Abstract

Saint Joseph Hospital, in Denver, has developed a computerized Diagnosis Profile System which provides a composite profile of health care services provided to its patient population by the physicians and supporting staff. Practical use of these profiles is aimed at providing positive and negative feedback as an ongoing evaluation tool in measuring specific health service utilization and the associated costs for those services performed. Increasing requirements of the government, accrediting groups, third party payors and specialty board recertification make this type of computerization necessary and possible. Benefits are derived through the assistance given the medical staff in performing a concurrent review of patient care for selected diagnoses and through providing current information on trends in the delivery of care and services.

Introduction

The Diagnosis Profiles are an end product of both a Medical Information and a Financial Information System currently operating in a real-time discipline at Saint Joseph Hospital. The Diagnosis Profiles represent a summary of data extracted from each of the systems for each patient admitted to the hospital. Using the primary/secondary discharge diagnosis or surgical procedure, patient service data is collected and categorized by diagnosis code. Through comparative analysis of patient services per diagnosis, an evaluation of the delivery of patient care and the resultant impact to the patient or third party payor can be achieved.

These profiles allow a physician, or group of physicians, to compare their utilization of ancillary services, patients' complications, surgical procedures and length of stay with criteria previously established by national or local medical groups. Use of this computerized information not only as it applies to the physician's own patient, but also as his experience compares to that of colleagues, makes the opportunity for self evaluation and education apparent. Medical Staff audit committees can ask the computer to review all patients with selective diagnoses for a given period of time and to designate those patients which do not satisfy certain previously determined criteria. Medical Staff audit committees can thereby establish norms, or accepted modes of practice, and can use this data for specific studies as a source for comparative evaluation or strictly as an education tool.

Development of the Profile

Development of the profiles commenced after successful implementation of computerized systems of a medical and non-medical nature throughout the hospital. By incorporating and consolidating the data available from existing computer systems in the hospital, a capsule-size picture of patient services and quality of care can be produced. Since each specific supporting computer system was developed around the requirements of each patient service area and utilizes the professional skills and knowledge of the personnel involved in maintaining their data system through CRT's, a high level of data integrity is achieved in the resultant profiles.

The profiles were designed to collect data on all discharged patients on a yearly basis with the ability to produce the profile on a demand basis at any given time. Collection of the data on a yearly basis provides the hospital with a performance measurement of data elements presented in the profiles for trend analysis, relational measurements and as a base for budgetary consideration.

Definition of the Elements of the Profiles

Four Profiles are produced by the computerized system:

Exhibit 1 - Diagnosis Profile - DXPRO1
Exhibit 2 - Diagnosis Profile (Comparison by Reimbursement Group) - DXPRO2
Exhibit 3 - Diagnosis Profile (Comparison by Length of Stay) - DXPRO3
Exhibit 4 - Diagnosis Profile - Surgical Procedures - DXPRO8

Each of the four profiles display some repetitive information or data. However, the majority of the data contained on the profiles is unique to each profile. The repetition of data is critical in order that a cross relation between profiles can be established when utilized in a review or
analysis. The profiles are related directly to
diagnosis identification coding, used by Medical
Records for charting of each patient's final dis-
charge diagnosis and/or primary surgical procedure
as adapted from the Hospital Adaptation if ICDA
(H-ICDA). The selection of H-ICDA coding over
other disease coding was dictated by the Federal
Government's decision to require Medicare and
Medicaid patients to be monitored and reported
utilizing H-ICDA coding. PSRO also utilizes
H-ICDA coding in conjunction with the Professional
Activity Study (PAS) Average Length-of-Stay
Tables.

The average length-of-stay data (excluding Saint
Joseph Hospital patients actual length-of-stay)
is extracted from the Length-of-Stay in PAS Hos-
pitals, by Diagnosis, United States, Western
Region using the 50th percentile.

Exhibit 1 - Diagnosis Profile - describes the hos-
pital experience of each specific diagnosis in
terms of certain general factors such as frequency
of infections, complications and deaths associated
with the diagnosis. Average costs are also pre-
presented. Of high importance is the development of
a utilization of prescribed services by ancillary
department. Definition of that data (which is not
self-explanatory) is as follows:

Total Patients with multiple discharge diag-
nosis - the number of patients with this
primary discharge diagnosis who had at
least one or more secondary discharge
diagnosis associated with this stay.

Total Patients with multiple surgical pro-
cedures - the number of patients with
this primary discharge diagnosis who had
more than one surgical procedure per-
formed during this stay.

Total Patients with reported infections -
the number of patients with this dis-
charge diagnosis who were seen by the
Infection Control nurse and subsequently
monitored by the Infection Control System.

Total Patients with reported complications -
the number of patients with this discharge
diagnosis who experienced complications
during their hospital stay.

Monies and Utilization of Services - is
intended to develop a percentage of pre-
scribed services and associated costs
relating actual patients treated within
a given ancillary department to the total
patients discharged for this diagnosis,
thus setting the stage for measuring
patterns of care by diagnosis. The
format for this is:

<table>
<thead>
<tr>
<th>Ancillary Department</th>
<th>No. patients</th>
<th>Charge dollars</th>
<th>% Utilization</th>
</tr>
</thead>
</table>

Where:

Ancillary Department - the actual serv-
vice or medical function from which
this patient received care.

No. Patients - the total number of
patients who received services from
the indicated ancillary department.

% Utilization - represents utilization
of services as measured by the num-
ber of patients receiving services
in the indicated ancillary depart-
ment equated to the total number of
patients discharged with this
diagnosis.

Exhibit 2 - Diagnosis Profile - Comparison by
Reimbursement Group - provides for an analysis of
care and prescribed services and costs by reim-
bursement groups, established clinics or HMO's.
Definition of the data which is not self-explana-
tory is as follows:

Specific Service Utilization - ancillary
utilization habits associated with a
given group of patients representing a
reimbursement party, a clinic, etc., and
is formatted as follows:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUP</td>
<td>Ancillary Dept. Patients</td>
<td>Charge dollars</td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------------</td>
<td>-----------------</td>
</tr>
</tbody>
</table>

Where:

Group - reimbursement party declared
by patient at the time of
admission and subsequently verified.

Ancillary Department - the actual
service or medical function from
which the patient received care.

Patients - the total number of
patients receiving services in the
indicated ancillary department
within the defined group.

Total Utilization - the sum of the patients
by indicated group that received ancil-
lar services and the total cost for
those services.

% Utilization - relates the percentage of
the total patient days associated with
each indicated group as equated to the
total days attributed to this specific
diagnosis.

Exhibit 3 - Diagnosis Profile - Comparative
Length of Stay draws a relationship between the
lengths of stay incurred by the patient populus
receiving care at Saint Joseph Hospital and the
50th percentile of reported patients for PAS hos-
pitals in the Western Region. Definition of the
data, which is not self-explanatory, is as follows:

Comparative Length of Stay - provides a comparison of the hospital's patients by age group, single or multiple discharge diagnosis, operated or non-operated to equivalent PAS length of stays for the same parameters in the form of data, where:

Type Pats - indicates age groupings of discharged patients.

Total Pats - the number of discharged patients associated with the specific age groupings.

Avg. Stay - the average PAS length of stay associated with this age group irrespective of any other criteria.

PAS (50%) - the PAS 50th percentile length of stay for this age group with respect to other indicated criteria.

Pt - the number of patients discharged from Saint Joseph in this age group with respect to other criteria.

Hosp - the average length of stay for Saint Joseph's patients discharged in this age group with respect to other indicated criteria.

Saint Joseph Hospital participates in PSRO through the Colorado Admissions Program. The Medical Staff decided that the responsibility for this function should be assumed by Saint Joseph Hospital staff and subsequently a computerized Patient Care Auditing System (PSRO) was developed and implemented. In the following descriptions the terminology "Audited" refers to patients seen by the review nurse and subsequently monitored by the Patient Care Audit system. Other review procedures are initiated and controlled by medical staff committees. With references to this profile, patients receiving this type of a review procedure are indicated as "REVIEWED". In the following descriptions of this report "REVIEWED" refers to non-Medicare - Medicaid patients that have had some type of patient care review not associated with the Medicare - Medicaid or PSRO audited data.

Specific Audit & Review - draws a relationship between Audited & Reviewed patients by specific reimbursement group to non-audited or reviewed patients, where:

 Aud - the number of patients audited for this specified group.

% - the percentage of patients audited for this specific group as equated to the total patients discharged.

Reviewed - the number of patients reviewed for this specific group.

% - the percentage of patients reviewed for this specific group as equated to the total patients discharged.

Ext - the number of patients granted extended stays as associated with the total number audited for this specific group.

% Ext - the percentage of patients granted an extension of stay as equated to the total patients audited for this specific group.

Ext Days - the total number of days associated with the total number of granted extensions for this specific group.

# Den - the total number of denied requests for extended stays associated with this specific group.

Den Days - the total number of days denied for requested extension of stay for this specific group.

Just - the total patients reviewed and found to be justifiable with respect to length of stay for this specific group.

Non-Just - the total patients reviewed and found not justifiable with respect to length of stay for this specific group.

Exhibit 4 - Surgical Profile. Utilizing the hospital's computerized surgery system, this profile draws together specific data relating to each patient's primary surgical procedure in order to develop a general profile of each procedure performed within the hospital. Definition of this data, which is not self-explanatory, is as follows:

Average Cost for this Procedure - the costs involved in performing the indicated surgical procedures irrespective of but contributing to the average cost of stay.

Average Blood Loss - utilized in determining probable blood which should be cross-matched and available for each patient as related to this specific procedure.

Diagnosis Profile Utilization

The profiles described above contain a wealth of information usable by various groups within a hospital, both financially and medically oriented. The uses are almost infinite, too numerous to describe in this presentation. Initial observation of the profiles reveals many obvious facts surrounding a given diagnosis or surgical procedure but through further analysis essential information about the quality and types of health care can be gleaned that could directly affect the operation
of the hospital.

The data presented can be overwhelming if not utilized in the proper context. The reports are exception-oriented in that the reviewer should look for abnormal conditions, occurrences of data that deviate substantially from pre-determined parameters established by the reviewer. The profiles are not intended to be a source listing of detail patient data but rather should serve as giving the reviewer vital clues that situations possibly exist in the delivery of health care in the hospital that may require further investigation and subsequent action.

Investigation may be accomplished by pulling specific patient charts involved in the subject diagnosis group and then reviewing the services administered. Through the use of the supporting computer sub-systems, i.e., Surgery, Infection Control, Delivery Room, etc., the detail facts surrounding the questionable cases can be determined.

The acceptance of the Diagnosis Profiles by the medical staff has been most gratifying during the short period of less than one year of operation. The following documents some experiences utilizing the profiles for audit and education by the medical staff and departments.

The Department of OB/GYN determined in February, 1978 that they would institute an ongoing concurrent review of all patients in the following categories:

- Patient deaths.
- Transfusions over 2 units.
- Positive blood cultures.
- Lengths of stay of 2 days ± in deviation of the stay normally accepted for the diagnosis.
- Complications of pulmonary embolus, pelvic abscess, bowel obstruction, urinary trauma or fistula following GYN surgery.
- Elective Caesarean Sections.

Each week the computer selects the diagnosis profiles of patients falling into these established categories and are reviewed by the Director of OB/GYN Education. An average of 6-8 patients have been reviewed each week and if further information is desired, a member of the house staff may be assigned to analyze the complete medical record. If questions persist, the case is referred to the Chairman of the P & R Committee. The small majority are easily explained, but a complicated case will be the subject for departmental review at the monthly staff meeting. It is the time factor involved by computer recall that makes such meaningful current reviews possible. Exhibit 5 brings this forcibly to ones attention and also indicates the obvious saving in man hours of time in comparison to that required to obtain this information by previous methods.

The Department of Psychiatry at its January, 1978 monthly meeting decided to make some concurrent reviews utilizing computerized information available in the Diagnosis Profiles for the following criteria:

- Admission activity of the psychiatric staff in relation to the total discharged days of psychiatric patients.
- Utilization of EEG and Occupational Therapy services by psychiatry staff for patients on psychiatry services.
- Anti-psychiatric drug utilization.

The Director of Medical Records Department, in order to obtain this information, made the following requests for information from the computerized Diagnosis Profiles.

"I. Therefore, the following data is requested for Computer Study -- #1. "Psychiatry Staff Utilization of SJH to Assist and Evaluate the LOS of Psychiatry Patients and Utilization of EEG and Occupational Therapy Services":

A. Provide the total number of patients and the total discharged days on psychiatry services by each psychiatry physician who is listed as the attending physician. (Please use the doctor's number and do not list the doctor if he is given as the consulting physician.)

B. Give the average LOS for each physician to include a breakdown by age category (0-19, 20-34, 35-49, 50-64, and 65 and older).

C. Give the range of the LOS for each physician, to include the highest LOS and the lowest LOS -- print the hospital number for each.

D. List the total number of patients who had EEG and Occupational Therapy services by each physician.

II. The second computer request study is to evaluate the use of multiple drugs which are similar and the following data is requested for Computer Study -- #II, "Anti-Psychotic Drug Utilization":

A. Report the total number of patients on psychiatry services who received one or more of the following drugs:

<table>
<thead>
<tr>
<th>Generic Name</th>
<th>Trade Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorpromazine</td>
<td>Thorazine</td>
</tr>
<tr>
<td></td>
<td>Stelazine</td>
</tr>
<tr>
<td></td>
<td>Haldo</td>
</tr>
<tr>
<td>Lithium Carbonate</td>
<td>Lithane</td>
</tr>
<tr>
<td></td>
<td>Eskalith</td>
</tr>
<tr>
<td>Generic Name</td>
<td>Trade Name</td>
</tr>
<tr>
<td>--------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Amitriptyline</td>
<td>Elavil</td>
</tr>
<tr>
<td></td>
<td>Endep</td>
</tr>
<tr>
<td></td>
<td>Sinequan</td>
</tr>
<tr>
<td>Imipramine</td>
<td>Tofranil</td>
</tr>
<tr>
<td>Molindone</td>
<td>Mobar</td>
</tr>
<tr>
<td>Fluphenazine</td>
<td>Prolixin</td>
</tr>
<tr>
<td>Thioridazine</td>
<td>Mellari1</td>
</tr>
<tr>
<td></td>
<td>Nevane</td>
</tr>
<tr>
<td></td>
<td>Triavil</td>
</tr>
<tr>
<td></td>
<td>Etrafon</td>
</tr>
<tr>
<td></td>
<td>Loxitane</td>
</tr>
<tr>
<td></td>
<td>Serentil</td>
</tr>
<tr>
<td>Desipramine</td>
<td>Pertofrane</td>
</tr>
</tbody>
</table>

B. Report the total number of patients who received one or more of the same drugs listed in (A) above who were on other services in the hospital and include the names of the other services.

C. Use whatever period is available for this data, or monitor for the collection of this data on the computer surveillance program as a concurrent study."

Exhibits 6 and 7 represent some of the findings as a result of these audits. Most of the data is self-explanatory, but the committee felt that a better care base-line was required and are in the process now of reviewing drug usage for psychiatric services based on start date, end date, dosage and age of patient.

Similarly, the Departments of Orthopedics, Internal Medicine and Surgery have repeatedly questioned the Diagnosis Profiles for specific information. Another example is exemplified in analyzing the procedure of mastectomy for carcinoma. Among the interesting observations that were made is that the cost and complication rate is greater for modified radical than for radical mastectomy. This is a technically more difficult operation than radical mastectomy. It is also noted that only 12 of 23 patients had the lesion biopsied in the Operating Room, all having had local excision as outpatients prior to admission for definitive surgery.

**Summary**

Saint Joseph Hospital has developed and implemented a system for clinical analysis and hospital evaluation of patient care based on the clinical record and the discharge diagnosis for the purpose of medical audit and education. This development and implementation is documented in the preceding article with an attempt to give some idea of how this computerized system is organized and how it functions. Varying examples of some of the analyses and information available from such a system, directly and indirectly indicating the potential extent of its application, are included.

**References**

(1) Director of Management Services  
Member of Computer Processing Advisory Committee  
Saint Joseph Hospital  
1835 Franklin Street  
Denver, CO 80202

(2) Thoracic and Cardiovascular Surgeon  
Chairman, Computer Processing Advisory Committee  
Saint Joseph Hospital

(3) Director of Medical Records  
Member of Computer Processing Advisory Committee  
Saint Joseph Hospital

(4) Supervisor of Computer Programming & Systems Design  
Saint Joseph Hospital
Exhibit 1 - Diagnosis Profile - DXPRO1

DIAGNOSIS PROFILE
SAINT JOSEPH HOSPITAL
1635 FRANKLIN, DENVER, COLO.
DATE 06/01/78
PAGE 855

PROFILE FOR - 410.9 - MYOCARD INFARCTION NOS

TOTAL PATIENTS DISCHARGED WITH DIAGNOSIS.............. 137
TOTAL PATIENT DAYS ATTRIBUTED TO THIS DIAGNOSIS........ 1197
- WITH SINGLE SURGICAL PROCEDURE.............. 65
- WITH MULTIPLE SURGICAL PROCEDURES.............. 1
- WITH REPORTED INFECTIONS.............. 3
- WITH REPORTED COMPLICATIONS.............. 0
TOTAL DEATHS ATTRIBUTED TO THIS DIAGNOSIS.............. 7

AVERAGE STAY.............. 0.78 DAYS
HIGH STAY 67 DAYS CHART NO 00704641
LOW STAY 1 DAYS CHART NO 00716717
% INFECTION RATE.............. 2.18
% COMPLICATION RATE.............. 0.00
DEATH RATE.............. 5.10

TOTAL FINAL BILLED MONIES ATTRIBUTED TO THIS DIAGNOSIS.............. $338,786
AVERAGE BILLED COST OF STAY.............. $2,473 HIGH BILL.............. $17,298.00 CHART NO 00704641
AVERAGE BILLED COST PER DAY.............. $283 LOW BILL.............. $243.00 CHART NO 00709063

MONIES AND UTILIZATION OF SERVICE ATTRIBUTED TO THIS DIAGNOSIS

<table>
<thead>
<tr>
<th>SERVICES</th>
<th>EMERGENCY DEPARTMENT</th>
<th>PROFESSIONAL SERVICES-AMB</th>
<th>CENTRAL SERVICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHARMACY</td>
<td>136  $18,897</td>
<td>132 $3,489</td>
<td>137 $9,333</td>
</tr>
<tr>
<td></td>
<td>99.27%</td>
<td>96.35%</td>
<td>100.00%</td>
</tr>
<tr>
<td>X-RAY</td>
<td>132  $11,396</td>
<td>27 $1,996</td>
<td>116 $8,791</td>
</tr>
<tr>
<td></td>
<td>98.35%</td>
<td>19.70%</td>
<td>84.67%</td>
</tr>
<tr>
<td>EKG</td>
<td>136  $13,106</td>
<td>127 $99,994</td>
<td>113 $79,038</td>
</tr>
<tr>
<td></td>
<td>99.27%</td>
<td>92.70%</td>
<td>82.40%</td>
</tr>
</tbody>
</table>
### Diagnosis Profile (Comparison by Reimbursement Group)

**Profile for - 410.9 - Myocardial Infarction NOS**

- **Total Patients Discharged with this Diagnosis:** 137
- **Total Patient Days Attributed to this Stay:** 1,197
- **Average Stay:** 8.73
- **Total Final-Billed Movies Attributed to this Diagnosis:** $338,786

#### Specific Service Utilization Profile by Reimbursement Party or Payor

<table>
<thead>
<tr>
<th>Service</th>
<th>Payor 1</th>
<th>Payor 2</th>
<th>Payor 3</th>
<th>Payor 4</th>
<th>Payor 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Surgery</strong></td>
<td>$90</td>
<td>$72</td>
<td>$2,472</td>
<td>$804</td>
<td>$68</td>
</tr>
<tr>
<td><strong>Emergency Department</strong></td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Professional Services-Ambulatory</strong></td>
<td>$45</td>
<td>$45</td>
<td>$250</td>
<td>$235</td>
<td>$45</td>
</tr>
<tr>
<td><strong>Central Service</strong></td>
<td>$15</td>
<td>$22</td>
<td>$301</td>
<td>$432</td>
<td>$20</td>
</tr>
<tr>
<td><strong>Pharmacy</strong></td>
<td>$181</td>
<td>$143</td>
<td>$1,220</td>
<td>$1,110</td>
<td>$407</td>
</tr>
<tr>
<td><strong>I.V. Therapy</strong></td>
<td>$18</td>
<td>$36</td>
<td>$263</td>
<td>$412</td>
<td>$97</td>
</tr>
<tr>
<td><strong>Laboratory</strong></td>
<td>$361</td>
<td>$360</td>
<td>$3,760</td>
<td>$2,276</td>
<td>$266</td>
</tr>
<tr>
<td><strong>Ultrasound</strong></td>
<td>4</td>
<td></td>
<td>$272</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Blood Bank</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$15</td>
</tr>
<tr>
<td><strong>X-Ray</strong></td>
<td>$89</td>
<td>$223</td>
<td>$1,176</td>
<td>$477</td>
<td>$64</td>
</tr>
<tr>
<td><strong>Nuclear Medicine</strong></td>
<td>1</td>
<td>6</td>
<td>$556</td>
<td></td>
<td>$16</td>
</tr>
<tr>
<td><strong>Respiratory Therapy</strong></td>
<td>$67</td>
<td>$24</td>
<td>$349</td>
<td>$327</td>
<td>$79</td>
</tr>
<tr>
<td><strong>EKG</strong></td>
<td>$179</td>
<td>$139</td>
<td>$1,243</td>
<td>$209</td>
<td>$218</td>
</tr>
<tr>
<td><strong>Cardio-Vascular Lab</strong></td>
<td>2</td>
<td>$1,030</td>
<td>12</td>
<td>$1,157</td>
<td>$270</td>
</tr>
<tr>
<td><strong>Room &amp; Board Nursing Care</strong></td>
<td>$560</td>
<td>$992</td>
<td>$6,390</td>
<td>$1,273</td>
<td>$274</td>
</tr>
<tr>
<td><strong>Recovery Room</strong></td>
<td>2</td>
<td>$100</td>
<td>7</td>
<td>$498</td>
<td></td>
</tr>
<tr>
<td><strong>Coronary Care</strong></td>
<td>$1,542</td>
<td>$1,024</td>
<td>$4,870</td>
<td>$586</td>
<td>$1,542</td>
</tr>
<tr>
<td><strong>Intensive Care</strong></td>
<td>4</td>
<td></td>
<td>$1,191</td>
<td>$4,632</td>
<td>$233</td>
</tr>
</tbody>
</table>

**Total Utilization**

<table>
<thead>
<tr>
<th>Payor 1</th>
<th>Payor 2</th>
<th>Payor 3</th>
<th>Payor 4</th>
<th>Payor 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>32</td>
<td>185</td>
<td>135</td>
<td>13</td>
</tr>
</tbody>
</table>

- **Patients Discharged:**
  - **Total:** 1
  - **Average Cost of Stay:** $3,137

- **Average Stay:** 11 days
  - **Average Cost Per Day:** $295

- **% Utilization:** 0.92

**Absence of Ancillary Service or Reimbursement Party Indicates 0.0% Utilization**
Exhibit 3 - Diagnosis Profile (Comparison by Length of Stay) - DXFR03
## Diagnosis Profile - Surgical Procedures

**Exhibit 4 - Diagnosis Profile - Surgical Procedures**

**Saint Joseph Hospital**
1635 Franklin, Denver, Colo.

**Profile for - S15.4 - Intracap Lens Extraction**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Patients Discharged with This Primary Procedure</td>
<td>41</td>
</tr>
<tr>
<td>Total Patient Stay Days Associated with This Procedure</td>
<td>136</td>
</tr>
<tr>
<td>Total Patients - With Additional Procedures</td>
<td>11 26.0%</td>
</tr>
<tr>
<td>- With Reported Infections</td>
<td>0</td>
</tr>
<tr>
<td>Total Deaths Associated with This Procedure</td>
<td>0</td>
</tr>
<tr>
<td>Average Stay</td>
<td>3.31 Days</td>
</tr>
<tr>
<td>High Stay</td>
<td>7.00 Days (Chart No. 00732246)</td>
</tr>
<tr>
<td>Low Stay</td>
<td>1.00 Days (Chart No. 00734991)</td>
</tr>
</tbody>
</table>
| % Infection Rate | 0.0%
| % Complication Rate | 14.6%
| % Death Rate | 0.0%
| Total Final Bill Monies Associated with This Procedure | $28,103 |
| Average Cost of Stay | $929 |
| Average Cost Per Day | $280 |
| High Bill | $1591.00 (Chart No. 00737406) |
| Low Bill | $598.00 (Chart No. 00737559) |

### Procedural Statistics

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Operation Time</td>
<td>0 Hrs. 50 Min.</td>
</tr>
<tr>
<td>High Operation Time</td>
<td>1 Hrs. 15 Min. (Chart No. 00737406)</td>
</tr>
<tr>
<td>Low Operation Time</td>
<td>0 Hrs. 29 Min. (Chart No. 00738100)</td>
</tr>
<tr>
<td>Total Patients with Complications in Surgery</td>
<td>1</td>
</tr>
</tbody>
</table>
| % Complications (Surgery) | 2.4%
| Total Patient Deaths in Surgery | 0 |
| % Deaths (Surgery) | 0.0%
| Average Pre-Op Hemoglobin | 13.6 |
| High Hemoglobin | 18.7 (Chart No. 00734676) |
| Low Hemoglobin | 12.3 (Chart No. 00736992) |
| Average Blood Loss | 0 CC |
| % of Cases with Specimen to Pathology | 59.2%
| % of Cases with Frozen Section to Pathology | 0.0%
| % of Cases using Foley Catheter | 0.0%
| % of Cases with Fluid Replenished | 12.2%
| % of Cases with Plasma Introduced | 0.0%
| % of Cases with Whole-Blood Introduced | 0.0%
| % of Cases with Pack-Cell Introduced | 0.0%
| Total Cases Transfused | 0 |
| Average Recovery Time | 1 Hrs. 44 Min. |
| High Recovery Time | 2 Hrs. 30 Min. (Chart No. 00734991) |
| Low Recovery Time | 1 Hrs. 13 Min. (Chart No. 00732063) |
| Total Patients with Complications in R.R. | 0 |
| % Complications (R.R.) | 0.0%
| % of Cases Oxygen Used (R.R.) | 75.0%
| % of Cases Monitor Used (R.R.) | 25.0%
| % of Cases Fluid Replenished (R.R.) | 87.5%
| % of Cases Plasma Introduced (R.R.) | 0.0%
| % of Cases Whole-Blood Introduced (R.R.) | 0.0%
| % of Cases Pack-Cell Introduced (R.R.) | 0.0%
| Number of Cases to Recovery Room | 8 |
Computer Audit

References: Medical Record Indexes (diagnosis, infections, complications, physicians and diagnosis profiles)

1. DX = Uncomplicated Delivery
2. Period = June-October, 1977 (5 months)
3. # of patients in study = 723
4. PAS-LOS = 2.70 days
5. SJH avg. LOS = 3.08 days
6. # and % of complications = 11 (1.52%)
7. # and % of infections = 1 (.13%)
8. # and % of deaths = 0 (0%)
9. LOS variation to PAS = +.38%

Based on age grouping:
   a. Single DX (non-operative) age 20-34
      PAS = 2 days  SJH = 3 days
   b. Multiple DX (operative) age 20-34
      PAS = 3 days  SJH = 3.2 days
   c. Single DX (operative) age 35-49
      PAS = 3 days  SJH = 3.2 days
   d. Multiple DX (operative) age 35-49
      PAS = 3 days  SJH = 3.2 days
10. Computer time to yield results = 5 minutes
11. Data availability to physicians = within 24 hours

Retrospective Audit

References: Patients Discharged Medical Records

1. DX = Uncomplicated Delivery
2. Period = January, 1977 (1 month)
3. # of patients in study = 100
4. PAS-LOS = 2.70 days
5. SJH criteria for LOS = 1 to 4 days; SJH avg. LOS = 4.31
   (1 patient stayed 5 days)
6. # and % of complications = 4 (4%) other complications
   which were not listed in criteria. 3 out of 4
   complications were reviewed by physician and were
   justified due to appropriate treatment given and/or
   complications which were not related to diagnosis.
7. # and % of infections = 0 (0%)
8. # and % of deaths = 0 (0%)
9. + LOS variation justified by physician due to:
   a. Multiple DX (complication and/or infection) = 1
      (Patient stayed 5 days - "milking"
   b. Age grouping = 0
10. Medical Record man hour time to yield results above =
    125 hours approximately.
11. Data availability to physicians = 5 months

Exhibit 5 - OB/GYN

1. DX = Delivery with Prolonged Labor
2. Period = June-October, 1977 (5 months)
3. # of patients in study = 9
4. PAS-LOS = 3.50 days
5. SJH avg. LOS = 3.66 days
6. # and % of complications = 0 (0%)
7. # and % of infections = 0 (0%)
8. # and % of deaths = 0 (0%)
9. LOS variation to PAS = +.16%

Based on age grouping:
   a. Single DX (non-operative) age 35-49
      PAS = 3 days  SJH = 4 days
   b. Single DX (operative) 35-49
      PAS = 4 days  SJH = 5 days
10. Computer time to yield results = 5 minutes
11. Data availability to physician = within 24 hours

12. All patient information data above could have been abstracted
    on day-to-day basis through PSRO programs.
EEG - OCCUPATIONAL THERAPY UTILIZATION

Utilization of EEG - Occupational Therapy Services for patients discharged June 1, 1977 through January 31, 1978, with final diagnosis of Mental Disorders, H-ICDA 290.0 through 318.9.

<table>
<thead>
<tr>
<th>Responsible Party</th>
<th>EEG #Pats</th>
<th>%</th>
<th>O.T. #Pats</th>
<th>%</th>
<th># of Pats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Party 1</td>
<td>34</td>
<td>21.7</td>
<td>113</td>
<td>72.0</td>
<td>157</td>
</tr>
<tr>
<td>Party 2</td>
<td>18</td>
<td>18.2</td>
<td>68</td>
<td>68.7</td>
<td>99</td>
</tr>
<tr>
<td>Party 3</td>
<td>23</td>
<td>23.5</td>
<td>49</td>
<td>50.0</td>
<td>98</td>
</tr>
<tr>
<td>Party 4</td>
<td>5</td>
<td>9.6</td>
<td>31</td>
<td>59.6</td>
<td>52</td>
</tr>
<tr>
<td>Party 5</td>
<td>6</td>
<td>19.4</td>
<td>22</td>
<td>71.0</td>
<td>31</td>
</tr>
<tr>
<td>Party 6</td>
<td>1</td>
<td>4.5</td>
<td>9</td>
<td>40.9</td>
<td>22</td>
</tr>
<tr>
<td>Party 7</td>
<td>2</td>
<td>20.0</td>
<td>8</td>
<td>80.0</td>
<td>10</td>
</tr>
<tr>
<td>Party 8</td>
<td>2</td>
<td>33.3</td>
<td>4</td>
<td>66.7</td>
<td>6</td>
</tr>
<tr>
<td>Party 9</td>
<td>1</td>
<td>25.0</td>
<td>4</td>
<td>100.0</td>
<td>4</td>
</tr>
<tr>
<td>Party 10</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
<td>0.0</td>
<td>1</td>
</tr>
<tr>
<td>Party 11</td>
<td>0</td>
<td>0.0</td>
<td>1</td>
<td>100.0</td>
<td>1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>92</td>
<td>19.1</td>
<td>309</td>
<td>64.2</td>
<td>481</td>
</tr>
</tbody>
</table>

Exhibit 6 - EEG - Occupational Therapy Utilization

ANTI-PSYCHOTIC DRUG USAGE

<table>
<thead>
<tr>
<th>Service</th>
<th>100 Physicians</th>
<th>Patients Received 1 Or More Anti-Psychotic Drugs</th>
<th>% of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychiatry</td>
<td>18</td>
<td>46</td>
<td>24%</td>
</tr>
<tr>
<td>Internal Medicine</td>
<td>46</td>
<td>70</td>
<td>36%</td>
</tr>
<tr>
<td>Surgery</td>
<td>17</td>
<td>29</td>
<td>15%</td>
</tr>
<tr>
<td>Neurosurgery</td>
<td>5</td>
<td>27</td>
<td>14%</td>
</tr>
<tr>
<td>(One doctor had 19 patients and 17 of them received triavil.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OB/GYN</td>
<td>5</td>
<td>5</td>
<td>3%</td>
</tr>
<tr>
<td>Urology</td>
<td>5</td>
<td>9</td>
<td>5%</td>
</tr>
<tr>
<td>Orthopedics</td>
<td>4</td>
<td>8</td>
<td>4%</td>
</tr>
</tbody>
</table>

Exhibit 7 - Anti-Psychotic Drug Usage