CHAPTER 7
HOSPITAL INFORMATION SYSTEM

Recommendations

Present day hospitals are complex organisations humming with the activity of doctors, nurses and paramedical staff with a common goal of providing patient care. Ever increasing population and awareness of health being a fundamental human right has increased the load on hospitals irrespective of the size of hospital. The present day hospitals are thus seized with "Information Explosion". Over the years the system for handling information has become more and more sophisticated because of the need to obtain information quickly and timely for decision making. Today's Administrator is required to be more such in terms of 'Information' than being traditionally skilled in planning organizing, directing and controlling. Effective information system is required for effective delivery of health care.

Hospital Information System is an information system for the management of the care of the patient. It is a system in which the flow of information throughout the hospital is purposive and designed specifically to assist in decision-taking which should be automatic and economical of effort. In the present day hospitals vast amount of information is generated. The information has to flow in all directions for decision making and subsequent actions. An efficient Hospital Information System will improve the efficiency in terms of quality care and better utilization of limited hospital resources. Information of all kinds whether meant for doctors, nurses, clinical staff, administrators or services planners must be appropriate, timely, of sufficient quality and quantity and accurate in order so that it can be used for decision-making.
Information reduces uncertainty and correct information at the right time can be vital to save a life or prevent catastrophe. A good and effective Hospital Information System serves the information needs of various levels of administration in hospital. The information system in hospitals should be designed in such a way which will generate, analyse, provide and store the needed information for retrieval on demand. Hospital Information System is thus a critical resource for the effective performance of managerial functions namely planning, directing, implementing, monitoring and evaluating programmes and projects.

7.1 DESIGN OF HOSPITAL INFORMATION SYSTEM

The high cost of hospital care has resulted in intensive look at hospitals. More efficient method for obtaining information for hospital patient care should be sought. An overview of elements or subsystems in the hospital system presented here shows the amount of information generated which has to be processed, interpreted and transferred. Design of information system will depend on the services offered by the hospital and its environment.

FIG 16
The Hospital System
It can be seen from the above diagram that the Communication System occupies a unique position among the hospital system as it is the nerve centre of the hospital. No data can be exchanged from one system to the other without the Communication System. The goal of this system is to integrate hospital activities into a coherent implementation of hospital policy.

The nature of flow of vast amount of information from top to bottom and vice versa is also presented below. It is evident from the diagram that no patient care is possible without the information processing tasks related to identification, medical history, diagnoses, investigation, treatment and rehabilitation.

FIG 17
Information and Service Links
Every Information system has to be designed to meet the requirements of its users. The user group must be identified and defined. The users of this system are:

CONSUMERS - Individual patients, groups of patient community and population as a whole.

PROVIDERS - Physicians, nurses, all concerned hospital personnel.

CARRIERS - Government/Private/Voluntary organisations

SUPPLIERS - Drug industry, other suppliers, medical and health personnel.

In designing a Hospital Information System the following steps should be followed. Each step should be followed with maximum care. All those factors which have a bearing on the information needs of the hospital should be taken into account while designing a Hospital Information System.

**FIG 18**
Design of Hospital Information System

![Diagram of Hospital Information System](image-url)
One Information System developed in a hospital cannot be blindly applied to the other. Each hospital has its own requirements and environments. The objectives, constraints, Information needs and sources etc. may differ from hospital to hospital. All these factors should be considered and an Information System is designed to suit the particular requirements of each hospital.

**BENEFITS OF HOSPITAL INFORMATION SYSTEM**

Preparation of various reports and their timely presentation to management through an effective Hospital Information System have the following benefits:

a) To help the hospital to identify more accurately the true needs of the population it serves.

b) To establish administrative control over functional activities.

c) To help take decisions on what services need to be expanded or reduced.

d) To help in defining the community needs.

e) To help in developing a more efficient referral system which could lead to a reduction of the hospital work load by screening out patients who could be satisfactorily treated at other hospitals.

f) To provide a basis for preparing operating budgets.

g) To help in eliminating redundant record-keeping and in avoiding duplication work.

h) To help in realistic planning for the future.

i) To provide a basis for the distribution of expenses when computing cost of operations.

j) To provide a basis for the calculation of average income and costs per unit of service rendered.

k) Quick and easy access to information.

l) Optimum utilization of resources.
7.2 HOSPITAL REPORTS IN THE HOSPITAL INFORMATION SYSTEM

Compilation of important hospital statistics and their reporting to the hospital management are the most important constituents of Hospital Information System. The Medical Records Department in a hospital plays the vital role in this regard. It collects, stores and retrieves the information on demand.

The Hospital Reports can be broadly divided into the following three categories:

I. Hospital Services Reports
II. Financial Reports
III. Cost Reports

Hospital Services Reports deal with information on patients while Financial Reports deal with the income and expenses and other financial information. Cost Reports deal with detailed information on cost of various hospital services and activities. The chart given in Fig.19 shows the various Hospital Reports in a nutshell.

HOSPITAL SERVICES REPORTS

Hospital Services Reports include reports of Inpatient services, Outpatient services and other service facilities in the hospital. Following is a description of the type of information which should be compiled and presented in a suitable form in respect of various service facilities available in the hospital.
FIG. 19

HOSPITAL REPORTS

Hospital Services Reports

In-patient Reports
1. Bed Resource Utilisation Report
2. Inpatient Service Report
3. Death Rates Report

Out-patient Reports
4. Laboratory Performance Report
5. X-ray Services Report
6. Miscellaneous Services Report

Patient Services Reports
1. Surgery Report
2. Anaesthesia Report
3. Delivery Report

Financial Reports
1. Income and Expenditure statement
2. Balance Sheet
3. Income and Expense Summary
4. Operating Income and Expense Details
5. Supplemental Schedule of changes in Accounts

Cost Reports
1. Material Reports
2. Labour Reports
3. Overhead Reports
4. Equipment Reports
5. Hospital Services
6. Others
**IN-PATIENT REPORTS**

**Bed Resource Utilisation Report**

The following rates are computed for each quarter and presented in the Bed Resource Utilisation Report to the management.

i) **Bed Occupancy Ratio**

\[
\text{Bed occupancy percentage} = \frac{\text{Average number of beds occupied in a quarter}}{\text{Average number of beds available in a quarter}} \times 100
\]

The two components of the ratio are computed as follows:

Average number of beds occupied in a quarter is arrived at by cumulating the average number of beds occupied day by day in a quarter. Average number of beds available in a quarter can be found out by adding the number of vacant (staffed and available) beds day by day and the occupied bed-days in a quarter.

The above figures can be obtained by forming a cumulative record of the daily bed state in the hospital. This record, in turn, can be prepared from the 'Midnight Census Report' or from the 'Daily Ward Counts'.

Further the percentage of occupancy can be determined for all the in-patients as a whole, for adults and children and for new borns separately. This will give the break-up of the occupied beds for a quarter. Again, the percentage of bed occupancy can also be shown speciality wise. It is a necessary condition in such a case to allocate the total number of beds available among the different speciality departments.
This ratio indicates how far the available bed capacity has been utilized.

ii) **Turnover Interval**

\[
\text{Turnover Interval} = \frac{\text{Total vacant bed-days for the Quarter}}{\text{Total Discharges and Deaths for the Quarter}}
\]

The 'turnover Interval' is the average number of days a bed lies vacant between successive patients.

The components of this rate is calculated as follows:

- Total vacant bed-days can be ascertained by adding up for each day of the quarter the number of vacant (and available) beds in the hospital. This information shall be obtained from 'Daily Ward Count'.
- The total number of discharges and deaths for the quarter can be obtained by analysing the medical records of discharged patients.

This information indicates the number of days on an average per patient for which a bed has remained unused. Under-utilization of bed resources can be investigated into to find out the possible causes. It serves the hospital administration to take the necessary steps.

iii) **The Average Length of Stay**

\[
\text{Average Length of Stay} = \frac{\text{Total number of days in hospital of each discharged patient for the quarter}}{\text{Total number of discharged patients for the quarter}}
\]

The components of this rate is arrived at as under:

The total number of In-patient-days for the quarter shall be obtained by adding up the individual duration of stay of the total number of
patients discharged during each quarter. The total number of patients discharged can be obtained from the medical records of discharged patients.

This index is complementary to the other index "Turnover Interval". This is more useful if computed for individual diseases.

It is important to recognise that the Percentage Occupancy, Turnover Interval and Average Length of Stay are interdependent. One of these cannot be changed without the others being affected. If occupancy and duration of stay are fixed, turnover Interval can have only one value. It is impossible to change one of the parameters without affecting at least one of the others and usually both.

iv) **Pressure Index per bed**

\[
\text{Pressure Index per bed} = \frac{\text{Number of users who at any one time are competing for beds for a quarter}}{\text{Actual Number of beds available for a quarter}}
\]

This index is more satisfactory than the bed occupancy rate because it embraces not only actual bed-use but potential bed-use. It takes into account not only of actual admissions but of accumulation in the waiting list, if any, maintained in the hospital. It is independent of the absolute size of the hospital.

v) **Average Daily Census**

\[
\text{Average Daily Census} = \frac{\text{Totals of Midnight Census Reports for the month}}{\text{No. of Days in the month}}
\]

Midnight Census Reports are prepared for each day and they record the inpatients occupying the beds, daily admissions and discharges. The
daily ward counts are accumulated for the month to get the Average Daily Census. This rate helps the management as a rough guide in budgeting and planning future financial or building policy. It also measures the trend of patient stay in the hospital and the occupancy rate.

There is a need for consistency as between duration of stay, turnover interval and occupancy rate and for their proper evaluation leads inevitably to analysis by speciality. The average stay and the permissible turnover interval, and the actual pressure itself will vary considerably from department to department. A sufficiency of beds for the hospital as a whole may mask balancing deficiencies and excess in individual departments. A proper statement of report should show the indices separately for all departments. It is a fact that in terms of departments a large hospital is the sum of a number of small hospitals. Beds are not always, in practice, rapidly convertible from departmental use to another.

A comprehensive report incorporating all the above mentioned indices for each quarter and for the hospital as a whole and also departmentwise can be prepared and presented to the management of the hospital. Such a report helps them in proper planning and for taking appropriate and timely decisions relating to the important hospital activities.
In-Patient Service Report

This report presents the details of Inpatient admissions, discharges, service days and deaths during a specified period, preferably a month in a nut-shell on a departmental basis. This report gives the management an idea regarding monthly in-patient service activities which indicate the volume of business done in respect of in-patients.
In-patient services Report

Month ...............  

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<tbody>
<tr>
<td>Admissions</td>
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<td>Discharges</td>
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</table>

**Death Rates Report**

It is very important for a hospital to compute various Mortality Rates for a specified period, preferably quarterly, and to present the rates to the management in the form of a report. This report is known as Death Rates Report. It indicates the number of deaths under 48 hours of admission and over 48 hours of admission. High Death Rates in a hospital warns the management to take remedial measures after analysing carefully the reasons put forward by the concerned medical staff. The reasons should be analysed into controllable and uncontrollable and the steps taken by the medical staff to avoid the controllable factors should be considered. Failures on the part of the management and the medical staff should be viewed seriously and necessary remedial actions should be taken at the appropriate level.

Following Death Rates are compiled and presented to the management for each quarter. While computing the hospital death rates, deaths occurring in the emergency room of the hospital or in the ambulance on the way to the hospital are not included.
1. **Gross Death Rate** = \( \frac{\text{Total number of deaths for the quarter}}{\text{Total number of discharges (including deaths) for the period}} \times 100 \)

2. **Net Death Rate** = \( \frac{\text{Total deaths under 48 hours of admission or over 48 hours of admission for the quarter}}{\text{Total number of deaths and discharges for the quarter}} \times 100 \)

3. **Anaesthesia Death Rate** = \( \frac{\text{Total number of anaesthesia deaths for the quarter}}{\text{Total number of anaesthetics administered for the quarter}} \times 100 \)

4. **Post-operative Death Rate** = \( \frac{\text{Total number of post-operative deaths for the quarter}}{\text{Total number of patients operated upon during the quarter}} \times 100 \)

   Post-operative deaths are deaths attributable to or precipitated by an operation and which are occurring within the convalescence period. (i.e. within the first 10 days post-operative)

5. **Maternal Death Rate** = \( \frac{\text{Total number of deaths of obstetrical patients for the quarter}}{\text{Total number of discharges and deaths of obstetrical patients for the quarter}} \times 100 \)

   Maternal Death is considered as one in which a complication of pregnancy, child birth or of the puerperium was the cause of death. It also includes deaths from abortions.

6. **Infant Death Rate** = \( \frac{\text{Total number of deaths of infants born in hospital for the quarter}}{\text{Total number of viable new born infants discharged (including deaths) for the quarter}} \times 100 \)
A viable infant is one that has reached a stage of development that enables it to live outside the uterus. This is usually considered as 28 weeks.

7. **Autopsy Rate**

Autopsy rate is also included in Death Rates since autopsy is conducted on dead patients. However, autopsies on still births, cases dead on arrival and cases released to legal authorities are not debited against the hospital and are not to be included in figuring the autopsy rate.

\[
\text{Autopsy rate} = \frac{\text{Number of autopsies for the quarter}}{\text{Total number of deaths} - \text{unautopsied medico-legal cases}} \times 100
\]

The above rates when combined into a report becomes a Death Rate Report which is presented below:

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**F69**

**Death Rates Report**

<table>
<thead>
<tr>
<th>Name of Rates</th>
<th>Death Rates</th>
<th></th>
<th>Last Year this Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>This Quarter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Gross Death Rate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Net Death Rate</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>3. Anaesthesia Death Rate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Post-operative Death Rate</td>
<td></td>
<td></td>
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<tr>
<td>5. Maternal Death Rate</td>
<td></td>
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<tr>
<td>6. Infant Death Rate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Autopsy Rate</td>
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</tr>
</tbody>
</table>
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OUT-PATIENT REPORT

One single report is prepared for each quarter to record all the activities taking place in the Out-patient Department of the hospital. This report incorporates the number of first visits, repeat visits, the average out-patient admission and the average daily out-patient admissions. The two averages tell the average work load on the Out-patient Department. The above details can be further broken down by different Out-patient clinics also. This break-down helps to show the activity of each out-patient clinic.

It is advisable to maintain the report as a record on a daily basis and then to summarise for the monthly and quarterly figures. The quarterly reports can thus be prepared and presented easily to the management.

The indices for the Out-patients are calculated as below:

1) **The Average Out-Patient Admission** = Total number of Out-patients during the Quarter
-----------------------------------------------
Total number of Out-patient admissions during the Quarter

2) **Average daily Out-Patient** = Total number of new Out-patients admissions during the Quarter
-----------------------------------------------
Number of working days during the Quarter

The data for the report can be compiled from the Registers maintained at the Registration counters in the Out-patient Departments, Special Clinics and Casualty Services.
<table>
<thead>
<tr>
<th>Out-Patient Clinics</th>
<th>First Visit</th>
<th>Repeat Visit</th>
<th>Total</th>
<th>Average Out-Patient Admission</th>
<th>Average Daily Out-Patient Admission</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>This Quarter</td>
<td>Last Year Quarter</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Medicine</td>
<td></td>
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<tr>
<td>Surgical-General</td>
<td></td>
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<tr>
<td>Surgical-Specialist</td>
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<tr>
<td>OB-Gyne</td>
<td></td>
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<tr>
<td>Pediatrics</td>
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<tr>
<td>Orthopaedics</td>
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<tr>
<td>Neurology</td>
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<tr>
<td>Cardiology</td>
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<td>ENT</td>
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<td>Eye</td>
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<tr>
<td>(Any other clinic)</td>
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<td>TOTAL</td>
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</tbody>
</table>
PATIENT-SERVICES REPORTS

A hospital renders a variety of services to the patients. The success and goodwill of a hospital wholly depend on the performance of the departments which render these patient services. The following stream of reports helps the management to assess the performance of these departments from time to time:

1. **SURGERY REPORT**

Surgery Report gives the number and variety of operations conducted during each quarter. This report should help the management to anticipate and arrange for the necessary facilities required in the Operation Theatre Complex during the next quarter. It should also help to measure the trend of the surgical services of the hospital.
### Surgery Report

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td></td>
<td>Major</td>
<td>Minor</td>
<td>Total</td>
</tr>
<tr>
<td>Skin, Subcutaneous &amp; Aerolar Tissues</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Repair of wounds</td>
<td></td>
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<tr>
<td>Musculoskeletal system</td>
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<tr>
<td>Cardiovascular System</td>
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<tr>
<td>Digestive System</td>
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<tr>
<td>Urinary System</td>
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<tr>
<td>Gynaecology</td>
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<tr>
<td>Endocrine System</td>
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<tr>
<td>Visual System</td>
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<tr>
<td>Neurosurgical System</td>
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<tr>
<td>Others</td>
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</tbody>
</table>

2. **ANAESTHESIA REPORT**

Anaesthesia Report shows at a glance the types and quantity of anaesthesia administered to patients during each quarter.
LABORATORY SERVICES REPORT

A Monthly Performance Report in respect of laboratory investigations is prepared and presented to the management. This report enables the management to ensure an adequate supply of chemicals, and plan for the purchase of equipment, and possibly for the training or hiring of more qualified staff. This report is prepared for each month since a large number of investigations are conducted during each month.

### Laboratory Performance Report

<table>
<thead>
<tr>
<th>MONTH &amp; YEAR:</th>
<th>Number of Investigations conducted</th>
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<tbody>
<tr>
<td></td>
<td>Variety of Investigations Available</td>
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<tr>
<td></td>
<td></td>
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<tr>
<td>1. Urinalysis</td>
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<tr>
<td>2. Parasitology</td>
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<tr>
<td>3. Haemotology</td>
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<tr>
<td>4. Biochemistry</td>
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<td>5. Bacteriology</td>
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<td>6. Pathology</td>
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<tr>
<td>7. Immunology</td>
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<tr>
<td>8. Serology</td>
<td></td>
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<tr>
<td>9. Miscellaneous</td>
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<tr>
<td>TOTAL</td>
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</tbody>
</table>
5. **X-RAY SERVICES REPORT**

A Monthly X-ray Performance Report is prepared and presented to management. This report indicates the volume and nature of investigations in the X-ray department. This report enables the management to ensure an adequate supply of X-ray films of different sizes and chemicals and also for the training of more qualified staff.

### F75
**X-Ray Performance Report**

<table>
<thead>
<tr>
<th>MONTH &amp; YEAR</th>
<th>Inpatients</th>
<th>Outpatients</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Types of X-rays</td>
<td>This Month</td>
<td>Last Year This Month</td>
<td>This Month</td>
</tr>
<tr>
<td>1. Bones</td>
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<td>2. Chest</td>
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<td>3. Abdomen</td>
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<tr>
<td>4. Others</td>
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<td>TOTAL</td>
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6. **MISCELLANEOUS SERVICES REPORT**

Other hospital services rendered to the patients are condensed and consolidated into one Report and presented to management in each quarter of the year. Other hospital services include E.C.G., E.E.G., Scanning etc.
F76
Miscellaneous Services Report

<table>
<thead>
<tr>
<th>QUARTER ENDED</th>
<th>Number of Examinations</th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Inpatients</td>
<td>Outpatients</td>
<td>TOTAL</td>
<td></td>
</tr>
<tr>
<td>Nature of Services</td>
<td>This Quarter</td>
<td>Last Year</td>
<td>This Quarter</td>
<td>Last Year</td>
</tr>
<tr>
<td>1. E.C.G.</td>
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<tr>
<td>2. Exercise</td>
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<tr>
<td>E.C.G.</td>
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<tr>
<td>3. E.E.G</td>
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</tr>
<tr>
<td>4. Scanning</td>
<td></td>
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<tr>
<td>5. Any other</td>
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<tr>
<td>Services</td>
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<tr>
<td>TOTAL</td>
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</tbody>
</table>

The various hospital services reports enumerated above are compiled periodically by the respective heads of the departments or the persons in charge of the services. This practice enables such persons to have a direct involvement in the reporting system in the hospital. This, in turn, will ensure the fixation of responsibility, boosting of morale and above all a direct participation in the overall progress of the hospital. The management, on their part, can plan the future activities of the hospital and take timely and appropriate decisions relating to the various services of the hospital.
FINANCIAL REPORTS

Financial Accounting system in a hospital can be regarded as an important information system in the hospital. It is the source of information essential to the management of the individual hospital and for the functioning of the hospital industry. The information generated by the process of accounting is of two basic types. Balance sheet reports financial position information and the Income Statement reports information relating to operating results. The Financial Statistics in a hospital are those information relating to the financial position and operating results of the hospital.

COST REPORTS

Following are the suggested cost reports to be used in hospitals. The form and frequency of each report should be designed by each hospital according to its requirements. The form, content and purpose of most of the Cost Reports suggested below are already given at the appropriate places.

I. MATERIAL REPORTS

1. Materials Cost Report
2. Inventory turnover report
3. Material purchase efficiency
4. Material price analysis
5. Weekly material usage
6. Surplus and deficiency
7. Inventory loss and wastage
8. Slow-moving and non-moving
9. Material cost per patient day
10. Material cost-income
II. **LABOUR REPORTS**

1. Labour cost
2. Staff wastage
3. Staff absenteeism
4. Idle time
5. Overtime
6. Labour productivity
7. Labour utilisation and performance
8. Shift work
9. Labour cost per patient-day

III. **OVERHEAD REPORTS**

1. Fixed cost
2. Variable cost
3. Fixed and variable cost per patient day
4. Operating cost
5. Overhead efficiency

IV. **EQUIPMENTS REPORT**

1. Hospital Equipment utilisation
2. Instruments Purchase
3. Repairs

V. **HOSPITAL SERVICES REPORTS**

1. Cost per patient-day
2. Cost per out-patient
3. Cost per operation
4. Cost per laboratory test
5. Cost per X-ray
6. Cost per delivery
7. Cost per scan
8. Cost per ECG
9. Cost of anaesthesia
10. Cost per 100 pieces of laundry
11. Cost summary reports
12. Cost of medicine per patient
13. Cost per dish of food
14. Cost of each department
15. Others

VI. OTHERS

1. Contribution margin for each type of patient service
2. BEP for various services
3. P/V Ratio for various services
4. Margin of safety for various services
CHAPTER 8
CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

Upon detailed analysis of the data collected from the private hospitals, the following conclusions are immediately obvious:

1. There is no professional management practised in hospitals. Even the basic managerial functions are not performed properly. There is no clarity in defining the authority, responsibility and roles of the owners, the hospital administrators and the team of doctors.

2. Accrual system of Financial Accounting is followed. The books of accounts and records maintained vary from hospitals to hospitals. The working result and the financial position are ascertained at the end of each accounting period.

3. There are very clear indications of inefficiencies, abnormalities and wastages in the hospital activities and procedures. Effective utilisation of hospital resources is not ensured at all.

4. There is no proper classification of hospital materials and supplies. The purchasing procedure, receipt, storage, issue, consumption, accounting and control of hospital materials are not scientific and effective. No systems exist in hospitals to compute the cost and its analysis of materials consumed. The records of materials are also insufficient.

5. Hospital Labour Cost is not given due consideration it deserves. The techniques of job evaluation, merit rating, time and motion study, and
work measurement are not practised in hospitals. Methods of remunerating
the different categories of hospital personnel are not scientific and
they vary widely from hospitals to hospitals. The high rate of labour
turnover is neither measured nor controlled. Labour cost is never
computed. Proper records are not maintained in respect of labour cost.
Proper controls are not exercised to contain the hospital labour cost.

6. No proper classification of other expenses exist in hospitals. Proper
records are not kept in respect of hospital assets. The system of
depreciating the fixed assets is not at all sound and proper. Proper
analysis is not made in respect of other expenses. There is no provision
of controlling various items of other expenses.

7. The cost of each department rendering specific services to patients is
never computed. The unit cost of services rendered by such department is
also not computed hitherto. The hospitals do not realise the significance
of computing the cost per in-patient day and out-patient visit.

8. Inter-hospital comparison in respect of various aspects of cost do not
exist at present in hospitals.

9. Decision making techniques based on marginal costing principles are not
applied in hospitals.

10. Sophisticated and effective cost control techniques like Budgetary
Control and Standard Costing are never practised.

11. There is no reporting system at present in hospitals. No systematic
collection and compilation of both cost and non-cost data is there in
hospitals. Management is unable to take judicious and wise decisions
based on accurate and prompt information.
12. Professional reviews and Performance Audit are never conducted to evaluate the performance of hospital staff with a view to achieve quality assurance in better patient care.

13. The fees charged for various hospital services are not fixed on any scientific basis. The fees charged for the same type of service vary widely from hospital to hospital. Cost has never been the basis of charging fees from patients.

**RECOMMENDATIONS**

The basic recommendation is to design a full-fledged Cost Accountancy System that suits the requirements of hospital. For this the principles and techniques of Cost Accountancy are tailored to fit within the hospital system. A complete sequence of Cost Accounting procedure is recommended for each element of hospital cost. Cost book-keeping procedure is designed to record the cost data in appropriate books of accounts. The procedure of analysing and computing cost of various departments and different types of hospital services is recommended with the help of data taken from a hospital. Both general and specific cost control techniques are recommended for hospitals. Application of marginal costing techniques for decision making and inter-hospital comparison are recommended to be practised in hospitals. A Hospital Information System is designed to generate prompt and accurate information for managerial purposes. These recommendations have already been given at appropriate places with a view to maintain the logical sequence of the presentation of the study without any interruptions. All the recommendations proposed in the study are practically possible only if the Cost Accountancy System is installed in hospitals. The success of a Cost Accountancy System largely depends on how the system is installed. The important aspects that should be considered for the installation of the Cost System are given below:
Installation of Cost Accountancy in Hospitals

There exists no system of Cost Accountancy in Indian hospitals. Although some attempts have been made all over India towards cost finding procedures in hospitals, all of them are either incomplete or unscientific. In majority of the cases, the attempts have been restricted to case studies. However, associations related to hospitals have made sincere efforts to lay special emphasis on cost reduction and cost control in hospitals through seminars, conferences, journals, papers etc. The need to have a full-fledged Cost Accountancy System in Indian hospitals is being realised at least by certain authorities and organisations engaged in hospital activities.

In this context, it is not possible to analyse the existing system of Cost Accountancy in hospital and to recast the same with a view to overcome the defects in the system. Hence it is proposed here to give recommendations in the form of guidelines to instal a full-fledged Cost Accountancy system in hospitals. The recommendations for the installation of the system include important factors to be taken into account while installing the system and also the recommended line of action to be followed. Most of the practical considerations suggested emanate from the peculiar features of the hospital system.

1. Factors affecting hospital cost

   As the first step in the process of installing the system, the important factors affecting the cost of hospitals need special consideration:

      Size of Hospital

      Unlike manufacturing concerns, as the size of the hospital increases, so does the range and comprehensiveness of service, resulting in a higher cost per patient day.
Higher the patient turnover, higher the number of staff required and greater the total number of procedures carried out. Although this lowers the unit cost, the total operating costs are increased.

**Competition**

Unlike the free market economy model, competition does not lead to lower prices to the customers in hospital industry. Competition results in higher costs as hospitals have to compete with each other by clinically keeping up with the competitors. More facilities and conveniences are provided by the more competitive hospitals and hence costs increase.

**Service intensity**

Specialisation and super-specialisation lead to higher costs per patient day since high technology care warrants sophisticated equipment, esoteric and expensive procedures, greater use of consumables and supplies, and more intensive staffing pattern.

**Degree of investment**

Higher operating costs result when capital and fixed costs are high. Greater the availability of sophisticated, high technology equipment and facilities, greater is its use, and thus higher the cost.

**Efficiency**

Efficient management leads to better ratio of output to input and lower costs. If, however, hospital productivity gains relative to wage increase are smaller than elsewhere in the economy, hospital prices and hence
expenditure on hospital care will increase more rapidly than expenditure in other sectors.

**Cost of the "market-basket"**

As the costs of food, fuel, supplies and labour increase, hospital costs also increase as hospitals have to pay higher prices for goods and services.

**Design of the hospital**

The age, location, architecture, layout, type of building materials and facilities provided have a bearing on maintenance costs, number of staff to be employed, work-flow etc. and thus affect hospital costs.

**Reimbursement pattern**

Payment of hospitalisation bills by third parties results in rising hospital costs. This is because the beneficiaries are less reluctant to be hospitalised or to remain for a long stay. Further, not feeling the immediate pinch, they demand more than what is necessary. Hospitals too, to play safe and to increase their revenue, administer more procedures than necessary.

**Malpractice insurance**

With an increasing tendency for patients to claim damages for iatrogenic problems and injuries sustained under the law of Torts, clinicians and hospitals require to take adequate safeguards to protect themselves in such an eventuality.
**Rising personal incomes**

People demand more hospital care as their incomes rise. Most often they demand more procedures, facilities and conveniences. These lead to increased hospital expenditures.

2. **Prerequisites**

There must be some basic and minimum requirements in a hospital for the installation of the cost system. There must also exist certain desirable conditions which are conducive for the effective implementation of the system. These are suggested below:

1. The hospital must have a sound organisational structure where authority and responsibility are already defined in each department.

2. A chart of accounts which relate to the organisation chart.

3. A comprehensive information system capable of collecting non-financial data which will provide the basis for distribution of costs.

4. Awareness of cost among all sections of the staff especially the doctors who happen to be the major incidence of costs.

5. The accounting system should provide for the accumulation, on the accrual basis, of revenue and expenditure under double-entry principles.

6. A detailed study of the nature of services rendered in each department, and the relation among the different departments.

7. The factors affecting hospital costs should be analysed into greater detail and the degree of influence of each factor on the costs ascertained.
3. **Line of Action**

The following line of action is recommended for the installation of cost system in hospitals:

1. Divide all the departments of the hospital into Revenue-producing and Non-Revenue producing centres. This classification also determines the cost centres in the hospital.

2. Streamline the working procedure in each cost centre and design suitable and proper forms and records for each of the cost centre.

3. Lay down the procedure for the collection and accumulation of both cost and non-cost data for each cost centre.

4. Fix the responsibility of incurring costs in each cost centre.

5. Prepare forms, card, report, books etc. for keeping records of all the elements of cost.

6. Decide the issues regarding material cost control and also determine the techniques to be applied for material cost control.

7. Decide the matters relating to labour cost control with special reference to staff wastage, idle time, over time etc.

8. Work out the normal and existing capacity in each department.

9. Find out and decide the most appropriate method of allocation and apportionment of costs to be applied for primary and secondary distribution and also for the final absorption of costs into units of services.

10. Make out the proper procedure for preparing budgets and setting standards.

11. Determine the most suitable method of segregating all costs into fixed and variable.
12. Maintain proper records for all the hospital equipments, instruments and machines.

13. Decide the method of maintaining cost books based on double-entry principle.

14. Search for the areas where cost reduction programmes can be implemented.

15. Decide about the types of reports to be prepared, its frequency and the level at which they are presented and also devise the most appropriate Reporting System.

CONTRIBUTIONS OF THE STUDY

The major contributions of this study are briefed below:

1. Cost Accountancy and Cost Control Systems in hospitals give a new thrust to the hospital management to meet new and challenging operating environment.

2. The proposed cost systems help to maintain better communication, understanding and co-ordination with the goals of the medical staff in hospitals. This ensures better medical control on the utilisation of resources and quality of patient-care.

3. Effective planning of hospital facilities and services are ensured.

4. It ensures proper balance between different specialities in hospitals and accessibility of hospital resources to individual doctors. This results in optimum utilization of hospital resources.

5. A model of low cost-high technology in hospitals shall provide invaluable relief to the agony and sufferings of millions of patients in the society.
6. Hospital is a cost intensive organisation and the cost of hospital based medical care all over the world is rising out of all proportions. There is widespread concern and dissatisfaction about the rising cost of medical care. The state of affairs of hospitals from the viewpoint of cost have become a subject of serious public criticism during recent time. An effective cost containment programme is the only solution to this alarming problem. The hospital planners and administrators can heavily rely on an effective Cost Accountancy System for the efficient achievement of their objectives.

7. The Administrator of today's hospitals is caught up between two grinds. On one hand he has to deal with the drama of human emotions enacted every second of the day inside the four walls of the hospital where battle of life and death is being fought by the staff, while on the other hand, devoid of all human touch and feelings, the Administrator has to deal with the tussle of bureaucracy with various authorities. The situation is further compounded when the areas of responsibility, and of control, and the multifarious activities on the part of the Hospital Administrator are assuming oceanic proportions. Since Cost Accountancy greatly facilitates the process of management, the Hospital Administrator is much relieved of the routine managerial problems and can concentrate on vital issues by exercising the principle of exception.

8. India can ill afford the luxury of wasteful spending, even if such expenditure is related to as critical area as health. Indian hospitals, while ensuring quality care, should therefore attempt to reduce costs through higher efficiency, effectiveness and economy. In this cost quality assurance exercise, factors specific to the Indian context merit consideration: strategies for reducing length of hospitalisation, reduction in frequency and costs of investigations, avoidance of non-
productive sophisticated technology, service mix planning, manpower substitutability, incorporation of Indian systems of medicine, etc. Besides, cost reduction is possible through an effective quality control monitoring system. External pressure groups such as consumer forums and third party payers can also play a major role in demanding better care for a lesser fee. All these attempts are possible when each hospital has its own fully developed cost system.

It is suggested that the humble effort in this direction should be continued by conducting further research in the area. A Management Accounting System should be designed for hospitals and the present Hospital Management Practices should be thoroughly examined and studied with a view to make the hospitals more effective and efficient in their sacred mission.

The researcher earnestly hopes that the private hospitals in our country do realise the necessity and significance of reducing the cost of valuable hospital services as a hallmark of their great responsibility towards the mankind. Since the very existence of the society solidly depends on the health of its members, the hospitals, being the providers of health care, should not be reluctant to welcome and implement programmes leading to cost control and cost reduction in hospital services. The golden fruits of ever-growing modern medical technology should be made available to all the sections of the society at the lowest possible cost. Let the motto of the hospitals be "BEST QUALITY PATIENT CARE AT MINIMAL COST"