 1990; Rauch, 1989). Another source took into consideration the preoperative, operative, and postoperative (including first year posttransplant) costs (Evans, 1985). It appears less creditable to report that it costs a certain amount of money for a procedure if the cost data is incomplete and/or the factors impacting the costs are not clearly defined. The most accepted cost analysis data tended to include all first year costs directly or indirectly related to the liver transplant procedure (Evans, 1985; HIAA, 1989).

The literature also indicated that costs vary significantly not only from facility to facility but from patient to patient (Evans, 1984; Chu et al, 1988; Williams et al, 1987). The preoperative condition of patients was found to have a significant impact on patient costs (Williams et al., 1987). Williams et al (1987) identify the various categories of preoperative liver transplant patients as follows:

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**Grade I:** Stable, awaiting transplantation at home.

**Grade II:** Unstable, requiring in-patient hospital care for liver disease or related complications.

**Grade III:** Requiring intensive care for management of complications of liver failure; hepatorenal syndrome; constantly encephalopathic; having two or more operations in liver hilum (p. 1117).

Grade I patients, on average, required the least amount of inpatient care and cost the least to treat, with the Grade III patients requiring the most inpatient care and costing the most to treat with the Grade II patients in the middle (Williams et al, 1987).

There are many factors to consider when determining the cost of a liver transplantation procedure. The first step is, however, to have a clear understanding of the difference between charges and costs. Evans (1985) explains these differences clearly when he writes: "Costs reflect the actual resources used to produce a good or service, while charges are what a provider bills a payer for having provided the good or service. Costs

are always lower than charges" (p. 130). To date, the cost data on liver transplantation has been somewhat fragmented and incomplete (Chu et al., 1988; Evans, 1984). The cost data available in the literature does provide a foundation, however crude, to determine what costs should be considered in analyzing individual facility costs for liver transplantation.

Most medical facilities break out costs into different categories. The Children's Hospital of Pittsburgh, in 1985, began giving families an estimate of costs for the liver transplantation procedure (Luebs, 1985). Their costs were broken down into five general categories: Hospital, Surgery, Anesthesia, Clinic Outpatient, and Postoperative, Nonsurgical Pediatric Care (Luebs, 1985). Another article determined costs for liver transplantation by dividing the procedure into three components, preoperative evaluation, hospitalization, and first year follow-up (Williams et al., 1987). Evans (1987) notes: "In assessing the cost of a transplant procedure one must consider the transplant as having several distinct cost components: pretransplant, evaluation and screening, candidacy, transplant, and posttransplant costs" (p. 68).

The literature clearly indicates that the hospital costs in treating liver transplant patients are much higher than the costs associated with treating most patients (Chu et al., 1988; Plevak et al, 1989). The direct nursing care is very intensive and demanding, especially in the intensive care unit (Plevak et al, 1989). In addition, liver transplant patients require an extraordinary amount of ancillary procedures (Chu et al., 1988). Organ procurement is also very expensive (Chu et al., 1988). Another factor is the expense involved in the operation itself. The liver transplantation operating team is a very large team, by normal standards, and the operation itself lasts a considerable amount of time (Luebs, 1985; Van Thiel et al, 1982).

The literature provides an array of methods to use when doing a cost analysis, also called cost finding (Berman, Weeks, & Kukla, 1986; Herkimer, 1986). Berman et al (1986) list the four most commonly used methods of cost analysis as:

1. Direct apportionment
2. The step-down method
3. Double apportionment

4. Algebraic or multiple apportionment (p. 120)

Each method of cost analysis has advantages and disadvantages. Direct apportionment is the simplest and least sophisticated method (Berman et al., 1986; Herkimer, 1986). Direct apportionment is not, however, accepted by most third party payors or some of the experts in the field of hospital financial management because its means of allocating costs may not be in relation to the amount of resources used (Berman et al., 1986).

The step-down method is a more advanced way to determine costs than is direct apportionment. The step-down method allows the costs of nonrevenue producing departments to be allocated to other nonrevenue producing departments and revenue producing departments (Berman et al., 1986; Herkimer, 1986). The shortfall in this method is that once a department has allocated all of its costs, it is considered closed. Once closed, a department cannot receive any costs from other nonrevenue producing departments (Berman et al., 1986; Herkimer, 1986). Because of this, it is important to determine the sequence in which to close the nonrevenue-producing departments (Herkimer, 1986).

The third method is the double apportionment method. Double apportionment allows for full interdepartmental costs to be allocated between the nonrevenue departments before final step-down to the revenue generating departments (Berman et al., 1986). This double apportionment method was used to correct the shortfall in the step-down method (Berman et al, 1986). This method is, however, more time consuming and cumbersome than the direct apportionment and step-down methods.

The fourth method is the multiple apportionment method. This method is the most complex method and, although it can be accomplished manually, is probably better suited for automation because of the many distribution equations. Algebraic multiple distributions are made between the various nonrevenue generating departments before being allocated to the revenue generating departments (Berman et al., 1986; Herkimer, 1986). These multiple transactions are an attempt to determine the exact costs of the particular service (Berman et al., 1986).

There are many methods available to use in performing a cost analysis. Which one to use must be

determined by the facility and situation. There appears to be little difference, in percentage, between the most sophisticated methods (Berman et al., 1986). In determining the most accurate method of cost analysis, (Berman et al., 1986) concluded: "A study of three hospitals showed a 1% or 2% variation by department between the algebraic method (multiple apportionment) and the step-down, with double apportionment coming somewhere between" (p. 137-138). Therefore, from a practical standpoint, it is recommended to use either the double apportionment or the step-down methods (Berman et al., 1986).

The cost analysis method used by the DOD in all its medical facilities is the Medical Expense and Performance Reporting System (MEPRS). The MEPRS uses a step-down methodology to determine the costs of providing various medical services (DOD 6010.13M, 1986). Costs of various services (i.e., administrative support, linen, housekeeping, ancillary services, providers' time, etc.) are distributed by an appropriate cost equation to the final units of measurement, called subaccounts. Administrative costs, for example, are distributed to all sections of the medical facility

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according to square footage. Provider costs, on the other hand, are distributed to various sections based on the time spent in that section. The MEPRS steps-down costs for a particular service/function only once and then closes out that service/account. The final product provides an average cost for various services, as broken down by a the unit of measurement known as a subaccount or, by civilian terms, a revenue producing department. For instance, subaccounts used in the MEPRS are: (1) average cost per inpatient day in the intensive care unit and; (2) average cost per surgical procedure (DOD 6010.13M, 1986). The shortfall with the MEPRS is that it does not take into consideration the intensity of care for the various individual patient conditions/diagnosis. Liver transplant patients, for instance, require a high intensity of care that uses a tremendous amount of resources as compared with patients suffering from other illnesses (Chu et al., 1988; Plevak et al, 1989).

OCHAMPUS provided the USAF/SG with statistical information that placed the average government cost for a liver transplant patient at \$94,100 (HQ USAF/SG, 1989). This estimate was a combination of hospital

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costs at \$87,000 and the professional fee costs at \$7,100 per transplant. The author was provided a 15 month summary of information (1 Oct 87 - 31 Dec 88) from CHAMPUS that showed hospital costs of \$89,794 and professional fee costs of \$7,093 for a total of \$96,887 per patient (Barnett, 1989). This study will use the \$96,887 cost figure from CHAMPUS since this cost figure was forwarded to the author on a computer generated report from the Chief of the Statistics Branch at OCHAMPUS. The CHAMPUS information, however, did not account for any costs other than the cost associated with the surgical procedure and the postoperative inpatient care (K. Zimmerman, personal communication, 9 July 1990). Cost excluded from the CHAMPUS information were preoperative costs, readmission costs (if any), organ procurement costs and first year costs.

### Purpose of the Study

The purpose of this study is to determine the costs involved in performing liver transplants at WHMC and compare this figure with the reimbursable amount paid for by the government under CHAMPUS. The objectives are to: (1) determine the average total cost per liver transplant case (patient) paid for by CHAMPUS; (2)

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determine what medical services are included in the CHAMPUS cost figure; (3) determine the average cost per liver transplant case (patient) at WHMC including in the cost equation only those medical services similar to the medical services in the CHAMPUS cost figure; (4) compare the CHAMPUS cost against the WHMC cost; (5) report the results of the study, through appropriate channels, to the WHMC Commander.

## CHAPTER II

### METHODS AND PROCEDURES

#### Subjects

The subjects measured in this study were the first four liver transplant patients at WHMC. The sample is considered representative of the population requiring this service. The sample selected is consistent with the pre-study criteria set up in the GMP Proposal and there existed no biases in the sample selection. The four transplant procedures took place between May, 1989 and May, 1990. The ethical rights of the subjects have been considered and are not applicable for the purposes of this study. There existed no harm to the subjects related to this cost gathering study and no names or other personal data are used in the study.

#### Study Design

This study will perform a retrospective cost analysis of the first four liver transplants performed at WHMC during 1989 and 1990. Each of these four liver transplants cases will be individually analyzed and this data documented. The cost analysis method to be used is a combination of a step-down analysis and direct allocation analysis. This method was chosen because it

was determined to be the most accurate and appropriate. WHMC uses the DOD implemented MEPRS to provide cost data for various patient care and support services. The MEPRS uses a step-down process to determine final costs for general medical services. The final number (cost) is overall direct and indirect costs divided by the number of patients or units. For instance, every patient seen in the emergency room, regardless of the medical problem or intensity of medical care provided, is considered to cost the same. Additionally, each inpatient service determines costs based on a bed day average for all patients receiving care in that specialty area. For instance, all patients being treated as an inpatient internal medicine patient are given the same weighted value in computing MEPRS costs although it is well known that intensity levels can be considerably different.

The MEPRS does, however, possess flaws when trying to determine specific costs associated with a particular patient or service. These flaws will be identified during this study and alternative methods to determine costs will be substituted as necessary. On the positive side, the MEPRS does have some strong points which will

be utilized extensively in this study. One of these strong points is the step-down distribution of certain indirect costs (administrative costs, facility maintenance costs, linen costs, etc.) to the various inpatient wards which are further stepped-down to individual patient bed days.

The costs associated with these liver transplants are to be allocated to eight major categories: Surgery, Pharmacy, Laboratory, Blood Bank, Radiology, Surgical ICU, Other Bed Days, and Organ Procurement. These categories selected were based on the literature, interviews with WHMC personnel, and the author's experience. Separating various costs into these eight categories allows for a clear picture of the ingredients that contribute to the overall cost.

The information on costs for the patients receiving liver transplants under CHAMPUS was provided by the HQ USAF/SG and OCHAMPUS. The CHAMPUS information appears limited because it only includes the costs involved with the surgical procedure(s), initial inpatient care, and professional costs. No information on pretransplant costs, subsequent readmission costs (if any), organ procurement or first year costs was available. Further

inquiries will be made to try and acquire any additional cost information on the CHAMPUS patients. A lack of additional CHAMPUS cost information will not, however, hinder this study.

#### Data Collection

The method used to determine costs for each category are as follows:

Surgery: The surgery costs will be derived from the MEPRS. The MEPRS step-down allocates personnel, supplies and equipment, and various overhead costs to the surgery suite and anesthesiology services. Prior analysis of these MEPRS accounts revealed a very accurate reporting system. Therefore, no alterations to the methodology were required for these areas. The unit of measure for surgery costs are minutes in surgery. This unit of measure was chosen because it lent the most accurate means to determine costs.

The overall costs for surgery suite and anesthesiology are divided by the total number of surgical and anesthesiology minutes to arrive at a cost per minute in the areas of supplies, labor and equipment and support. These figures are then multiplied by the number of minutes for surgery and anesthesiology as

documented in the liver transplant patients' medical records. The total numbers are then combined to arrive at the cost for the liver transplant operation.

Pharmacy: The pharmacy costs for this study will be determined on an individual unit basis. Each patient's pharmacy issue history will be extracted from the pharmacy computer and/or patient's medical record and all drugs given to the patients will be recorded. The unit/dose supply cost will be obtained for each drug along with the estimated labor, equipment, and support costs. The MEPRS provides a method to step-down pharmacy costs, but this method was not selected because it would not come close to providing accurate data for a liver transplant procedure. The MEPRS takes the total dollar figure of pharmacy costs (including stepped-down support costs) for a particular medical service and divides that number by the total number of prescriptions filled for that service to arrive at the average cost per prescription.

The liver transplant patient uses an extraordinary amount of drug items when compared to other inpatients. Many of these drugs are also very expensive when compared with the average drug item cost. The MEPRS

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procedure to allocate pharmacy costs, if used, would severely understate the true pharmacy costs in this instance.

Laboratory: The laboratory costs for this study are also determined on an individual basis. The MEPRS provides a method to step-down laboratory costs for a particular service but, like the pharmacy, the liver transplant patient requires an inordinate number of laboratory tests and the data would be skewed if the MEPRS information was used. Therefore, the laboratory tests performed on each patient will be extracted from the laboratory computer and/or patients' record. The laboratory costs are based on weighted units as assigned by the College of American Pathologists (CAP). Supply costs for the tests (reagents, etc.) are available from laboratory records using the Medical Supply Issue/Turn-In Summary document. Labor and support costs are derived by taking overall costs and multiplying them by the various CAP weighted unit.

Blood Banks: The blood bank costs will be computed similar to the way the laboratory costs are to be computed. Blood bank products are normally stepped-down during MEPRS but, because of the extraordinary amount of

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blood products used by liver transplant patients, these costs will be calculated separately to ensure accurate data. Blood bank information will be obtained from the laboratory computer system and the patients' medical records. Supply costs will be determined by the officer in charge (OIC) of the blood bank using various procurement documents as the blood products do not have CAP weighted values. The labor and support costs will be determined utilizing the CAP weighted values.

Radiology: The radiology costs are arrived at by taking the weighted procedure value for each type of exam and multiplying it by the MEPRS cost per weighted procedure. Radiology costs are somewhat easier to arrive at versus pharmacy and laboratory costs because the cost of radiology supplies (radiology film, developing solution, etc.), remains relatively constant from one procedure to another whereas drug item and reagent costs differ significantly.

Surgical ICU: The basic surgical ICU costs came from the MEPRS Detail Unit Cost Report. It is necessary to identify and subtract the ancillary service costs from the overall MEPRS Surgical ICU costs since the ancillary costs are calculated individually for each

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patient. The ancillary services (i.e., pharmacy, radiology, laboratory and blood bank) allocate a portion of their costs to the Surgical ICU in the MEPRS step-down procedures. Additionally, the ancillary services also distribute some costs to several subaccounts that later allocate a percentage of their costs to the Surgical ICU during the step-down process. Therefore, the step-down ancillary costs were identified and eliminated from the overall MEPRS Detail Unit Cost Report figure for the Surgical ICU.

Another factor that was considered in determining Surgical ICU costs was the intensity of patient care given the liver transplant patients. The liver transplant patient requires much more intensive nursing care than the "routine" Surgical ICU patient. There was also noted to be a greater usage of medical supplies and medical equipment expended on the liver transplant patients. Based on this information, it was determined that the intensity of care given these liver transplant patients is approximately double that given to the "routine" Surgical ICU patients (M. Schell, personal conversation, 31 May 1990).

Analyzing the information presented above, the cost

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for each Surgical ICU bed day is determined by taking the overall Surgical ICU costs, minus ancillary services, and dividing that number by the total number of bed days. This equation gives the average cost per Surgical ICU patient per bed day. This number is then multiplied by the total number of Surgical ICU bed days as recorded in the patients' medical records. This number is then doubled because the intensity of care given the liver transplant patients is considered to be double that of the "routine" Surgical ICU patients.

Other Bed Days: This category identifies all other inpatient bed day costs other than Surgical ICU days. WHMC has a transplant ward where all transplant patients (i.e., kidney, liver, pancreas, etc.) receive inpatient care. This ward is somewhat similar to a general medical ward in staffing and treatment regimen. The liver transplant patients are usually transferred to this ward once they are stable enough to leave the Surgical ICU. As with the Surgical ICU ward costs, all inpatient wards are allocated a portion of ancillary service costs directly and indirectly during the MEPRS step-down process. These step-down ancillary costs will be identified and removed from the overall inpatient

ward costs prior to development of the cost equation for this study. The equation used to determine other inpatient bed days is developed by taking the overall transplant ward costs, minus ancillary service costs, and dividing that number by the overall patient bed days. This figure is then multiplied by the number of liver transplant bed days for each patient.

Organ Procurement: This category is used to identify all costs associated with procurement of the donor liver. The costs associated with organ procurement can vary significantly from patient to patient. This category will identify, if applicable, the cost of the organ, the professional costs to harvest the organ, and the transportation costs to retrieve the organ.

Reliability and Validity

The reliability of the data extraction and collection method is very sound and can be duplicated in future studies. The reliability is based on the knowledge that the information gathered (on the four patients treated at WHMC) in this study can be replicated by another person using the same design and data gathering methods. Most of the workload

information in this study will be gathered from two separate sources: the patients' inpatient medical records and the WHMC computer system (including MEPRS). Minor discrepancies, if any, will be documented, researched, and corrected to assure accuracy.

The information provided by CHAMPUS, however, can not be considered as reliable as the WHMC information because it is summarized data without much detail about what is included in the total cost. This statement is based on the unavailability of source documents (itemized patient billing statements) to help the author define and accurately determine the various inputs to the data that comprised the CHAMPUS costs. Further documentation might be required from CHAMPUS in order to authenticate their cost figures.

The validity of the instrument used to compute the cost per liver transplant at WHMC is a combination of methods widely used and accepted as appropriate by many of the experts in the financial management arena as mentioned by Berman et al (1986) and Herkimer (1986). The methods used were promoted by the American Hospital Association (Herkimer, 1986) and/or Broyles & Rosko (1986) and Tselepis (1989). The methods selected for

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use in this study are a combination of cost analysis methods that are individually adapted to each of the eight major categories that compose the total cost of the liver transplant procedure. The author individually adapted various methods for each section to offset foreseen shortfalls in the use of only one system. In addition, the MEPRS data base was noted to have many shortcomings when trying to determine the total costs involved with a particular disease or diagnosis as the MEPRS does not take into account the intensity of care required. The various methods selected by the author take into account the high intensity of care required to treat the liver transplant patients as noted by Chu et al (1988) and Plevak et al (1989) .

The validity of the CHAMPUS data is taken at face value because the it could not be completely determined as to the specific data that comprized the CHAMPUS costs. The costs appears to be a summary of the professional costs, organ procurement costs, operative costs, and postoperative costs up until discharge for the patients receiving liver transplants over an 15 month reporting period. There was no availability of data to determine the average, if any, of preoperative

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care or whether or not there were any subsequent readmissions of any of the CHAMPUS patients for follow-up care. Numerous inquiries were made to OCHAMPUS in an attempt to obtain individual patient information and/or retrieve the patient billings statements. Unfortunately, these attempts proved unsuccessful.

### CHAPTER III

#### RESULTS

The overall results of this study indicate that WHMC can provide liver transplant operations at a cost that is less than the government's share paid under CHAMPUS. The average cost of the four liver transplants performed at WHMC between May 1989 and April 1990 was \$79,656 as compared to the average cost of \$96,887 for the 34 liver transplants performed under CHAMPUS during a 15 month period ending 31 Dec 1988. The average cost per bed day for the WHMC patients was \$1,991 as compared to the CHAMPUS average cost per bed day of \$3,086. The average length of stay (ALOS) was 31.4 days for the CHAMPUS patients and 40.0 days for the WHMC patients. These figures are comparatively shown below:

|                  | <u>CHAMPUS</u> | <u>WHMC</u> |
|------------------|----------------|-------------|
| NUMBER OF CASES  | 34             | 4           |
| COST PER CASE    | \$96,887       | \$79,656    |
| COST PER BED DAY | \$3,086        | \$1,991     |
| ALOS             | 31.4           | 40.0        |

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The summarized cost data provided above is a cost comparison of liver transplantation cases provided under CHAMPUS and by WHMC. The CHAMPUS data summarizes 34 liver transplantation patients who were treated in any one of a number of CHAMPUS-approved civilian liver transplant centers located throughout the United States. The CHAMPUS data only provided overall hospital costs (including ancillary services) and professional costs for the initial admission episode for the liver transplantation procedure. No pretransplant admission or posttransplant readmission data was available. Also omitted from the CHAMPUS data were the costs associated with procuring the donor organs.

The CHAMPUS information also did not provide any information on the category of patient treated (i.e., retired military, dependent of retired military, or dependent of active duty military) which has a bearing on the actual cost of the procedure. This is due to the fact that the CHAMPUS program uses a different deductible rate for different categories of patients. The CHAMPUS costs reflected are the actual reimbursement amounts (allowable charges) paid for by CHAMPUS and not the actual overall cost per liver transplant.

The WHMC cost data, unlike CHAMPUS, is an actual cost figure of the resource utilization that goes into performing a liver transplant operation. The WHMC data used to calculate costs was tailored to match the data that was used to compute the CHAMPUS cost figures. The information on the WHMC patients did not include any services that were not similarly included for the CHAMPUS patients. The WHMC patient information was easily assessable and extremely complete. The cost information was organized in such a manner as to provide a sound, realistic picture of actual costs for each of the four WHMC patients.

The methodology used to determine the actual costs for each of the WHMC patients was customized for this study. Patient costs were separated into one of eight major cost finding categories. This action was taken because the literature identified the high intensity of care and resource utilization required by a liver transplant patient. The author developed spreadsheets for many of these categories. The complete summary of the cost information for the WHMC patients is located at appendices 4-7. Appendix 3 is a summary of each of the eight major cost categories for each of the patients.

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The cost information for the four WHMC patients broken out by category is as follows:

|                          | <u>AVERAGE COST</u> |
|--------------------------|---------------------|
| SURGICAL PROCEDURE       | \$9,676             |
| PHARMACY                 | \$15,257            |
| LABORATORY               | \$4,668             |
| BLOOD BANK               | \$5,568             |
| RADIOLOGY                | \$2,238             |
| SURGICAL ICU             | \$37,385            |
| OTHER BED DAYS           | \$4,864             |
| <u>ORGAN PROCUREMENT</u> | <u>\$12,544*</u>    |
| TOTAL                    | \$92,200            |

\* This figure is not included in the total cost figure of \$79,656 used as a comparison against the CHAMPUS cost figure.

The results of this study are considered very accurate and complete from the WHMC standpoint and coincide with the limited information provided by CHAMPUS. The information provided by CHAMPUS is somewhat vague and not as detailed as the researcher would like, but does provide a cost figure that is comparable. This study is considered sound in that the

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cost data from WHMC was comparable to the data reported  
by CHAMPUS.

## CHAPTER IV

### DISCUSSION

The actual cost involved in performing liver transplant operations varies significantly from medical facility to medical facility and patient to patient. The literature review provided many cost estimates with a wide range of overall costs. How much a liver transplant actually costs is determined in large part by what information is included in the cost analysis study.

The researcher acknowledges and recognizes that there is a difference between the terms "costs" and "charges". This difference was pointed out in the literature review by Evans (1985). WHMC is a United States government facility and is budgeted by the government on a cost basis. In other words, WHMC only receives the amount of money necessary to cover actual costs. CHAMPUS, on the other hand, reimburses civilian physicians and hospitals on billed charges which are more than actual costs. Even the not for profit medical facilities must charge more than actual costs in order to provide revenue for expansion and capital acquisitions. The "bottom line" of this study was, however, to determine if it was less expensive to the

government to perform liver transplant operations at WHMC or under CHAMPUS. Therefore, the definitions of costs and charges are irrelevant to this study as costs and charges can be compared when trying to determine the total expenditures per liver transplant procedure paid for by the government.

The most important, and most difficult, aspect of this study was determining what patient care services were to be included into the WHMC cost equation. Specifically, the WHMC cost information had to coincide with the CHAMPUS information in order to provide a realistic cost analysis. As mentioned earlier, the CHAMPUS information was hard to acquire, extremely limited, and rather vague. This vagueness was expected as the literature indicated that cost information on liver transplantation was somewhat fragmented and incomplete (Chu et al, 1988; Evans, 1984). The CHAMPUS information only accounted for a portion of the total costs of liver transplantation. For this reason, the WHMC cost analysis only included costs similar to those reported by CHAMPUS thus providing a sound cost comparison study.

The findings of this study provide a detailed

analysis of the cost in performing liver transplants at WHMC. The comparison between the WHMC costs and the CHAMPUS costs, as reported, clearly indicate that WHMC can perform liver transplant operations at a lower cost to the government than CHAMPUS. The study summarizes costs into the two major categories (cost per liver transplant and cost per bed day) to further strengthen the cost comparison.

The cost per procedure dollar amounts can be misleading in a cost comparison study of liver transplants because there are many variables that can impact costs. Some of these variables are age, the type of liver disease, and the overall medical condition of the patient. Liver transplant patients categorized as Grade I patients, on average, will cost less to treat than Grade III patients as noted by Williams et al (1987). This information was available for the WHMC patients but was unavailable for the CHAMPUS patients. Therefore, costs for WHMC patients and CHAMPUS patients were also compared using a well accepted unit of measure for patient costs, cost per bed day. The total costs were combined to determine the average cost per bed day figure.

An analysis of the WHMC cost findings was consistent with the literature. The liver transplant is an expensive medical procedure in every aspect which was pointed out by Chu et al (1988) and Plevak et al (1989). Especially expensive is the cost associated with the ancillary service areas. The average WHMC liver transplant patient required an excessive amount of ancillary services when compared to other surgical or medicine patients which was consistent with the findings of Chu et al (1988). In addition, the liver transplant patient remained in the hospital, on the average, more than four times that of the "normal" WHMC patient. The "normal" WHMC patient is the sum average of all patients at WHMC without regards to sex, age, type of medical care required, or any other factors. The ALOS for the "normal" WHMC patient was approximately 9.2 days as compared to 40.0 days for the liver transplant patient.

The cost of the operations for the WHMC patients also depended in large part on the preoperative condition of the patients. Two of the WHMC patients only had one operative procedure during their inpatient stay while the other two patients required multiple

operations in addition to the liver transplant operation. This was consistent with the literature and could be expected as the general health of the patient is a factor in the intensity of medical care and cost of a liver transplant (Williams et al, 1987). The liver transplant operations were very lengthy procedures but were within the expected time limits identified in the literature (Luebs, 1985; Van Thiel et al, 1982). The CHAMPUS information, once again, did not specify the number of operations, other than the liver transplant operations, its patients underwent.

WHMC spent an average of \$12,544 for procurement of the donor organs. This figure was more costlier than the literature suggested (Chu et al, 1988). CHAMPUS did not provide any information on the average cost of the donor organs and it was not included in their overall cost information provided to the researcher. Therefore, this cost was eventually omitted from the overall WHMC cost before it was compared against the CHAMPUS cost.

The average length of stay for the CHAMPUS patients was 31.4 days as compared to 40.1 days for the WHMC patients. The CHAMPUS data only included the inpatient time for the patients' operation and follow-up care. No

extensive pretransplant inpatient care or subsequent readmission data was available. The WHMC data did initially include pretransplant inpatient care for the four patients. This information was excluded, however, from the final cost analysis used for comparison with the CHAMPUS cost data. The ALOS for the CHAMPUS patients (31.4 days) was considered low based on the literature review while the ALOS for the WHMC patients (40.0) was within the expected range of 38.0 to 50.4 days as noted in the literature (Grygar, 1990; Williams et al, 1987).

The cost per bed day for the CHAMPUS patients was \$3,086 whereas the cost for the WHMC patients was \$1,991 per bed day. CHAMPUS cost per bed day was much higher than the costs per bed day identified in the literature. The WHMC cost per bed day, on the other hand, was much lower than the costs identified in the literature (Grygar, 1990; Williams et al, 1987). The CHAMPUS cost per bed day was expected to be a little higher than WHMC cost because the highest percentage of costs involved with the WHMC liver transplant patients was associated with the surgical procedure and postoperative recovery in the Surgical ICU. Cost per

bed day tends to decrease over time as the patient becomes physically better and requires less and less intensive nursing care. Ironically, two of the WHMC patients required extensive care in the Surgical ICU following the transplant surgery (52 days and 35 days) which brought the average Surgical ICU time for all WHMC patients to 27.5 days. However, WHMC was still able provide care at a much lower cost per bed day than CHAMPUS. No information was available from CHAMPUS that provided the average number of days spent by CHAMPUS patients in the Surgical ICU.

Ancillary services costs for the WHMC patients (pharmacy, laboratory, radiology, and blood bank) were expensive when compared against the average costs for all WHMC inpatients. This was, once again, expected since high ancillary service costs were identified with liver transplantation in the literature (Chu et al, 1988). The average WHMC ancillary costs for liver transplant patients were, however, much lower than the average of patients treated in civilian hospital as noted by Grygar (1990) and Rauch (1989). There were no ancillary service cost information provided for the CHAMPUS patients. The average cost for ancillary

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services per bed day for liver transplant patients treated in selected civilian hospitals and WHMC along with the average ancillary service costs per bed day for the "normal" WHMC patient are provided below:

|            | <u>LIVER TRANSPLANTS</u> |             | OTHER           |
|------------|--------------------------|-------------|-----------------|
|            | <u>CIVILIAN</u>          | <u>WHMC</u> | <u>PATIENTS</u> |
|            | <u>HOSPITALS</u>         |             | <u>WHMC</u>     |
| PHARMACY   | \$513.83                 | \$381.43    | \$39.91         |
| LABORATORY | \$960.63                 | \$116.70    | \$27.20         |
| BLOOD BANK | NA                       | \$139.20    | \$3.90          |
| RADIOLOGY  | \$112.99                 | \$55.95     | \$13.90         |

Overall cost (government) per case for CHAMPUS patients was \$96,887. This figure represents the average acceptable reimbursable amount paid for by CHAMPUS and does not include or mention the average deductible amount paid for by the patients or cost of organ procurement (K. Zimmerman, personal communication, 9 July 1990). CHAMPUS beneficiaries pay either a \$1,000 or \$10,000 deductible based on their beneficiary status. Therefore, the actual overall cost of the liver transplants performed under CHAMPUS,

including the deductible fee and the organ procurement cost is somewhere in the range of \$105,000 to \$120,000. This figure is more within the range of the costs referenced in the literature (Grygar, 1990; Williams et al, 1987).

The overall WHMC cost per liver transplant patient was \$84,520, not including the organ procurement cost of \$12,544. The WHMC cost was much lower than the CHAMPUS reimbursable cost and the cost estimates identified in the literature by Grygar (1990), Rauch (1989), and Williams et al (1987). The WHMC cost is, perhaps, the most complete and accurate of all the cost figures referenced because each and every resource involved in the treatment of the patients was tracked. In addition, the WHMC costs are "true" costs in that all government medical facilities identify only the actual costs paid by the government for supply/equipment items, personnel costs, overhead costs, etc.

The majority of the cost information for the WHMC patients was taken from the MEPRS reports from Oct 88 - Mar 89 versus using up-to-date (1990) cost figures. This was done to provide an accurate comparison with CHAMPUS cost information which provided data from 1988

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and 1989. It would not have been appropriate or accurate to compare 1988/1989 cost data against 1990 cost data.

## CHAPTER V

### CONCLUSIONS AND RECOMMENDATIONS

#### Conclusions

The problem of this study was to determine if WHMC could perform liver transplants at a lower cost to the government than what the government pays for these procedures to be performed in civilian medical facilities under CHAMPUS. The results of the study show conclusively that WHMC can perform liver transplant operations at a lower cost to the government than the government pays for under CHAMPUS.

The results of the study were expected by the researcher. WHMC, being a military hospital, is budgeted by the United States government on a cost basis. This means that only the actual costs associated with providing medical care will be funded by the government. WHMC is not allowed to make a profit (or revenue over expenses), whereas civilian hospitals and physicians charge for services in excess of what it actually costs to provide that service.

Liver transplantation has seen tremendous advancements in patient survival rates since Dr. Starzl's first liver transplant operation in 1963.

Liver transplantation is now a well recognized treatment for certain end stage liver diseases. Although liver transplantation is an expensive medical procedure, the alternative means of treating patients with end stage liver disease can also be expensive. Future research and development in the area of liver transplantation will, perhaps, expand this life saving treatment to many more people while at the same time reducing the average cost to the patient.

#### Recommendations

The researcher offers two recommendations based on findings and observations made during this study. These recommendations are: (1) Expand the WHMC liver transplant service; (2) Conduct further research in the area of liver transplantation cost.

The first recommendation, expanding liver transplant services at WHMC, serves two purposes. The first purpose is to recapture CHAMPUS expenses associated with providing a medical service that is less costlier to the government if it is performed in a military medical facility. The second purpose served would be that of medical research. WHMC is a major medical research facility and could play a significant

impact on the advancement of liver transplantation surgery.

The second recommendation, conduct further research on liver transplantation costs, is based on the need to better account for the resources expended in providing a high intensity health care service. There exists very little "sound" cost information on exact costs associated with liver transplant procedures. A better cost accounting system would provide decisions makers with the knowledge to make "tough" decisions.

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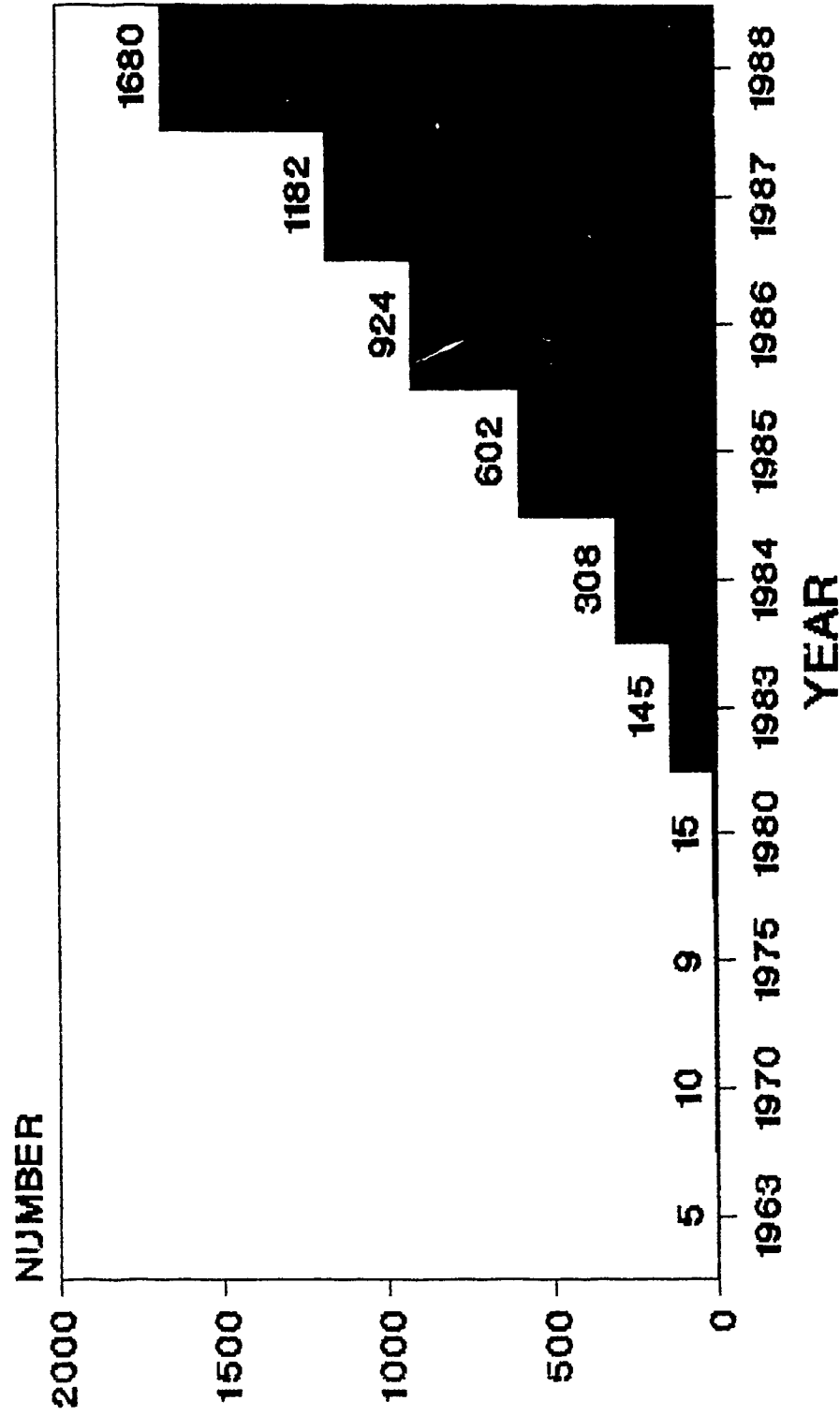
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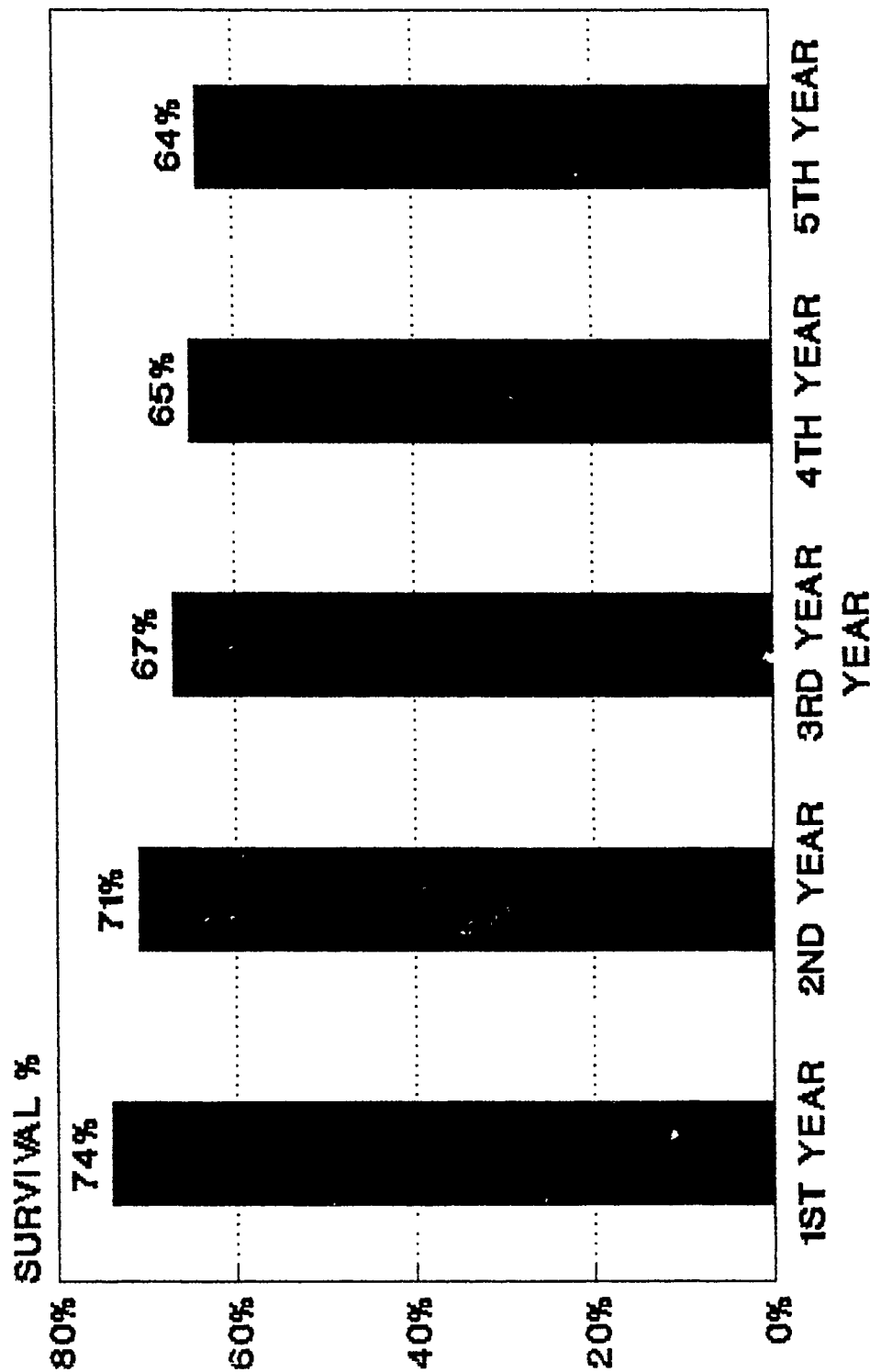
APPENDIX 1

# LIVER TRANSPLANTATION HISTORY



APPENDIX 2

# LIVER TRANSPLANTATION PATIENT SURVIVAL RATES



N=1,000 (PATIENTS)

APPENDIX 3

WHMC LIVER TRANSPLANTATION COST SUMMARY

|                   | COST PER PATIENT |              |             |             |              | AVERAGE  |
|-------------------|------------------|--------------|-------------|-------------|--------------|----------|
|                   | PATIENT #1       | PATIENT #2   | PATIENT #3  | PATIENT #4  | TOTAL        |          |
| SURGICAL          | \$11,107.74      | \$13,000.58  | \$9,327.73  | \$5,269.35  | \$38,705.40  | \$9,676  |
| PHARMACY          | \$17,389.60      | \$20,668.63  | \$17,754.94 | \$5,213.06  | \$61,026.23  | \$15,257 |
| LABORATORY        | \$8,179.47       | \$2,538.12   | \$5,534.99  | \$2,418.05  | \$18,670.63  | \$4,668  |
| BLOOD BANK        | \$16,447.39      | \$1,074.28   | \$1,003.19  | \$3,749.11  | \$22,273.97  | \$5,568  |
| RADIOLOGY         | \$3,247.42       | \$3,104.67   | \$1,920.17  | \$678.12    | \$8,950.38   | \$2,238  |
| SURGICAL ICU      | \$70,690.89      | \$47,580.40  | \$24,469.92 | \$6,797.20  | \$149,538.40 | \$37,385 |
| OTHER BED DAYS    | \$0.00           | \$9,728.00   | \$0.00      | \$9,728.00  | \$19,456.00  | \$4,864  |
| ORGAN PROCUREMENT | \$9,500.00       | \$9,000.00   | \$15,100.00 | \$16,576.00 | \$50,176.00  | \$12,544 |
| TOTAL             | \$136,562.50     | \$106,694.68 | \$75,110.94 | \$50,428.89 | \$368,797.01 | \$92,200 |

APPENDIX 4-1-1

PHARMACY COSTS - LIVER TRANSPLANT PATIENT #1

| NAME OF DRUG                  | COST PER UNIT |                   |         | TOTAL COST BY CATEGORY |                 |            |                   | TOTAL COST |
|-------------------------------|---------------|-------------------|---------|------------------------|-----------------|------------|-------------------|------------|
|                               | SUPPLIES      | LABOR & EQUIPMENT | SUPPORT | TOTAL COST EACH        | NUMBER SUPPLIED | SUPPLIES   | LABOR & EQUIPMENT |            |
| ACYCLOVIR (ZOVIRAX) IV        | \$21.61       | \$2.56            | \$1.73  | \$25.90                | 69              | \$1,491.09 | \$176.64          | \$1,787.10 |
| ACYCLOVIR                     | \$5.28        | \$0.13            | \$0.09  | \$5.50                 | 43              | \$227.04   | \$5.59            | \$236.50   |
| ALBUMIN 25% IV                | \$62.66       | \$2.56            | \$1.73  | \$66.95                | 46              | \$2,882.36 | \$117.76          | \$3,079.70 |
| ALTERNABEL                    | \$0.26        | \$0.13            | \$0.09  | \$0.48                 | 9               | \$2.34     | \$1.17            | \$4.32     |
| ALUPENT                       | \$0.13        | \$0.13            | \$0.09  | \$0.35                 | 8               | \$1.04     | \$1.04            | \$2.80     |
| AMIKACIN IV                   | \$18.21       | \$2.56            | \$1.73  | \$22.50                | 9               | \$163.89   | \$23.04           | \$202.50   |
| AMPHOTERICIN B (FUNGIZONE) IV | \$20.16       | \$2.56            | \$1.73  | \$24.45                | 33              | \$665.28   | \$84.48           | \$806.85   |
| AMPICILLIN (POLYICLIN N) IV   | \$1.76        | \$2.56            | \$1.73  | \$6.05                 | 13              | \$22.88    | \$33.28           | \$78.65    |
| ANUSOL-HC SUPPOSITORY         | \$0.90        | \$0.13            | \$0.09  | \$1.12                 | 1               | \$0.90     | \$0.13            | \$1.12     |
| ATIVAN IV                     | \$4.84        | \$2.56            | \$1.73  | \$9.13                 | 1               | \$4.84     | \$2.56            | \$9.13     |
| BACTRIM                       | \$0.04        | \$0.13            | \$0.09  | \$0.26                 | 26              | \$1.04     | \$3.38            | \$6.76     |
| BACTRIM IV                    | \$2.62        | \$2.56            | \$1.73  | \$6.91                 | 4               | \$10.48    | \$10.24           | \$27.64    |
| BENEDRYL IV                   | \$6.77        | \$2.56            | \$1.73  | \$11.06                | 25              | \$169.25   | \$64.00           | \$276.50   |
| CARAFATE                      | \$2.85        | \$0.13            | \$0.09  | \$3.07                 | 78              | \$222.30   | \$10.14           | \$239.46   |
| CEFOTAN IV                    | \$9.38        | \$2.56            | \$1.73  | \$13.67                | 1               | \$9.38     | \$2.56            | \$13.67    |
| CEFOTAXIME (CLAFORAN) IV      | \$12.62       | \$2.56            | \$1.73  | \$16.91                | 12              | \$151.44   | \$30.72           | \$202.92   |
| CLEOCIN/GENTAMICIN IV         | \$17.25       | \$2.56            | \$1.73  | \$21.54                | 2               | \$34.50    | \$5.12            | \$43.08    |
| CLINDAMYCIN (CLEOCIN) IV      | \$8.18        | \$2.56            | \$1.73  | \$12.47                | 6               | \$49.08    | \$15.36           | \$74.82    |
| COLACE                        | \$0.01        | \$0.13            | \$0.09  | \$0.23                 | 2               | \$0.02     | \$0.26            | \$0.46     |
| CYCLOSPORINE (SANDIMMUNE) IV  | \$15.06       | \$2.56            | \$1.73  | \$19.35                | 47              | \$707.82   | \$120.32          | \$909.45   |
| DELTASONE                     | \$0.03        | \$0.13            | \$0.09  | \$0.25                 | 4               | \$0.12     | \$0.52            | \$1.00     |
| EDECRIN IV                    | \$11.35       | \$2.56            | \$1.73  | \$15.64                | 3               | \$34.05    | \$7.68            | \$46.92    |

Liver Transplantation Costs

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APPENDIX 4-1-2

|                                   |          |        |        |          |    |            |          |         |            |
|-----------------------------------|----------|--------|--------|----------|----|------------|----------|---------|------------|
| ERYTHROMYCIN IV                   | \$1.86   | \$2.56 | \$1.73 | \$6.15   | 49 | \$91.14    | \$125.44 | \$84.77 | \$301.35   |
| FAT EMULSION 20% IV               | \$7.68   | \$2.56 | \$1.73 | \$11.97  | 5  | \$38.40    | \$12.80  | \$8.65  | \$59.85    |
| FLAVYL                            | \$0.02   | \$0.13 | \$0.09 | \$0.24   | 13 | \$0.26     | \$1.69   | \$1.17  | \$3.12     |
| FLAVYL IV                         | \$3.19   | \$2.56 | \$1.73 | \$7.48   | 15 | \$47.85    | \$38.40  | \$25.95 | \$112.20   |
| FORTAZ IV                         | \$22.99  | \$2.56 | \$1.73 | \$27.28  | 23 | \$528.77   | \$58.88  | \$39.79 | \$627.44   |
| GENTAMICIN (GARAMYCIN) IV         | \$1.30   | \$2.56 | \$1.73 | \$5.59   | 5  | \$6.50     | \$12.80  | \$8.65  | \$27.95    |
| HUMAN IMMUNE GLOBULIN IV          | \$170.68 | \$2.56 | \$1.73 | \$174.97 | 1  | \$170.68   | \$2.56   | \$1.73  | \$174.97   |
| IMIPENEM-CILASTATIN (PRIMAXIN) IV | \$23.59  | \$2.56 | \$1.73 | \$27.88  | 52 | \$1,226.68 | \$133.12 | \$89.70 | \$1,449.76 |
| 20% INTRALIPIDS                   | \$7.00   | \$0.13 | \$0.09 | \$7.22   | 2  | \$14.00    | \$0.26   | \$0.12  | \$14.44    |
| LACTULOSE SYRUP                   | \$14.44  | \$0.13 | \$0.09 | \$14.66  | 1  | \$14.44    | \$0.13   | \$0.09  | \$14.66    |
| LASTIX IV                         | \$2.59   | \$2.56 | \$1.73 | \$6.88   | 6  | \$15.54    | \$15.36  | \$10.38 | \$41.28    |
| LIDOCAINE IV                      | \$2.92   | \$2.56 | \$1.73 | \$7.21   | 3  | \$8.76     | \$7.68   | \$5.19  | \$21.63    |
| MAGNESIUM SULFATE IV              | \$1.31   | \$2.56 | \$1.73 | \$5.60   | 1  | \$1.31     | \$2.56   | \$1.73  | \$5.60     |
| MIDAZOLAM (VERSED) IV             | \$70.86  | \$2.56 | \$1.73 | \$75.15  | 6  | \$425.16   | \$15.36  | \$10.38 | \$450.90   |
| METHYLPREDNISOLONE IV             | \$25.40  | \$2.56 | \$1.73 | \$29.69  | 3  | \$76.20    | \$7.68   | \$5.19  | \$89.07    |
| NEOMYCIN                          | \$0.40   | \$0.13 | \$0.09 | \$0.62   | 39 | \$15.60    | \$5.07   | \$3.51  | \$24.18    |
| NEUTROPHOS                        | \$0.08   | \$2.56 | \$1.73 | \$4.37   | 41 | \$3.28     | \$104.96 | \$70.93 | \$179.17   |
| NYSTATIN                          | \$1.27   | \$0.13 | \$0.09 | \$1.49   | 87 | \$110.49   | \$11.31  | \$7.83  | \$129.63   |
| OKTS IV                           | \$750.68 | \$2.56 | \$1.73 | \$754.97 | 5  | \$3,753.40 | \$12.80  | \$8.65  | \$3,774.85 |
| PIPERACILLIN IV                   | \$10.47  | \$2.56 | \$1.73 | \$14.76  | 10 | \$104.70   | \$25.60  | \$17.30 | \$147.60   |
| RANITIDINE (ZANTAC) IV            | \$11.39  | \$2.56 | \$1.73 | \$15.68  | 14 | \$159.46   | \$35.84  | \$24.22 | \$219.52   |
| REGLAN IV                         | \$1.86   | \$2.56 | \$1.73 | \$6.15   | 14 | \$26.04    | \$35.84  | \$24.22 | \$86.10    |
| REGULAR INSULIN IV                | \$0.73   | \$2.56 | \$1.73 | \$5.02   | 3  | \$2.19     | \$7.68   | \$5.19  | \$15.06    |
| RIOBAN                            | \$0.16   | \$0.13 | \$0.09 | \$0.38   | 71 | \$11.36    | \$9.23   | \$6.39  | \$26.98    |
| SOLUDORTEF IV                     | \$2.14   | \$2.56 | \$1.73 | \$6.43   | 5  | \$10.70    | \$12.80  | \$8.65  | \$32.15    |
| SOLIMEDROL IV                     | \$2.68   | \$2.56 | \$1.73 | \$6.97   | 28 | \$75.04    | \$71.68  | \$48.44 | \$195.16   |
| TETRACYCLINE IV                   | \$6.05   | \$2.56 | \$1.73 | \$10.34  | 2  | \$12.10    | \$5.12   | \$3.46  | \$20.68    |
| THIAMINE                          | \$0.02   | \$0.13 | \$0.09 | \$0.24   | 40 | \$0.80     | \$5.20   | \$3.60  | \$9.60     |
| TOBRAMYCIN IV                     | \$11.50  | \$2.56 | \$1.73 | \$15.79  | 3  | \$34.50    | \$7.68   | \$5.19  | \$47.37    |

APPENDIX 4-1-3

|                             |            |          |         |            |    |             |            |            |             |
|-----------------------------|------------|----------|---------|------------|----|-------------|------------|------------|-------------|
| UNASYN IV                   | \$5.33     | \$2.56   | \$1.73  | \$9.62     | 36 | \$191.88    | \$92.16    | \$62.28    | \$346.32    |
| VANCOMYCIN (VANCCIN) IV     | \$30.55    | \$2.56   | \$1.73  | \$34.84    | 1  | \$30.55     | \$2.56     | \$1.73     | \$34.84     |
| VIVONEX STANDARD ENTERAL IV | \$7.00     | \$2.56   | \$1.73  | \$11.29    | 58 | \$406.00    | \$148.48   | \$100.34   | \$654.82    |
| TOTAL                       | \$1,420.11 | \$101.79 | \$68.82 | \$1,590.72 |    | \$14,464.92 | \$1,744.72 | \$1,179.96 | \$17,389.60 |

APPENDIX 4-2-1

LABORATORY COSTS - LIVER TRANSPLANT PATIENT #1

| TEST               | COST PER TEST |                   |         |                 | TOTAL COST BY CATEGORY |          |                   |         | TOTAL COST |
|--------------------|---------------|-------------------|---------|-----------------|------------------------|----------|-------------------|---------|------------|
|                    | SUPPLIES      | LABOR & EQUIPMENT | SUPPORT | TOTAL COST EACH | NUMBER PERFORMED       | SUPPLIES | LABOR & EQUIPMENT | SUPPORT |            |
| A-G RATIO          | \$0.25        | \$0.09            | \$0.02  | \$0.36          | 38                     | \$9.50   | \$3.42            | \$0.76  | \$13.68    |
| ACA CREATININE     | \$1.33        | \$0.21            | \$0.05  | \$1.59          | 2                      | \$2.66   | \$0.42            | \$0.10  | \$3.18     |
| ACETONE            | \$0.08        | \$4.29            | \$1.05  | \$5.42          | 4                      | \$0.32   | \$17.16           | \$4.20  | \$21.68    |
| AFB CULTURE        | \$51.97       | \$28.06           | \$6.88  | \$86.91         | 5                      | \$259.85 | \$140.30          | \$34.40 | \$434.55   |
| AFB SNEAR          | \$0.17        | \$2.57            | \$0.63  | \$3.37          | 6                      | \$1.02   | \$15.42           | \$3.78  | \$20.22    |
| ALBUMIN            | \$0.07        | \$0.09            | \$0.02  | \$0.18          | 46                     | \$3.22   | \$4.14            | \$0.92  | \$8.28     |
| ALK PHOS HITACHI   | \$0.22        | \$0.09            | \$0.02  | \$0.33          | 49                     | \$10.78  | \$4.41            | \$0.98  | \$16.17    |
| ALT (SGPT) HITACHI | \$1.04        | \$0.09            | \$0.02  | \$1.15          | 31                     | \$32.24  | \$2.79            | \$0.62  | \$35.65    |
| AMIKACIN PEAK      | \$1.74        | \$0.21            | \$0.05  | \$2.00          | 5                      | \$8.70   | \$1.05            | \$0.25  | \$10.00    |
| AMIKACIN TRO       | \$1.74        | \$0.21            | \$0.05  | \$2.00          | 15                     | \$26.10  | \$3.15            | \$0.75  | \$30.00    |
| AMMONIA            | \$9.60        | \$0.21            | \$0.05  | \$9.86          | 11                     | \$105.60 | \$2.31            | \$0.55  | \$108.46   |
| AMYLASE (HITACHI)  | \$2.28        | \$0.21            | \$0.05  | \$2.54          | 26                     | \$59.28  | \$5.46            | \$1.30  | \$66.04    |
| AMYLASE BF         | \$2.28        | \$0.09            | \$0.02  | \$2.39          | 2                      | \$4.56   | \$0.18            | \$0.04  | \$4.78     |
| ANAEROBIC CULTURE  | \$3.10        | \$13.00           | \$3.19  | \$19.29         | 15                     | \$46.50  | \$195.00          | \$47.85 | \$289.35   |
| ANTI-HIJOCHAN AB   | \$2.69        | \$8.58            | \$2.11  | \$13.38         | 1                      | \$2.89   | \$8.58            | \$2.11  | \$13.58    |
| AST (SGOT) HITACHI | \$0.28        | \$0.09            | \$0.02  | \$0.39          | 58                     | \$16.24  | \$5.22            | \$1.16  | \$22.62    |
| BASE XS ARTERIAL   | \$1.35        | \$3.09            | \$0.76  | \$5.20          | 118                    | \$159.30 | \$364.62          | \$89.68 | \$613.60   |
| BILIRUBIN TOTAL    | \$2.01        | \$0.09            | \$0.02  | \$2.12          | 63                     | \$126.63 | \$5.67            | \$1.26  | \$133.56   |
| BLOOD CULTURE      | \$5.77        | \$7.08            | \$1.74  | \$14.59         | 33                     | \$190.41 | \$233.64          | \$57.42 | \$481.47   |
| BODY FLUID PH      | \$0.20        | \$3.00            | \$0.74  | \$3.94          | 11                     | \$2.20   | \$3.00            | \$0.14  | \$43.34    |
| BUN                | \$0.12        | \$0.09            | \$0.02  | \$0.23          | 64                     | \$7.68   | \$5.76            | \$1.28  | \$14.72    |
| B12/FOLATE         | \$1.27        | \$3.00            | \$0.74  | \$5.01          | 1                      | \$1.27   | \$3.00            | \$0.74  | \$5.01     |

Liver Transplantation Costs

APPENDIX 4-2-2

|                      |         |         |        |         |    |          |          |         |          |
|----------------------|---------|---------|--------|---------|----|----------|----------|---------|----------|
| C. DIFFICILE         | \$3.58  | \$2.57  | \$0.63 | \$6.78  | 1  | \$3.58   | \$2.57   | \$0.63  | \$6.78   |
| CALCIUM              | \$0.19  | \$0.21  | \$0.05 | \$0.45  | 46 | \$8.74   | \$9.66   | \$2.30  | \$20.70  |
| CALCIUM UR CONC      | \$2.39  | \$0.21  | \$0.05 | \$2.65  | 1  | \$2.39   | \$0.21   | \$0.05  | \$2.65   |
| CARBON DIOXIDE       | \$0.31  | \$0.09  | \$0.02 | \$0.42  | 66 | \$20.46  | \$5.94   | \$1.32  | \$27.72  |
| CBC                  | \$0.20  | \$1.24  | \$0.31 | \$1.75  | 91 | \$18.20  | \$112.84 | \$28.21 | \$159.25 |
| CERULO PLASMA        | \$1.04  | \$1.89  | \$0.46 | \$3.39  | 1  | \$1.04   | \$1.89   | \$0.46  | \$3.39   |
| CHLORIDE             | \$0.13  | \$0.09  | \$0.02 | \$0.24  | 65 | \$8.58   | \$5.94   | \$1.32  | \$15.84  |
| CHOLESTEROL          | \$0.45  | \$0.09  | \$0.02 | \$0.56  | 2  | \$0.90   | \$0.18   | \$0.04  | \$1.12   |
| A38                  | \$0.12  | \$0.04  | \$0.01 | \$0.17  | 10 | \$1.20   | \$0.40   | \$0.10  | \$1.70   |
| CMV CULTURE          | \$0.00  | \$2.57  | \$0.63 | \$3.20  | 1  | \$0.00   | \$2.57   | \$0.63  | \$3.20   |
| CMV IGG TITER        | \$2.22  | \$3.43  | \$0.84 | \$6.49  | 3  | \$6.66   | \$10.29  | \$2.52  | \$19.47  |
| CMV IGM TITER        | \$3.67  | \$3.00  | \$0.74 | \$7.41  | 1  | \$3.67   | \$3.00   | \$0.74  | \$7.41   |
| COAGULATION BATTERY  | \$0.80  | \$2.57  | \$0.63 | \$4.00  | 38 | \$30.40  | \$97.66  | \$23.94 | \$152.00 |
| CREATININE           | \$0.16  | \$0.21  | \$0.05 | \$0.42  | 60 | \$9.60   | \$12.60  | \$3.00  | \$25.20  |
| CSF CULTURE          | \$1.23  | \$8.28  | \$2.03 | \$11.54 | 1  | \$1.23   | \$8.28   | \$2.03  | \$11.54  |
| CSF FLUID EXAM       | \$0.41  | \$7.72  | \$1.89 | \$10.02 | 1  | \$0.41   | \$7.72   | \$1.89  | \$10.02  |
| CYCLOSPORIN          | \$12.74 | \$1.16  | \$0.28 | \$14.18 | 24 | \$305.76 | \$27.84  | \$6.72  | \$340.32 |
| DIFF                 | \$0.18  | \$4.72  | \$1.16 | \$6.06  | 80 | \$14.40  | \$377.60 | \$92.80 | \$484.80 |
| DIRECT BILIRUBIN     | \$1.66  | \$0.21  | \$0.05 | \$1.92  | 62 | \$102.92 | \$13.02  | \$3.10  | \$119.04 |
| EB VIRUS BATTERY     | \$7.34  | \$19.74 | \$4.84 | \$31.92 | 2  | \$14.68  | \$39.48  | \$9.68  | \$63.84  |
| ESR HESTERGEN        | \$3.48  | \$1.72  | \$0.42 | \$5.62  | 1  | \$3.48   | \$1.72   | \$0.42  | \$5.62   |
| FAT QUALITATIVE      | \$0.05  | \$2.57  | \$0.63 | \$3.25  | 1  | \$0.05   | \$2.57   | \$0.63  | \$3.25   |
| FERRITIN             | \$2.46  | \$3.00  | \$0.74 | \$6.20  | 3  | \$7.38   | \$9.00   | \$2.22  | \$18.60  |
| FIBRIN SPLIT PRODUCT | \$4.60  | \$3.43  | \$0.84 | \$8.87  | 1  | \$4.60   | \$3.43   | \$0.84  | \$8.87   |
| FIBRINOGEN           | \$3.00  | \$2.75  | \$0.67 | \$6.42  | 1  | \$3.00   | \$2.75   | \$0.67  | \$6.42   |
| FREE T4              | \$2.06  | \$3.00  | \$0.74 | \$5.80  | 1  | \$2.06   | \$3.00   | \$0.74  | \$5.80   |
| FT1                  | \$0.25  | \$0.09  | \$0.02 | \$0.36  | 4  | \$1.00   | \$0.36   | \$0.08  | \$1.44   |
| FUNGUS CULTURE       | \$3.63  | \$1.07  | \$0.26 | \$4.96  | 18 | \$65.34  | \$19.26  | \$4.68  | \$89.28  |

Liver Transplantation Costs

APPENDIX 4-2-3

|                    |         |        |        |         |     |          |          |         |          |
|--------------------|---------|--------|--------|---------|-----|----------|----------|---------|----------|
| FUNGUS SHEAR       | \$0.14  | \$3.22 | \$0.79 | \$4.15  | 6   | \$0.84   | \$19.32  | \$4.74  | \$24.90  |
| GAMMA GT           | \$1.67  | \$0.09 | \$0.02 | \$1.78  | 25  | \$41.75  | \$2.25   | \$0.50  | \$44.50  |
| GENTAMICIN PEAK    | \$6.60  | \$2.15 | \$0.53 | \$9.28  | 3   | \$19.80  | \$6.45   | \$1.59  | \$27.84  |
| GENTAMICIN TROUGH  | \$6.60  | \$2.15 | \$0.53 | \$9.28  | 4   | \$26.40  | \$8.60   | \$2.12  | \$37.12  |
| GLOBULIN           | \$0.25  | \$0.09 | \$0.02 | \$0.36  | 44  | \$11.00  | \$3.96   | \$0.88  | \$15.84  |
| GLUC URN CONC      | \$0.12  | \$0.04 | \$0.01 | \$0.17  | 11  | \$1.32   | \$0.44   | \$0.11  | \$1.87   |
| GLUCOSE            | \$0.07  | \$0.09 | \$0.02 | \$0.18  | 68  | \$4.76   | \$6.12   | \$1.36  | \$12.24  |
| GLUCOSE BF         | \$0.07  | \$0.09 | \$0.02 | \$0.18  | 2   | \$0.14   | \$0.18   | \$0.04  | \$0.36   |
| GLUCOSA CSF        | \$0.12  | \$0.04 | \$0.01 | \$0.17  | 1   | \$0.12   | \$0.04   | \$0.01  | \$0.17   |
| GRAM STAIN         | \$0.25  | \$2.19 | \$0.54 | \$2.98  | 10  | \$2.50   | \$21.90  | \$5.40  | \$29.80  |
| HCO3 ARTERIAL      | \$0.25  | \$0.09 | \$0.02 | \$0.36  | 118 | \$29.50  | \$10.62  | \$2.36  | \$42.48  |
| HDL CHOLESTEROL    | \$0.61  | \$0.09 | \$0.02 | \$0.72  | 2   | \$1.22   | \$0.18   | \$0.04  | \$1.44   |
| HEMOGLOBIN BS      | \$0.04  | \$1.37 | \$0.34 | \$1.75  | 118 | \$4.72   | \$161.66 | \$40.12 | \$206.50 |
| HERPES TITER       | \$3.20  | \$3.43 | \$0.84 | \$7.47  | 2   | \$6.40   | \$6.86   | \$1.68  | \$14.94  |
| HITACHI BATTERY    | \$2.98  | \$2.45 | \$0.60 | \$6.03  | 20  | \$59.60  | \$49.00  | \$12.00 | \$120.60 |
| HIV-1 AB SCREEN    | \$1.78  | \$1.97 | \$0.48 | \$4.23  | 1   | \$1.78   | \$1.97   | \$0.48  | \$4.23   |
| K URN CONC         | \$0.12  | \$0.04 | \$0.01 | \$0.17  | 10  | \$1.20   | \$0.40   | \$0.10  | \$1.70   |
| K-TRANS MARKER     | \$55.80 | \$9.05 | \$2.22 | \$67.07 | 6   | \$334.80 | \$54.30  | \$13.32 | \$402.42 |
| LACTIC ACID VEIN   | \$2.90  | \$0.21 | \$0.05 | \$3.16  | 1   | \$2.90   | \$0.21   | \$0.05  | \$3.16   |
| LD (LDH)           | \$0.28  | \$0.09 | \$0.02 | \$0.39  | 42  | \$11.76  | \$3.78   | \$0.84  | \$16.38  |
| LD BF              | \$0.00  | \$0.09 | \$0.02 | \$0.11  | 2   | \$0.00   | \$0.18   | \$0.04  | \$0.22   |
| LDL CHOLESTEROL    | \$0.00  | \$0.09 | \$0.02 | \$0.11  | 2   | \$0.00   | \$0.18   | \$0.04  | \$0.22   |
| LEGIONELLA CULTURE | \$1.16  | \$6.35 | \$1.56 | \$9.07  | 1   | \$1.16   | \$6.35   | \$1.56  | \$9.07   |
| LEGIONELLA DFA     | \$8.00  | \$2.15 | \$0.53 | \$10.68 | 11  | \$88.00  | \$23.65  | \$5.83  | \$117.48 |
| LEGIONELLA TITER   | \$4.42  | \$2.57 | \$0.63 | \$7.62  | 1   | \$4.42   | \$2.57   | \$0.63  | \$7.62   |
| LIDOCAINE LVL      | \$6.60  | \$2.15 | \$0.53 | \$9.28  | 1   | \$6.60   | \$2.15   | \$0.53  | \$9.28   |
| MAGNESIUM HITACHI  | \$1.13  | \$0.09 | \$0.02 | \$1.24  | 23  | \$25.99  | \$2.07   | \$0.46  | \$28.52  |
| Mg URN CONC        | \$0.20  | \$2.15 | \$0.53 | \$2.88  | 1   | \$0.20   | \$2.15   | \$0.53  | \$2.88   |
| NA URN CONC        | \$0.12  | \$0.04 | \$0.01 | \$0.17  | 10  | \$1.20   | \$0.40   | \$0.10  | \$1.70   |

Liver Transplantation Costs

APPENDIX 4-2-4

|                    |          |         |        |          |     |          |          |         |          |
|--------------------|----------|---------|--------|----------|-----|----------|----------|---------|----------|
| OCULT BLOOD        | \$0.05   | \$2.57  | \$0.63 | \$3.25   | 5   | \$0.25   | \$12.85  | \$3.15  | \$16.25  |
| OSMOLALITY         | \$0.03   | \$4.29  | \$1.05 | \$5.37   | 2   | \$0.06   | \$8.58   | \$2.10  | \$10.74  |
| O2 SAT ARTERIAL    | \$0.08   | \$1.72  | \$0.42 | \$2.22   | 118 | \$9.44   | \$202.96 | \$49.56 | \$261.96 |
| PARASITES          | \$3.55   | \$20.59 | \$5.05 | \$29.19  | 2   | \$7.10   | \$41.18  | \$10.10 | \$58.38  |
| PCO2 ARTERIAL      | \$0.08   | \$1.72  | \$0.42 | \$2.22   | 118 | \$9.44   | \$202.96 | \$49.56 | \$261.96 |
| PH ARTERIAL        | \$0.08   | \$1.72  | \$0.42 | \$2.22   | 118 | \$9.44   | \$202.96 | \$49.56 | \$261.96 |
| PHOS URN CONC      | \$1.39   | \$0.21  | \$0.05 | \$1.65   | 1   | \$1.39   | \$0.21   | \$0.05  | \$1.65   |
| PHOSPHORUS         | \$0.09   | \$0.21  | \$0.05 | \$0.35   | 53  | \$4.77   | \$11.13  | \$2.65  | \$18.55  |
| PLEURAL FLUID EXAM | \$0.41   | \$7.72  | \$1.89 | \$10.02  | 1   | \$0.41   | \$7.72   | \$1.89  | \$10.02  |
| PLT CONC           | \$2.45   | \$3.86  | \$0.95 | \$7.26   | 11  | \$26.95  | \$42.46  | \$10.45 | \$79.86  |
| POTASSIUM          | \$0.13   | \$0.09  | \$0.02 | \$0.24   | 67  | \$8.71   | \$6.03   | \$1.34  | \$16.08  |
| POTASSIUM B6       | \$0.17   | \$1.72  | \$0.42 | \$2.31   | 113 | \$19.21  | \$194.36 | \$47.46 | \$261.03 |
| PROTEIN CSF        | \$1.58   | \$0.21  | \$0.05 | \$1.84   | 1   | \$1.58   | \$0.21   | \$0.05  | \$1.84   |
| RETIC              | \$0.13   | \$3.86  | \$0.95 | \$4.94   | 2   | \$0.26   | \$7.72   | \$1.90  | \$9.88   |
| SERUM IRON         | \$1.32   | \$0.43  | \$0.11 | \$1.86   | 1   | \$1.32   | \$0.43   | \$0.11  | \$1.86   |
| SODIUM             | \$0.13   | \$0.09  | \$0.02 | \$0.24   | 66  | \$8.58   | \$5.94   | \$1.32  | \$15.84  |
| SODIUM B6          | \$0.17   | \$1.72  | \$0.42 | \$2.31   | 113 | \$19.21  | \$194.36 | \$47.46 | \$261.03 |
| SPUTUM CULTURE     | \$5.92   | \$10.64 | \$2.61 | \$19.17  | 7   | \$41.44  | \$74.48  | \$18.27 | \$134.19 |
| STOOL CULTURE      | \$1.80   | \$6.22  | \$1.53 | \$9.55   | 3   | \$5.40   | \$18.66  | \$4.59  | \$28.65  |
| SUSCEPT (KB) GP    | \$1.50   | \$2.79  | \$0.68 | \$4.97   | 2   | \$3.00   | \$5.58   | \$1.36  | \$9.94   |
| SUSCEPT (SUPPLM)   | \$1.50   | \$2.79  | \$0.68 | \$4.97   | 12  | \$18.00  | \$33.48  | \$8.16  | \$59.64  |
| SUSCEPT GPS GP     | \$3.30   | \$2.79  | \$0.68 | \$6.77   | 10  | \$33.00  | \$27.90  | \$6.80  | \$67.70  |
| THROAT CULTURE     | \$4.74   | \$2.96  | \$0.73 | \$8.43   | 1   | \$4.74   | \$2.96   | \$0.73  | \$8.43   |
| TIBC               | \$1.40   | \$0.09  | \$0.02 | \$1.51   | 1   | \$1.40   | \$0.09   | \$0.02  | \$1.51   |
| TISSUE REPORT      | \$184.14 | \$4.29  | \$1.05 | \$187.48 | 3   | \$552.42 | \$12.87  | \$3.15  | \$568.44 |
| TORAMYCIN TRD      | \$3.48   | \$0.21  | \$0.05 | \$3.74   | 1   | \$3.48   | \$0.21   | \$0.05  | \$3.74   |
| TOTAL PROTEIN      | \$0.15   | \$0.09  | \$0.02 | \$0.26   | 38  | \$5.70   | \$3.42   | \$0.76  | \$9.88   |
| TOTAL PROTEIN BF   | \$0.15   | \$0.09  | \$0.02 | \$0.26   | 2   | \$0.30   | \$0.18   | \$0.04  | \$0.52   |
| TRIGLYCERIDES      | \$0.39   | \$0.09  | \$0.02 | \$0.50   | 2   | \$0.78   | \$0.18   | \$0.04  | \$1.00   |

APPENDIX 4-2-5

|                   |          |          |         |          |    |            |            |          |            |
|-------------------|----------|----------|---------|----------|----|------------|------------|----------|------------|
| TT3               | \$1.14   | \$3.00   | \$0.74  | \$4.88   | 3  | \$3.42     | \$9.00     | \$2.22   | \$14.64    |
| TT4               | \$1.14   | \$3.00   | \$0.74  | \$4.88   | 4  | \$4.56     | \$12.00    | \$2.96   | \$19.52    |
| T3RU              | \$0.25   | \$3.00   | \$0.74  | \$3.99   | 4  | \$1.00     | \$12.00    | \$2.96   | \$15.96    |
| TSH               | \$1.14   | \$3.00   | \$0.74  | \$4.88   | 4  | \$4.56     | \$12.00    | \$2.96   | \$19.52    |
| UREA NITRO        | \$0.12   | \$0.04   | \$0.01  | \$0.17   | 1  | \$0.12     | \$0.04     | \$0.01   | \$0.17     |
| URIC ACID         | \$0.51   | \$0.09   | \$0.02  | \$0.62   | 43 | \$21.93    | \$3.87     | \$0.86   | \$26.66    |
| URIC ACID CONC    | \$3.93   | \$0.21   | \$0.05  | \$4.19   | 1  | \$3.93     | \$0.21     | \$0.05   | \$4.19     |
| URINE CULTURE     | \$1.66   | \$4.46   | \$1.09  | \$7.21   | 14 | \$23.24    | \$62.44    | \$15.26  | \$100.94   |
| URINE MACRO       | \$0.40   | \$1.29   | \$0.32  | \$2.01   | 16 | \$6.40     | \$20.64    | \$5.12   | \$32.16    |
| URINE MICRO       | \$0.26   | \$1.29   | \$0.32  | \$1.87   | 16 | \$4.16     | \$20.64    | \$5.12   | \$29.92    |
| VANCOMYCIN PEAK   | \$6.11   | \$0.21   | \$0.05  | \$6.37   | 2  | \$12.22    | \$0.42     | \$0.10   | \$12.74    |
| VANCOMYCIN TRO    | \$6.11   | \$0.21   | \$0.05  | \$6.37   | 7  | \$42.77    | \$1.47     | \$0.35   | \$44.59    |
| VARIDELLA TITER   | \$0.00   | \$2.57   | \$0.63  | \$3.20   | 1  | \$0.00     | \$2.57     | \$0.63   | \$3.20     |
| VDRL (RPR SCREEN) | \$1.73   | \$1.29   | \$0.32  | \$3.34   | 1  | \$1.73     | \$1.29     | \$0.32   | \$3.34     |
| VIRAL CULTURE     | \$0.00   | \$2.57   | \$0.63  | \$3.20   | 1  | \$0.00     | \$2.57     | \$0.63   | \$3.20     |
| VIRAL HEP TEST    | \$13.97  | \$5.92   | \$1.45  | \$21.34  | 2  | \$27.94    | \$11.84    | \$2.90   | \$68       |
| WBC STOOL         | \$0.05   | \$0.94   | \$0.23  | \$1.22   | 1  | \$0.05     | \$0.94     | \$0.23   | \$1.22     |
| WOUND CULTURE     | \$1.23   | \$5.28   | \$1.29  | \$7.80   | 22 | \$27.06    | \$116.16   | \$28.38  | \$171.60   |
| TOTALS            | \$513.65 | \$320.88 | \$78.65 | \$913.18 |    | \$3,391.63 | \$3,846.59 | \$941.25 | \$8,179.47 |

APPENDIX 4-3

BLOOD BANK COSTS - LIVER TRANSPLANT PATIENT #1

| TEST                  | COST PER TEST OR UNIT |                   |         |                 | TOTAL COST BY CATEGORY |             |                   |          | TOTAL COST  |
|-----------------------|-----------------------|-------------------|---------|-----------------|------------------------|-------------|-------------------|----------|-------------|
|                       | SUPPLIES              | LABOR & EQUIPMENT | SUPPORT | TOTAL COST EACH | NUMBER PERFORMED       | SUPPLIES    | LABOR & EQUIPMENT | SUPPORT  |             |
| CROSS MATCH           | \$0.48                | \$1.21            | \$0.34  | \$2.03          | 176                    | \$84.48     | \$212.96          | \$59.84  | \$357.28    |
| CRYOPRECIPIT ORDERED  | \$19.00               | \$0.00            | \$0.00  | \$19.00         | 15                     | \$285.00    | \$0.00            | \$0.00   | \$285.00    |
| FFP THAW/ISSUE        | \$1.50                | \$1.21            | \$0.34  | \$3.05          | 139                    | \$208.50    | \$168.19          | \$47.26  | \$423.95    |
| FFP LOST              | \$25.00               | \$0.00            | \$0.00  | \$25.00         | 36                     | \$900.00    | \$0.00            | \$0.00   | \$900.00    |
| FFP TRANSFUSED        | \$25.00               | \$0.00            | \$0.00  | \$25.00         | 103                    | \$2,575.00  | \$0.00            | \$0.00   | \$2,575.00  |
| PLATELETS OUTDATED    | \$26.00               | \$0.00            | \$0.00  | \$26.00         | 161                    | \$4,186.00  | \$0.00            | \$0.00   | \$4,186.00  |
| PLATELETS TRANSFUSED  | \$26.00               | \$0.00            | \$0.00  | \$26.00         | 138                    | \$3,588.00  | \$0.00            | \$0.00   | \$3,588.00  |
| RBC (UNIT) TRANSFUSED | \$48.00               | \$0.00            | \$0.00  | \$48.00         | 86                     | \$4,128.00  | \$0.00            | \$0.00   | \$4,128.00  |
| TYPE & SCREEN         | \$0.40                | \$2.93            | \$0.83  | \$4.16          | 1                      | \$0.40      | \$2.93            | \$0.83   | \$4.16      |
| TOTAL                 | \$171.38              | \$5.35            | \$1.51  | \$178.24        |                        | \$15,955.38 | \$384.08          | \$107.93 | \$16,447.39 |

APPENDIX 4-4

RADIOLOGY COSTS - LIVER TRANSPLANT PATIENT #1

| TYPE OF PROCEDURE          | COST PER PROCEDURE |                      |          | TOTAL<br>COST EACH | NUMBER<br>PERFORMED | TOTAL COST BY CATEGORY |                      |          | TOTAL<br>COST |
|----------------------------|--------------------|----------------------|----------|--------------------|---------------------|------------------------|----------------------|----------|---------------|
|                            | SUPPLIES           | LABOR &<br>EQUIPMENT | SUPPORT  |                    |                     | SUPPLIES               | LABOR &<br>EQUIPMENT | SUPPORT  |               |
| ABDOMEN                    | \$3.08             | \$9.73               | \$3.26   | \$16.07            | 2                   | \$6.16                 | \$19.46              | \$6.52   | \$32.14       |
| OTHER ANGIO                | \$27.50            | \$86.91              | \$29.12  | \$143.53           | 1                   | \$27.50                | \$86.91              | \$29.12  | \$143.53      |
| PA AND LAT CHEST           | \$3.30             | \$10.43              | \$3.49   | \$17.22            | 5                   | \$16.50                | \$52.15              | \$17.45  | \$86.10       |
| BRAIN WITH BONE WINDOWS    | \$5.50             | \$17.38              | \$5.82   | \$28.70            | 1                   | \$5.50                 | \$17.38              | \$5.82   | \$28.70       |
| ABD ABSCESS PROTOCOL       | \$6.60             | \$20.86              | \$6.99   | \$34.45            | 1                   | \$6.60                 | \$20.86              | \$6.99   | \$34.45       |
| ABDOMEN OR PELVIS PROTOCOL | \$6.60             | \$20.86              | \$6.99   | \$34.45            | 1                   | \$6.60                 | \$20.86              | \$6.99   | \$34.45       |
| T TUBE CHolangiogram       | \$22.00            | \$69.53              | \$23.30  | \$114.83           | 1                   | \$22.00                | \$69.53              | \$23.30  | \$114.83      |
| OTHER FLOURO               | \$7.70             | \$24.34              | \$8.15   | \$40.19            | 1                   | \$7.70                 | \$24.34              | \$8.15   | \$40.19       |
| PORTABLE CHEST             | \$6.60             | \$20.86              | \$6.99   | \$34.45            | 69                  | \$455.40               | \$1,439.34           | \$482.31 | \$2,377.05    |
| PORTABLE ABDOMEN           | \$6.60             | \$20.86              | \$6.99   | \$34.45            | 3                   | \$19.80                | \$62.58              | \$20.97  | \$103.35      |
| PORTABLE SHOULDER          | \$6.60             | \$20.86              | \$6.99   | \$34.45            | 1                   | \$6.60                 | \$20.86              | \$6.99   | \$34.45       |
| PORTABLE OTHER US          | \$6.60             | \$20.86              | \$6.99   | \$34.45            | 4                   | \$26.40                | \$83.44              | \$27.96  | \$137.80      |
| DOPPLER STUDY              | \$15.40            | \$48.67              | \$16.31  | \$80.38            | 1                   | \$15.40                | \$48.67              | \$16.31  | \$80.38       |
| TOTAL                      | \$124.08           | \$392.15             | \$131.39 | \$647.62           |                     | \$622.16               | \$1,966.38           | \$658.88 | \$3,247.42    |

APPENDIX 4-5

SURGERY COSTS - LIVER TRANSPLANT PATIENT #1

| SERVICE        | COST PER MINUTE |                   |         |                 | TOTAL COST BY CATEGORY |            |                   |            | TOTAL COST  |
|----------------|-----------------|-------------------|---------|-----------------|------------------------|------------|-------------------|------------|-------------|
|                | SUPPLIES        | LABOR & EQUIPMENT | SUPPORT | TOTAL COST EACH | NUMBER OF MINUTES      | SUPPLY     | LABOR & EQUIPMENT | SUPPORT    |             |
| SURGICAL SUITE | \$3.17          | \$2.30            | \$0.72  | \$6.19          | 1164                   | \$3,689.88 | \$2,677.20        | \$838.08   | \$7,205.16  |
| ANESTHESIOLOGY | \$0.70          | \$1.97            | \$0.30  | \$2.97          | 1314                   | \$919.80   | \$2,588.58        | \$394.20   | \$3,902.58  |
| TOTAL          | \$3.87          | \$4.27            | \$1.02  | \$9.16          |                        | \$4,609.68 | \$5,265.78        | \$1,232.28 | \$11,107.74 |

**SURGICAL ICU BED DAY COSTS - LIVER TRANSPLANT PATIENT #1**

[illegible]

APPENDIX 4-7

OTHER BED DAY COSTS - LIVER TRANSPLANT PATIENT #1

|                     | COST PER BED DAY |                      |         | TOTAL<br>COST EACH<br>BED DAYS | NUMBER OF<br>BED DAYS | TOTAL COST BY CATEGORY |                      |         | TOTAL<br>COST |
|---------------------|------------------|----------------------|---------|--------------------------------|-----------------------|------------------------|----------------------|---------|---------------|
|                     | SUPPLIES         | LABOR &<br>EQUIPMENT | SUPPORT |                                |                       | SUPPLIES               | LABOR &<br>EQUIPMENT | SUPPORT |               |
| OTHER BED DAY COSTS | \$21.34          | \$338.33             | \$29.45 | \$389.12                       | 0                     | \$0.00                 | \$0.00               | \$0.00  | \$0.00        |

APPENDIX 4-8

ORGAN PROCUREMENT COSTS - LIVER TRANSPLANT PATIENT #1

TOTAL COST \$9,500.00

APPENDIX 5-1-1

PHARMACY COSTS - LIVER TRANSPLANT PATIENT #2

| NAME OF DRUG                  | COST PER UNIT     |                 |         |                 | TOTAL COST BY CATEGORY |                 |         |            |
|-------------------------------|-------------------|-----------------|---------|-----------------|------------------------|-----------------|---------|------------|
|                               | LABOR & EQUIPMENT |                 | SUPPORT | TOTAL COST EACH | LABOR & EQUIPMENT      |                 | SUPPORT | TOTAL COST |
|                               | SUPPLIES          | NUMBER SUPPLIED |         |                 | SUPPLIES               | NUMBER SUPPLIED |         |            |
| ACYCLOVIR (ZOVIRAX) IV        | \$21.61           | 29              | \$1.73  | \$25.90         | \$626.69               | 29              | \$50.17 | \$751.10   |
| ACYCLOVIR                     | \$5.28            | 18              | \$0.09  | \$5.50          | \$95.04                | 18              | \$1.62  | \$99.00    |
| ALBUMIN 25% IV                | \$62.66           | 45              | \$1.73  | \$66.95         | \$2,819.70             | 45              | \$77.85 | \$3,012.75 |
| ALTERNASEL                    | \$0.26            | 53              | \$0.09  | \$0.48          | \$13.78                | 53              | \$4.77  | \$25.44    |
| AMIKACIN IV                   | \$18.21           | 6               | \$1.73  | \$22.50         | \$109.26               | 6               | \$10.38 | \$135.00   |
| AMILORIDE                     | \$11.22           | 6               | \$0.09  | \$11.44         | \$67.32                | 6               | \$0.54  | \$68.64    |
| AMPHOTERICIN B (FUNGIZONE) IV | \$20.16           | 15              | \$1.73  | \$24.45         | \$302.40               | 15              | \$25.95 | \$366.75   |
| AMPICILLIN (POLYICILLIN N) IV | \$1.76            | 8               | \$1.73  | \$6.05          | \$14.08                | 8               | \$13.84 | \$48.40    |
| BACTRIM                       | \$0.04            | 7               | \$0.09  | \$0.26          | \$0.28                 | 7               | \$0.63  | \$1.82     |
| BENEDRYL IV                   | \$6.77            | 17              | \$1.73  | \$11.06         | \$115.09               | 17              | \$29.41 | \$188.02   |
| CARAFATE                      | \$2.85            | 35              | \$0.09  | \$3.07          | \$102.60               | 35              | \$3.24  | \$110.52   |
| CEFADYL                       | \$11.22           | 31              | \$0.09  | \$11.44         | \$347.82               | 31              | \$2.79  | \$354.64   |
| CEFOTAN IV                    | \$9.38            | 6               | \$1.73  | \$13.67         | \$56.28                | 6               | \$10.38 | \$82.02    |
| CEFOTAXIME (CLAFORAN) IV      | \$12.62           | 8               | \$1.73  | \$16.91         | \$100.96               | 8               | \$13.84 | \$135.28   |
| CEFULAC                       | \$11.22           | 1               | \$0.09  | \$11.44         | \$11.22                | 1               | \$0.09  | \$11.44    |
| CIPROFLOXICIN                 | \$11.22           | 1               | \$0.09  | \$11.44         | \$11.22                | 1               | \$0.09  | \$11.44    |
| CLINDAMYCIN (CLEOCIN) IV      | \$8.18            | 2               | \$1.73  | \$12.47         | \$16.36                | 2               | \$3.46  | \$24.94    |
| COLACE                        | \$0.01            | 13              | \$0.09  | \$0.23          | \$0.13                 | 13              | \$1.17  | \$2.99     |
| CYCLOSPORINE (SANDIMMUNE) IV  | \$14.32           | 25              | \$1.73  | \$18.61         | \$358.00               | 25              | \$43.25 | \$465.25   |
| CYCLOSPORINE (SANDIMMUNE)     | \$20.95           | 14              | \$0.09  | \$21.17         | \$293.30               | 14              | \$1.26  | \$296.38   |
| DEKOROL                       | \$11.22           | 1               | \$1.73  | \$15.51         | \$11.22                | 1               | \$1.73  | \$15.51    |
| EDECRIN IV                    | \$11.35           | 2               | \$1.73  | \$15.64         | \$22.70                | 2               | \$3.46  | \$31.28    |

Liver Transplantation Costs

APPENDIX 5-1-2

|                           |          |        |        |          |     |            |          |          |            |
|---------------------------|----------|--------|--------|----------|-----|------------|----------|----------|------------|
| ERYTHROMYCIN IV           | \$1.86   | \$2.56 | \$1.73 | \$6.15   | 98  | \$182.28   | \$250.88 | \$169.54 | \$602.70   |
| FORTAZ IV                 | \$22.99  | \$2.56 | \$1.73 | \$27.28  | 19  | \$436.81   | \$48.64  | \$32.87  | \$518.32   |
| GAMMA IMMUNE IV           | \$11.22  | \$2.56 | \$1.73 | \$15.51  | 8   | \$89.76    | \$20.48  | \$13.84  | \$124.08   |
| GASTROGROPHINE            | \$11.22  | \$0.13 | \$0.09 | \$11.44  | 1   | \$11.22    | \$0.13   | \$0.09   | \$11.44    |
| GENTAMICIN (GARAMYCIN) IV | \$1.30   | \$2.56 | \$1.73 | \$5.59   | 3   | \$3.90     | \$7.68   | \$5.19   | \$16.77    |
| K-PHOS                    | \$11.22  | \$0.13 | \$0.09 | \$11.44  | 3   | \$33.66    | \$0.39   | \$0.27   | \$34.32    |
| LACTULOSE SYRUP           | \$14.44  | \$0.13 | \$0.09 | \$14.66  | 6   | \$86.64    | \$0.78   | \$0.54   | \$87.96    |
| LASIX IV                  | \$2.59   | \$2.56 | \$1.73 | \$6.88   | 49  | \$126.91   | \$125.44 | \$84.77  | \$337.12   |
| MAXIDE                    | \$11.22  | \$0.13 | \$0.09 | \$11.44  | 5   | \$56.10    | \$0.65   | \$0.45   | \$57.20    |
| MOM                       | \$11.22  | \$0.13 | \$0.09 | \$11.44  | 1   | \$11.22    | \$0.13   | \$0.09   | \$11.44    |
| MAGNESIUM SULFATE IV      | \$1.31   | \$2.56 | \$1.73 | \$5.60   | 25  | \$32.75    | \$64.00  | \$43.25  | \$140.00   |
| MYCOSTATIN VAS SUPP       | \$11.22  | \$0.13 | \$0.09 | \$11.44  | 58  | \$650.76   | \$7.54   | \$5.22   | \$663.52   |
| MYLANTA                   | \$11.22  | \$0.13 | \$0.09 | \$11.44  | 6   | \$67.32    | \$0.70   | \$0.54   | \$68.64    |
| MVI                       | \$11.22  | \$0.13 | \$0.09 | \$11.44  | 2   | \$22.44    | \$0.26   | \$0.18   | \$22.88    |
| NEDMYCIN                  | \$0.40   | \$0.13 | \$0.09 | \$0.62   | 45  | \$18.00    | \$5.85   | \$4.05   | \$27.90    |
| NYSTATIN                  | \$1.27   | \$0.13 | \$0.09 | \$1.49   | 108 | \$137.16   | \$14.04  | \$9.72   | \$160.92   |
| OKTS IV                   | \$750.68 | \$2.56 | \$1.73 | \$754.97 | 12  | \$9,008.16 | \$30.72  | \$20.76  | \$9,059.64 |
| PERCOCET                  | \$11.22  | \$0.13 | \$0.09 | \$11.44  | 7   | \$78.54    | \$0.91   | \$0.63   | \$80.08    |
| PIPERACILLIN IV           | \$10.47  | \$2.56 | \$1.73 | \$14.76  | 26  | \$272.22   | \$66.56  | \$44.98  | \$383.76   |
| PLASMANATE                | \$11.22  | \$0.13 | \$0.09 | \$11.44  | 2   | \$22.44    | \$0.26   | \$0.18   | \$22.88    |
| RANITIDINE (ZANTAC) IV    | \$11.39  | \$2.56 | \$1.73 | \$15.68  | 39  | \$444.21   | \$99.84  | \$67.47  | \$611.52   |
| RESTORIL                  | \$11.22  | \$0.13 | \$0.09 | \$11.44  | 2   | \$22.44    | \$0.26   | \$0.18   | \$22.88    |
| REGLAN IV                 | \$1.86   | \$2.56 | \$1.73 | \$6.15   | 14  | \$26.04    | \$35.84  | \$24.22  | \$86.10    |
| RIOPAN                    | \$0.16   | \$0.13 | \$0.09 | \$0.38   | 26  | \$4.16     | \$3.38   | \$2.34   | \$9.88     |
| ROCEPHIN                  | \$11.22  | \$0.13 | \$0.09 | \$11.44  | 1   | \$11.22    | \$0.13   | \$0.09   | \$11.44    |
| SENA II                   | \$11.22  | \$0.13 | \$0.09 | \$11.44  | 9   | \$100.98   | \$1.17   | \$0.81   | \$102.96   |
| SOLUHEXROL IV             | \$2.68   | \$2.56 | \$1.73 | \$6.97   | 51  | \$136.68   | \$130.56 | \$88.23  | \$355.47   |
| TYLENOL                   | \$11.22  | \$0.13 | \$0.09 | \$11.44  | 17  | \$190.74   | \$2.21   | \$1.53   | \$194.48   |
| VANCORNYCIN (VANCOCIN) IV | \$30.55  | \$2.56 | \$1.73 | \$34.84  | 17  | \$519.35   | \$43.52  | \$29.41  | \$592.28   |

APPENDIX 5-1-3

| ZARDOLYN | \$11.22    | \$0.13  | \$0.09  | \$11.44    | 1 | \$11.22     | \$0.13     | \$0.09   | \$11.44     |
|----------|------------|---------|---------|------------|---|-------------|------------|----------|-------------|
| TOTAL    | \$1,294.76 | \$65.08 | \$44.04 | \$1,403.88 |   | \$18,310.78 | \$1,406.40 | \$951.45 | \$20,668.63 |

APPENDIX 5-2-1

LABORATORY COSTS - LIVER TRANSPLANT PATIENT #2

| TEST               | COST PER TEST |           |                    | TOTAL COST BY CATEGORY |         |          |           |               |            |
|--------------------|---------------|-----------|--------------------|------------------------|---------|----------|-----------|---------------|------------|
|                    | LABOR &       |           | TOTAL<br>COST EACH | NUMBER<br>PERFORMED    | LABOR & |          |           | TOTAL<br>COST |            |
|                    | SUPPLIES      | EQUIPMENT |                    |                        | SUPPORT | SUPPLIES | EQUIPMENT |               | SUPPORT    |
| ACA BATTERY        | \$1.33        | \$0.21    | \$0.05             | \$1.59                 | 14      | \$18.62  | \$2.94    | \$0.70        | \$22.26    |
| AFB SMEAR          | \$0.17        | \$2.57    | \$0.63             | \$3.37                 | 1       | \$0.17   | \$2.57    | \$0.63        | \$3.37     |
| ALK PHOS HITACHI   | \$0.22        | \$0.09    | \$0.02             | \$0.33                 | 3       | \$0.66   | \$0.27    | \$0.06        | \$0.99     |
| ALPHA-FETOPROT     | \$1.76        | \$1.68    | \$0.40             | \$3.84                 | 1       | \$1.76   | \$1.68    | \$0.40        | \$3.84     |
| ALT (SGPT) HITACHI | \$1.04        | \$0.09    | \$0.02             | \$1.15                 | 9       | \$9.36   | \$0.81    | \$0.18        | \$10.35    |
| AMIKACIN PEAK      | \$1.74        | \$0.21    | \$0.05             | \$2.00                 | 1       | \$1.74   | \$0.21    | \$0.05        | \$2.00     |
| AMMONIA            | \$9.60        | \$0.21    | \$0.05             | \$9.86                 | 5       | \$48.00  | \$1.05    | \$0.25        | \$49.30    |
| AMYLASE BF         | \$2.28        | \$0.09    | \$0.02             | \$2.39                 | 8       | \$18.24  | \$0.72    | \$0.16        | \$19.12    |
| ANAEROBIC CULTURE  | \$3.10        | \$13.00   | \$3.19             | \$19.29                | 1       | \$3.10   | \$13.00   | \$3.19        | \$19.29    |
| ANTIBODY SCR       | \$2.89        | \$4.34    | \$1.05             | \$8.28                 | 1       | \$2.89   | \$4.34    | \$1.05        | \$8.28     |
| AST (SGOT) HITACHI | \$0.28        | \$0.09    | \$0.02             | \$0.39                 | 1       | \$0.28   | \$0.09    | \$0.02        | \$0.39     |
| BILIRUBIN TOTAL    | \$2.01        | \$0.09    | \$0.02             | \$2.12                 | 1       | \$2.01   | \$0.09    | \$0.02        | \$2.12     |
| BLOOD CULTURE      | \$5.77        | \$7.08    | \$1.74             | \$14.59                | 2       | \$11.54  | \$14.16   | \$3.48        | \$29.18    |
| BLOOD GASES ART    | \$5.77        | \$7.08    | \$1.74             | \$14.59                | 70      | \$403.90 | \$495.60  | \$121.80      | \$1,021.30 |
| BLOOD GASES VEN    | \$5.77        | \$7.08    | \$1.74             | \$14.59                | 3       | \$17.31  | \$21.24   | \$5.22        | \$43.77    |
| BODY FLUID PH      | \$0.20        | \$3.00    | \$0.74             | \$3.94                 | 1       | \$0.20   | \$3.00    | \$0.74        | \$3.94     |
| BUN                | \$0.12        | \$0.09    | \$0.02             | \$0.23                 | 8       | \$0.96   | \$0.72    | \$0.16        | \$1.84     |
| CALCIUM IONIZED    | \$0.19        | \$0.21    | \$0.05             | \$0.45                 | 27      | \$5.13   | \$5.67    | \$1.35        | \$12.15    |
| CBC                | \$0.20        | \$1.24    | \$0.31             | \$1.75                 | 28      | \$5.60   | \$34.72   | \$8.68        | \$49.00    |
| CHEM PROFILE       | \$1.76        | \$2.52    | \$0.60             | \$4.88                 | 35      | \$61.60  | \$88.20   | \$21.00       | \$170.80   |
| CREATININE         | \$0.16        | \$0.21    | \$0.05             | \$0.42                 | 1       | \$0.16   | \$0.21    | \$0.05        | \$0.42     |
| CYCLOSPORIN TDX    | \$12.74       | \$1.16    | \$0.28             | \$14.18                | 5       | \$63.70  | \$5.80    | \$1.40        | \$70.90    |

Liver Transplantation Costs

APPENDIX 5-2-2

|                    |        |         |        |         |    |         |         |         |          |
|--------------------|--------|---------|--------|---------|----|---------|---------|---------|----------|
| DIFFERENTIAL       | \$0.18 | \$4.72  | \$1.16 | \$6.06  | 21 | \$3.78  | \$99.12 | \$24.36 | \$127.26 |
| DIRECT BILIRUBIN   | \$1.66 | \$0.21  | \$0.05 | \$1.92  | 1  | \$1.66  | \$0.21  | \$0.05  | \$1.92   |
| FUNGUS CULTURE     | \$3.63 | \$1.07  | \$0.26 | \$4.96  | 1  | \$3.63  | \$1.07  | \$0.26  | \$4.96   |
| FUNGUS SHEAR       | \$0.14 | \$3.22  | \$0.79 | \$4.15  | 2  | \$0.28  | \$6.44  | \$1.58  | \$8.30   |
| GAMMA GT           | \$1.67 | \$0.09  | \$0.02 | \$1.78  | 8  | \$13.36 | \$0.72  | \$0.16  | \$14.24  |
| GLUCOSE BF         | \$0.07 | \$0.09  | \$0.02 | \$0.18  | 1  | \$0.07  | \$0.09  | \$0.02  | \$0.18   |
| GRAM STAIN         | \$0.25 | \$2.19  | \$0.54 | \$2.98  | 6  | \$1.50  | \$13.14 | \$3.24  | \$17.88  |
| HITACHI BATTERY    | \$2.98 | \$2.45  | \$0.60 | \$6.03  | 22 | \$65.56 | \$53.90 | \$13.20 | \$132.66 |
| LD (LDH)           | \$0.28 | \$0.09  | \$0.02 | \$0.39  | 1  | \$0.28  | \$0.09  | \$0.02  | \$0.39   |
| LD (LDH) BF        | \$0.00 | \$0.09  | \$0.02 | \$0.11  | 1  | \$0.00  | \$0.09  | \$0.02  | \$0.11   |
| MAGNESIUM HITACHI  | \$1.13 | \$0.09  | \$0.02 | \$1.24  | 9  | \$10.17 | \$0.81  | \$0.18  | \$11.16  |
| NO SPEC COL YME    | \$0.00 | \$1.24  | \$0.31 | \$1.55  | 1  | \$0.00  | \$1.24  | \$0.31  | \$1.55   |
| PERITONEAL FL EX   | \$1.76 | \$1.68  | \$0.40 | \$3.84  | 1  | \$1.76  | \$1.68  | \$0.40  | \$3.84   |
| PLEURAL FLUID EXAM | \$1.76 | \$1.68  | \$0.40 | \$3.84  | 1  | \$1.76  | \$1.68  | \$0.40  | \$3.84   |
| PLT CONC           | \$2.45 | \$3.90  | \$1.55 | \$7.90  | 9  | \$22.05 | \$35.10 | \$13.95 | \$71.10  |
| SOL                | \$0.13 | \$0.09  | \$0.02 | \$0.24  | 14 | \$1.82  | \$1.26  | \$0.28  | \$3.36   |
| SOD2               | \$5.77 | \$7.08  | \$1.74 | \$14.59 | 14 | \$80.78 | \$99.12 | \$24.36 | \$204.26 |
| SBLU               | \$0.07 | \$0.09  | \$0.02 | \$0.18  | 2  | \$0.14  | \$0.18  | \$0.04  | \$0.36   |
| SK                 | \$0.13 | \$0.09  | \$0.02 | \$0.24  | 14 | \$1.82  | \$1.26  | \$0.28  | \$3.36   |
| SNA                | \$0.13 | \$0.09  | \$0.02 | \$0.24  | 14 | \$1.82  | \$1.26  | \$0.28  | \$3.36   |
| SOSMO              | \$1.76 | \$4.20  | \$1.00 | \$6.96  | 2  | \$3.52  | \$8.40  | \$2.00  | \$13.92  |
| SPUTUM CULTURE     | \$5.92 | \$10.64 | \$2.61 | \$19.17 | 2  | \$11.84 | \$21.28 | \$5.22  | \$38.34  |
| SSBOT              | \$1.76 | \$1.26  | \$0.50 | \$3.52  | 1  | \$1.76  | \$1.26  | \$0.50  | \$3.52   |
| STAT APTT          | \$1.76 | \$2.10  | \$0.50 | \$4.36  | 23 | \$40.48 | \$48.30 | \$11.50 | \$100.28 |
| STAT PROTINE       | \$1.76 | \$1.26  | \$0.30 | \$3.32  | 23 | \$40.48 | \$28.98 | \$6.90  | \$76.36  |
| TDX BATTERY        | \$1.33 | \$0.21  | \$0.05 | \$1.59  | 1  | \$1.33  | \$0.21  | \$0.05  | \$1.59   |
| TOTAL PROTEIN BF   | \$0.15 | \$0.09  | \$0.02 | \$0.26  | 1  | \$0.15  | \$0.09  | \$0.02  | \$0.26   |
| URINALYSIS MACRO   | \$0.40 | \$1.29  | \$0.32 | \$2.01  | 12 | \$4.80  | \$15.48 | \$3.84  | \$24.12  |
| URINALYSIS MICRO   | \$0.26 | \$1.29  | \$0.32 | \$1.87  | 12 | \$3.12  | \$15.48 | \$3.84  | \$22.44  |

APPENDIX 5-2-3

|               |          |          |         |          |    |            |            |          |            |
|---------------|----------|----------|---------|----------|----|------------|------------|----------|------------|
| URINE CULTURE | \$1.66   | \$4.46   | \$1.09  | \$7.21   | 13 | \$21.58    | \$57.98    | \$14.17  | \$93.73    |
| VENIPUNCTURE  | \$1.76   | \$1.68   | \$0.40  | \$3.84   | 3  | \$5.28     | \$5.04     | \$1.20   | \$11.52    |
| WOUND CULTURE | \$1.23   | \$5.28   | \$1.29  | \$7.80   | 2  | \$2.46     | \$10.56    | \$2.58   | \$15.60    |
|               | \$101.71 | \$116.14 | \$29.12 | \$246.97 |    | \$1,007.35 | \$1,225.67 | \$305.10 | \$2,538.12 |

APPENDIX 5-3

BLOOD BANK COSTS - LIVER TRANSPLANT PATIENT #2

| TEST                 | COST PER TEST OR UNIT |                   |         |                 | TOTAL COST BY CATEGORY |          |                   |         | TOTAL COST |
|----------------------|-----------------------|-------------------|---------|-----------------|------------------------|----------|-------------------|---------|------------|
|                      | SUPPLIES              | LABOR & EQUIPMENT | SUPPORT | TOTAL COST EACH | NUMBER PERFORMED       | SUPPLIES | LABOR & EQUIPMENT | SUPPORT |            |
| AB SCR S.A.L-AHG     | \$0.35                | \$1.21            | \$0.34  | \$1.90          | 1                      | \$0.35   | \$1.21            | \$0.34  | \$1.90     |
| CROSS MATCH          | \$0.48                | \$1.21            | \$0.34  | \$2.03          | 21                     | \$10.08  | \$25.41           | \$7.14  | \$42.63    |
| FFP THAW/ISSUE       | \$1.50                | \$1.21            | \$0.34  | \$3.05          | 11                     | \$16.50  | \$13.31           | \$3.74  | \$33.55    |
| FFP TRANSFUSED       | \$25.00               | \$0.00            | \$0.00  | \$25.00         | 11                     | \$275.00 | \$0.00            | \$0.00  | \$275.00   |
| PLATELETS TRANSFUSED | \$26.00               | \$0.00            | \$0.00  | \$26.00         | 6                      | \$156.00 | \$0.00            | \$0.00  | \$156.00   |
| PROD RTN TO INV      | \$0.00                | \$1.21            | \$0.34  | \$1.55          | 24                     | \$0.00   | \$29.04           | \$8.16  | \$37.20    |
| WBC/RBC TRANSFUSED   | \$48.00               | \$0.00            | \$0.00  | \$48.00         | 11                     | \$528.00 | \$0.00            | \$0.00  | \$528.00   |
| TOTAL                | \$101.33              | \$4.84            | \$1.36  | \$105.63        |                        | \$985.93 | \$68.97           | \$19.38 | \$1,074.28 |

Liver Transplantation Costs

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APPENDIX 5-4

RADIOLOGY COSTS - LIVER TRANSPLANT PATIENT #2

| TYPE OF PROCEDURE          | COST PER PROCEDURE |                   |         |                 | TOTAL COST BY CATEGORY |          |                   |          | TOTAL COST |
|----------------------------|--------------------|-------------------|---------|-----------------|------------------------|----------|-------------------|----------|------------|
|                            | SUPPLIES           | LABOR & EQUIPMENT | SUPPORT | TOTAL COST EACH | NUMBER PERFORMED       | SUPPLIES | LABOR & EQUIPMENT | SUPPORT  |            |
| ABDOMEN                    | \$3.08             | \$9.73            | \$3.26  | \$16.07         | 1                      | \$3.08   | \$9.73            | \$3.26   | \$16.07    |
| OTHER ANGIO                | \$27.50            | \$86.91           | \$29.12 | \$143.53        | 2                      | \$55.00  | \$173.82          | \$58.24  | \$287.06   |
| PA AND LAT CHEST           | \$3.30             | \$10.43           | \$3.49  | \$17.22         | 3                      | \$9.90   | \$31.29           | \$10.47  | \$51.66    |
| ABD ACCESS PROTOCOL        | \$6.60             | \$20.86           | \$6.99  | \$34.45         | 1                      | \$6.60   | \$20.86           | \$6.99   | \$34.45    |
| ABDOMEN OR PELVIS PROTOCOL | \$6.60             | \$20.86           | \$6.99  | \$34.45         | 1                      | \$6.60   | \$20.86           | \$6.99   | \$34.45    |
| OTHER FLOURO               | \$7.70             | \$24.34           | \$8.15  | \$40.19         | 1                      | \$7.70   | \$24.34           | \$8.15   | \$40.19    |
| PORTABLE CHEST             | \$6.60             | \$20.86           | \$6.99  | \$34.45         | 57                     | \$376.20 | \$1,189.02        | \$398.43 | \$1,963.65 |
| PORTABLE ABDOMEN           | \$6.60             | \$20.86           | \$6.99  | \$34.45         | 13                     | \$85.80  | \$271.18          | \$90.87  | \$447.85   |
| ULTRASOUND                 | \$12.37            | \$48.27           | \$15.79 | \$76.43         | 3                      | \$37.11  | \$144.81          | \$47.37  | \$229.29   |
| TOTAL                      | \$80.35            | \$263.12          | \$87.77 | \$431.24        |                        | \$587.99 | \$1,885.91        | \$630.77 | \$3,104.67 |

APPENDIX 5-5

SURGERY COSTS - LIVER TRANSPLANT PATIENT #2

| SERVICE        | COST PER MINUTE |                      |         | TOTAL<br>COST EACH | NUMBER OF<br>MINUTES | TOTAL COST BY CATEGORY |            |            | TOTAL<br>COST |
|----------------|-----------------|----------------------|---------|--------------------|----------------------|------------------------|------------|------------|---------------|
|                | SUPPLIES        | LABOR &<br>EQUIPMENT | SUPPORT |                    |                      | SUPPLY                 | EQUIPMENT  | SUPPORT    |               |
| SURGICAL SUITE | \$3.17          | \$2.30               | \$0.72  | \$6.19             | 1346                 | \$4,266.82             | \$3,095.80 | \$969.12   | \$8,331.74    |
| ANESTHESIOLOGY | \$0.70          | \$1.97               | \$0.30  | \$2.97             | 1572                 | \$1,110.40             | \$3,096.84 | \$471.60   | \$4,668.84    |
| TOTAL          | \$3.87          | \$4.27               | \$1.02  | \$9.16             |                      | \$5,367.22             | \$6,192.64 | \$1,440.72 | \$13,000.58   |

**SURGICAL ICU BED DAY COSTS - LIVER TRANSPLANT PATIENT #2**

[illegible]

APPENDIX 5-7

OTHER BED DAY COSTS - LIVER TRANSPLANT PATIENT #2

|                     | COST PER BED DAY |                      |         |  | TOTAL<br>COST EACH<br>BED DAYS | TOTAL COST BY CATEGORY |                      |         |  | TOTAL<br>COST |
|---------------------|------------------|----------------------|---------|--|--------------------------------|------------------------|----------------------|---------|--|---------------|
|                     | SUPPLIES         | LABOR &<br>EQUIPMENT | SUPPORT |  |                                | SUPPLIES               | LABOR &<br>EQUIPMENT | SUPPORT |  |               |
| OTHER BED DAY COSTS | \$21.34          | \$338.33             | \$29.45 |  | \$389.12                       | \$0.00                 | \$0.00               | \$0.00  |  | \$0.00        |

APPENDIX 5-8

ORGAN PROCUREMENT COSTS - LIVER TRANSPLANT PATIENT #2

TOTAL COST                      \$9,000.00

Liver Transplantation Costs

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PHARMACY COSTS - LIVER TRANSPLANT PATIENT #3

| NAME OF DRUG                  | COST PER UNIT |                   |         |                 | TOTAL COST BY CATEGORY |            |                   |         | TOTAL COST |
|-------------------------------|---------------|-------------------|---------|-----------------|------------------------|------------|-------------------|---------|------------|
|                               | SUPPLIES      | LABOR & EQUIPMENT | SUPPORT | TOTAL COST EACH | NUMBER SUPPLIED        | SUPPLIES   | LABOR & EQUIPMENT | SUPPORT |            |
| ACYCLOVIR (ZOVIRAX) IV        | \$21.61       | \$2.56            | \$1.73  | \$25.90         | 25                     | \$540.25   | \$64.00           | \$43.25 | \$647.50   |
| ACYCLOVIR                     | \$5.28        | \$0.13            | \$0.09  | \$5.50          | 68                     | \$359.04   | \$8.84            | \$6.12  | \$374.00   |
| ALBUMIN 25% IV                | \$62.66       | \$2.56            | \$1.73  | \$66.95         | 39                     | \$2,443.74 | \$99.84           | \$67.47 | \$2,611.05 |
| ALTERNAGEL                    | \$0.26        | \$0.13            | \$0.09  | \$0.48          | 25                     | \$6.50     | \$3.25            | \$2.25  | \$12.00    |
| AMPHOTERICIN B (FUNGIZONE) IV | \$20.16       | \$2.56            | \$1.73  | \$24.45         | 2                      | \$40.32    | \$5.12            | \$3.46  | \$48.90    |
| BENEDRYL IV                   | \$6.77        | \$2.56            | \$1.73  | \$11.06         | 7                      | \$47.39    | \$17.92           | \$12.11 | \$77.42    |
| CARAFATE                      | \$2.85        | \$0.13            | \$0.09  | \$3.07          | 28                     | \$79.80    | \$3.64            | \$2.52  | \$85.96    |
| CEFOTAXIME (CLAFORAN) IV      | \$12.62       | \$2.56            | \$1.73  | \$16.91         | 6                      | \$75.72    | \$15.36           | \$10.38 | \$101.46   |
| CLEOCIN/GENTAMICIN IV         | \$16.57       | \$2.56            | \$1.73  | \$20.86         | 6                      | \$99.42    | \$15.36           | \$10.38 | \$125.16   |
| CLINDAMYCIN (CLEOCIN) IV      | \$8.18        | \$2.56            | \$1.73  | \$12.47         | 6                      | \$49.08    | \$15.36           | \$10.38 | \$74.82    |
| CYCLOSPORINE (SANDIMMUNE)     | \$20.95       | \$0.13            | \$0.09  | \$21.17         | 107                    | \$2,241.65 | \$13.91           | \$9.63  | \$2,265.19 |
| CYCLOSPORINE (SANDIMMUNE) IV  | \$14.32       | \$2.56            | \$1.73  | \$18.61         | 30                     | \$429.60   | \$76.80           | \$51.90 | \$558.30   |
| DELTAZONE                     | \$0.03        | \$0.13            | \$0.09  | \$0.25          | 54                     | \$1.62     | \$7.02            | \$4.86  | \$13.50    |
| DILANTIN                      | \$0.02        | \$0.13            | \$0.09  | \$0.24          | 46                     | \$0.92     | \$5.98            | \$4.14  | \$11.04    |
| DILANTIN IV                   | \$20.82       | \$2.56            | \$1.73  | \$25.11         | 2                      | \$41.64    | \$5.12            | \$3.46  | \$50.22    |
| EDECRIN IV                    | \$11.35       | \$2.56            | \$1.73  | \$15.64         | 1                      | \$11.35    | \$2.56            | \$1.73  | \$15.64    |
| ERYTHROMYCIN IV               | \$1.86        | \$2.56            | \$1.73  | \$6.15          | 9                      | \$16.74    | \$23.04           | \$15.57 | \$55.35    |
| FERROSEQUELS                  | \$0.04        | \$0.13            | \$0.09  | \$0.26          | 90                     | \$3.60     | \$11.70           | \$8.10  | \$23.40    |
| FLAGYL                        | \$0.02        | \$0.13            | \$0.09  | \$0.24          | 32                     | \$0.64     | \$4.16            | \$2.88  | \$7.68     |
| GENTAMICIN (GARAMYCIN) IV     | \$1.30        | \$2.56            | \$1.73  | \$5.59          | 44                     | \$57.20    | \$112.64          | \$76.12 | \$245.96   |
| 20% INTRALIPIDS               | \$7.00        | \$0.13            | \$0.09  | \$7.22          | 8                      | \$56.00    | \$1.04            | \$0.72  | \$57.76    |
| LACTULOSE SYRUP               | \$14.44       | \$0.13            | \$0.09  | \$14.66         | 1                      | \$14.44    | \$0.13            | \$0.09  | \$14.66    |

APPENDIX 6-1-2

|                           |            |         |         |            |    |             |          |          |             |
|---------------------------|------------|---------|---------|------------|----|-------------|----------|----------|-------------|
| LASIX IV                  | \$2.59     | \$2.56  | \$1.73  | \$6.88     | 6  | \$15.54     | \$15.36  | \$10.38  | \$41.28     |
| MAGNESIUM SULFATE IV      | \$1.31     | \$2.56  | \$1.73  | \$5.60     | 9  | \$11.79     | \$23.04  | \$15.57  | \$50.40     |
| MYSTATIN                  | \$1.27     | \$0.13  | \$0.09  | \$1.49     | 25 | \$31.75     | \$3.25   | \$2.25   | \$37.25     |
| UKTS IV                   | \$750.38   | \$2.56  | \$1.73  | \$754.67   | 11 | \$8,254.18  | \$28.16  | \$19.03  | \$8,301.37  |
| PIPERACILLIN IV           | \$10.47    | \$2.56  | \$1.73  | \$14.76    | 17 | \$177.99    | \$43.52  | \$29.41  | \$250.92    |
| RANITIDINE (ZANTAC) IV    | \$11.39    | \$2.56  | \$1.73  | \$15.68    | 11 | \$125.29    | \$28.16  | \$19.03  | \$172.48    |
| RANITIDINE (ZANTAC)       | \$0.57     | \$0.13  | \$0.09  | \$0.79     | 32 | \$18.24     | \$4.16   | \$2.88   | \$25.28     |
| RIDPAN                    | \$0.16     | \$0.13  | \$0.09  | \$0.38     | 2  | \$0.32      | \$0.26   | \$0.18   | \$0.76      |
| SOLUCORTEF IV             | \$1.49     | \$2.56  | \$1.73  | \$5.78     | 2  | \$2.98      | \$5.12   | \$3.46   | \$11.56     |
| SOLUDECROL IV             | \$2.68     | \$2.56  | \$1.73  | \$6.97     | 19 | \$50.92     | \$48.64  | \$32.87  | \$132.43    |
| VANCORVYCIN (VANCOCIN) IV | \$30.55    | \$2.56  | \$1.73  | \$34.84    | 36 | \$1,099.80  | \$92.16  | \$62.28  | \$1,254.24  |
| TOTAL                     | \$1,061.97 | \$52.89 | \$35.77 | \$1,150.63 |    | \$16,405.46 | \$804.62 | \$544.86 | \$17,754.94 |

APPENDIX 6-2-1

LABORATORY COSTS - LIVER TRANSPLANT PATIENT #3

| TEST               | COST PER TEST |                   |         |                 | TOTAL COST BY CATEGORY |          |                   |         | TOTAL COST |
|--------------------|---------------|-------------------|---------|-----------------|------------------------|----------|-------------------|---------|------------|
|                    | SUPPLIES      | LABOR & EQUIPMENT | SUPPORT | TOTAL COST EACH | NUMBER PERFORMED       | SUPPLIES | LABOR & EQUIPMENT | SUPPORT |            |
| A-G RATIO          | \$0.25        | \$0.09            | \$0.02  | \$0.36          | 2                      | \$0.50   | \$0.18            | \$0.04  | \$0.72     |
| ACA CREATININE     | \$1.33        | \$0.21            | \$0.05  | \$1.59          | 38                     | \$50.54  | \$7.98            | \$1.90  | \$60.42    |
| ACETONE            | \$0.08        | \$4.34            | \$1.05  | \$5.47          | 1                      | \$0.08   | \$4.34            | \$1.05  | \$5.47     |
| AFB CULTURE        | \$51.97       | \$28.06           | \$6.88  | \$86.91         | 1                      | \$51.97  | \$28.06           | \$6.88  | \$86.91    |
| AFB SMEAR          | \$0.17        | \$2.57            | \$0.63  | \$3.37          | 1                      | \$0.17   | \$2.57            | \$0.63  | \$3.37     |
| ALBUMIN            | \$0.07        | \$0.09            | \$0.02  | \$0.18          | 4                      | \$0.28   | \$0.36            | \$0.08  | \$0.72     |
| ALK PHOS HITACHI   | \$0.22        | \$0.09            | \$0.02  | \$0.33          | 32                     | \$7.04   | \$2.88            | \$0.64  | \$10.56    |
| ALT (SGPT) HITACHI | \$1.04        | \$0.09            | \$0.02  | \$1.15          | 38                     | \$39.52  | \$3.42            | \$0.76  | \$43.70    |
| AMYLASE (HITACHI)  | \$2.28        | \$0.21            | \$0.05  | \$2.54          | 11                     | \$25.08  | \$2.31            | \$0.55  | \$27.94    |
| ANAEROBIC CULTURE  | \$3.10        | \$13.00           | \$3.19  | \$19.29         | 13                     | \$40.30  | \$169.00          | \$41.47 | \$250.77   |
| AST (SGOT) HITACHI | \$0.28        | \$0.09            | \$0.02  | \$0.39          | 29                     | \$8.12   | \$2.61            | \$0.58  | \$11.31    |
| BASE XS ARTERIAL   | \$1.35        | \$3.09            | \$0.76  | \$5.20          | 73                     | \$98.55  | \$225.57          | \$55.48 | \$379.60   |
| BILIRUBIN TOTAL    | \$2.01        | \$0.09            | \$0.02  | \$2.12          | 18                     | \$36.18  | \$1.62            | \$0.36  | \$38.16    |
| BLOOD CULTURE      | \$5.77        | \$7.08            | \$1.74  | \$14.59         | 13                     | \$75.01  | \$92.04           | \$22.62 | \$189.67   |
| BUN                | \$0.12        | \$0.09            | \$0.02  | \$0.23          | 26                     | \$3.12   | \$2.34            | \$0.52  | \$5.98     |
| C. DIFFICILE       | \$3.58        | \$2.57            | \$0.63  | \$6.78          | 1                      | \$3.58   | \$2.57            | \$0.63  | \$6.78     |
| CALCIUM            | \$0.19        | \$0.21            | \$0.05  | \$0.45          | 9                      | \$1.71   | \$1.89            | \$0.45  | \$4.05     |
| CARBON DIOXIDE     | \$0.31        | \$0.09            | \$0.02  | \$0.42          | 14                     | \$4.34   | \$1.26            | \$0.28  | \$5.88     |
| CBC                | \$0.20        | \$1.24            | \$0.31  | \$1.75          | 36                     | \$7.20   | \$44.64           | \$11.16 | \$63.00    |
| CHLORIDE           | \$0.13        | \$0.09            | \$0.02  | \$0.24          | 14                     | \$1.82   | \$1.26            | \$0.28  | \$3.36     |
| C1 URN CONC        | \$0.12        | \$0.04            | \$0.01  | \$0.17          | 2                      | \$0.24   | \$0.08            | \$0.02  | \$0.34     |
| CMV CULTURE        | \$0.00        | \$2.57            | \$0.63  | \$3.20          | 2                      | \$0.00   | \$5.14            | \$1.26  | \$6.40     |

Liver Transplantation Costs  
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APPENDIX 6-2-2

|                      |         |        |        |         |    |          |          |         |          |
|----------------------|---------|--------|--------|---------|----|----------|----------|---------|----------|
| CMV IGG TITER        | \$2.22  | \$3.43 | \$0.84 | \$6.49  | 5  | \$11.10  | \$17.15  | \$4.20  | \$32.45  |
| CMV IGM TITER        | \$3.67  | \$3.00 | \$0.74 | \$7.41  | 5  | \$18.35  | \$15.00  | \$3.70  | \$37.05  |
| CREATININE           | \$0.16  | \$0.21 | \$0.05 | \$0.42  | 20 | \$3.20   | \$4.20   | \$1.00  | \$8.40   |
| CSF CULTURE          | \$1.23  | \$8.28 | \$2.03 | \$11.54 | 4  | \$4.92   | \$33.12  | \$8.12  | \$46.16  |
| CSF FLUID EXAM       | \$0.41  | \$7.72 | \$1.89 | \$10.02 | 2  | \$0.82   | \$15.44  | \$3.78  | \$20.04  |
| CYCLOSPORIN          | \$12.74 | \$1.16 | \$0.28 | \$14.18 | 42 | \$535.08 | \$48.72  | \$11.76 | \$595.56 |
| DIFF                 | \$0.18  | \$4.72 | \$1.16 | \$6.06  | 16 | \$2.88   | \$75.52  | \$18.56 | \$96.96  |
| DIRECT BILIRUBIN     | \$1.66  | \$0.21 | \$0.05 | \$1.92  | 20 | \$33.20  | \$4.20   | \$1.00  | \$38.40  |
| FIBRIN SPLIT PRODUCT | \$4.60  | \$3.43 | \$0.84 | \$8.87  | 1  | \$4.60   | \$3.43   | \$0.84  | \$8.87   |
| FIBRINOGEN           | \$3.00  | \$2.75 | \$0.67 | \$6.42  | 2  | \$6.00   | \$5.50   | \$1.34  | \$12.84  |
| FUNGUS CULTURE       | \$3.63  | \$1.07 | \$0.26 | \$4.96  | 5  | \$18.15  | \$5.35   | \$1.30  | \$24.80  |
| FUNGUS SHEAR         | \$0.14  | \$3.22 | \$0.79 | \$4.15  | 5  | \$0.70   | \$16.10  | \$3.95  | \$20.75  |
| GAMMA GT             | \$1.67  | \$0.09 | \$0.02 | \$1.78  | 34 | \$56.78  | \$3.06   | \$0.68  | \$60.52  |
| GENTAMICIN PEAK      | \$6.60  | \$2.15 | \$0.53 | \$9.28  | 6  | \$39.60  | \$12.90  | \$3.18  | \$55.68  |
| GENTAMICIN TROUGH    | \$6.60  | \$2.15 | \$0.53 | \$9.28  | 6  | \$39.60  | \$12.90  | \$3.18  | \$55.68  |
| GLUC URN CONC        | \$0.12  | \$0.04 | \$0.01 | \$0.17  | 3  | \$0.36   | \$0.12   | \$0.03  | \$0.51   |
| GLUCOSE              | \$0.07  | \$0.09 | \$0.02 | \$0.18  | 1  | \$0.07   | \$0.09   | \$0.02  | \$0.18   |
| GRAM STAIN           | \$0.25  | \$2.19 | \$0.54 | \$2.98  | 13 | \$3.25   | \$28.47  | \$7.02  | \$38.74  |
| HITACHI BATTERY      | \$2.98  | \$2.45 | \$0.60 | \$6.03  | 47 | \$140.06 | \$115.15 | \$28.20 | \$283.41 |
| K URN CONC           | \$0.12  | \$0.04 | \$0.01 | \$0.17  | 2  | \$0.24   | \$0.08   | \$0.02  | \$0.34   |
| K-TRANS MARKER       | \$55.80 | \$9.05 | \$2.22 | \$67.07 | 1  | \$55.80  | \$9.05   | \$2.22  | \$67.07  |
| LD (LDH)             | \$0.28  | \$0.09 | \$0.02 | \$0.39  | 3  | \$0.84   | \$0.27   | \$0.06  | \$1.17   |
| MAGNESIUM HITACHI    | \$1.13  | \$0.09 | \$0.02 | \$1.24  | 13 | \$14.69  | \$1.17   | \$0.26  | \$16.12  |
| MG URN CONC          | \$0.20  | \$2.15 | \$0.53 | \$2.88  | 1  | \$0.20   | \$2.15   | \$0.53  | \$2.88   |
| NA URN CONC          | \$0.12  | \$0.04 | \$0.01 | \$0.17  | 2  | \$0.24   | \$0.08   | \$0.02  | \$0.34   |
| OSMOLALITY           | \$0.03  | \$4.29 | \$1.05 | \$5.37  | 1  | \$0.03   | \$4.29   | \$1.05  | \$5.37   |
| PHOSPHORUS           | \$0.09  | \$0.21 | \$0.05 | \$0.35  | 3  | \$0.27   | \$0.63   | \$0.15  | \$1.05   |
| POTASSIUM            | \$0.13  | \$0.09 | \$0.02 | \$0.24  | 17 | \$2.21   | \$1.53   | \$0.34  | \$4.08   |
| SODIUM               | \$0.13  | \$0.09 | \$0.02 | \$0.24  | 14 | \$1.82   | \$1.26   | \$0.28  | \$3.36   |

APPENDIX 6-2-3

|                  |          |          |         |          |    |            |            |          |            |
|------------------|----------|----------|---------|----------|----|------------|------------|----------|------------|
| SPUTUM CULTURE   | \$5.92   | \$10.64  | \$2.61  | \$19.17  | 1  | \$5.92     | \$10.64    | \$2.61   | \$19.17    |
| SUSCEPT (KB) GP  | \$1.50   | \$2.79   | \$0.68  | \$4.97   | 12 | \$18.00    | \$33.48    | \$8.16   | \$59.64    |
| SUSCEPT (SUPPLX) | \$1.50   | \$2.79   | \$0.68  | \$4.97   | 2  | \$3.00     | \$5.58     | \$1.36   | \$9.94     |
| SUSCEPT GPS GP   | \$3.30   | \$2.79   | \$0.68  | \$6.77   | 19 | \$62.70    | \$53.01    | \$12.92  | \$128.63   |
| TISSUE REPORT    | \$184.14 | \$4.29   | \$1.05  | \$189.48 | 12 | \$2,209.68 | \$51.48    | \$12.60  | \$2,273.76 |
| URINE CULTURE    | \$1.66   | \$4.46   | \$1.09  | \$7.21   | 7  | \$11.62    | \$31.22    | \$7.63   | \$50.47    |
| URINE MACRO      | \$0.40   | \$1.29   | \$0.32  | \$2.01   | 7  | \$2.80     | \$9.03     | \$2.24   | \$14.07    |
| URINE MICRO      | \$0.26   | \$1.29   | \$0.32  | \$1.87   | 5  | \$1.30     | \$6.45     | \$1.60   | \$9.35     |
| VANCOMYCIN PEAK  | \$6.11   | \$0.21   | \$0.05  | \$6.37   | 4  | \$24.44    | \$0.84     | \$0.20   | \$25.48    |
| VANCOMYCIN TRO   | \$6.11   | \$0.21   | \$0.05  | \$6.37   | 7  | \$42.77    | \$1.47     | \$0.35   | \$44.59    |
| WOUND CULTURE    | \$1.23   | \$5.28   | \$1.29  | \$7.80   | 20 | \$24.60    | \$105.60   | \$25.80  | \$156.00   |
| TOTAL            | \$396.66 | \$166.54 | \$40.78 | \$603.98 |    | \$3,857.24 | \$1,347.85 | \$329.90 | \$5,534.99 |

APPENDIX 6-3

BLOOD BANK COSTS - LIVER TRANSPLANT PATIENT #3

| TEST                  | COST PER TEST OR UNIT |                   |         |                 | TOTAL COST BY CATEGORY |          |                   |         | TOTAL COST |
|-----------------------|-----------------------|-------------------|---------|-----------------|------------------------|----------|-------------------|---------|------------|
|                       | SUPPLIES              | LABOR & EQUIPMENT | SUPPORT | TOTAL COST EACH | NUMBER PERFORMED       | SUPPLIES | LABOR & EQUIPMENT | SUPPORT |            |
| CROSS MATCH           | \$0.48                | \$1.21            | \$0.34  | \$2.03          | 25                     | \$12.00  | \$30.25           | \$8.50  | \$50.75    |
| FFP THAW/ISSUE        | \$1.50                | \$1.21            | \$0.34  | \$3.05          | 20                     | \$30.00  | \$24.20           | \$6.80  | \$61.00    |
| FFP TRANSFUSED        | \$25.00               | \$0.00            | \$0.00  | \$25.00         | 10                     | \$250.00 | \$0.00            | \$0.00  | \$250.00   |
| PLATELETS TRANSFUSED  | \$26.00               | \$0.00            | \$0.00  | \$26.00         | 14                     | \$364.00 | \$0.00            | \$0.00  | \$364.00   |
| RBC (UNIT) TRANSFUSED | \$48.00               | \$0.00            | \$0.00  | \$48.00         | 5                      | \$240.00 | \$0.00            | \$0.00  | \$240.00   |
| TYPE & SCREEN         | \$0.40                | \$2.93            | \$0.83  | \$4.16          | 9                      | \$3.60   | \$26.37           | \$7.47  | \$37.44    |
| TOTAL                 | \$101.38              | \$5.35            | \$1.51  | \$108.24        |                        | \$899.60 | \$80.82           | \$22.77 | \$1,003.19 |

APPENDIX 6-4

RADIOLOGY COSTS - LIVER TRANSPLANT PATIENT #3

| TYPE OF PROCEDURE          | COST PER PROCEDURE |                   |         |                 | TOTAL COST BY CATEGORY |          |                   |          | TOTAL COST |
|----------------------------|--------------------|-------------------|---------|-----------------|------------------------|----------|-------------------|----------|------------|
|                            | SUPPLIES           | LABOR & EQUIPMENT | SUPPORT | TOTAL COST EACH | NUMBER PERFORMED       | SUPPLIES | LABOR & EQUIPMENT | SUPPORT  |            |
| PA AND LAT CHEST           | \$3.30             | \$10.43           | \$3.49  | \$17.22         | 5                      | \$16.50  | \$52.15           | \$17.45  | \$86.10    |
| PRE-OP CHEST               | \$3.30             | \$10.43           | \$3.49  | \$17.22         | 2                      | \$6.60   | \$20.86           | \$6.98   | \$34.44    |
| UNENHANCED BRAIN           | \$4.76             | \$18.56           | \$6.07  | \$29.39         | 1                      | \$4.76   | \$18.56           | \$6.07   | \$29.39    |
| ABD ABSCESS PROTOCOL       | \$6.60             | \$20.86           | \$6.99  | \$34.45         | 1                      | \$6.60   | \$20.86           | \$6.99   | \$34.45    |
| ABDOMEN OR PELVIS PROTOCOL | \$6.60             | \$20.86           | \$6.99  | \$34.45         | 1                      | \$6.60   | \$20.86           | \$6.99   | \$34.45    |
| T TUBE CHOLANGIOGRAM       | \$22.00            | \$69.53           | \$23.30 | \$114.83        | 3                      | \$66.00  | \$208.59          | \$69.90  | \$344.49   |
| PORTABLE CHEST             | \$6.60             | \$20.86           | \$6.99  | \$34.45         | 25                     | \$165.00 | \$521.50          | \$174.75 | \$861.25   |
| PORTABLE ABDOMEN           | \$6.60             | \$20.86           | \$6.99  | \$34.45         | 5                      | \$33.00  | \$104.30          | \$34.95  | \$172.25   |
| DECUBITUS CHEST            | \$2.85             | \$11.14           | \$3.64  | \$17.63         | 1                      | \$2.85   | \$11.14           | \$3.64   | \$17.63    |
| ULTRASOUND                 | \$12.37            | \$48.27           | \$15.79 | \$76.43         | 4                      | \$49.48  | \$193.08          | \$63.16  | \$305.72   |
| TOTAL                      | \$74.98            | \$251.80          | \$83.74 | \$410.52        |                        | \$357.39 | \$1,171.90        | \$390.88 | \$1,920.17 |

APPENDIX 6-5

SURGERY COSTS - LIVER TRANSPLANT PATIENT #3

| SERVICE        | COST PER MINUTE |                   |         |                 | TOTAL COST BY CATEGORY |            |                   |            | TOTAL COST |
|----------------|-----------------|-------------------|---------|-----------------|------------------------|------------|-------------------|------------|------------|
|                | SUPPLIES        | LABOR & EQUIPMENT | SUPPORT | TOTAL COST EACH | NUMBER OF MINUTES      | SUPPLY     | LABOR & EQUIPMENT | SUPPORT    |            |
| SURGICAL SUITE | \$3.17          | \$2.30            | \$0.72  | \$6.19          | 970                    | \$3,074.90 | \$2,231.00        | \$698.40   | \$6,004.30 |
| ANESTHESIOLOGY | \$0.70          | \$1.97            | \$0.30  | \$2.97          | 1119                   | \$783.30   | \$2,204.43        | \$335.70   | \$3,323.43 |
| TOTAL          | \$3.87          | \$4.27            | \$1.02  | \$9.16          |                        | \$3,858.20 | \$4,435.43        | \$1,034.10 | \$9,327.73 |

**SURGICAL ICU BED DAY COSTS - LIVER TRANSPLANT PATIENT #3**

[illegible]

APPENDIX 6-7

OTHER BED DAY COSTS - LIVER TRANSPLANT PATIENT #3

| COST PER BED DAY    |                   |          |                 | TOTAL COST BY CATEGORY |                   |          |            |
|---------------------|-------------------|----------|-----------------|------------------------|-------------------|----------|------------|
|                     | LABOR & EQUIPMENT |          |                 | NUMBER OF BED DAYS     | LABOR & EQUIPMENT |          |            |
|                     | SUPPLIES          | SUPPORT  | TOTAL COST EACH |                        | SUPPLIES          | SUPPORT  | TOTAL COST |
| OTHER BED DAY COSTS | \$21.34           | \$338.33 | \$389.12        | 25                     | \$533.50          | \$736.25 | \$9,728.00 |

APPENDIX 6-8

ORGAN PROCUREMENT COSTS - LIVER TRANSPLANT PATIENT #3

TOTAL COST \$15,100.00

Liver Transplantation Costs

APPENDIX 7-1-1

PHARMACY COSTS - LIVER TRANSPLANT PATIENT #4

| NAME OF DRUG                  | COST PER UNIT |                      |         | TOTAL<br>COST EACH | NUMBER<br>SUPPLIED | TOTAL COST BY CATEGORY |                      |         | TOTAL<br>COST |
|-------------------------------|---------------|----------------------|---------|--------------------|--------------------|------------------------|----------------------|---------|---------------|
|                               | SUPPLIES      | LABOR &<br>EQUIPMENT | SUPPORT |                    |                    | SUPPLIES               | LABOR &<br>EQUIPMENT | SUPPORT |               |
| ACYCLOVIR (ZOVIRAX) IV        | \$21.61       | \$2.56               | \$1.73  | \$25.90            | 13                 | \$280.93               | \$33.28              | \$22.49 | \$336.70      |
| ACYCLOVIR                     | \$5.28        | \$0.13               | \$0.09  | \$5.50             | 33                 | \$174.24               | \$4.29               | \$2.97  | \$181.50      |
| ALBUMIN 25% IV                | \$62.66       | \$2.56               | \$1.73  | \$66.95            | 3                  | \$187.98               | \$7.68               | \$5.19  | \$200.85      |
| AMPICILLIN (POLYICILLIN N) IV | \$1.76        | \$2.56               | \$1.73  | \$6.05             | 9                  | \$15.84                | \$23.04              | \$15.57 | \$54.45       |
| BENEDRYL IV                   | \$6.77        | \$2.56               | \$1.73  | \$11.06            | 11                 | \$74.47                | \$28.16              | \$19.03 | \$121.66      |
| CEFOTAN IV                    | \$9.38        | \$2.56               | \$1.73  | \$13.67            | 7                  | \$65.66                | \$17.92              | \$12.11 | \$95.69       |
| CEFOTAXIME (CLAFORAN) IV      | \$12.62       | \$2.56               | \$1.73  | \$16.91            | 9                  | \$113.58               | \$23.04              | \$15.57 | \$152.19      |
| COLACE                        | \$0.01        | \$0.13               | \$0.09  | \$0.23             | 23                 | \$0.23                 | \$2.99               | \$2.07  | \$5.29        |
| CYCLOSPORINE (SANDIMMUNE) IV  | \$14.32       | \$2.56               | \$1.73  | \$18.61            | 14                 | \$200.48               | \$35.84              | \$24.22 | \$260.54      |
| CYCLOSPORINE (SANDIMMUNE)     | \$20.95       | \$0.13               | \$0.09  | \$21.17            | 27                 | \$585.65               | \$3.51               | \$2.43  | \$571.59      |
| DEMOROL                       | \$11.22       | \$2.56               | \$1.73  | \$15.51            | 3                  | \$33.66                | \$7.68               | \$5.19  | \$46.53       |
| DONNATAL                      | \$11.22       | \$0.13               | \$0.09  | \$11.44            | 1                  | \$11.22                | \$0.13               | \$0.09  | \$11.44       |
| GASTROGRAFIN                  | \$11.22       | \$0.13               | \$0.09  | \$11.44            | 1                  | \$11.22                | \$0.13               | \$0.09  | \$11.44       |
| KCL                           | \$11.22       | \$0.13               | \$0.09  | \$11.44            | 3                  | \$33.66                | \$0.39               | \$0.27  | \$34.32       |
| LASIX IV                      | \$2.59        | \$2.56               | \$1.73  | \$6.86             | 24                 | \$62.16                | \$61.44              | \$41.52 | \$165.12      |
| LIDOCAINE IV                  | \$2.92        | \$2.56               | \$1.73  | \$7.21             | 3                  | \$8.76                 | \$7.68               | \$5.19  | \$21.63       |
| MAALOX                        | \$11.22       | \$0.13               | \$0.09  | \$11.44            | 18                 | \$201.96               | \$2.34               | \$1.62  | \$205.92      |
| MS                            | \$11.22       | \$0.13               | \$0.09  | \$11.44            | 6                  | \$67.32                | \$0.78               | \$0.54  | \$68.64       |
| MYCOSTATIN VAG SUPP           | \$11.22       | \$0.13               | \$0.09  | \$11.44            | 14                 | \$157.08               | \$1.82               | \$1.26  | \$160.16      |
| MYLANTA 11                    | \$11.22       | \$0.13               | \$0.09  | \$11.44            | 1                  | \$11.22                | \$0.13               | \$0.09  | \$11.44       |
| MS BALUS                      | \$11.22       | \$0.13               | \$0.09  | \$11.44            | 7                  | \$78.54                | \$0.91               | \$0.67  | \$80.08       |
| MYSTATIN                      | \$1.27        | \$0.13               | \$0.09  | \$1.49             | 54                 | \$68.58                | \$7.02               | \$4.96  | \$80.46       |

Liver Transplantation Costs

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APPENDIX 7-1-2

|                        |            |         |         |            |    |            |          |          |            |
|------------------------|------------|---------|---------|------------|----|------------|----------|----------|------------|
| OKT3 IV                | \$750.68   | \$2.56  | \$1.73  | \$754.97   | 1  | \$750.68   | \$2.56   | \$1.73   | \$754.97   |
| PERCOCET               | \$11.22    | \$0.13  | \$0.09  | \$11.44    | 12 | \$134.64   | \$1.56   | \$1.08   | \$137.28   |
| PHENERGAN              | \$11.22    | \$0.13  | \$0.09  | \$11.44    | 2  | \$22.44    | \$0.26   | \$0.18   | \$22.88    |
| PREDNISONE             | \$11.22    | \$0.13  | \$0.09  | \$11.44    | 30 | \$336.60   | \$3.90   | \$2.70   | \$343.20   |
| RANITIDINE (ZANTAC) IV | \$11.39    | \$2.56  | \$1.73  | \$15.68    | 24 | \$273.36   | \$61.44  | \$41.52  | \$376.32   |
| REBLAN IV              | \$1.86     | \$2.56  | \$1.73  | \$6.15     | 17 | \$31.62    | \$43.52  | \$29.41  | \$104.55   |
| RIOFAN                 | \$0.16     | \$0.13  | \$0.09  | \$0.38     | 45 | \$7.20     | \$5.85   | \$4.05   | \$17.10    |
| SOLIMEDROL IV          | \$2.68     | \$2.56  | \$1.73  | \$6.97     | 24 | \$64.32    | \$61.44  | \$41.52  | \$167.28   |
| TYLENOL                | \$11.22    | \$0.13  | \$0.09  | \$11.44    | 12 | \$134.64   | \$1.56   | \$1.08   | \$137.28   |
| TYLOX                  | \$11.22    | \$0.13  | \$0.09  | \$11.44    | 1  | \$11.22    | \$0.13   | \$0.09   | \$11.44    |
| VELOSIT                | \$11.22    | \$0.13  | \$0.09  | \$11.44    | 16 | \$179.52   | \$2.08   | \$1.44   | \$183.04   |
| VISTARIL               | \$11.22    | \$0.13  | \$0.09  | \$11.44    | 7  | \$78.54    | \$0.91   | \$0.63   | \$80.08    |
| TOTAL                  | \$1,108.43 | \$38.44 | \$26.02 | \$1,172.89 |    | \$4,449.22 | \$455.41 | \$308.43 | \$5,213.06 |

APPENDIX 7-2-1

LABORATORY COSTS - LIVER TRANSPLANT PATIENT #4

| TEST              | COST PER TEST |                   |         | TOTAL COST BY CATEGORY |                  |          |                   | TOTAL COST |
|-------------------|---------------|-------------------|---------|------------------------|------------------|----------|-------------------|------------|
|                   | SUPPLIES      | LABOR & EQUIPMENT | SUPPORT | TOTAL COST EACH        | NUMBER PERFORMED | SUPPLIES | LABOR & EQUIPMENT | SUPPORT    |
| ACA BATTERY       | \$1.33        | \$0.21            | \$0.05  | \$1.59                 | 1                | \$1.33   | \$0.21            | \$0.05     |
| ALK PHOS HITACHI  | \$0.22        | \$0.09            | \$0.02  | \$0.33                 | 13               | \$2.86   | \$1.17            | \$0.26     |
| ALT (SPT) HITACHI | \$1.04        | \$0.09            | \$0.02  | \$1.15                 | 22               | \$22.88  | \$1.98            | \$0.44     |
| AMYLASE (HITACHI) | \$2.28        | \$0.21            | \$0.05  | \$2.54                 | 10               | \$22.80  | \$2.10            | \$0.50     |
| ANAEROBIC CULTURE | \$3.10        | \$13.00           | \$3.19  | \$19.29                | 3                | \$9.30   | \$39.00           | \$9.57     |
| ANTI HBC (Igm)    | \$1.33        | \$4.20            | \$1.00  | \$6.53                 | 2                | \$2.66   | \$8.40            | \$2.00     |
| ANTI-HAV (Igm)    | \$1.76        | \$4.20            | \$1.00  | \$6.96                 | 2                | \$3.52   | \$8.40            | \$2.00     |
| APTT              | \$1.76        | \$2.10            | \$0.50  | \$4.36                 | 11               | \$19.36  | \$23.10           | \$5.50     |
| AST (SGOT)-HITAC  | \$0.28        | \$0.09            | \$0.02  | \$0.39                 | 12               | \$3.36   | \$1.08            | \$0.24     |
| BETA 2 MICROGLOB  | \$1.76        | \$1.10            | \$0.27  | \$3.13                 | 7                | \$12.32  | \$7.70            | \$1.89     |
| BILIRUBIN TOTAL   | \$2.01        | \$0.09            | \$0.02  | \$2.12                 | 11               | \$22.11  | \$0.99            | \$0.22     |
| BLOOD CULTURE     | \$5.77        | \$7.08            | \$1.74  | \$14.59                | 1                | \$5.77   | \$7.08            | \$1.74     |
| BLOOD GASES ART   | \$5.77        | \$7.08            | \$1.74  | \$14.59                | 37               | \$213.49 | \$261.96          | \$64.38    |
| BUN               | \$0.12        | \$0.09            | \$0.02  | \$0.23                 | 2                | \$0.24   | \$0.18            | \$0.04     |
| CALCIUM IONIZED   | \$0.19        | \$0.21            | \$0.05  | \$0.45                 | 1                | \$0.19   | \$0.21            | \$0.05     |
| CBC               | \$0.20        | \$1.24            | \$0.31  | \$1.75                 | 10               | \$2.00   | \$12.40           | \$3.10     |
| CHEM PROFILE      | \$1.76        | \$2.52            | \$0.60  | \$4.88                 | 22               | \$38.72  | \$55.44           | \$13.20    |
| CHW IGG TITER     | \$2.22        | \$3.43            | \$0.84  | \$6.49                 | 5                | \$11.10  | \$17.15           | \$4.20     |
| CHW IGM TITER     | \$3.67        | \$3.00            | \$0.74  | \$7.41                 | 5                | \$18.35  | \$15.00           | \$3.70     |
| CREATININE        | \$0.16        | \$0.21            | \$0.05  | \$0.42                 | 2                | \$0.32   | \$0.42            | \$0.10     |
| CYCLOSPORIN TDX   | \$12.74       | \$1.16            | \$0.28  | \$14.18                | 24               | \$305.76 | \$27.84           | \$6.72     |
| DIFFERENTIAL      | \$0.18        | \$4.72            | \$1.16  | \$6.06                 | 5                | \$0.90   | \$23.60           | \$5.80     |

Liver Transplantation Costs

APPENDIX 7-2-2

|                   |          |          |         |          |    |            |          |          |            |
|-------------------|----------|----------|---------|----------|----|------------|----------|----------|------------|
| DIRECT BILIRUBIN  | \$1.66   | \$0.21   | \$0.05  | \$1.92   | 12 | \$19.92    | \$2.52   | \$0.60   | \$23.04    |
| E B VCA IBS       | \$3.63   | \$1.08   | \$0.26  | \$4.97   | 2  | \$7.26     | \$2.16   | \$0.52   | \$9.94     |
| E B VCA IGH       | \$0.14   | \$3.25   | \$0.80  | \$4.19   | 2  | \$0.28     | \$6.50   | \$1.60   | \$8.38     |
| GAMMA GT          | \$1.67   | \$0.09   | \$0.02  | \$1.78   | 22 | \$36.74    | \$1.98   | \$0.44   | \$39.16    |
| HBSAG             | \$0.07   | \$0.09   | \$0.02  | \$0.18   | 2  | \$0.14     | \$0.18   | \$0.04   | \$0.36     |
| HITACHI BATTERY   | \$2.98   | \$2.45   | \$0.60  | \$6.03   | 23 | \$68.54    | \$56.35  | \$13.80  | \$138.69   |
| LD (LDH)          | \$0.28   | \$0.09   | \$0.02  | \$0.39   | 1  | \$0.28     | \$0.09   | \$0.02   | \$0.39     |
| MAGNESIUM HITACHI | \$1.13   | \$0.09   | \$0.02  | \$1.24   | 1  | \$1.13     | \$0.09   | \$0.02   | \$1.24     |
| PROTIME           | \$1.76   | \$1.26   | \$0.30  | \$3.32   | 7  | \$12.32    | \$8.82   | \$2.10   | \$23.24    |
| RAPID URN COMB 1  | \$1.76   | \$1.10   | \$0.25  | \$3.11   | 1  | \$1.76     | \$1.10   | \$0.25   | \$3.11     |
| SCU               | \$0.13   | \$0.09   | \$0.02  | \$0.24   | 2  | \$0.26     | \$0.18   | \$0.04   | \$0.48     |
| SCD2              | \$5.77   | \$7.08   | \$1.74  | \$14.59  | 2  | \$11.54    | \$14.16  | \$3.48   | \$29.18    |
| SELU              | \$0.07   | \$0.09   | \$0.02  | \$0.18   | 1  | \$0.07     | \$0.09   | \$0.02   | \$0.18     |
| SK                | \$0.13   | \$0.09   | \$0.02  | \$0.24   | 3  | \$0.39     | \$0.27   | \$0.06   | \$0.72     |
| SNA               | \$0.13   | \$0.09   | \$0.02  | \$0.24   | 2  | \$0.36     | \$0.18   | \$0.04   | \$0.48     |
| SPUTUM CULTURE    | \$5.92   | \$10.64  | \$2.61  | \$19.17  | 1  | \$5.92     | \$10.64  | \$2.61   | \$19.17    |
| STBIL             | \$2.01   | \$0.09   | \$0.02  | \$2.12   | 1  | \$2.01     | \$0.09   | \$0.02   | \$2.12     |
| SURG PATH CLERIC  | \$0.15   | \$0.09   | \$0.02  | \$0.26   | 1  | \$0.15     | \$0.09   | \$0.02   | \$0.26     |
| SURG GROSS ASST   | \$1.76   | \$1.68   | \$0.40  | \$3.84   | 1  | \$1.76     | \$1.68   | \$0.40   | \$3.84     |
| SUSCEPT GPS SA 1  | \$1.50   | \$2.79   | \$0.68  | \$4.97   | 1  | \$1.50     | \$2.79   | \$0.68   | \$4.97     |
| TISSUE REPORT     | \$184.14 | \$4.29   | \$1.05  | \$189.48 | 3  | \$552.42   | \$12.87  | \$3.15   | \$568.44   |
| URINALYSIS MACRO  | \$0.40   | \$1.29   | \$0.32  | \$2.01   | 3  | \$1.20     | \$3.87   | \$0.96   | \$6.03     |
| URINALYSIS MICRO  | \$0.26   | \$1.29   | \$0.32  | \$1.87   | 3  | \$0.78     | \$3.87   | \$0.96   | \$5.61     |
| URINE CULTURE     | \$1.66   | \$4.46   | \$1.09  | \$7.21   | 8  | \$13.28    | \$35.68  | \$8.72   | \$57.68    |
| VARICELLA BATT    | \$0.00   | \$2.57   | \$0.63  | \$3.20   | 1  | \$0.00     | \$2.57   | \$0.63   | \$3.20     |
| VENIPUNCTURE      | \$1.76   | \$1.68   | \$0.40  | \$3.84   | 17 | \$29.92    | \$28.56  | \$6.80   | \$65.28    |
| VIRAL CULTURE     | \$0.00   | \$2.57   | \$0.63  | \$3.20   | 4  | \$0.00     | \$10.28  | \$2.52   | \$12.80    |
| WOUND CULTURE     | \$1.23   | \$5.28   | \$1.29  | \$7.80   | 4  | \$4.92     | \$21.12  | \$5.16   | \$31.20    |
| TOTAL             | \$270.42 | \$111.78 | \$27.24 | \$409.44 |    | \$1,492.76 | \$743.98 | \$181.31 | \$2,418.05 |

APPENDIX 7-3

BLOOD BANK COSTS - LIVER TRANSPLANT PATIENT #4

| TEST                | COST PER TEST OR UNIT |                      |         |                    | NUMBER<br>PERFORMED | TOTAL COST BY CATEGORY |                      |         |            | TOTAL<br>COST |
|---------------------|-----------------------|----------------------|---------|--------------------|---------------------|------------------------|----------------------|---------|------------|---------------|
|                     | SUPPLIES              | LABOR &<br>EQUIPMENT | SUPPORT | TOTAL<br>COST EACH |                     | SUPPLIES               | LABOR &<br>EQUIPMENT | SUPPORT |            |               |
| AB SCR S,A,L-AHG    | \$0.35                | \$1.21               | \$0.34  | \$1.90             | 2                   | \$0.70                 | \$2.42               | \$0.68  | \$3.80     |               |
| ABO FB TYPE & RH    | \$0.33                | \$1.21               | \$0.34  | \$1.88             | 8                   | \$2.64                 | \$9.68               | \$2.72  | \$15.04    |               |
| ABO FT & RH (CB)    | \$0.35                | \$1.21               | \$0.34  | \$1.90             | 8                   | \$2.80                 | \$9.68               | \$2.72  | \$15.20    |               |
| CROSS MATCH         | \$0.48                | \$1.21               | \$0.34  | \$2.03             | 9                   | \$4.32                 | \$10.89              | \$3.06  | \$18.27    |               |
| CRYO THAW/ISSUE     | \$19.00               | \$0.00               | \$0.00  | \$19.00            | 8                   | \$152.00               | \$0.00               | \$0.00  | \$152.00   |               |
| FFP THAW/ISSUE      | \$1.50                | \$1.21               | \$0.34  | \$3.05             | 3                   | \$4.50                 | \$3.63               | \$1.02  | \$9.15     |               |
| FFP TRANSFUSED      | \$25.00               | \$0.00               | \$0.00  | \$25.00            | 64                  | \$1,600.00             | \$0.00               | \$0.00  | \$1,600.00 |               |
| PLATELET TRANSFUSED | \$26.00               | \$0.00               | \$0.00  | \$26.00            | 24                  | \$624.00               | \$0.00               | \$0.00  | \$624.00   |               |
| PROD RTN TO INV     | \$0.00                | \$1.21               | \$0.34  | \$1.55             | 103                 | \$0.00                 | \$124.63             | \$35.02 | \$159.65   |               |
| WBC/RBC TRANSFUSED  | \$48.00               | \$0.00               | \$0.00  | \$48.00            | 24                  | \$1,152.00             | \$0.00               | \$0.00  | \$1,152.00 |               |
| TOTAL               | \$121.01              | \$7.26               | \$2.04  | \$130.31           |                     | \$3,542.96             | \$160.93             | \$45.22 | \$3,749.11 |               |

## RADIOLOGY COSTS - LIVER TRANSPLANT PATIENT #4

| TYPE OF PROCEDURE          | COST PER PROCEDURE |                      |         |  | TOTAL<br>COST EACH | NUMBER<br>PERFORMED | TOTAL COST BY CATEGORY |                      |          |               |
|----------------------------|--------------------|----------------------|---------|--|--------------------|---------------------|------------------------|----------------------|----------|---------------|
|                            | SUPPLIES           | LABOR &<br>EQUIPMENT | SUPPORT |  |                    |                     | SUPPLIES               | LABOR &<br>EQUIPMENT | SUPPORT  | TOTAL<br>COST |
| ABDOMEN                    | \$3.08             | \$9.73               | \$3.26  |  | \$16.07            | 1                   | \$3.08                 | \$9.73               | \$3.26   | \$16.07       |
| PA AND LAT CHEST           | \$3.30             | \$10.43              | \$3.49  |  | \$17.22            | 4                   | \$13.20                | \$41.72              | \$13.96  | \$68.88       |
| CATHETER CHECK             | \$5.50             | \$17.38              | \$5.82  |  | \$28.70            | 1                   | \$5.50                 | \$17.38              | \$5.82   | \$28.70       |
| ABDOMEN OR PELVIS PROTOCOL | \$6.60             | \$20.86              | \$6.99  |  | \$34.45            | 1                   | \$6.60                 | \$20.86              | \$6.99   | \$34.45       |
| OTHER FLOURO               | \$7.70             | \$24.34              | \$8.15  |  | \$40.19            | 1                   | \$7.70                 | \$24.34              | \$8.15   | \$40.19       |
| PORTABLE CHEST             | \$6.60             | \$20.86              | \$6.99  |  | \$34.45            | 10                  | \$66.00                | \$208.60             | \$69.90  | \$344.50      |
| PORTABLE ABDOMEN           | \$6.60             | \$20.86              | \$6.99  |  | \$34.45            | 1                   | \$6.60                 | \$20.86              | \$6.99   | \$34.45       |
| UGI                        | \$6.60             | \$20.86              | \$6.99  |  | \$34.45            | 1                   | \$6.60                 | \$20.86              | \$6.99   | \$34.45       |
| ULTRASOUND                 | \$12.37            | \$48.27              | \$15.79 |  | \$76.43            | 1                   | \$12.37                | \$48.27              | \$15.79  | \$76.43       |
| TOTAL                      | \$58.35            | \$193.59             | \$64.47 |  | \$316.41           |                     | \$127.65               | \$412.62             | \$137.85 | \$678.12      |

APPENDIX 7-5

SURGERY COSTS - LIVER TRANSPLANT PATIENT #4

| SERVICE        | COST PER MINUTE |                   |         |                 | TOTAL COST BY CATEGORY |            |                   |          | TOTAL COST |
|----------------|-----------------|-------------------|---------|-----------------|------------------------|------------|-------------------|----------|------------|
|                | SUPPLIES        | LABOR & EQUIPMENT | SUPPORT | TOTAL COST EACH | NUMBER OF MINUTES      | SUPPLY     | LABOR & EQUIPMENT | SUPPORT  |            |
| SURGICAL SUITE | \$3.17          | \$2.30            | \$0.72  | \$6.19          | 525                    | \$1,664.25 | \$1,207.50        | \$378.00 | \$3,249.75 |
| ANESTHESIOLOGY | \$0.70          | \$1.97            | \$0.30  | \$2.97          | 680                    | \$476.00   | \$1,339.60        | \$204.00 | \$2,019.60 |
| TOTAL          |                 |                   |         |                 |                        | \$2,140.25 | \$2,547.10        | \$582.00 | \$5,269.35 |

**SURGICAL ICU BED DAY COSTS - LIVER TRANSPLANT PATIENT #4**

[illegible]

APPENDIX 7-7

OTHER BED DAY COSTS - LIVER TRANSPLANT PATIENT #4

|                     | COST PER BED DAY |                      |         |                    | TOTAL<br>NUMBER OF<br>BED DAYS | TOTAL COST BY CATEGORY |                      |          |            | TOTAL<br>COST |
|---------------------|------------------|----------------------|---------|--------------------|--------------------------------|------------------------|----------------------|----------|------------|---------------|
|                     | SUPPLIES         | LABOR &<br>EQUIPMENT | SUPPORT | TOTAL<br>COST EACH |                                | SUPPLIES               | LABOR &<br>EQUIPMENT | SUPPORT  |            |               |
| OTHER BED DAY COSTS | \$21.34          | \$338.33             | \$29.45 | \$389.12           | 25                             | \$533.50               | \$8,458.25           | \$736.25 | \$9,728.00 |               |

APPENDIX 7-8

ORGAN PROCUREMENT COSTS - LIVER TRANSPLANT PATIENT #4

TOTAL COST \$16,576.00