COST ACCOUNTANCY AND COST CONTROL IN HOSPITALS

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C E R T I F I C A T E

THIS IS TO CERTIFY THAT THE THESIS ENTITLED "COST ACCOUNTANCY AND COST CONTROL IN HOSPITALS" IS A RECORD OF THE BONAFIDE RESEARCH WORK DONE BY SHRI. P.K.SUNDARESAN, PART-TIME RESEARCH SCHOLAR FOR THE DEGREE OF DOCTOR OF PHILOSOPHY, AT THE SCHOOL OF MANAGEMENT STUDIES, COCHIN UNIVERSITY OF SCIENCE AND TECHNOLOGY, DURING THE PERIOD OF HIS STUDY.

THIS THESIS IS THE OUTCOME OF HIS ORIGINAL WORK AND HAS NOT FORMED THE BASIS FOR THE AWARD OF ANY DEGREE, DIPLOMA, ASSOCIATESHIP, FELLOWSHIP OR OTHER SIMILAR TITLE.

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DECLARATION

THIS IS TO DECLARE THAT THE DISSERTATION ENTITLED "COST ACCOUNTANCY AND COST CONTROL IN HOSPITALS" IS A RECORD OF BONAFIDE RESEARCH DONE BY ME AND THAT IT HAS NOT PREVIOUSLY FORMED THE BASIS FOR THE AWARD OF ANY DEGREE, DIPLOMA, ASSOCIATESHIP, FELLOWSHIP OR OTHER SIMILAR TITLE.

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CHAPTER 1

INTRODUCTION

Development is a process of growth in the direction of modernity especially towards nation building and socio-economic progress. Development implies progressive improvements in the living conditions and quality of life enjoyed by society and shared by its members. Amongst the objectives of development are health and productivity. They are reciprocal and complementary. Without health, productivity can hardly flourish. On the other hand, productivity may increase means and opportunities for better health. Thus good health is a prerequisite to human productivity and the development process. A healthy community is the infrastructure upon which to build an economically viable society. There can be no two opinions that health is basic to national progress and in terms of resources for economic development nothing could be of greater significance than the health of the people. Health is defined as "a state of complete physical, mental and social well-being and not merely an absence of disease or infirmity."[1] "Health is a positive state of well-being in which harmonious development of mental and physical capacities of the individuals lead to the enjoyment of a rich and full life ..... It implies adjustment of the individual to his total environment - physical and social".[2]

Against this backdrop, a hospital should be viewed as a potent tool of development. Hospital organisation is an essential and integral part of the health services of a country. The medical care to the community, by and

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1. WHO, World Health, May 1979, p.3.

2. Govt of India, First Five Year Plan, 1951, p.488.

large, is rendered through hospitals which are the pivotal points of all health services. The main function of a hospital is to promote the health of the community which it serves. "Hospital is an integral part of a social and medical organisation, the function of which is to provide for the population, complete health care, both curative and preventive.....; the hospital is also a centre for the training of health workers and for bio-social research" and "an institution that provides in-patient accommodation for medical and nursing care".[3] Hospitals have now become indispensable to the proper care of the broad spectrum of health problems. The basic purpose of the hospital is 'better patient care' and return the patient back to the community as a productive unit of that community. In a dynamic society, the hospital occupies a unique place to accommodate explosion of science into medicine and the whole galaxy of new treatment techniques, new equipments and proliferation of services which have made a profound impact on the provision of care facilities and services. Further, the development of socio-politico, cultural and educational systems have made the people conscious of their rights and they demand that modern and best means of medical and health care be made available to them. A major hospital is at once a hotel, a treatment centre, a laboratory and a university. Hospitals typically employ a large number of professionals, both physicians and other experts and have a high degree of specialisation of labour. These impacts have made a hospital a very complex organisation. Management of such a complex organisation requires blending of technical, administrative and accounting competence in the right direction. Each hospital is a distinct entity and as such each has to be tailored to the specific aims to be accomplished, the specific tasks to be performed, the

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3. WHO, Technical Report Services, 395, 1968, p.6

volume of services to be rendered and the type of the community to be served. The output of "better patient care" should be secured by hospitals through optimum utilisation of available resources.

1.1 STATEMENT OF THE PROBLEM

It is a fact that there now exists a sound framework of accounting theory to ascertain the working results and the investment status of hospitals. Yet, there is no system of accounting in practice to conduct its activities with utmost efficiency. No attempts have hitherto been made for the continuous improvement in the servics rendered by hospitals. Personal investments in hospitals have made the interaction of business to some extent. Planning, decision making and control assume increasing importance as hospitals grow in size and complexity. Moreover, wise and effective utilisation of resources should be ensured. The importance of cost cannot be overlooked in this context. Cost is the most effective factor in the determination of the prices of hospital services rendered. The important managerial functions have to rely heavily on accurate and timely cost information. More people can be provided with services if no services cost more than what is a must to provide the necessary level of care. The price paid for high cost technology for a few is no technology at all for the many. Hence no pains must be spared in ascertaining, presenting, controlling and reducing costs. An effective system of Cost Accountancy and Cost Control is imperative for the survival of hospitals in the intensely competitive conditions of today. The valuable objective of "better patient care" can be attained only if the management can make use of the various tools and techniques to ascertain, control and reduce each item of cost in hospitals. Constant efforts must be made by the management to continuously improve their services and bring down costs

and prices of all hospital services. Cost Accountancy has made its impresssive impact on almost all the spheres of human activities. It is high time a comprehensive Cost Accountancy and Cost Control system be implemented in hospitals. The problem under study thus is the designing of a sound and full-fledged Cost Accountancy and Cost Control system that suits the requirements of hospitals. It is for the first time in India during the evolution of Cost Accountancy that a comprehensive cost system is tried in hospitals.

1.2 OBJECTIVE OF THE STUDY

The objective of the study is to design a sound and full-fledged Cost Accountancy system in hospitals. It is also the objective of the study to work out suitable control techniques to contain the ever - increasing hospital costs. Following aspects are covered in a logical sequence in the study to attain the objectives:

1. To see whether a Cost Acountancy system is in practice in hospitals.

2. To enquire whether any control systems exist in hospitals to keep the hospital costs within desired limits.

3. To see whether the Cost Accountancy and Cost Control systems, if existing in hospitals, are comprehensive and effective in their mission.

4. To pinpoint the weaknesses if any inherent in any existing systems of Cost Accountancy and Cost Control in hospitals.

5. To give suggestions to overcome such weaknesses with a view to make the existing cost systems more effective and efficient.

6. To locate the weaknesses, inefficiencies and lossess in hospitals in the absence of Cost Accountancy and Cost Control System.

7. To design a sound and full-fledged Cost Accountancy System that suits the requirements of hospitals. The suggested hospital cost system is to include Cost Accounting procedures in respect of Materials and Supplies, hospital labour and other Expenses, Cost book-keeping scheme, Cost-Finding procedures and the application of special Cost Accounting techniques in hospitals.

8. To suggest suitable Cost Control measures to ensure containment of hospital costs in all spheres.

9. To design a Hospital Information System to help the management to take appropriate and sound decisions.

1.3 REVIEW OF LITERATURE

Literature on this particular area of study is brought under two heads:

1. General, and
2. Specific

1. GENERAL

Management control process requires accounting data and a major portion of the task of supplying such data is in the domain of Cost Accountancy. Cost Accountancy as a branch of Financial Accounting is closely interwoven into Management Accounting. The principles, practices and techniques of these disciplines form the general framework of the study. An intensive approach is followed

to deduce the most practical propositions for the designing of a cost system in hospitals.

2. SPECIFIC

Since Cost Accountancy and Cost Control Systems are to be applied in hospitals, special attention has been paid to the nature and mode of operation of hospital activities. The organisational pattern, management system and the accounting procedure in hospitals deserve particular consideration in this respect. The problems of planning, decision-making, Co-ordination and control in hospitals are examined and analysed.

No studies have yet been undertaken to run the hospitals efficiently and economically. The working of a full-fledged Cost Accountancy System has never been tested in hospitals. Very little has been done to reduce the cost of various activities in hospitals. There is also the absence of effective application of Cost Control techniques in hospitals. There is a great dearth in the literature on this topic of study and the few references available have helped to formulate valid theories, procedure and techniques of Cost Acountancy and Cost Control that should fit into the hospital system.

Lasser (1954) outlines the theory of accounting for private hospitals. Patients should be charged according to the principle "What traffic can bear", but cost must also be taken into account [4].

4. Lasser G.K, Hand book of Accounting Methods, New York: D. Van Hostrand Co. Ltd.,1954, p.325.

Barnes W Thomas (1965) finds that hospitals do not use cost Accounting system in the traditional sense; instead, they employ cost finding techniques. The objective of hospital cost finding is the accurate determination of departmental costs. Even the most basic hospital accounting systems usually record direct expenses departmentally, but indirect expenses must be calculated, and then total cost properly allocated to the different departmental functions or types of patients.[5]

Maurice W Cunning (1971) has given a fine description of the problems of hospital staff management. The techniques of planning, supply, recruitment and placement of hospital employees should be given proper attention by the management. Major areas of control of labour in hospitals include measurement of labour performance, minimisation of labour turnover and appropriate schemes of remuneration of hospital staff.[6]

John Leslie Livingstone (1974) explains the introduction of management accounting in hospitals through a case study. There is the need to develop an efficient system to enhance the effectivness of the top management of a hospital.[7]

The voluntary Health Association of India (1975) in its Accounting guide for hospitals deals with hospital cost finding procedure. Cost finding is the process of allocating all costs of operating the hospital to

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5. Barnes W Thomas, Encyclopedia of cost Accounting, Vol.II, Englewood cliffs: Prentice Hall International, 1965, pp. 413-442.

6. Maurice W Cunning, Hospital Staff Management, London:William Heinemann Ltd,1971, pp. 7ff.

7. John Leslie Livingstone and Sanford C Gunn, Accounting for Social Goals, New York: Harper and Raw, 1974, pp.289-293.

departments which produce revenue in order to obtain the cost of each unit of service rendered by the hospital. If the total cost of operating the hospital is to be recovered from the patients who receive service, an accurate assignment of all costs must be made only to the departments providing services for which patients pay. The four basic steps of cost finding method include the selecting the cost centres from which and to which costs will be allocated, establishing the bases for distributing the costs, allocating the cost of the general service cost centres to the revenue producing centres and summarising the cost data in a report.[8]

Gupta and Juyal(1978) conducted an exploratory study on cost analysis in a welfare centre. The objective was to work out cost analysis of various activities performed by the staff and also to determine unit of various services provided in clinic and during home visits. The staff activities were divided into productive and non-productive and cost was computed for each activity and for each category of staff. There were six categories of services rendered during clinic visit and home visit and cost was computed for each type of service.[9]

Harold Trader (1986) tries to develop a Management Accounting system in hospitals by projecting three types of reports. Managers' Report compares the budget with actual performance. Productivity Report yields a productivity index and also provides a measure of efficiency. The Capital Budget Analysis Report reviews the Capital Budgeting necessary

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8. Voluntary Health Association of India, An Accounting Guide for Voluntary Hospitals in India, New Delhi: 1975, pp.143-149.

9. Dr. J.P.Gupta and Dr. R.K.Juyal, "An Exploratory study on Cost Analysis of an Urban Maternal & Child Health and Family Welfare Centre", Hospital Administration, Vol XV, June, 1978, pp.28-35.

for any desired equipment purchase. Control of hospital operations are facilitated by these reports.[10]

According to R.K. Sarma, the Cost Containment Programme in hospitals can be dealt at two levels, one is macro level, ie,on the overall functioning of the hospital and at micro level, ie, in the day-to-day operation of the hospital and its functional units. Macro level programme deals with policies,programming and planning of hospital and health facilities. Cost Containment in micro level includes efficiency of supportive services, machinery, equipment and materials and professional reviews in hospitals.[11]

Dr. Ashok Sahni compiled the papers submitted to the Seventh Annual conference of Indian Society of Health Administrators. The papers cover a wide range of techniques of cost reduction in hospitals. The areas include construction and Equipment Management, Financial Planning, Costing systems, computers and Management Systems.[12]

Ananthapadmanabhan lays down some important techniques to control and to reduce material costs in hospitals. The cost control techniques include:[13]

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10. Harold Trader, et.al., "Management Accounting in a Hospital", Hospital Administration, Vol XXIII, March-September, 1986, pp.1-8.

11. "R.K. Sarma, "Cost Containment in Hospital", Hospital Administration, Vol XXIII, October-December, 1986, pp.366.

12. Ashok Sahni, Cost Reduction in Hospitals and Health care, Bangalore: Indian society of Health Administration, 1986, pp.99ff.

13. U.K. Ananthapadmanabhan," Relevance of cost control and cost Reduction Techniques in Hospital Materials Management", Hospital Administration, Vol.XXIII, October-December, 1986, pp.408.

- Inventory Control
- Minimisation of Rejections and Wastages
- Resistance of price increases
- Elimination of stock out costs, and
- Standardisation

Cost reduction techniques include:

- Locating cheaper source
- Use of reusables
- Cutting down procurement cost, and
- Value analysis

Daksha D. Pandit (1988) conducted a study on the cost assessment of an urban health centre in Bombay. The total expenditure of the centre was divided into variable and Fixed Expenditure. Total Out-patient days were calculated by multiplying the total number of outpatients in one year by four for which days patients are given medicines in the centre. Total cost per out-patient day is arrived at by adding the Fixed Cost per patient-day and variable cost per patient day. The study helped the centre to identify what went wrong with earlier projections, to evaluate past experience and to use the information obtained to improve the next year's projection of services.[14]

Ashok kumar Roy indicates the various aspects which should be given due consideration while designing a cost reduction programme for hospital. The major aspects include:[15]

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14. Daksha D. Pandit, et.al, "Cost Assessment of an Urban Health Centre"' Hospital Administration Vol XXV, June, 1988, pp.199.

15. Ashokkumar Roy, "Cost Reduction in Hospital", Hospital Administration, Vol. XXV, March, 1988, pp.81.

- Location of hospitals
- Training Programme
- Type of Building, Equipment and facilities
- Staffing
- Hospital supplies
- Utilities
- Maintenance
- Shared services
- Management responsibility

Tiwari (1990) attempts to explain the importance of Budgeting in hospitals. The types of budgets suitable to hospitals are:

Operating Budgets

Cash Budget, and

Capital Budget

The specific duties of a budget committee in a hospital includes collection of necessary data for various budgets and consolidation of draft budgets into a Master budget. Budgetary control in hospitals is achieved by[16]

- Performance appraisal
- Corrective action, and
- Follow up

Lloyd G. Reynolds gives a vivid picture of quasi-public goods including health care. He looks into the economics of the large and growing health care industry. This is a peculiar industry only because of the fact that

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16. C.K. Tiwari, "Hospital Budgeting," Hospital Administration, Vol XXVII, October-December, 1990, pp.101.

the supplier (the doctor) rather than the customer (the patient) largely determines the demand for health care. The present organisation of hospital care encourages escalation of costs per patient-day and also excessive use of hospital facilities. Issues in the delivery of medical care include the problem of access to medical services, inefficient utilisation of the doctor's time, and the cost advantage of organisations large enough to use specialised para medical personnel.[17]

1.4 DATA AND METHODOLOGY

The research study is designed in such a way that the different aspects of the hospital activities are investigated with a view to explore the practicability of designing a comprehensive Cost Accountancy and Cost Control System in the hospital organisation. The hospitals under study are in the private sector and the forms of organising them range from individual ownership to Christian Medical Missions. The hospitals adopt Allopathic system of Medicine. All the hospitals have the modern and advanced diagnostic and treatment facilities. There are ten private hospitals having hundred or more beds for in-patients in Ernakulam District. A census study is conducted in the ten hospitals in the district to collect the requisite data. Primary data is collected from the hospitals and other source are also tapped in so far as they are relevant for the study. Data is collected in respect of all Hospitals Costs, hospital procedures, techniques and methods of hospital activities, and other relevant information required for the study. Data is collected for the year 1990-'91 and data relating to the immediately preceding years are also collected whenever it is considered necessary.

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17 Lloyd G. Reynolds, Microeconomics, Analysis and Policy, New Delhi: Universal Book Stall, 1990, pp.398.

Personal interviews using a structured and pretested schedule and observation are the techniques used for the collection of data. The schedule of questions covers all the aspects of the working of hospitals and it is at a number of sittings that the schedule is completed for each hospital. All the categories of hospital personnel are interviewed for the study. The interviews are unstructured and informal. They are in the form of long and detailed discussions with surgeons from different specialities and the hospital technical staff in particular. Many of the important hospital procedures and methods are observed directly in cases where information cannot be obtained in any other manner.

The data is analysed by applying the techniques and procedures of Cost Accountancy. The procedures and practices in hospitals in respect of each element of cost are analysed with a view to locate the weaknesses in the existing systems. Appropriate and detailed suggestions are recommended within the theoretical framework of Cost Accountancy to improve the overall efficiency of hospitals. The suggestions are thoroughly tested for their suitability and practicability within the hospital system. The total cost structure of a typical hospital is analysed in detail with a view to compute the cost of various hospital services rendered to patients. The cost analysis is done by using Cost Accounting techniques which are suggested for hospitals.

1.5 DEFINITION OF TERMS

The definition of the important terms used in the study are given below:

COST

Cost is "the amount of expenditure (actual or notional) incurred on, or attributable to, a given thing".[18] The constituent elements of cost include the cost of materials and supplies used and consumed by an organisation, the cost of labour engaged by it and the cost of various services utilised by it. Although there are different conceptions of cost, the one common concept applicable to all types is, "the cost which is represented by the resources that have been or must be sacrificed to attain a particular objective".[19]

HOSPITAL COST

Hospital cost represents the cost of taking care of an average patient for one day. It is the cost of providing various services to the patients. It is also the cost of operating the hospital.

COST ACCOUNTANCY

Cost Accountancy is "the application of costing and cost accounting principles, methods and techniques to the science, art and practice of cost control and the ascertainment of profitability. It includes the presentation of information derived there from for the purpose of managerial decision-making."[20]

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18. Institute of Cost and Management Accountants, Terminology of Cost Accountancy, London: 1988, p.2.

19. Gordon Shillinglaw, Cost Accounting - Analysis and Control Bombay: D.B. Taraporevala and sons Co. Pvt. Ltd., 1971. p.14.

20. Institute of Cost and Management Accountants, op. cit.

COST ACCOUNTING

Cost Accounting is "the process of accounting for cost from the point at which expenditure is incurred or committed to the establishment of its ultimate relationship with cost centres and cost units"[21]

COSTING

Costing is defined as, "the techniques and processes of ascertaining costs".[22]

COST CONTROL

Cost control is "the regulation by executive action of the costs of operating an undertaking, particularly where such action is guided by Cost Accounting".[23]

1.6 LIMITATIONS OF THE STUDY

The study is limited to private hospitals in Ernakulam district involved in allopathetic treatment. Government hospitals are excluded from the study for two obvious reasons:

i) Proper and sufficient records are not maintained in the majority of government hospitals and hence it is very difficult to collect the required cost and non-cost data, and

ii) It is not possible for a single individual to apportion the total government expenditure among the various Ministries in order to get the share of health ministry and then to apportion again such share among all the government hospitals in the state.

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21. Ibid, p.6.

22. Ibid, p.1.

23. Ibid, p.18.

The degree of specialisation,the nature of patient services and the technology used differ from hospital to hospital. In order to study all the varieties of patient services available in different hospitals, each hospital should be treated as a separate and distinct unit of study. Further, Ernakulam District has the best of the medical institutions available in the private sector in the State. This is the reason why one district, especially Ernakulam, is selected as the area of census study.

The study is further limited to those private hospitals having 100 or more beds to accomodate in-patients at a time. This is done because a Cost Accountancy System gives better results in medium and large sized hospitals. It is a known fact that a cost system is worth its installation only in an organisation where the volume of activities are sufficiently larger.

General hospitals are taken for the study for the reason that almost all the types of hospital services are rendered only in general hospitals. General hospitals provide the scope for applying the costing principles and techniques to all the different types of hospital services. Speciality hospitals restrict their services to one or two specialities and hence do not serve the purpose of the study.

Finally, cost analysis is not done for four hospital departments, viz, Transport, Canteen, Blood Bank and Mortuary. While Transport and Canteen services have their own independent and developed cost systems, Blood Bank and Motruary are not common to all hospitals. Further, the cost of certain highly skilled, most advanced and specialised operations and processes like By-pass Heart Surgery, Kidney Transplantation, Dialysis, etc., are not computed since these are not common in all hospitals.

1.7 SCHEME OF PRESENTATION

The results of the study have ben presented in Eight Chapters as shown below. The division into chapters has been made on a functional basis. The findings and recommendations relating to each function are given together in the same chapter rather than grouping all the recommendations together at the end. The format of the interview schedule and selected bibliography are shown as appendices.

Chapter 1 introduces the problem under study and explains the objectives, limitations and the methodology adopted to analyse and solve the problem. It also reviews the literature relevant to the problem and defines the terms used for the study. Chapter 2 deals with the important features of Departments, Management and Accounting in Hospitals. The necessity and relevance of Cost Accountancy in hospitals are also explained in this chapter. Chapter 3 lays down the Cost Accounting procedures in respect od Hospital Materials and Supplies, Hospital Labour and Hospital Other Expenses. The Hospital Cost Book-keeping suggested in the chapter completes the Cost Accounting procedure. Chapter 4 describes the Cost-Finding procedure to compute the cost of various Hospital Services. Chapter 5 suggests the important cost control techniques that should be applied in hospitals, while Chapter 6 deals with special cost techniques which improve the efficiency of Hospitals. Chapter 7 explains the Hospital Information System and Chapter 8 ends with conclusions, recommendations and suggestions for future research in the area of present study.

CHAPTER 2

HOSPITAL AND COST ACCOUNTANCY

2.1 DEPARTMENTS IN HOSPITALS

For a proper understanding of the working of a hospital, it is necessary to give a brief sketch of the functioning of different departments in a hospital. The functions performed by each department indicates the nature and complexity of the hospital activities. The diversified nature of the different departments points to the need of proper and adequate co-ordination and control procedures in hospital. The designing of a Cost Accountancy System suitable for a hospital requires a thorough analysis and understanding of the nature of activities in each of the various departments in the hospital. The nature of activities in each department has a weighing influence on the amount of cost incurred in that department. The nature of Cost Accounting procedures in respect of various elements of costs also depends largely on the functions of different departments in a hospital. The description of the departments also include creative suggestions to make them more efficient and effective.

1. ACCIDENT AND EMERGENCY DEPARTMENT

This department provides emergency or casuality services. An emergency, whether it strikes an individual or a group of individuals in a community, is a crisis. The acid test of a hospital is the promptness, efficiency and the effectiveness with which it can rise to the expectations of the community to deal with that crisis. It is, therefore, the Hospital Administrator's prime concern and responsibility to organise, plan and gear up the Emergency Services of his hospital to such a high level of performance as to achieve this goal. This department

provides round-the-clock, immediate diagnosis and treatment for illness of emergent nature and injuries from accidents, poisoning, mental accident, etc. Emergency service is acquiring increasing importance due to modern problems arising out of urbanisation, transportation and mechanisation. The best services must be provided to the patients in the Emergency wards as the patients and their relatives are under emotional strain and surcharged with suspense and anxiety about the consequences of the diseases or calamity that has come up suddenly.

Following principles should be followed in rendering emergency services in hospital :

(a) Formation of well-trained, efficient and well-knit emergency teams.

(b) Rendering Emergency treatment on the spot where it occurs or wherever patient is brought.

(c) Patient once received at a point should not be unnecessarily moved particularly at night except to the operation theatre or to delivery rooms.

(d) Each of such places so ear-marked should be equipped to deal with all types of emergencies without resorting to go out to fetch equipments or medicines.

(e) Creation of composite and an efficient system of mobile emergency teams to attend to calls.

(f) Creation of 'Survival Teams' within the hospital to take over the nursing care of 'very critical cases'.

(g) Periodical re-hearsing of these teams to keep them at a high level of proficiency at all times.

(h) Making readily available at all times facilities like the following:

i) Waiting areas

ii) telephone services

iii) toilet facilities

iv) drinking water facilities

v) receptionist and general information counter for anxious relations.

vi) easy accessibility to police

vii) doctors' examination cubicles

viii) stores

ix) Brought-in-dead rooms

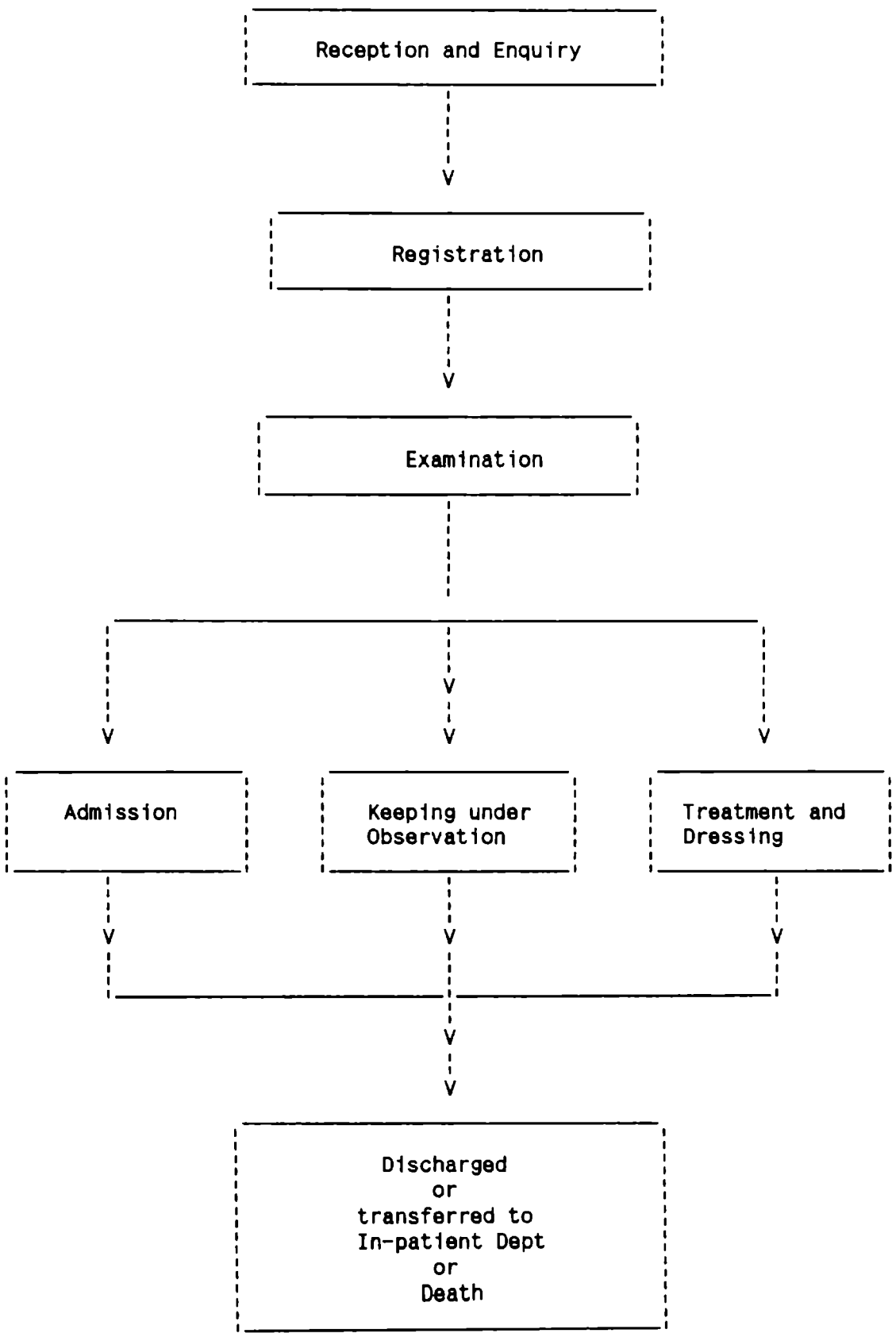
x) On the spot observation beds

xi) Laboratory, blood bank, pharmacy, X-ray, ECG facilities etc.

Simple cases after administering preliminary treatment are discharged with instructions to attend Out-patient Department as a follow-up measure. Cases of serious nature are admitted to emergency wards to provide immediate medical care. Such patients are either discharged after 2-3 days or are transferred to permanent In-patient wards.

Following diagram shows the procedure in an Accident and Emergency Department:

FIG. 1

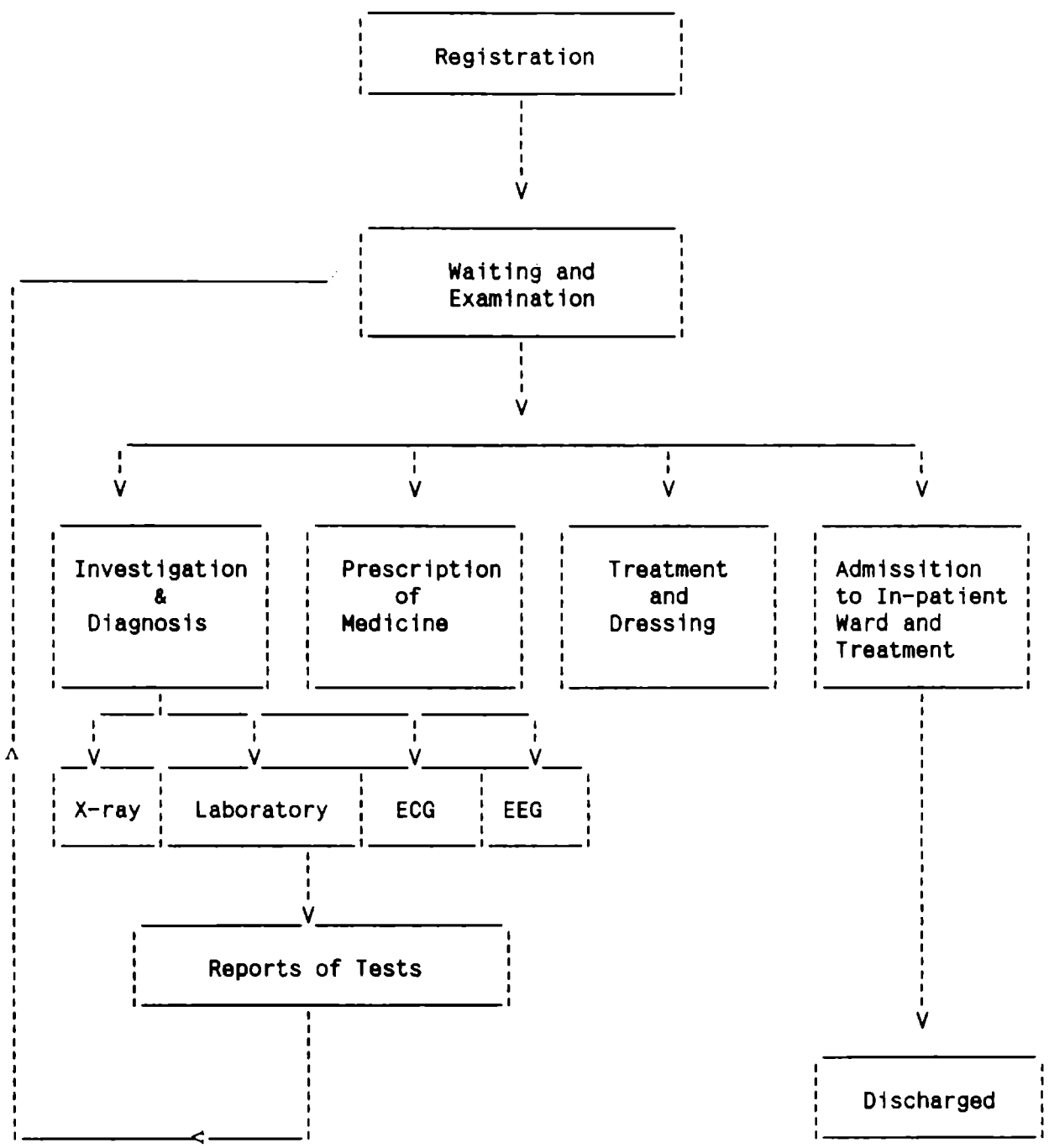

Reception and Enquiry
Registration
Examination
Admission
Keeping under Observation
Treatment and Dressing
Discharged or transferred to In-patient Dept or Death

2. OUT-PATIENT DEPARTMENT (OPD)

The Out-Patient department is one of the most important departments in a hospital. This department is the bridge as well as the first contact point between hospital and community. Eighty per cent of the population who avail of the hospital services return home from the Out-Patient Department. It is therefore very important that the services rendered in this department are of the highest order and play an important role in the achievement of the objectives of the hospital. It is one of the areas in hospital services where great revolutions occur. A good out-patient department and its services, correlated with and as adjunct to preventive and promotive health services, can be a potent force towards improving the health status of the community which the hospital serves. The status, prestige and goodwill of a hospital can be evaluated from the efficiency and effectiveness in the functioning of its Out-patient department.

The functions of the department are to provide diagnostic, curative, preventive and rehabilitative services on an ambulatory basis. All the patients suffering from diseases of minor, serious, acute and chronic nature are examined in this department. The working procedure of a typical Out-Patient Department in a hospital can be diagrammatically represented below :

FIG.2



Following points are worth mentioning in connection with the proper functioning of the Out-Patient department:

(a) The department is so planned that the building is separate from the indoor area.

(b) The department should be well and closely connected to the laboratories, X-ray and other supportive services.

(c) It should have enough accommodation to avoid congestion and overcrowding.

(d) Even distribution of work-load among the various specialities should be ensured. Any scientific arrangement in this respect can be made by taking into account all the relevant factors.

(e) Timings of the department should be such as to ensure convenient service to the community.

(f) Arrangements be provided to attend to the stragglers who arrive after the registration is closed, rather than returning them.

(g) Arrangements to give preference in attending to the seriously ill, old, infirm and children and critical cases, out of turn.

(h) A sympathetic and human approach by all the staff particularly the lower level staff.

(i) Special periodic orientation training of personnel working in the department to keep them at a high pitch of proficiency and motivation.

(j) Provision of pleasant environments, public amenities, adequate seating and refreshment arrangements.

(k) Paying personal visits to the department by the Hospital Administrator frequently, especially during peak hours to assess the situation himself and detect any problems requiring remedial action.

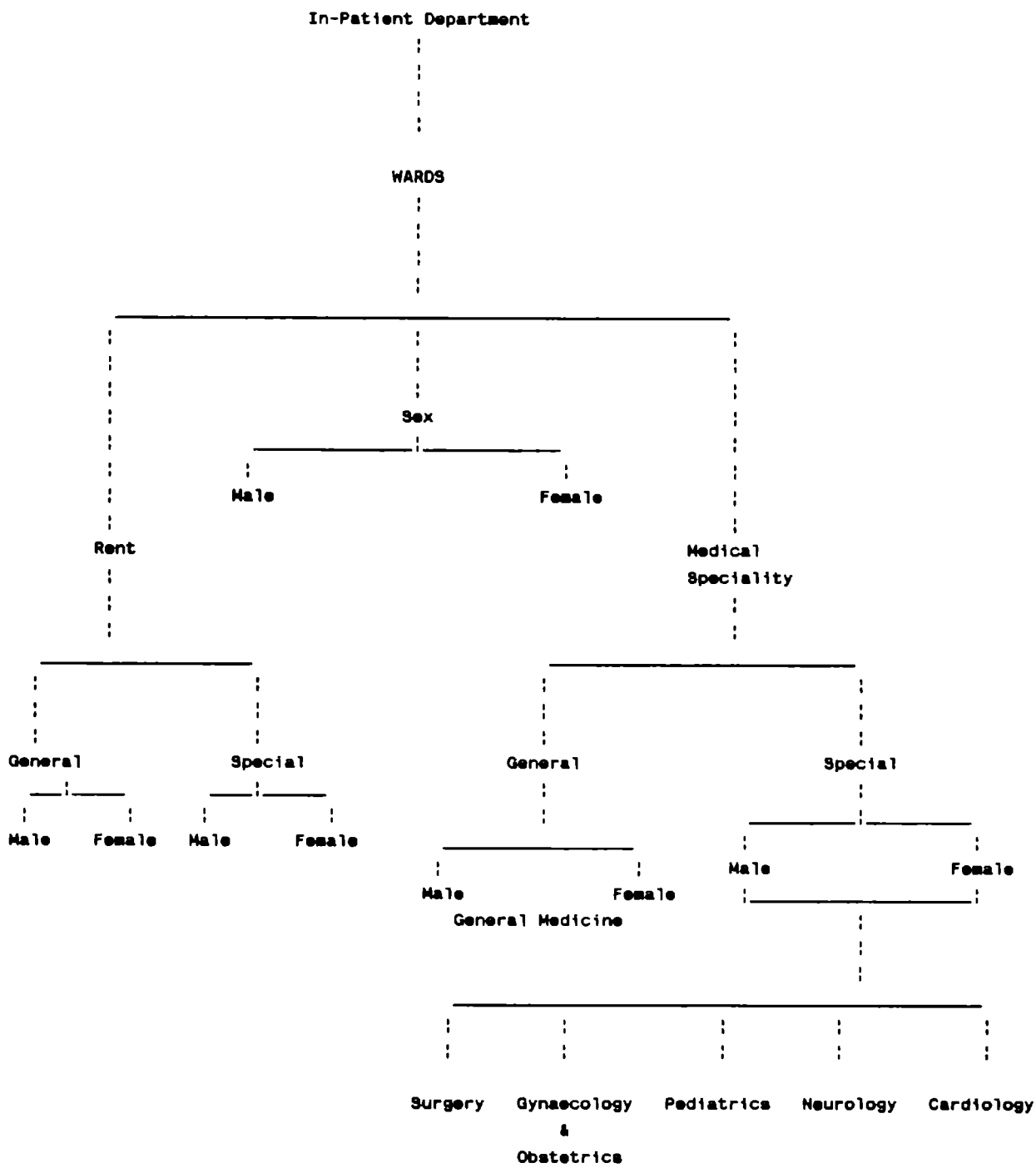
(l) Display of selected health material in the form of posters, charts etc, closed circuit Television system etc., to utilize the waiting time of the Out-patients to expose them to health education.

To sum up, the Hospital Administrator must himself be on the look out for every opportunity that he can avail of in projecting not only the good image of the hospital but also its bonafide concern to serve the community best.

3. IN-PATIENT DEPARTMENT

The in-patient department of a hospital is regarded as the G.C.M of the hospital, meaning thereby that it is the Greatest Common Multiple in terms of cost. The department is like a temporary home for the patients and should, therefore, suit the cultural background from which community the patients come. An inpatient department consists of a number of wards. Each ward has a number of beds. The total number of beds in each ward depends on many factors such as the total number of beds available in the hospital, the number and nature of medical specialities offered, the number of in-patients admitted under each speciality, etc. A ward may be a special ward or a general ward. The general or special nature of a ward is related to the rent levied from the patients as well as the nature of medical speciality. Each of the general and special ward is again classified into Male and Female ward. The classification of wards based on these three factors is depicted in the following diagram:

FIG.3



The control, supervision and maintenance of all the wards in a hospital are in the hands of a Nursing Superintendent. Each of the wards is under the charge of a sister-in-charge who is assisted by a team of nurses and

nursing aids. The sister-in-charge of each ward is directly accountable to the Nursing Superintendent. Reputation of the hospital depends upon the efficient professional and administrative skills of the nurse.

The plan of arrangement of beds in each ward is usually of two types. In the older hospital, the ward used to be of pavillion type which means that each ward would be a large one with 30 or 50 beds in one hall with a nursing station in the middle and facilities at the end. This pattern requires a fewer number of nurses. On the other hand, the other pattern of ward in modern hospital is distribution of beds in a cubic pattern and such cubicles could be one bed, two beds, four beds, six beds, etc. Such an arrangement not only provides privacy, avoids glare, reduces the chances of infection but also more acceptable to the patient. However, this distribution of beds requires more nurses. To strike at a balance between these two types of ward plans, a few new ward designs are being in the offing. A few such designs which have been adopted are the circular, semi-circular or L-shaped ward pattern. Such a design has the best of both the types. The patient accommodation is in the cubicle pattern and the number of nurses required is still probably the same.

Each ward must have the following facilities :

(a) nursing station having the facilities for toilet, office work by doctors and nurses, cup board for medicines and for the safe custody of patient case sheets.

(b) adequate storage space for dressings, linen, general stores etc.

(c) a ward pantry, duty room for doctors, patient toilets, and waiting space for the patients' relatives.

(d) isolation rooms, dirty and clean utility rooms, treatment room etc.

As a step towards maximum utilization of available space, every effort should be taken to arrange the facilities required in each ward very intelligently and scientifically. Many important and far-reaching measures can be taken while at the planning and designing stage of the wards in the In-patient department. Each medical speciality ward should be designed in such a manner that it shall include all special requirements of the particular disease, its treatment and nature of nursing required.

4. INTENSIVE CARE UNIT

An intensive care unit in a hospital is a special care unit in which the nature of care provided is either very specialised or intensive or both. Some of the patients admitted to hospitals require acute, multi-disciplinary and intensive observation and treatment. An intensive care unit is meant for such patients. Like the emergency services, this unit requires much better staffing pattern - one nurse for 1 1/2 bed per shift. The staff needs to be specially trained to work in this unit. The patients in this unit are subject to a number of intensive procedures.

Following are the facilities required in an intensive care unit :

a) emergency power generator system
b) provision of clinical engineering system responsible for electrical safety.
c) arrangements of heating, ventilation, and air conditioning supply.
d) Oxygen and vaccum connections to avoid any leakage.
e) Water facilities.

f) provision of all the necessary and vital equipments and instruments.

g) provision of special sterile or clean procedure.

h) provision of life-saving and emergency medicines.

5. OPERATION THEATRE

With recent technological advancement in medical science and increasing expectation of the people, modern surgery has become a complex and expensive affair. At the present time, about 50% of the hospital beds are surgical beds and about 50% to 60% of the inpatients require surgical treatment. Surgical facilities represent a central life saving activity. Its performance is also dramatic, and its successes and failures are highly visible. The activities carried out in the operation theatre department can make or mar the reputation of the hospital.

Following is a brief summary of the important and necessary considerations which require special emphasis with respect to the Operation Theatre department :

A. ZONING

It is universally agreed that operation is to be performed under the most aseptic conditions. To ensure this aseptic condition, the operating department is divided into four distinct zones.: Protective zone, clean zone, sterile zone and disposal zone. These zones are bacteriological zones of varying degrees of cleanliness. 100% sterility is ensured in sterile zone. The facilities available in these zones are as follows :

Protective Zone

It usually provides facilities like Reception, Waiting Room for patient's relatives, Changing Room, Pre-anaesthesia Room, Store Room, Autoclave, Trolley Bay, Control area of electricity etc.

Clean Zone

It provides facilities such as Preoperating room, Recovery Room, Theatre Work Room, Plaster Room, Blood Storage and Frozen Section Room, X-ray Unit with dark Room, Nurses' Duty Room, Doctors' Work Room, Sisters' Work Room, Staff Work Room, Anaesthesia Store.

Sterile Zone

This zone has facilities like Operating Room, Scrub Room, Anaesthesia Room, Instrument Sterilization and trolley laying area.

Disposal Zone

This zone provides facilities like Dirty wash up Room, Disposal Corridor and Janitor's closet.

B. NUMBER OF OPERATING SUITES

The number of operation theatre required for a particular hospital can be worked out by studying in great detail the following factors which are more or less quantifiable :

Type of Hospital

Hospital policy and procedures

Hospital bed compliment

Number and type of surgical patients

Number and type of Surgeons

Number of operations per day

Expected Average Length of stay of Surgical Patients

Expected Turn Over Interval in Operation Theatre

Average Time of Operation

Estimated time for cleaning between operations

Time allowed for staff breaks

Time allowed for maintenance of Operation Theatre

Amount of time operating suites can be equipped and staffed and available for use.

Amount of time reserved for emergency use

Allowance for septic patients

C. LOCATION OF OPERATION THEATRES

The location of operating suites is dictated by the numner of suites to be provided. The operation theatre complex can be conveniently located in the ground floor. The Operating department should be easily accessible to the Central Sterile Supply Department, Emergency Department, Theatre Sterile Supply Unit and Surgical Wards. It should be independent of general traffic and should have maximum protection from sun, heat, noise, dust and wind. However, the most recent concept is that Operating suites can be located anywhere as the atmosphere and environment of operating suites are under controlled conditions.

D. ESSENTIAL SERVICE

Efficient lighting of an operating suite is essential to enable the surgical team to achieve their best. There must also be an emergency electric Generator.

Air conditioning helps in maintaining the aseptic condition of the operating room by letting only controlled air to pass inside. It also improves the efficiency of the surgical team by creating a pleasant environment and helps in maintaining the vital functions of the patient by providing the optimum comfortable environment.

There should be positive pressure ventilation in the operating suites. The pressure grading should be highest in the sterile zone, gradually diminishing towards the clean, protective and disposal zones in the descending order.

6. THE X-RAY DEPARTMENT

X-ray is a useful invention of the age and has become an essential tool for our way of life. Almost every patient has to attend this department either for the radio-diagnostic or radio-therapeutic purposes. This department is concerned with radiological investigation of casualities, outpatients and inpatients. It is under the clinical direction of a specialist, known as a radiologist. The department is staffed by technicians known as radiographers, and while the bulk of the work is done by appointment, it also provides emergency cover through out the day and night.

Requests for X-rays are made on special forms and these should always be accurately and completely filled in. When the X-ray examination has been

completed, the films will be reported on by the radiologist. The assistants in the department help him to prepare the report in the appropriate form which is sent with the X-rays to the doctors, ward or department requesting the examination. A copy of the report will be filed in the X-ray department.

When the report and X-ray has reached the medical records department, the report is fixed to the investigation sheet in the medical records. Once the films have been seen by the doctor responsible for the clinical care of the patient in the out-patient department, they are returned for filing, but the films of in-patients remain in the ward until the patient is discharged.

7. LABORATORY DEPARTMENT

This is another important supportive service which examines and tests various samples of blood, urine, sputum, foeces etc. for the presence of pathogentic infection and organism which causes various diseases. This department also carries out a series of other investigations ordered by physicians, surgeons, etc. The success of medical prescription would depend upon propar laboratory diagnosis. It provides round the clock service. It provides facilities for examinations in clinical chemistry, microbiology, haematology, serology, histopathology and many others.

This department is headed by a medical person, known as pathologist, who is qualified in the pathology branch of medicine. He is assisted by a team of qualified and experienced laboratory technicians and aides. It must always be ensured that the technicians are really doing the job because a minor mistake on their part may ruin the life of the patients.

There is a need for constant supervision over the functioning of these laboratory services.

Requests for the necessary examinations are made by the doctors on proper, standardised and printed forms. Results of the examination are entered on the reports. Reports are prepared in duplicate. One copy is sent to the doctor concerned and the other is filed in the department alphabetically according to the names of the patients. The copy sent to the doctor after his verification is filed in the case sheet of the patient. In the ultimate, the laboratory report forms an important part of the medical records of the patient.

8. PHARMACEUTICAL SERVICES DEPARTMENT

The pharmaceutical department in a hospital has the following functions to be performed:

a) Dispensing of drugs and medicines as per the prescriptions of the medical staff of the hospital.

b) Management of the Medical Stores which include

   i) purchase of medicines and other allied stores

   ii) providing for proper storage of such medicines

   iii) Distribution of medicines

   iv) Maintenance of proper records of drugs purchased and the distribution thereof.

c) Manufacture and distribution of medicaments and products such as transfusion fluids, tablets, capsules, stock mixtures etc.

d) Providing drug monitoring services by studying various effects of drugs administered to the patients and recording them suitably.

e) Establishment and maintenance of Drug Information Centre.

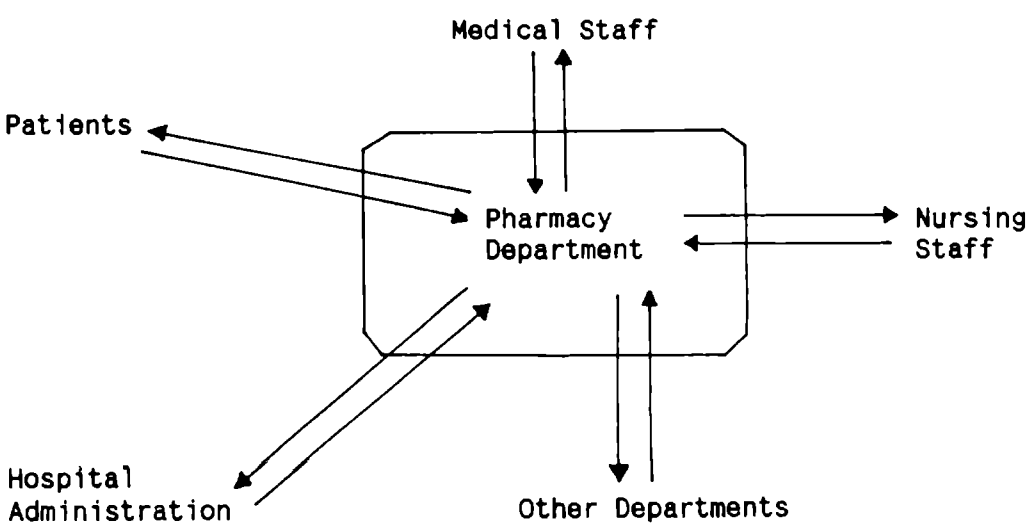
f) Patient Counselling service while supplying drugs especially from the out-patient department.

g) Maintaining liason with medical staff, nursing staff and patients, and serve them readily with the information on various aspects of drugs and their proper usage when required by them.

h) Render such other services as may be required by the hospital administration from time to time.

The following diagram shows in an abstract manner the pharmaceutical services indicating boundaries or interfaces between the Pharmacy department and several other departments and functions in the hospital. The arrows represent interactions between pharmacy department and also the flow of information and material.

FIG.4



The Pharmacy department is headed by a Chief Pharmacist. He is assisted

by a team of pharmacists. He has to ensure that the pharmacists functioning in different areas such as central dispensing area, Patient care areas and direct patient care areas carry out their assigned functions and duties efficiently. He should be aware of his responsibility towards his staff on the one hand and the hospital administration on the other. The Chief Pharmacist is directly accountable and responsible to the Medical Superintendent.

9. NURSING SERVICES DEPARTMENT

The aim of the Nursing Profession is to serve the society so that its members are healthy and contributory and participate in the goal of national development. Nursing personnel is one of the most important assets of any health care system and represents considerable "National Investment". Besides providing supportive services to Medical Care, nursing services play an important role in promotive, preventive, curative and rehabilitative activities and serve all age groups in the population from womb to tomb with specialised care adopted to the particular needs of each group.

Reputation of the hospital depends upon the efficient professional and administrative skills of the nurse. Her role here is vital and touchy. She has to exert all her faculties in managing the sensitive areas. She is the loyal friend to the doctor, affectionate mother - substitute to the patient, and co-ordinator of all the activities of the ward personnel.

Nursing department functions under a Director or Superintendent of Nursing. She controls, supervises, co-ordinates and directs the nursing services in a hospital. She allocates and distributes the work among the

members of her staff over the other important departments such as Emergency department, Out-patient department, In-patient department, Intensive Care Unit, Operation theatre and Delivery Room. The Nursing Superintendent is directly responsible and accountable to the Medical Superintendent in the hospital. The nursing staff besides providing patient care has also to do a large volume of paper work which becomes an important part of medical records of the hospital.

A new concept of hospital nursing audit is worth mentioning at this juncture. Hospital Nursing Audit is a retrospective evaluation of patient care given in a hospital through analysis of nursing components of medical records. It is therefore a review of the professional work of the nurses in hospitals. The audit reveals the true nature of quality of patient care. In this audit, a debit-credit concept can be introduced. The debit items are - death of patients (gross and net), complications, infection, errors in procedures, absconded patients and patients left against medical advice, etc. The credit items include recovered patients, improved patients, cured patients, health education activities, preventive services performed etc.

10. DIETARY SERVICES DEPARTMENT

The medical food service management in hospital is very diverse and complex in nature. The important objectives of the dietary department are:

a) To provide direct, individualised and total nutritional care for patients on both regular and modified diets; and

b) To provide meals for personnel guests, for different personnel of the hospital and for special activities in a variety of settings.

To achieve the objectives, the dietary department has to perform the following functions :

i) To plan menu after considering the population to be served - their eating habits and the resulting food habits, nutritional needs of individuals and groups, and a knowledge of wide variety of food, acceptable combinations, and preparation and service techniques.

ii) To plan and purchase the necessary equipments and to exercise maximum care over their use.

iii) To purchase raw food after considering the food quality, food grades, food processing and yields, food availability and marketing conditions, purchasing systems, specifications writing, ordering, receiving and storing techniques.

iv) To produce food on cook-serve system

v) To serve food to individual patients as prescribed by physicians.

vi) To manage the personnel in the department, and

vii) To make the necessary arrangements to raise the funds needed to run the department most effectively and efficiently.

The department is under the supervision of a dietitian. He allocates the work of the department among the different categories of employees. He has to see that co-ordination is achieved between the medical staff, other staff, service staff and patients to achieve the objectives of the organisation.

11. CENTRAL STERILE SUPPLY DEPARTMENT

This department is also called in certain hospitals as Central Sterile Room. This department is the focal point for processing, sterilising and dispensing of practically all sterile equipments and sets required in the hospitals. This department has a crucial role in bringing down the hospital infection which has been identified as one of the commonest cause of increased average length of stay of patients in hospitals. This department is therefore particularly economical from the patient point of view of 'opportunity cost' to the patients particularly undergoing surgical procedures where the chances of post operative infection, hospital infection and cross infection can be reduced.

The objectives, functions and activities of the department could be as under :

a) To process, maintain supply and control of sterile articles, equipments and standard sets for wards, departments, sections, operation theatres, etc.

b) To provide teaching and training facilities for the training of department assistants and to participate in in-service education programme of all hospital personnel.

c) To undertake operational research in improving sterilising practices and to participate in supply and equipment research in an effort to provide the most suitable material available for patient care.

d) To take an effective part in Hospital Infection Control Activities.

e) To replinish the stock in Hospital Bank.

The responsibility for the supervision of sterilising task should be closely defined, clearly understood, undivided and vested in one responsible officer in the department. A good illustrated procedure mannual is essential to the effective operation of a well-functioning department.

12. MEDICAL RECORDS DEPARTMENT

Medical Records department maintains Medical Records in a hospital. Medical Records contain important medical facts relating to the patients who are treated in the various medical departments in a hospital. A continually updated record will focus the clinician's attention on the fundamental medical problem presented by the patient's condition and will assist him at every point to develop the correct strategy to deal with this problem. Medical Records act as instruments of teaching and research. Medical Records are also sources of statistics. They are aids to planning and decision-making by management.

The important functions of the department are enumerated below:

1. To manage and initiate procedures for patient services.

2. To execute administrative policy relating to the maintenance of medical record and hospital indices of patients.

3. To advise the management on any technical aspects of recording procedures.

4. To provide requisite statistical managerial data either for routine or for adhoc studies.

5. To give help to those responsible for planning new departments or sections of the hospital in which patient service activities are carried out.

6. To provide a high standard of patient documentation to meet the particular needs of medical staff.

7. To supply statistical information and assistance with surveys for research and medical administration purposes.

8. To provide well-organised arrangements for medical records handling, so that notes are complete and available when their use is necessary for the patient's treatment.

9. To deal with those aspects of the hospital organisation where arrangements for the patients' progress to and through hospital are devised and supervised - appointments, admission, enquiries, transmission of information between departments or between doctors.

10. To devise solutions for problems of patient administration.

The department is headed by a Medical Records Officer who is assisted by a team of staff. Since this department is one of the most important departments in a hospital, the co-operation and efficiency of the staff have a great impact on the success of hospital service activities.

In a hospital with a large medical staff, it is preferrable to have a Medical Records Committee consisting of representatives of medical and nursing staff, Medical Records department and the hospital administration. It is the duty of the committee to see that accurate and

complete medical records are kept for every patient treated in the hospital by formulating broad policies and programmes with regard to completion of forms, records and reports.

13. HOSPITAL ENGINEERING DEPARTMENT

The Hospital Engineering Department occupies a unique position in the whole hospital set up. It deals with all sorts of repairs and maintenance work in the hospital. The activities of the department can be broadly divided into the following two categories :

a) Building Services which comprise of water supply, Civil Mason , Carpenter, Plumber work, Electricity, Refrigeration and Air-conditioning, Hot water, Steam Supply, Infection Control and Construction, and Operation and maintenance of these systems. It also includes repairs and maintenance of furniture and fixtures.

b) Bio-medical services which include repairs and maintenance of special purpose Medical Instruments which are of Electronic, Electric, Hydraulic and Mechanical in nature.

This department undertakes both preventive and break down maintenance. It has to work out an effective system of functioning. Timely and proper execution of work by this department is a pre-requisite for the success of the hospital. The steady and further advancements of modern Medical technology, Medical Architecture and Environmental Health Planning call for due and extended role of Hospital Engineering. The success of this department lies, to a great extent, on the effectiveness and efficiency of a team of expert, qualified and experienced staff. The members of staff of this department must be persons from almost all disciplines of Engineering.

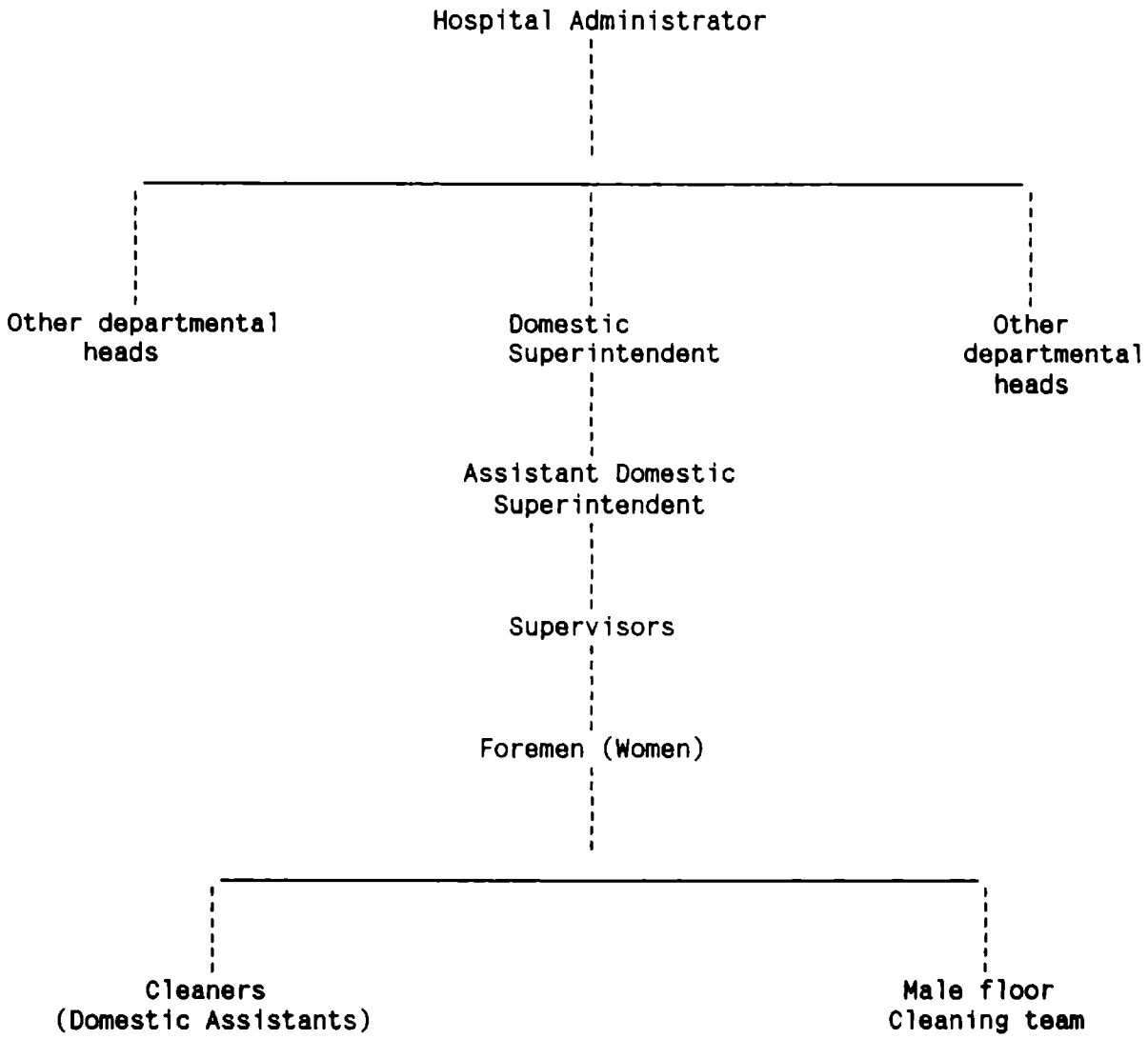
14. HOUSE-KEEPING DEPARTMENT

The hospital sanitation has become a topic of utmost concern. It is vital that the principles of environmental health are adhered to and that the patient will not leave the hospital sicker than when he arrived. Thus the emphasis on the importance of house-keeping is deliberate, as efficiency in it leads not only to the comfort and well-being of the patients, but it contributes significantly to the profitability of the hospital.

The actual work of a housekeeping department of a hospital includes cleaning and maintaining articles, rooms, walls, furniture, beds, floors, etc. The house-keeping has activities in all the sections of the hospital which involves keeping the premises, equipments and facilities clean and orderly at all times. It also includes interior decoration which deals with lighting, ventilation and heating. It also deals with pest control and infection control.

A house-keeping department in a hospital is organised in the manner indicated below:

FIG.5



15. LAUNDRY DEPARTMENT

Every large sized hospital will have its own laundry department to cleanse linen and make them ready for use in the different in-patient wards of the hospital. Since linen and the laundering of it is such an expensive item, it becomes imperative to consider the laundry department as a separate service cost centre.

The principal functions of a hospital laundry are :

1. To cleanse, by the use of thermal disinfection washing process, all foulded or infected linen, normal soiled linen and other garments used in the hospital, and

2. To dry and finish them at the lowest cost consistent with a standard of finish acceptable for their use and within a time span to suit the user departments.

The production sequence in a hospital laundry include -

Reception

Sorting

Classifying

Washing, hydroextracting and drying

Calendering and Pressing

Distribution

Traditional dhobis are a good choice for manning the laundry department. The department may have one supervisor, his deputy and other clerical staff. Staff for linen collection and distribution, linen making and linen mending will have to be separately provided for depending on local circumstances. Work study will however precisely determine the staff requirements.

The location and layout of the department merit special consideration in that it must have easy access to a boiler house, all wards, operation theatres, etc.

THE LINEN ROOM

A linen room in a hospital is the central depot for all linen and from it sufficient clean articles, in good condition, are distributed throughout

the hospital. Although hospital laundry deals with laundering of linen, it is preferable to have a separate linen room attached to the laundry. A separate linen room in the laundry section provides for the receipt of soiled linen of all types, the safe storage of cleaned linen and the prompt issue of cleaned articles to the user departments. It is very important to have a central linen room since launderable linen is required throughout the hospital on a regular basis. Considering the investment in hospital linen, it is imperative on the part of the hospital authorities to maintain and keep linen of all types and also to exercise rigid control over the use of linen.

Since linen room is an essential and important place, much thought should be given to its situation and planning in order that the work of issue, collection, storage and upkeep of the articles can go on as smoothly as possible. Ideally, the linen room should be situated with direct and easy access for the loading and unloading of linen baskets to and from the laundry, and for the distribution of linen throughout the hospital.

16. ADMINISTRATION DEPARTMENT

The Administration Department in a hospital is a nerve-centre which controls the multi-varied activities of the hospital. The more important functions of this department are enumerated below:

a) To plan, organise, coordinate, evaluate and implement various hospital programmes.

b) To co-ordinate the activities of the different departments of the hospital into a unified whole to achieve the objectives of the hospital.

c) To exercise maximum control over the use of available resources like men, money, machine ad materials.

d) To achieve cost-effectiveness and cost reduction to make the hospital services available within the reach of common man.

e) To introduce innovative approaches, appropriate technology, computers, quantitative management techniques etc. wherever possible and practical.

f) To introduce professionalisation in Hospital Management.

g) To introduce Hospital Organisation Development Programme which envisages a planned change in the hospital organisation to make effective in problem-solving and coping with the environmental problems.

h) To discharge usual managerial functions like Planning, Organising, Decision-making, Controlling etc.

Besides above, this department is also engaged in the usual work of an administrative nature.

The department is in the charge of a Hospital Administrator. He is the Supreme Commander of the hospital. He should be in close liason with the medical staff, the nursing staff, the para-medical staff and other staff of the hospital. He is assisted by a team of Hospital Managers and Hospital Supervisors. In certain hospitals, the Medical Superintendent himself acts in the capacity of Hospital Administrator. In other hospitals, two different persons adore these coveted positions. Preferably, the Hospital Administrator must be a full-time professional

manager who should possess the requisite skill and knowledge to manage the most complex type hospital organisation.

17. ACCOUNTS DEPARTMENT

The Accounts department in a hospital is considered to be the mine-house of information relating to the financial activities of the hospital. The important function of this department is to accumulate, communicate and interpret historical and projected data relating to the financial performance of the hospital. The department supply the management at regular intervals with financial reports such as Balance Sheet, Income and Expenditure Account, Supplemental Schedule of changes in accounts, Details of income and expenses etc. The department also prescribes suitable internal control procedures. It also maintains all the books of accounts and records showing the financial activities of the hospital. The department also undertakes the responsibility of preparing various budgets which are basic for hospital planning and cost control.

A Finance Manager or a Chief Accountant is the head of this department. He is assisted by a team of well-trained and qualified assistants. He is responsible not only for the efficiency of his department but also for the financial activities of the entire hospital. The Finance Manager occupies a key position in the hospital organisation.

2.2 MANAGEMENT IN HOSPITALS

Hospitals at present do not have any professional management. The basic managerial functions are not performed in hospitals. Hospital authorities do not realise the need and importance of application of management principles to solve the multifarious problems facing them. Because of the complex nature of the hospital organisation, there are serious gaps in the process of planning, co-ordination, decision-making and control. There are many practical references of failures in many areas of hospital avtivities due to the absence of proper management functions. The current hospital scenario lacks in most of the hospitals adequate inputs of professional managerial skills in managing hospitals of different types. It is only the professional managers who can make hospitals more efficient and effective and they will be able to contain cost and provide better satisfaction to patients, assure quality services and that too within the present allocated resources.

The need is felt for professionalisation in hospital management due to certain major issues in hospitals under study. These issues are plaguing the hospitals because of non-professional approach to the management of hospitals. The issues which require immediate attention of professional managers in hospitals are stated below:

1. The doctor is highly professionalised and is a specialist in a particular area of medicine. But in many hospitals, this high level of professionalisation has led to fragmentisation of services. As a result, the patient is not in a position to get the fruit of technology, because there is no coordination of activities. This trend has also led to different units and departments working quite autonomously, ultimately failing to contribute for the overall objectives of the hospital.

2. With the increasing number of specialities and new technology, the supportive services needed for medical professionals have increased tremendously over a period of time. But this development has led to the introduction of bureaucracy into these services which results in a lot of delays and bottlenecks to provide prompt and effective support to medical professionals. Often there is friction between medical professionals and persons in charge of supportive services.

3. Most of the hospitals lack proper short term and long term planning perspective. Many hospitals lack not only programme planning but also financial planning leading to chaotic conditions in implementing its different programmes. The persons at the helm of the affairs of hospital do not bother about making a good organisational diagnosis to identify its strengths and weaknesses as well as its future needs.

4. Often modern technology is introduced in hospitals for the sake of modernisation without serving any purpose to clientele group. The amount of resources spent on modern technology is often not reflected on the patient satisfaction. It has often led to escalation in the cost of medical care without satisfying the patient.

5. The departmental heads in hospitals have no commitment to hospital goals and programmes. Personal and professional interests predominate over hospital goals and no effort is made to develop strategies to implement programmes. Often these departments function like satellite organisations within the total hospital organisation.

6. Further, morale of the lower level employees are low in hospitals. There is no conscious effort to motivate the subordinates in hospital. The

chief executive in hospitals do not have any knowledge about the labour relations and about how to deal with strikes and grievances.

7. There is hardly any performance appraisal system existing in hospitals. As a result there is not much accountability and there is no means to find out whether hospitals are achieving their goals. Lack of performance appraisal also leads to lack of identification of the strengths and weaknesses of subordinates. Hence there is hardly any effort in hospitals to undertake any staff development programmes.

STRIKING FEATURES OF HOSPITAL MANAGEMENT

An in-depth analysis of the existing management practices in hospitals reveals the following striking features :

1. DISPERSAL OF PLANNING AND CONTROL

The planning and control decisions are dispersed in hospitals due to diversity of power base and authority structure. The three groups responsible for planning and control decisions are the owners, the medical staff and the hospital administrator. The owners of the hospital have the legal authority to decide on broad financial matters. The medical staff has the technical knowledge and authority concerning patient treatment. The hospital administrator and his staff are in charge of the functioning of the hospital and are engaged in organisational planning and control.

2. PLANNING

The planning function in hospitals is carried out in many ways. The medical staff has a vital role in planning related to patient care and

treatment. The hospital administator is engaged in broader strategic planning. He is concerned with the financing and procurement of facilities and planning for their effective utilisation. The owners prepare plans for the growth and development of hospitals.

3. CONTROL

Various segments in hospitals establish their own 'hospital procedures'. Such procedures range all the way from the surgical procedures by the medical staff to business methods established by the hospital administator. These hospital procedures provide the basis for control over relatively programmed activities. However, many of the functions in the hospital are non-routine and it becomes difficult to establish well-defined controls for such activities.

4. CO-ORDINATION

A high degree of differentiation and specialisation creates critical problems of co-ordination in hospitals. It is very difficult to achieve co-ordination in hospitals by means of organisational hierarchy. Hospitals do, however, make extensive use of co-ordination by administrative rules and procedures. These are most effective for the programmable, routine events. But the diverse problems associated with the care and treatment of patients do not allow hospitals to rely exclusively on administrative procedures for co-ordination. The unusual and non-routine events are dealt with by voluntary co-ordination and willingness of various participants.

5. ORGANISATION STRUCTURE

The organisation structure of large general hospitals differ substantially from the design of other large-scale organisations. Hospitals establish a unique relationship between the formal authority of position and the authority of knowledge. The former is represented by the administrative hierarchy and the latter by the medical practitioners and other professionals. This creates a some what diffused and unusual formal structure. Futher more, there are variations in structure among hospitals because of differences in their environments and technologies.

6. LINE OF AUTHORITY

There is no one line of authority regarding the specific authority structure in hospitals. Authority in hospitals is shared, not equally, by the owners, the doctors and the administrator. They are considered as the three centres of power in the organisation. To some extent, the head of the nursing staff also shares the authority. These groups have their own legitimate reasons for the basis of excercising the authority. However, they are not clearly delineated and separate. Authority is dispersed and shared rather than adhering to the scalar hierarchy.

7. MATRIX ORGANISATION

A matrix organisation aptly depicts the organisational structure and authority in hospitals. In a matrix organisation there exists both hierarchical (vertical) co-ordination through departmentalisation and the formal chain of command and simultaneously lateral (horizontal) co-ordination across departments (the patient care team). Each specialist doctor is the manager who integrates the activities of nurses,

athologist, Radiologist, Medical Records Officer and other professionals. This form of organisation overcomes some of the difficulties created by excessive specialisation of labour and departmentalisation within the hospital. Co-ordination and integration of different hospital activities can be achieved to a great and sufficient extent in this matrix structure.

SPECIAL ASPECTS OF HOSPITAL MANAGEMENT

The principles of management can be applied with suitable modifications in hospitals. In addition, there are specific areas of hospital management where cretain special techniques of management should be practised. These special techniques are selected after taking into account the peculiar conditions prevailing in hospitals.

1. PARTICIPATIVE MANAGEMENT

Participative Management has an important place in the Hospital Management; Participative management ensures participation by the employees in the decision-making process of the hospital, so far as it affects their interest immediately or remotely in the democratic process. The medical staff, nursing staff, paramedical staff and administrative staff, etc. of the hospital, if participated in the decision making process, will get motivated and this, in turn, result in the smooth management of hospital activities.

2. SOCIAL SCIENCE

The application of social science ideas to Hospital Management and Administration is of great relevance and importance. Social science is concerned with the study of different aspects of people. The persons who

manage and administer the hospitals are required to have competence to deal with a variety of groups of people, each having its own peculiarities. Such groups of people in the hospital setting are:

a) doctors, nurses, technicians and para-medical personnel of various types.

b) other management personnel dealing with such aspects as diet, laundry, supplies, accounts, housekeeping, maintenance, watch and ward, etc.

c) the patients, who get the services of the hospital, and

d) the community which comes into the picture in studying the many aspects of the groups as mentioned above, and in visualising a hospital as a community institution.

Study of these different categories of people involves the application of most important specialities of social science. Social science consultation in the field of hospital management includes :

a) diagnosing and suggesting solutions for certain special problems that may arise within the hospital, especially interpersonal relations within the hospital staff, and

b) Conducting special studies for widening the knowledge about some special social science areas particularly the measurement of 'felt needs' demands of patients and the hospital staff.

3. DISASTER MANAGEMENT

Disaster management is a multi-institutional approach and hospital is one of the institutions involved. It demands advance planning on the part of

the hospital management to tackle it during catastrophe. Disaster is a situation that creates too great a load for the normal system of a hospital to cope-up with. Disaster management implies that the casuality department of a hospital must function well if disaster is to be managed effectively. The specific problems of Disaster management are clinical problems and administrative problems. These problems enlarge the scope of the field of hospital management.

4. MANAGEMENT INFORMATION SYSTEM

The Management Information system in a hospital is a tool for quality care. It is a powerful method for aiding the hospital administrator in solving a variety of problems and making important decisions. A well-designed Information system forms the 'eyes and ears' of planners, administators, etc. who are concerned with organisation, co-ordination, control and monitoring of services at the hospital. An effective Hospital Information System is a subsystem of the hospital management system.

5. MANAGEMENT ENGINEERING

The Industrial Engineering concepts when applied to hospitals becomes Management Engineering. It offers techniques that can be usefully employed in achieving professionalisation in hospital management. It enriches the professional hospital administator with numerous techniques and tools with which he can manage the hospital system for best results.

6. HOSPITAL ENGINEERING

Hospital Engineering is an integrated form of Engineering as applicable to hospitals. It can be broadly divided into two categories, namely,

Building Services and Bio-medical engineering. Tackling of hospital engineering problems in a hospital is one of the important aspects as well as functions of hospital management. Hospital Engineering problems include operation and maintenance of Building services such as water, electricity, infection control, refrigeration and air-conditioning etc. and medical instrumentation problems. Planning and control of these services in hospital are greatly facilitated with the techniques and tools of Hospital Engineering.

7. CONFLICT MANAGEMENT

Conflicts are clashes of contrary wishes. Hospital is the most vulnerable organisation for conflict as compared to any other organisation because of more complex nature of hospital in many respects. Conflicts are inherent in any organisation system and more so in hospitals. Conflicts either facilitates the productivity, solvency, cohesiveness and adoptability of hospitals or they inhibit them. Conflict may infact be a source of equillibrium and stability in a hospital. In hospital large number of categories of people from super specialist professional to unskilled persons work in a close vicinity to each other under similar working conditions. Persons of great diversity in their socio-economic status, educational levels, trades and skills work together with a large variety of sophisticated instrument and equipment and with advance technology to serve the patients of wide varieties of ailments, temparaments, culture and socio-economic status. Therefore, it is very obvious that one come across various types of conflicts at different levels of hospital system. These conflicts cannot be eradicated completely, but certainly they can be controlled and minimised through administrative procedures. It becomes a necessary function of hopsital

management to probe into the various types of conflicts persisting in the hospital situation, to ascertain the reasons in detail and to take the necessary steps to prevent and manage the conflicts most effectively.

8. MANAGEMENT BY OBJECTIVES

Since hospital management is not only difficult but also complex in comparison to any other industry, there is vast scope for the application of Management by Objectives in hospitals. Management by objectives is one of the most important principles of modern management techniques which has given astounding results primarily in other industries. Hospitals have two parallel functions namely medical and non-medical and the various people in both the spheres frequently come on a common platform to sort out each others' matters bringing about absolute effectivity in the total management of the hospital. This common approach can be possible only by the introduction of Management by Objectives. Management by Objectives is, for the purpose of hospital management, a result-oriented, non-specialist management process for the effective operational utilization of organisational resources by integrating individuals with the organisation and the organisation with the environment. It is a top-down approach and essentially group oriented. Yet, there is a high degree of individual freedom. Management by Objectives, as a technique of hospital management, can be effectively applied in a hospital setting with concrete results. It is definitely a panacea for most of the ailments and headaches of hospital management.

2.3 ACCOUNTING IN HOSPITALS

Hospital Accounting may be defined as the accumulation, communication and interpretation of historical and projected economic data relating to the financial position and operating results of a hospital enterprise, for the purposes of decision-making by its management and other interested parties. It involves the process of recording and classifying the business transactions and financial events that occur in the economic life of the hospital. It also includes the reporting of recorded information to those who utilize it. Hospital Accounting is further extended to the effort to analyse and evaluate the reported information so that it may be better understood and more easily utilised by the decision-makers.

Generally, all hospitals follow accrual basis of accounting system. This system of accounting gives recognition to all revenues earned and to all expenses incurred in the time period, irrespective of the flow of cash between the hospital and other parties. The accrual basis of accounting provides the necessary qualities of completeness, accuracy and meaningfulness in accounting data.

ACCOUNTING CYCLE

Accounting cycle is a complete sequence of accounting procedures which are repeated in the same order during each accounting period. The cycle includes :

(a) Recording transactions in journals

(b) Classifying the recorded data by posting them from journals to the ledger accounts, and

(c) Closing the books and preparation of financial statements.

BOOKS OF ACCOUNTS

The Books of Accounts maintained by a hospital are of two types, namely Journals and Ledgers. A brief description of each of these is given below:

JOURNALS

Journals are books of original entry which record all transactions chronologically. Various kinds of journals are in use, depending upon the hospital size and nature of its services. Journals are written up with the help of source documents or posting media. These journals are of two types in hospitals - special journals and general journal.

Special Journals

The types of special journals which are used in hospitals usually depend upon the frequency with which like transactions of a particular class occur. The special journals commonly used in hospitals include the following :-

1. In-patient Fees Journal
2. Out-patient Fees Journal
3. Patients' Concession Journal
4. Cash Receipts and Payments Journal
5. Petty Cash Journal
6. Medicines Purchase Journal
7. Purchase Journal
8. Salary Journal

A brief description of each of the above Journals is as follows :

1. In-patient Fees Journal

Cash income from Inpatients in summary form are recorded in this Journal. This Journal is written with the help of posting media called charge slips. Charge slips show the type of service rendered to each patient together with the charges.

The charge slips are posted to the Individual Patient's Account in the In-patient Ledger as soon as they reach the Accounts Department. Then the charge slips are summarised, totalled and entered in the appropriate columns of the Inpatients Fees Journal. At the end of each month, the totals of the various columns are posted to the General Ledger.

2. Out-patient Fees Journal

This Journal records the daily receipts from out-patients in summary form and by departments. Charge slips are directly posted in totals to this Journal.

IN-PATIENT FEES JOURNAL

Date	Bill No.	Room	Nursing Care	Visiting charge	Opera-tion Room	Deliv. Room	X-ray	Labor-atory	Pharm-acy	Total	Advance paid	Conce-ssion	Cash Paid	Acct. Rec.	Total
TOTALS															
POSTED										x					

F2

OUT-PATIENT FEES JOURNAL

Date	Receipt No. From To	Medical Consul-tation	Treat-ment	X-ray	Labo-ratory	Pharm-acy	Regis-tration	ECG	Othe-rs	Total	Conce-ssion	Cash Paid	Total
TOTALS													
POSTED										X			

CHARGE SLIPS

Hospital service charges are usually recorded in charge slips which are made out by the departments rendering services to patients. Operating charges, anaesthesia, pharmacy, laboratory, delivery, X-ray etc. are recorded in the respective charge slips by the departments. A different coloured charge slip may be used for each department, which is an aid in sorting and posting media. Such charge slips are collected in individualenvelopes or folders and arranged by patient name in the Billing Section of the Accounts Department in the case of in-patients. In the case of out-patients, these are collected department-wise. Charge slips are usually made out in triplicate so that copies are available for the patient record, department rendering service and the Blling Section.

A typical form of Charge Slip which Combines Request, charge and Report is given below:

F3

COMBINED REQUEST, CHARGE AND REPORT SLIP

Name ..... Hospital No ..... No .....
Date.....

Indoor ☐ Outdoor ☐ Ward..... Bed No.....

TEST/X-RAY/DELIVERY/TREATMENT/OPERATION/ OTHERS ..... REQUEST	CHARGE	
	Rs	Ps
.....		
.....		
Total		
Dr. Signature		

REPORT

.....

.....

Dr./Technician .....

It is important that strict internal Control System should be established in respect of various service charges. There should set up a daily income summary from the copies of charge slips. The sum of the charge slips for each department will add up to that day's income from special prbfessional services. This summary should be tallied periodically with the Patient Fee Journals and also with the registers of service departments like the operating room, delivery room, X-ray, laboratory where the number of operations, deliveries, X-ray examinations, and laboratory tests can be counter checked.

3. Patient's Concession Journal

Following are the circumstances when it becomes necessary to give concession or adjustment to a patient's bill:

(a) free service has been authorised for a poor patient.

(b) courtesy discounts are given to hospital staff and their dependents.

(c) professional discounts are given to doctors or nurses.

(d) a miscellaneous write-off is made of a disputed charge.

All concessions are recorded daily in the Patients' Concession Journal.

F.4

PATIENTS' CONCESSION JOURNAL

Serial No.	Date	Name and Address	Bill No.	Patient		Religion			Concession		Address		Debit Free Care	
				In Patient	Out Patient	Hindu	Muslim	Christian	Full	Part	Local	Village	In Patient	Out Patient

All the information shown in the Journal is important in showing the charity nature of the hospital to government officials, staff members, as well as local citizens.

The accounting data for this journal are obtained from the Inpatient and Outpatient Fees Journals. The cash receipts in these Journals will equal patient fees less concessions given. At the end of each month, this Journal is totalled and the amounts debited to Free Care - Inpatient Account, and Free Care - Outpatient Account maintained in the Ledger.

The total number of patients receiving concessions is important, as well as the total rupee value of free care given. Comparison can then be made between the percentage of patients receiving free care (either full or part concession) and the percentage of patient income which is given free to patients. The calculations are as under :

$$\% \text{ patients receiving free care} = \frac{\text{No. of patients given concessions} \times 100}{\text{No. of patients treated}}$$

$$\% \text{ patient income given free} = \frac{\text{Rupee total of concessions} \times 100}{\text{Rupee total of patient income}}$$

4. Cash Receipts and Payments Journal

This is one of the most important Special Journals in hospitals, wherein all receipts and payments in cash and in cheque are recorded on a day-to-day basis. All cash transactions in other special journals are summarised and shown in this Journal so that the cash position of the hospital can be quickly seen at a glance.

F5

CASH RECEIPTS AND PAYMENTS JOURNAL

Date	Receipt No.	Acct. No.	Receipts	L/F	Cash	Bank	Date	Voucher No.	Acct. No.	Payments	L/F	Cash	Bank
					Rs.	Rs.						Rs.	Rs.

Since cash assumes a very important role in hospital operations, the accounting of cash needs careful attention. It is a good practice to have pre-numbered receipts, to enter every receipt in the Journal, to bank the entire receipts, to make major payments by cheque and to make small payments through pre-authorised petty cash vouchers. It is also very necessary to check the physical balance of cash in hand and to reconcile both the cash balance and bank balance at frequent intervals of time.

5. Petty Cash Journal

Petty Cash payments constitute an important aspect of total cash payments in a hospital. The hospital should establish a policy of depositing the entire money collection into the bank at regular intervals keeping a small imprest petty cash amount to meet minor expenses, and making all other payments by cheque. It is necessary for the hospital to establish an imprest petty cash fund which should be kept separate from other cash funds of the hospital. When payments are made from this fund, petty cash slips are prepared. A form of Petty Cash Slip is given below:

F6
PETTY CASH SLIP

(Hospital Name) RECEIVED FROM		No
Rs.		Rs. .....
In full payment of		
Signed		
Account No.	Approved by	Date

Petty Cash Slips show the amount of payments, the nature of payments and the accounts to which they should be charged. These slips serve as the basis for recording the reimbursement through the cash payment Journal.

A Petty Cash Journal is necessary to summarise the petty cash payments. It depends on the volume of petty cash transactions and also facilitates distribution of work. A proforma of Petty Cash Journal is given below.

F7

PETTY CASH JOURNAL

Date	Payee	Voucher No.	Amount Total	Expense Distribution					
				Acct. No.	Acct. No.	Acct. No.	Acct. No.	Other Accounts	
								Acct. No.	Amount
			Rs.						Rs.

6. Medicine Purchase Journal

Medicines or drugs constitute a major portion of the total inventory in a hospital. Regular use is made of very large quantity of drugs of varied

nature both for inpatients and outpatients. Hence a regular purchase system is essential for the drugs to be used in the hospital. Since the quantity and money involved in the purchase of drugs is very large, it is imperative to keep a separate Purchase Journal for drugs. The Medicine Purchase Journal serves as a basis to account for the investment of money made in drugs for a specified period. A form of the Journal is given below:

F8

MEDICINE PURCHASE JOURNAL

Year Month Date	Invoice No.	Name of Supplier	L/F	Description of drugs	Amount
					Rs.

7. Purchase Journal

Purchase of materials other than drugs are recorded in the Purchase Journal. Materials other than drugs include laboratory chemicals, X-ray films, linen and beddings, consumable stores, Hospital instruments and equipments and office materials. Since these items are regularly used, a

separate record of their purchase is specially called for. A columnar Purchase Journal is used in hospitals to record all the materials purchased during a specified period.

F9
COLUMNAR PURCHASE JOURNAL

Date	Invoice No.	Items purchased									
		Lab Chemicals	L/F	X-ray films	L/F	Linen & Bedding	L/F	Instruments &Equipments	L/F	Others, specify	L/F
		Rs.		Rs.		Rs.		Rs.		Rs.	

8. Salary Journal

The purpose of the salary Journal or Register is to summarise information on hours worked, record data necessary to determine salary payable, and summarise payroll data for entry in the general ledger accounts. A summary of each payroll is made in the salary register for the purpose. A suitable form of the Register is given as under:

F10
SALARY REGISTER

		Salary for the month of ..... 19...				
		1	2	3	4	Total
EARNINGS	Basic Pay					
	Dearness Allowance					
	House Rent					
	Other Allowances					
	Total Earnings					
DEDUCTIONS	Provident Fund					
	Income-Tax					
	Food					
	Others					
	Total Deductions					
	Net Cash Paid					
		Name Signature	Name Signature	Name Signature	Name Signature	Name Signature

Depending upon the specific requirements of each hospital, it may have additional special journals, if necessary. Here it is only the typical and most commonly used special journals are explained and illustrated.

General Journal

The General Journal is used to record all those transactions which cannot be conveniently recorded in the special Journals. Some of the items which are recorded in this Journal are given below:

(a) Donated Supplies

(b) Patients' receivables uncollected

(c) Inventory Adjustment

(d) Depreciation adjustment

(e) Prepaid Expenses

(f) Deferred Income

(g) Contributed services of personnel

(h) Other Adjusting and closing entries

LEDGER

All the transactions recorded in the general and special Journals are classified and summarised in the Ledger. Ledger is the most important part of the Books of Account in a hospital. The amounts posted to the various accounts in the Ledger are regularly summarised, balanced and used in the preparation of financial statements. The numbers and type of accounts carried in the Ledger usually depend upon the financial data requirements of the hospital. Generally the following type of ledger account is used in a hospital:

F11
LEDGER ACCOUNT

Date	Particulars	J/F	Debit	Credit	Dr. Cr.	Balance
			Rs.	Rs.		Rs.

Generally the Ledger is divided into General Ledger and Subsidiary Ledger. General Ledger consists of those accounts which are not included in Subsidiary Ledgers. Subsidiary Ledger consists of those accounts which represent transactions of a similar nature. When transactions of a like nature occur in very large numbers, it is preferable to set up a separate subsidiary Ledger to incorporate such kind of transactions. Following are the usual Subsidiary Ledgers kept in a hospital.:

a) Patients' Accounts Receivable Ledger representing the individual Accounts of patients.

b) Accounts Payable - Suppliers Ledger consisting of individual Accounts of Suppliers.

c) Inventory Ledger consisting of individual Accounts of Medicines, Medical and Surgical Supplies, Linen and other hospial materials.

d) Plant and Equipment Ledger consisting of individual Accounts of Building, Hospital Equipments and other hospial assets.

When Subsidiary Ledgers are maintained, it becomes necessary to substitute a Summary Account called 'Control Account' in the General Ledger. The balance of Control Account reflects the net amount of the debit or credit balance of the individual Subsidiary Ledger. The advantages of self-balancing system can be ensured in this arrangement.

TRIAL BALANCE

At the end of each month and also at the close of the accounting period, a trial balance is extracted from the ledger account balances of General and Subsidiary Ledgers. Trial Balance facilitates the preparation of periodical Financial Statements.

ADJUSTING AND CLOSING ENTRIES

It becomes necessary in the hospital to make certain adjustments in respect of certain items like depreciation, provision for uncollectable accounts, inventory adjustments, expenses outstanding, etc. These adjustments are usually made at the end of the accounting period and, if necessary, at the end of each month. Adjustments are effected by passing adjusting entries in the General Journal and postings are made to the respective accounts in the General and Subsidiary Ledgers.

Closing entries are passed in the General Journal at the end of each accounting period to close all the Incomes and Expenses Accounts to the Income

and Expenditure Summary Account in the General Ledger. The debit or credit balance in the Income and Expenditure Summary Account is then transferred to Capital Fund.

FINANCIAL STATEMENTS

The Financial Statements represent the end-result of the accounting system. They provide the information required by those who interpret and act on them. The Financial Statements prepared in a hospital include the Income and Expenditure Account and Balance Sheet.

INCOME AND EXPENDITURE ACCOUNT

This Account or statement reports the results of the hospital operations for a stated period of time (month or financial year). The form of statement will depend upon management needs, degree of detail desired, and the type of comparison required. It is preferable to present the statement in comparison with the prior year and budget figures. This statement can be prepared in the conventional Account form. Howerver, a more summarised and useful format of Income and Expenditure statement is given below. This form provides for comparison of the current month with the same month of the previous year and comparison of actual year-to-date figures with the yearly budget.

F12

INCOME AND EXPENDITURE STATEMENT

Month/Year ended.....19...

Total

Year to Date			This month	
Actual	Budget		Actual	Budget
Rs	Rs		Rs	Rs
		INCOME		
		Income from Routine Services		
		- Inpatients		
		- Outpatients etc.		
		Total Income		
		Less Reduction of patient Income		
		Net Operating Income		
		Add Non-operating Income		
		Donation etc.		
		TOTAL INCOME		
		EXPENDITURE		
		Administration		
		Dietary		
		House-keeping		
		Laundry and Linen		
		Operation of Plant		
		Maintenance and Repairs		
		Motor Service		
		Professional Care of Patients:		
		Medical		
		Nursing		
		Operating Room		
		Other Expenses		
		TOTAL EXPENSES		
		GAIN OR (LOSS)		

BALANCE SHEET

A Balance Sheet is a position statement which reveals the financial position of a hospital as on a specified date. Although a Balance Sheet is prepared at the end of each accounting period, a monthly Balance Sheet with supporting schedules is one of the most important reports received by a hospital administration. The classification of Balance Sheet data usually conforms to general ledger classification of accounts maintained by the hospital. A Balance Sheet which reports the financial status of assets, liabilities and net worth as of a specific date compared with the same date a year ago helps in the evaluation of significant variations in the comparative figures.

The form of the Balance Sheet takes the standard format used in India except for limited companies which have to follow the form in Part I of Schedule VI of the Indian Companies Act, 1956. The standard format of the Balance Sheet other than the form prescribed by the Companies Act is given below :

F13

HOSPITAL NAME

BALANCE SHEET AS AT ..... 19...

LIABILITIES AND NET WORTH	CURRENT YEAR	PREVIOUS YEAR	ASSETS	CURRENT YEAR	PREVIOUS YEAR
	Rs.	Rs.		Rs.	Rs.
CURRENT LIABILITIES			CURRENT ASSETS		
Accounts Payable			Cash in hand and at Bank		
Short Term Loans			Security deposits/Investments		
Due to other Funds			Accounts Receivable		
			Inventories		
			Prepaid Expenses		
Total Current Liabilities			Due from Other Funds		
			Others		
TOTAL LONG-TERM					
LIABILITIES			Total Current Assets		
Building and					
Equipment Funds					
Others			FIXED ASSETS		
			Construction in progress		
			Vehicles		
			Equipment		
			Building		
FUNDS - OTHER			Land		
			Others		
NET WORTH					
Opening Balance :			Total Fixed Assets		
Gain/Loss for the period:					
Hospital Capital :					
			Funds - Investment		
Total Net Worth					
TOTAL			TOTAL		

SUPPORTING SCHEDULES

Supporting schedules attached to the Financial Statements provide necessary and useful information for analysis. They supply management with the necessary tool for analysis and interpretation of financial position and operating results. The usual and important supporting schedules are given below :

1. INCOME AND EXPENSE SUMMARY

It is a summary statement of operations with regard to gross income and expense amounts. It frequently contains data with regard to number of patient-days during the reporting period as well as other hospital statistics which indicate patient load. It is prepared monthly to indicate the trend in various hospital operations.

F14
HOSPITAL NAME
INCOME AND EXPENSE SUMMARY
MONTH: ..... 19...

Year to date			This Month	
Actual	Budget		Actual	Budget
Rs	Rs		Rs	Rs
		Income from Routine Service		
		Less: Reduction of Patient Income		
		Net Operating Income		
		Add: Non-Operating Income		
		TOTAL INCOME		
		Administration		
		Dietary		
		Household and Property		
		Professional care of patients :		
		Medical		
		Nursing		
		Operating Room		
		Delivery Room		
		Anaesthesiology		
		OPD		
		X-ray		
		Laboratory		
		Pharmacy		
		Other Expenses		
		TOTAL EXPENSES		
		GAIN OR (LOSS)		

Year to date		This Month	
Actual		Actual	Budget
		Rs	Rs
	FINANCIAL INDICATORS		
	Patient Fees (Net) per Patient Day		
	Other Income " " "		
	Total Income " " "		
	Total Expenses " " "		
	Gain or Loss " " "		
	STATISTICS		
	Inpatient - Admissions		
	- Patient Days		
	- Average Daily Census		
	Outpatient - New Patients		
	- Old Patients		
	- Total Visits		

2. OPERATING INCOME AND EXPENSE DETAILS

These statements help the management to have effective financial control. The Hospital Administrator, the Medical Superintendent and the Hospital Managers have great utility of these statements for management purposes. The Proforma of the statements are given below:

F15
HOSPITAL NAME

INCOME DETAIL

Month of.....19...	This month		Monthly total		Year to date	
	Inpatient	Outpatient	This Year	Previous Year	This Year	Previous Year
	Rs	Rs	Rs	Rs	Rs	Rs
OPERATING INCOME						
Room						
Food						
Medical Care						
Dispensary/Emergency						
Operating Room						
Delivery Room						
Anaesthesia						
X-ray						
Laboratory						
Pharmacy						
Medical/Surgical						
Physical Therapy						
Dentistry						
Gross Operating Income						
Reduction of Patient Income						
Free Care Inpatients						
Free Care Outpatients						
Total Other Reductions						
Net Operating Income						
Grants - Sponsors						
- Contributed Services						
- Government						
Donations- Local						
- Foreign						
- Value Free Supplies						
Nurses Training School						
Other Income						
TOTAL INCOME						

F16
HOSPITAL NAME

EXPENSE DETAIL

Month of .....19...	This month		Year to date	
	This Year	Previous Year	This Year	Previous Year
	Rs	Rs	Rs	Rs
Administration - Salaries				
- Supplies and Expenses				
Dietary - Salaries				
- Supplies and Expenses				
- Raw Food				
House-keeping - Salaries				
- Supplies and Expenses				
Laundry & Linen - Salaries				
- Supplies and Expenses				
- Linen & Bedding				
Operation Plant - Salaries				
- Supplies and Expenses				
- Utilities				
Maintenance and Repairs - Salaries				
- Supplies and Expenses				
Motor Service - Salaries				
- Supplies and Expenses				
Medical Service - Salaries				
- Supplies and Expenses				
Nursing Service - Salaries				
- Supplies and Expenses				

Month of .....19...	This month		Year to date	
	This Year	Previous Year	This Year	Previous Year
	Rs	Rs	Rs	Rs
Operating Room - Total				
Delivery Room - Total				
Anaesthesia - Total				
Outpatient Dept - Total				
X-ray - Salaries				
- Supplies and Expenses				
Laboratory - Salaries				
- Supplies and Expenses				
Pharmacy - Salaries				
- Supplies and Expenses				
Other Expenses				
TOTAL EXPENSE				

3. SUPPLEMENTAL SCHEDULE OF CHANGES IN ACCOUNTS

A schedule of changes in the items of Working Capital and also in the Capital Expenditure is a useful guide in determining the overall financial position of a hospital. A summary picture of the changes in the important accounts shows at a glance the liquidity and solvency position of hospital.

F17

SUPPLEMENTAL SCHEDULE OF CHANGES IN ACCOUNTS

For the month of .....

Additional Accounts Receivables this month .....
Total Accounts Receivable on Books .....
Additional Accounts Payable this month .....
Total Accounts Payable on Books .....
Invested in inventories this month .....
(Stores Inventory only)

CAPITAL EXPENDITURE

Department	Particulars		Amount
	Items	Quantity	
			Rs

CASH POSITION

Cash Balance Beginning of this month
Cash Receipts for the month
Cash Disbursements
Cash Balance as on ..... 19...
(Include all Cash in Hand and in Bank except Designated Funds)

2.4 NECESSITY AND RELEVANCE OF COST ACCOUNTANCY IN HOSPITALS

NECESSITY OF COST ACCOUNTANCY IN HOSPITALS

The hospital today is a very complex institution performing diverse functions and having extremely heterogenous staff working for the patient care. In the last fifty years, there has been a profound change in the Medical Science, accompanied with parallel changes in patients attitudes. The patient today wants more for his money. The workers of the hospital have become as demanding as in other industries and are now being organised for strong bargain. Added to all these, are rising costs of hospital facilities and the pressure on administrators to contain costs.

The state of affairs of hospitals at present justify the urgent need of a system of Cost Accountancy in hospitals. The necessity of the cost system in hospitals emnates from the following:

1. The huge waste and alarming inefficiency in hospital activities is colossal due to lack of managerial skills in managing the different affairs. The persons charged with the efficient running of the hospitals are not trained in the managerial techniques and tools necessary for getting the best out of the resources available.

2. Absence of cost consciousness among hospital authorities and staff is another grave problem. They do know little about the economics of health services and know little about the costs of equipment and supplies they use. Doctors tend to employ what is new without regard to cost. It is a fashion to prescribe costly drugs. Improper bed utilisation, unnecessary investigations, long hospital stay, heavy drug consumption and

ineffective utilisation of hospital resources are the important outcomes of the absence of cost consciousness in hospitals.

3. It is a fact that there is no clear conceptualisation of hospital output. Quality of care, as a concept, is vague and not easily definable in quantifiable terms. Nevertheless, hospitals must attempt to maximise quality of care of patients and minimize costs. In ensuring health for all by 2000 A.D. hospitals must lay emphasis on making available care of an acceptable standard at the least feasible cost. Quality assurance itself necessitates a cost-benefit exercise to define strategies for optimum utilisation of resources, focus on cost-effective methods, and introduction of systematic on-going quality control programmes to continuously monitor and improve the nature of care rendered and the overall productivity of the hospital.

4. The current trend in rising cost of medical care is pushing it to a level beyond the reach of the majority which is incompatable not only with demand on spendable income but also with social policies on availability of and access to hospital services. It is an accepted fact that improved health and social progress is directly dependent on accessibility of health care. Modern Society decrees that access to health care is a human right, regardless of persons' ability to pay. Medical care now moves from 'blessed benevolence' through that of 'private luxury' to one of civic right. This is a big challenge to today's hospital administrators and points to the need to deal with the variable and unbudgetable nature of medical care costs in hospitals.

5. Nothing has yet been done to achieve cost effectiveness in hospital project planning. Cost effectiveness is a management technique for

decision making pertaining to planning and allocation of resources commensurate with the objective of a hospital project. In hospital project planning, the three important cost factors involved are land, building and plant and equipment. At the planning and design stage itself, these factors merit very important consideration. Unless the cost aspects of these factors are properly analysed and interpreted before taking a final decision, these will have far reaching consequences on the future cost structure and the overall productivity and profitability of hospital.

6. Materials happen to be the major input in any organisation. In a competitive market it becomes essential to handle this input in a very effective manner to maximise profit. However, there exists an unsatisfactory system of Drugs and Medical Supplies in hospitals. The efficiency of hospital services depends not only on the competence of medical personnel but also on the availability of drugs in right quantity and of right quality. To ensure best possible patient care in a hospital, Hospital Engineering services must be maintained in an up-to-date and orderly state. Such a state will not be accomplished without effective Materials Management as ready availability of materials is the blood line of any engineering activity. It should be ensured that all the materials and supplies required in a hospital are properly managed, controlled and utilised to yield maximum return on the investment.

7. Unfortunately, the existing hospital system does not attach much importance to proper utilisation of available manpower resources. Salary expenditure is the single largest expenditure in hospital constituting a high percentage of the total operating cost. The quality of medical care is largely dependent on professional skill, team effort, working climate,

motivation and dedication to professional work. But there is no proper personnel function in many large hospitals. There are no scientific systems of recruitment, training, placement, job evaluation, merit rating, remuneration, promotion, incentives and bonus for the employees of hospital. This has created strained relations between the management and the different categories of employees in the hospital. It has also an adverse effect on the quality of medical care and hospital costs. Detailed manpower planning, proper work scheduling, efficient supervision, provision of the best method of remuneration and incentive and bonus schemes etc. can cut down 'manpower costs' in hospitals substantially. The utilisation of manpower is necessarily a cost aspect which should be interpreted in terms of effective and efficient achievement of hospital objectives.

8. Overhead expenses in hospitals are ever increasing day by day without any corresponding increase in the volume and quality of services rendered. Although a high percentage of total overhead expenses is in the nature of fixed expenses, no sincere efforts have been made to contain and reduce this important element of cost. This has resulted in increased overhead cost per patient. Only a cost control system can contain the overhead cost within the desired limit. Only then the objective of better patient care is achieved with minimal cost.

9. Hospital is a complex organisation with several service departments each independently functioning but much inter-dependent to provide total medical care to the patient. There is thus the growing need for co-ordination, co-operation and team approach for the desired result. Further, with the growing awareness towards hospital care facilities,

hospitals are always faced with growing demand on services and scarcity of funds. The hospitals have to manage with the available funds and aim at optimum utilization of funds. For these reasons, a system of budgeting is highly appreciable in the hospital set-up. The present style of achieving these needs is through the annual budget prepared on most conservative lines. The excessive emphasis is on accountability and financial control and in the process the hospitals are losing their dynamism. The drive, the initiative and imagination required for increasing productivity and thereby reducing the cost of service is missing. The easiest method adopted to balance the proposed expenditure is to raise prices of services. The present system of preparing budgets should be radically changed to effective device of planning, co-ordination and control. It becomes necessary for the hospitals to plan and budget their limited resources in a more "business-like" manner.

10. There is no denying the fact that in our country, hospital statistics are not properly maintained. The available statistics lack in uniformity, quantity and quality. Hardly any set up exists in a hospital which can exclusively deal with the collection, classification, tabulation and presentation of hospital statistics especially hospital service statistics and Patient-group statistics. In the absence of such an arrangement, it will be very difficult to programme, implement, monitor and evaluate hospital care. Communication gap will also exist between the providers and consumers of health care. The outcome of all these practices lead to inefficient management and lower productivity. Medical statistics are very necessary for analysing the past activities and for forecasting the future level of performance. Efficient performance of any administrator is based on timely and accurate information. 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 information system in hospitals will improve the efficiency in terms of quality care and better utilisation of limited resources. A Scientific Reporting System is thus very vital to the success of a hospital.

These are but a few symptoms of the cancerous growth of hospitals today. Only a sound Cost Accountancy System can bring to light the symptoms of the fatal diseases that eat into the vitals of hospitals. Cost Accountancy can prescribe effective, preventive and remedial treatments for eradicating the weaknesses and diseases which hinder the efficient functioning of hospitals. The application of the techniques and principles of Cost Accountancy and Cost Control in hospitals can go a long way in utilising the hospital resources towards the efficient and effective achievement of the objective of better patient care. Once the costs of hospital activities are controlled within the desired limits, the management can provide one of the most vital and essential services at a price within the common man's reach.

RELEVANCE OF COST ACCOUNTANCY IN HOSPITALS

Cost Accountancy has a prominent role to play in the present day private hospitals since it is the only tool available for the management to set things right and to put the wheels of hospitals in a smooth running condition. Relevance of Cost Accountancy and Cost Control in a hospital becomes more specific in the following context:

1. Setting Fees

It is only through an efficient cost system that a hospital can set up a proper fee structure to assure complete recovery of the cost of operating the hospital. Proper setting of fees is possible only with a firm knowledge of various cost factors. Minimum charges that can be levied from patients for various facilities provided in the hospital can be decided only by having a proper cost system. In too many hospitals at present, fees are charged without accurate knowledge of the actual cost of providing a particular service. Charges for services are based on arbitrary decisions based on the size of the annual deficit. Justification of an increase in fees is thus based on an overall loss or profit figure rather than the actual cost, regardless of whether the fee adjustments will actually be sufficient to cover the budget in the next year. It is very important to note that eventually all costs must be distributed to those departments which charge fees so that the total cost of operating the hospital can be recovered in full.

2. Ascertainment of costs

Cost Accountancy lays down the principles to be followed in evolving different methods by which costs are collected, analysed and related to the services rendered. The unit cost of each type of service in a hospital and the sub division of such cost into its components are possible to suit the various needs of management. Accurate and timely cost information form the very basis of Cost Accountancy.

3. Control of Cost

The very existence of a hospital largely depends on its ability to levy minimum charges for its services. This can be possible only if costs are controlled within the expected limits. A Cost Control System reveals to the management inefficiencies, wastages and unprofitable activities existing in a hospital. Each item of cost incurred in a hospital is subject to strict control limits under the systems of Budgetary Control and Standard Costing. These techniques of Cost Control enable the management to concentrate on those areas where remedial actions are urgently needed.

4. Assessing the feasibility of new programmes or departments

In contemplating a new activity in a hospital one must assess the viability of the proposal along with its need. One of the most important tools of such an evaluation is a budget based not only on direct costs, but also on the hidden indirect costs. It is only when one has all the information as to the complete cost and the revenue per unit of service, and the number of units of service expected to be rendered, that the management can pass on to considering other factors of the new proposal. Thus appraisal of past data and projected level of performance help predict profitability and financial viability.

5. Evaluating Efficiency

Efficiency can be evaluated by examining costs in relation to output. Unit costs have to be compared with figures of previous years, of other hospitals and also with standards previously laid down. All these

measures indicate the level of efficiency of each activity in the hospital.

6. **Determining Break-even Point**

Determination of Breakeven Point helps the management to ascertain at what level of activity revenue equals expenditure and when profits are possible. It assists the management in planning and decision-making. It also reveals the various effects of changes in the volume of activity on the profitability of a hospital.

7. **A basis for business Policy**

Cost Accountancy also provides the management with bases for formulating the business policies of the hospital. Forward planning and decision making are the prime functions of every management. Cost Accountancy has important techniques to facilitate tactical decisions and profit planning. Marginal Costing principles provide ample scope to deal with many practical problems faced by the hospital management particularly in the areas of decision-making and planning.

8. **Detecting trends**

Cost Accountancy can detect unhealthy trends in each department of the hospital in relation to the amount of work being done in the department. Analysis of cost data together with the volume of activity in each department can reveal undesirable trends.

9. **Cost Comparison**

Cost Accountancy enables management to make cost comparisons of various services rendered in a hospital. The application of Uniform Costing

principles renders possible inter-hospital comparisons without affecting the competitive strength of each hospital. With cost finding, hospitals can compare costs, not only by units of service, but also by each component of the unit of service.

10. Helps reveal idle capacity

Under-utilization of productive resources can be brought to light. Also management is enabled to ascertain the cost of idle capacity. Although it is true that idle capacity must exist in hospitals, the abnormal cost of idle capacity points to the measures to be taken by the management to overcome the undesirable practice.

11. Cost Reduction Programme

A well thought out formulation and implementation of a cost reduction programme in hospitals can lead to a highly favourable response from the community which they serve. The management can also boast of rendering a very valuable service to the society at the minimum cost without impairing the quality of service. An ultimate outcome of this exercise is the overall increase in the competitive strength of the hospitals.

CHAPTER 3

COST ACCOUNTING PROCEDURE IN HOSPITALS

3.1 HOSPITAL MATERIALS AND SUPPLIES

A hospital requires a continuous stream of materials and supplies for providing proper service to patients. There are numerous individual items of materials required for running a modern hospital. The larger the size of a hospital, the greater is the number of items of materials needed. The materials and supplies in a hospital can be classified as follows:

T1 Table showing kinds of materials in hospital.

MEDICAL	NON-MEDICAL
1. Medicines	1. Linen and Bedding
2. Medical and surgical supplies	2. Laundry supplies
3. X-ray supplies	3. House keeping supplies
4. Laboratory supplies	4. Dietary supplies
	5. Maintenance and repair materials
	6. Stationery and Office supplies

The break-up of each item of medical and non-medical material is given below:

FIG 6
Chart showing varieties of materials used in hospital:

Medical

1. Medicines	____	Tablets & Capsules, ointments, intravenious solutions, mixtures, anaesthetic drugs, narcotics, injections, etc.
2. Medical and Surgical Supplies	____	dressing, suture and rubber articles, plaster, bandages, cotton, oxygen, syringes, etc.
3. X-ray Supplies	____	Films, chemicals, Dyes, contrast
4. Laboratory Supplies	____	Chemicals, glassware, test tubes, cotton, rubber materials, etc.

Non-Medical

1. Linen and Bedding	____	Sheets, pillows, towels, blankets, mattresses, uniforms.
2. Laundry Supplies	____	Soap, detergents, bleach, bluing, acids, fuel, ironing materials.
3. House keeping Supplies	____	Soap, detergents, cleaners, brooms, floor clothes, buckets, lotions.
4. Dietary Supplies	____	Raw food, dishes, kitchen utensils, fuel, provisions.
5. Maintenance and Repairs Materials	____	Consumable spare parts for Generator, lift, pump, electrical and plumbing materials, seeds, fertilisers, etc.
6. Stationery and Office supplies	____	Printed forms, books, ledgers, records, papers, carbon, pen & pencils, etc.

MATERIAL COSTS

Material costs play a significant role in the overall productivity of a hospital. The cost of raw materials as a percentage of cost of goods or services in some major industries including hospital clearly underlines the need to give the desired attention to materials management.

T2 Table showing Material cost as percentage of Product or Service cost in different industries

INDUSTRY	PERCENTAGE OF PRODUCT OR SERVICE COST
Cement	40
Chemicals	53
General Engineering	54
Hospital	35
Hotel	50
Jute	68
Paper	54
Steel	42
Sugar	65
Textiles	65

Upon analysis of the various elements in the turnover value with reference to hospital industry, the break-up would be as follows:

T3 Table showing Elements in the turnover as a percentage of turnover

ELEMENTS	PERCENTAGE OF TURNOVER
Material cost	40
Labour cost	15
Capital cost	20
Cost of Utilities	7
Taxes & Other levies	6
Profit	12
TOTAL	100

On the basis of the different classes of hospital materials, the total hospital material cost can be broken down as follows:

T4 Table showing Break-up of Total Hospital Material Cost
(in percentages)

CLASSES OF MATERIALS	COST OF EACH CLASS
1. Medicines & drugs	59.00
2. Medical and Surgical supplies	11.00
3. X-ray supplies	8.00
4. Laboratory supplies	5.00
5. Linnen and bedding	6.00
6. Laundry supplies	1.50
7. House-keeping supplies	1.00
8. Dietary supplies	3.00
9. Maintenance & Repair materials	2.25
10. Stationery & Office supplies	3.25
TOTAL	100.00

Like most of the other industries, material cost in hospitals also share a major portion of the total operating cost. However, the materials management system in hospitals is poor and ineffective in controlling the most important constituent of the total cost. Hospitals can profitably apply the modern tools and techniques of material management to stretch their resources in improving the quality and quantity of patient care.

Cost Accounting System provides for efficient material management procedures to control and reduce the material cost. It is proposed here to analyse the existing material procedures in hospitals, to locate the defects and weaknesses in these procedures and to make suggestions of Cost Accounting procedures in respect of materials and supplies suited to the hospital system. The entire process of materials management is suitably analysed under the following appropriate heads:

DEMAND

It is very necessary to assess the actual requirements of various types of hospital materials from time to time. The existing system of assessing the demand for materials in hospitals, and the suggestive techniques in this respect are given below:

Existing System

It is seen that the hospital materials are requisitioned:-

- on a one-time basis or on a continuous basis
- for a specific application or for replenishing stock
- as a single unit or as a bulk requirement, and
- for an urgent, immediate use or in anticipation of a need

All of the above bases are used in most of the hospitals for almost all the hospital materials. However, bulk requirements need scientific techniques for assessing the true demand. Techniques found useful in hospitals for assessing the requirements are as follows:

1. Forecasting

There exists no system of application of statistical techniques to predict future requirements based on past consumption patterns. It is recommended that any of the scientific forecasting techniques finds its appropriate place in assessing the material requirements in hospitals for a future period.

2. Standardisation

Existing System

Standardisation is very important in regulating the demand for materials. The process of standardisation is mainly applicable to hospital engineering items and medicines. It has been observed that standardisation helped many hospitals especially in the areas of Order Placing and Procurement, Incoming Inspection, Issues and Storage and Records. The practical application of standardisation on medicines in one of the hospitals is on the following lines:

Capsule Ampicillin 250mg. is available as Ampipen, Bacipen, Broacil, Broadicillin, Campicillin, Dynacil, Euphocillin, Ificillin, and Marticillin. The process of standardisation involved screening the items on the basis of their generic name, potency. Company reputation, user-acceptability, cost etc. and chose one of these to be stocked and used.

Hence, instead of stocking fourteen brands, expenditure on inventory could be brought down by stocking just one brand that is cheapest and most acceptable.

Weaknesses

There are however certain defects in the system of standardisation practised in hospitals. The application is irregular and incomplete. All the medicines used in the hospitals are not subject to standardisation. Only selected items are considered for the purpose and that too vary from hospital to hospital. Further, other hospital materials are not standardised. Surgical, X-ray, Laboratory and other consumable supplies are so varied that all those varieties are in use in hospitals. These materials are either non-standardised or faulty standardisation effected.

Recommendations

There is vast scope for the application of standardisation of materials in hospitals. It is suggested that a pharmaceutical committee should be entrusted with the task of standardisation. The committee is to consist the chief pharmacist, the physicians and the hospital administrator. It should be the endeavour of the committee to screen each and every item of medicine used in the hospital and to make the final selection of medicines to be stocked and used. Another commitee should also be constituted with the representatives of various departments as its members. This committee is to look into the process of standardisation in respect of all hospital materials except medicines. The two committees are to make out, in the ultimate analysis, the respective lists of standardised items to be purchased. Checks should be made at frequent intervals to ensure that only the lists prepared by the committees form

the basis of purchase and use of all the hospital materials. Provision should be made in the lists to incorporate changes in order to meet the latest requirements of the hospitals.

3. Value Analysis

Existing System

Value analysis is closely related to standardisation. Only a very few hospitals have made use of this technique. However, the introduction in all hospitals of non-disposable, autoclavable plastic syringes in lieu of easily breakable, more expensive glass syringes is based on the value analysis principle. For certain medicines also, the technique has enabled the management to provide for cheaper substitutes without impairing the quality and which fulfil the same objectives. It is seen that this technique is of immense help to the Bio-Medical Engineers in hospitals who study the imported spares and try to indigenise them after understanding the function of such imported spares. In a 450-bed hospital, where there is a sophisticated blood cell processor, the disposable plastic blood container has been made out of stainless steel and made reusable. The stainless steel container is not similar to that of the disposable container in construction but it is similar in function. By this, the hospital is able to save about 100 plastic containers each costing Rs.150 in a year. The cost of reusable container is hardly about Rs.3000 which can be used for many more years to come.

Weaknesses

However, the value analysis technique is not being used in all hospitals and for all hospital materials. No sincere efforts have been made to put

this technique into practice in its most scientific form. There is no faith in using alternatives for cheaper but equally effective functioning. There is also no systematic approach to the issue and team work is absent in this regard. There is also the problem of dearth of persons who are experts in this technique.

Recommendations

It is suggested that a full fledged value analysis programme should be implemented in hospitals. All the heads of the different departments should take active participation in its implementation. A check list containing a certain number of specific questions should be used in the programme. By analysing each question, it will be possible to find areas where elimination or substitution can be effected. The technique is to be applied for each item of hospital materials for the existing and probable purchases. Expert advice from outside can be sought for the execution of the programme. The technique can also be applied to a group of hospitals in the same locality with better procedures and results. Further, continuous vigilance should be made as to the availability of alternatives in the market in respect of all hospital materials. For this, contacts should be made with the existing and prospective suppliers on a regular basis. Above all, open mindedness, systematic approach and team work are the necessary prerequisites for the success of the programme in hospitals.

4. Manual of Indents

Existing System

All the hospitals provide Indents which form the basis of purchase of materials. For the hospital pharmacy, the indent is in the nature of an

approved formulary for the hospital. This formulary contains the details of various medicines regularly used in the hospital. A sample page of a hospital formulary is reproduced below:

FIG 7
Chart showing a hospital Formulary

AUTONOMIC DRUGS
(Sympathomimetic drugs - Adrenergic)

1. Ephedrine Sulphate Injection	:	1 ml. contain 50 mg.
Dispense	:	1 ml.
Route	:	Subcutaneous, intramuscular
Dose	:	25 to 50 mg. every four hours.
2. Epinephrine Injection	:	1 ml. contains 1 mg. epinephrine
Dispense	:	1 ml.
Route	:	Sucutaneous
Dose	:	0.2 mg. to 1 mg. every four hours
3. Levarterenol Bitartrate Injection	:	4 ml. contains 4 mg. Levarterenol
Dispense	:	4 ml.
Route	:	Intravenous only by infusion
Dose	:	4 mg. added to 1000ml. of 50% dextrose solution. Each 1 ml. of the dilution contains 4 mg. Levarterenol.
4. Phenylephrine hydrochloride Injection	:	1 ml. contains 10 mg. phenylephrine hydrochloride
Dispense	:	1 ml.
Route	:	Subcutoneous
Dose	:	1 to 10 mg. every 8 hours

It is seen that the presentation of each drug in the formulary above is in the form of a prescription. Provision is made in the formulary for additions or deletions of drugs to meet the changing requirements of hospital.

For other hospital materials, list of items actually purchased during a specified previous period form the basis for further purchases.

Weaknesses

The hospital formulary lacks brevity in the sense that too many unnecessary details are included therein. It cannot be regarded as a drug list. Moreover, all the drugs used in hospitals for a specified period are not included in the formulary. Regarding other hospital materials, the lists maintained are not at all comprehensive. There is no standard form used and sometimes even oral indents are made for initiating the purchases. The requisioners' real needs cannot be ascertained accurately and promptly.

Recommendations

It is recommended to modify the existing system of indents on the following lines:

To ensure that standard items are indented and also to ensure that the items purchased are in conformity with the requisioner's need, it is necessary for the hospitals to make available to the user departments manuals detailing all the information about the items in regular use. A typical form of manual is suggested below:

F18
MANUAL OF INDENTS

Name of material	Code Number	Specification	Unit	Pack size	Quantity

The manual must have flexibility to incorporate the changes in the use of items. Suitable changes shall be made in respect of the information contained in the manual according to the nature of materials used. All the departments of the hospital except pharmacy can make use of the manual. For the pharmacy, the hospital formulary shall be used for indents. The existing pattern of hospital formulary is preferably subject to the following modification. The recast formulary combines the brevity of a drug list with a pharmacological classification and routes of administration for parenteral products.

FIG 8

CHART SHOWING HOSPITAL FORMULARY

CARDIOVASCULAR DRUGS (Vasodilators)

1. Amyl Nitrite Pearles (Capsules - glass)
   Route : Inhalation
   Glyceryl Trimitrate (Nitroglycerin)
   (a) 0.3 mg. H.T.
   (b) 0.6 mg. H.T.
   (c) 0.4 mg. H.T. (H.T. = Hypodermic tablets)

2. Mannitol Hexanitrate - 30 mg. tablets

3. Papaverine Hydrochloride:
   30 mg. tablet
   30 mg. ampule
   30 mg. in i.c.c. for subcutaneous use

4. Pentarythritol Tetramitrate (Peritrate) :
   10 mg. tablets

5. Priscoline Hydrochloride
   25 mg. tablets
   10 cc vials 25 mg/cc
   For intramuscular or intravenous use

PURCHASE OF HOSPITAL MATERIALS & SUPPLIES

ORGANISATION FOR PURCHASE

Existing System

The organisation for purchase of materials in hospitals usually depends on the size of the hospital and the policy of management. It is seen that most of the hospitals follow a compromise of centralised and decentralised purchasing. Although the main stores-purchase department purchases the bulk of the materials required for various departments, it is the practice of most of the hospitals to provide for departmental purchasing by the pharmacy and dietary departments especially because of the specialised nature of items dealt with by them. All the purchases are effected by the Hospital Administrator but in some hospitals, the authority is delegated to a Purchase Officer.

Weaknesses

Although the existing system of purchasing in hospitals is rather good, it suffers from certain defects, the most important of them is the non-professionalisation of purchasing activity. Since a huge investment is made in hospital materials, it is necessary to adopt the most efficient and effective techniques of purchasing which is absent in most of the hospitals. The Hospital Administrator is entrusted with a multitude of functions as his daily routines, the result of which is that he cannot discharge the purchase functions effectively.

Recommendations

It is therefore suggested to consider the purchase function a specialised activity. Persons with proven ability, knowledge and experience should be appointed as Purchase Managers. Even in the case of decentralised purchasing,

the Purchase Manager must shoulder the major share of responsibility. Another important suggestion in this respect is a system of group purchasing that can be practised by a group of hospitals having common interest. They can get together and form an agency to effect bulk purchases on their behalf. This has the advantages similar to centralised purchasing though on a much larger scale. Such purchases, however, have to be planned well in advance and hospitals forming part of the group must restrict the nature of their indents to standards approved by the group.

PURCHASE PROCEDURE

The Cost Accounting procedure of purchase of materials begins with the initiation of purchase requisitions and ends with the receipt of materials into the hospital and the payment of bills for purchase. The purchase procedure in hospitals is analysed into the following stages:

1. Initiation of Purchase Requisition or Indent

Existing System

It is seen in most hospitals that request for purchases are made by different persons representing the various departments. These requests are made to Hospital Administrator. In a large number of cases, requisitions are made in writing by preparing chits of non-standardised form. In others oral requests are also in practice. The pharmacy department usually makes their requisitions by forwarding a list of all medicines to be required for a future specified period. All the doctors in the hospital have their own suggestion regarding the items of medicines to be purchased and stocked on the basis of consultations with the visiting medical representatives. The pharmacist incorporates these

suggestions in the list prepared by him to be forwarded to purchasing authority. All the requisitions usually indicate the nature of material and its quantity to be purchased.

Weaknesses

There are, however, certain defects inherent in the existing system of requisitioning of materials. There is no proper authority fixed in different departments to initiate the purchase requisitions. Different persons themselves act as the authority each time a requisition is made. No standard form is used for the requisition. All requisitions are not in writing. Requisitions are also incomplete and are not properly filed and kept. Only one copy is prepared and the same is sent to the purchasing authority. No record is maintained in this respect in the department initiating the requisition. The most important and serious drawback is the absence of a separate specialised purchasing agency in most hospitals with whom requisitions can be placed.

Recommendations

Proper authority must be fixed in each department to requisition the materials. The purchasing authority must have with him a list of the persons authorised in each department to initiate the purchase requisition. The proper authority is preferably the heads of the different departments. Further, each such authority must be given the financial limits within which he can initiate the requisitions. The purchasing authority must, in turn, be aware of the limits of each authority. There should be standard form of Purchase Requisitions. The form should be uniform in all respects throughout the hospital. A suggested form of a Purchase Requisition is given below:

F19

NAME OF HOSPITAL

PURCHASE REQUISITION

Department :..... No: .....

Date sent :..... Purchase Order .....

Charge Account:..... Date Required.....

Quantity	Unit	Description	Suggested vendor	Unit Cost	Total Cost
				Rs.	Rs.

Requested by ..... Approved by..... Date ordered.....

The Purchase Requisition is to be prepared in triplicate and a possible routing of the form can be as follows:

Copy 1 and 2 - sent to the purchasing authority and store keeper.

Copy 3 - kept by the department originating the requistion for follow up and checking when the supplies arrive.

It will be a good practice to acknowledge the receipt of the purchase requisition by the purchasing authority to the head of the department

initiating the requistion. This can be done either by sending a copy of the Purchase Order or indicating other decisions, if any, taken by the purchasing authority in respect of the materials requisitioned. It is also recommended that each department initiating the purchase requisitions should maintain a record of requisition made out and sent during a specified period, action taken on each and remarks put forward by the purchasing authority. This will help the department a great deal in forwarding purchase requisitions in future.

2. Placing the Purchase Order

Existing System

In actual practice the procedure for placing the Purchase order differs from hospitals to hospitals. However, in all hospitals, a list of suppliers of various items of materials is being maintained. In respect of certain items of materials other than medicines, some hospitals are seen to enter into purchase contracts with firms on an annual basis to ensure supply of items at a fixed rate, thus avoiding the need for frequent placing of purchase orders. In certain other cases, the vendor firm is assured of a fixed volume of purchases during a year and hence offers a fixed rate irrespective of the delivery schedules agreed upon. It is also usual for hospitals to invite necessary quotations and bids from selected suppliers. Suppliers are usually selected on the basis of payment conditions and prompt delivery. Purchase order is prepared in consultation with Purchase Requisition and sent to suppliers by post. Sometimes orders are also placed by telephone or telegram. In the case of all kinds of medicines, the manufacturers' sales representatives visit the hospitals and they themselves take the necessary orders at frequent

intervals. Only the most favourable terms are usually accepted by the hospitals since they require a very large quantity of each type of medicine regularly. Two copies of Purchase Order are prepared of which one is sent to the supplier and the other is retained by the purchasing authority.

Weaknesses

A comprehensive list of suppliers is not maintained in many hospitals. Necessary additions and deletions are not made in the list depending upon the requirements and policy of hospitals and also the changing scene in market conditions. Routine buying from one source without bids being called is found to be another drawback in the system. This is more expensive to hospitals and neutralises one of the advantages of centralised buying. A comparative statement of tenders or bids is never prepared in hospitals, thereby increasing the risk in the selection of suppliers. All the important and necessary factors for the selection of suppliers are not considered and therefore it cannot be said that a judicious decision is taken in every case in respect of selection of suppliers. Further, sufficient number of copies of purchase order is not prepared and there is no proper routing of the same. In certain cases, even unauthorised purchases without written orders are also found in practice.

Recommendations

A separate file should be maintained to include all the relevant information about all the available suppliers. It is advisable to maintain a classified list of all suppliers under each item of material

required in hospitals. The list should be prepared in a statement form which may take the shape as follows:

F20

COMPARATIVE STATEMENT OF SUPPLIERS

Material: (a) Description ..... Code No.....
(b) Specification..... Frequency of purchase.....

Name of supplier	Price per unit	Quality	Time of deli-very	Dependa-bility	Disco-unt	Credit facil-ity	Terms of pay-ment	Remarks
	Rs.							

It is advisable to maintain this statment throughout the period during which the suppliers are selected ultimately. Necessary changes can also be made in the statement. Competitive buying should always be practised. It is also suggested that all purchases be confirmed by a written order duly processed and signed to avoid unauthorised purchases. Before placing the orders, the purchase requisition should be thoroughly scrutinised to determine -

1) whether materials requested are in accordance with established standards and specifications,

2) whether the quantity requested should be increased or decreased to allow for economic ordering under prevailing conditions, and

3) whether the requisition is properly approved.

Two copies of Purchase Order are insufficient to give necessary information to the related departments. Although the number of copies of the purchase order depends upon the size of the hospital, five copies are recommended for issue. The possible routing of the Purchase Order is -

Copy 1 - to the supplier

Copy 2 - to the department initiating the purchase requisition

Copy 3 - to the stores department

Copy 4 - to the Accounts department

Copy 5 - to be retained in the purchase department

The copy sent to the stores department should not include the quantity and value of materials ordered. The copies for each department may be readily identified by the use of distinctive colours, and imprinted by name for ease in distribution.

3. Follow-up of Purchase Order

Existing System

Only some hospitals adopt follow-up action in respect of orders placed with suppliers. Follow-up action is taken either by sending copies of purchase order from time to time until delivery is effected or by sending reminders. Reminding the suppliers through telephone or telegram is also found in practice.

Weaknesses

The weakness in the system is that the follow-up action is not regularised at all. The system is found ineffective in the absence of well-laid down procedures of follow-up action. Proper records are not kept for the actions taken.

Recommendations

The hospital should obtain an acknowledgement or acceptance of the order. A promise of delivery according to requirements should be secured from the supppliers. The purchasing authority should watch the progress of filling up of orders, more frequently for important items. It should also be checked that the delivery promise is observed by the supllier. The follow up function would be easier if the copies of Purchase order retained by the purchasing agency are filed in order of delivery date. In such a case, it would provide checking on possible daily deliveries. It is also suggested to maintain a Purchase Order Book in all hospitals. A possible form of this book is given below:

F21

PURCHASE ORDER BOOK
MONTH & YEAR .....

Name of Supplier	Details of materials ordered	Date of order	Expected date of delivery	Date of delivery	Remarks

After obtaining acknowledgement from the supplier, expected date of delivery should be noted in the Purchase order Book. This book should be periodically reviewed and enquiries should be made for incoming deliveries. When materials are received, the book should be properly marked off. If for any material, acknowledgement or deliveries are not received within due dates, nor any advice of despatch has been received, remedial measures can be taken immediately.

4. Receiving of materials

Existing System

In majority of the cases, the materials are received in hospital in the stores department by the store keeper. In other cases, the Hospital

Administrator himself receives the materials. The medicines are usually received in the pharmacy. On receipt, the materials are physically verified by the respective authoirty with the help of invoice recieved from the supplier along with the materials. Delivery note is not common in most hospitals. Any descripancy is noted and intimation is given in this regard to the Accounts department where necessary debit or credit notes, as the case may be, are prepared. The details of materials received are entered in a stock Register maintained by the respective authority in the store room and pharmacy. Invoice is then marked and sent to Accounts Department for payment.

Weaknesses

The store keeper has not been given the entire authority to receive the materials. It is not at all desirable for the Hospital Administrator to look after the receipt of materials. Purchase Order has a less role in the verification of Invoice or of the materials received. Purchase Requisition is often never checked with the invoice. Only oral intimation is given to Accounts Department in respect of discrepancies noted on verification of materials received. The stock register is written up directly from the invoice before the latter is thoroughly checked for its accuracy. This usually results in many corrections to be made in the stock register.

Recommendations

Except for medicines, the store keeper should be the sole authority entrusted with the task of receiving materials. Medicines should be received by the pharmacist. In certain cases, the physical design of the hospital buildings may be such that some materials are delivered

preferably to a spot other than the central store room. In such cases, before delivery is made, the stores staff should be notified to be present at the spot of delivery to verify the materials received. This is important if effective control is to be maintained. Purchase Order must be used for checking the materials received. Delivery note and invoice should be compared with the Purchase Order. The quantity column in the Purchase Order should be filled in by the concerned authority who conducts the physical checking of the materials received. All materials should be inspected and certified by the stores department though in the case of technical items the requisitioner or user should also certify. In the case of bulk orders, random sampling may suffice. Samples of drugs should also be analysed and certified by the drugs analytical section in the laboratory. Descripancies such as shortages, incorrect or damaged materials, out-dated supplies etc. must be recorded in an Inspection Report. A typical form of the report is given below:

F22

NAME OF HOSPITAL

MATERIAL INSPECTION REPORT

Inspection Report No..... Date:.....

Purchase Order No..... Date .....

Materials Received Note No..... Date:.....

Material Code:	Description	Quantity			Reasons for rejection
		Inspected	Accepted	Rejected	

Special Remarks :

Concerned authority:.....

Three copies of the Inspection Report should be prepared and the copies are routed as follows:

Copy 1 - sent to the supplier by the Purchase Department

Copy 2 - purchasing authority

Copy 3 - store keeper/pharmacist

Materials accepted after inspection should be entered on a Materials Received Note by the store keeper or pharmacist, as the case may be. A form of such Note applicable to hospitals is suggested here:

F23

NAME OF HOSPITAL

MATERIAL RECEIVED NOTE

Number ..... Purchase Order No.....
Received from..... Date .....

Quantity Received	Description	Grade	Condition of goods

Received :.....
Store keeper/pharmacist

If a separate Inspection Report is not found necessary in some hospitals, the Materials Received Note can be suitably modified to enter the result of Inspection also.

Four copies of Material Received Note should be prepared and each copy is to be routed as follows:

To the purchasing authority

To the Accounts department

To the requisitioner

To be retained in stores or pharmacy

The copy of Materials Received Note should be the source document from where the books and records relating to purchase of materials should be written up.

5. Payment for materials purchased

Existing System

The invoice is usually received along with the materials. The invoice may be either cash bill or credit bill. In most of the cases, the invoice is received in Accounts Department and the Hospital Administrator may himself receive the invoice in other cases. The invoice is checked in the Accounts department with the intimation received from the store keeper in respect of materials actually accepted in hospital. When it is found that everything is in order, the invoice is marked appropriately and sent to cash section for payment if it is a cash bill. If it is a credit bill, it is filed in an "Invoice pending file". This file is checked from time to time and as and when the payment becomes due on each invoice, the same is sent to cash section for payment.

Weaknesses

Either the Accounts department or the hospital administrator is not the proper authority to receive the invoice. There is no internal check in respect of the invoices and its payment. The system of checking the invoices with the materials actually received is very weak and it is not at all desirable for the Accounts department to do so. Invoice is the only document used to avoid double payment which cannot be considered as an effective method. The system by which discrepanices are recorded and dealt with is also not sound. Finally, the system of maintaining the

"pending invoices file" and their ultimate payment is not worth while since the hospital suffers from losses due to non-availability of discounts arising from delayed payments.

Recommendations

Invoices, as a matter of rule should not be received either by the Accounts Department or by the Hospital Administrator. The purchasing authority must receive the invoices and number them consecutively for entry into an Invoice Register, a form of which is given below:

F24

NAME OF HOSPITAL

INVOICE REGISTER

Serial No.	Date of Receipt	Name of Supplier	Invoice No.	Date of Payment	Remarks

The purchasing agency should verify the invoices with reference to Purchase Order, Materials Received Note and Inspection Report and sign for correctness of the entries therein. The Purchase Order Book should be marked with Invoice Number to preclude double payment. Before releasing payment, the accounts department must ensure that the bill bears proof of receipt of materials,

certification of acceptance and completion of purchase documentation. In the case of credit bills, there should maintain in the accounts department a "Pending Invoice Payment Register" which can be in the following form:

F25

NAME OF HOSPITAL

PENDING INVOICE PAYMENT REGISTER

Month and Year .....

Date of Receipt of Invoice	Invoice Number	Name of Supplier	Terms of Payment and Amount	Date of actual payment with Remarks

On payment of the bill, a distinct endorsement should be made on the bills and the Purchase Order Copy to the effect that payment is made to avoid any possibility of double payment. In the case of discrepancies in the receipt of materials, the purchasing agency should inform the accounts department through the copy of Inspection Report and the accounts department should, in turn, record the discrepancies if any, in the accounts of the suppliers concerned.

STORAGE OF HOSPITAL MATERIALS & SUPPLIES

1. Organisation of the stores department

Existing System

The existing system of storage in hospitals is a combination of both centralised and decentralised systems of storage. There is a central store room for all hospital materials except for medicines and dietary materials. The pharmacy department stores all the medicines required for the hospital, while the dietary department stores all the materials required by it. Almost all other hospital departments have their own sub-stores which receive the required materials from the central store from time to time. The central store is headed by a storekeeper and the sub-stores are managed by the respective heads of departments.

Weaknesses

Although the existing system of storage suits the requirements of hospitals, it suffers from certain defects. There exist operational disadvantages due to bad location of central store. There is no proper and effective link between the sub-stores and central store. The responsibility of heads of departments in respect of management of sub-stores is not properly defined and fixed and this often results in mismanagement of sub stores.

Recommendations

The central store room should be preferably located so as to have easy accessibility to all the departments requisioning materials from it. Although the size of the hospial building has a major influence on the

location of central store room, there should be careful planning to minimise the operational difficulties. Further, there should be proper co-ordination between the sub-stores and the central store through a system of records and supervision. There should be clear-cut guidelines in respect of receipt and replenishment of items in each sub-store. The responsibility of the heads of departments in this regard should be properly defined and fixed and they should be made accountable to the storekeeper as far as the sub-store is concerned.

2. Stores-keeping practices

Existing System

Various items of materials are arranged and kept in the Central Store not on the basis of any particular principle, but according to convenience. Some hospitals provide for special storage facilities for certain materials. Any of the hospital staff is able to enter the store room at any time. In pharmacy, medicines are arranged in racks again according to convenience and medicines usually and regularly required are arranged on the basis of accessibility. The place of each item kept once is not changed so that easy identification is possible. In sub-stores attached to each department, materials are stocked in each rack from where they are drawn for use by different persons.

Weaknesses

There is no proper classification of various items of materials stocked in the central store. Scientific principles for arranging the materials are almost absent in majority of cases. Only a very few hospitals provide for special storage facilities. Unauthorised entry to the store room is

another serious drawback which enhances the chances of fraud, loss of materials and other malpractices. In the pharmacy also, the medicines are not properly arranged and stocked. Easy identification cannot be claimed in every situation. Here also, special storage facilities are lacking. Further, sub-stores are not maintained on healthy lines. Adequate control on sub-stores is not given its due importance in many instances.

Recommendations

There should be a fool proof classification of all hospital materials. Function-wise classification is the most suited one for hospital materials.

Table T1 and Fig.6 give a suitable classification.

When materials are classified and grouped on the basis of use to which they are put, easy location and identification are greatly facilitated. Materials should be arranged in alphabetical order under each group. In the pharmacy, medicines should be grouped together and stored contiguously depending on their generic name, similarity, pharmacological action and application. There must be special storage facilities which should include fire-proof room for storage of rubber goods and plastics, refrigerators for certain drugs and biological preparations, safe cabinets for narcotics and expensive drugs and materials, and slotted-angle racks with adequate floor clearance for most other items. The materials should be adequately protected from fire, pests, water, seepage, etc. Access to store room should be granted only to authorised staff. This authority is best given to one person, rather than several, during regular working hours. Other staff may be authorised to have access to the store room in the event that supplies of an emergency

nature are needed at night or on week ends. Materials in sub-stores in the user departments must always be kept under safe custody. Only one or two persons should be authorised to draw the materials therefrom.

3. Stores Records

Existing System

Stock Register is the only record maintained in Central Store, substores and pharmacy. The Register usually contains information such as name of materials, and quantity of receipts and issues. The entries are made in the Register sometimes from invoices and bill books and sometimes by observation. Daily record is made of the receipts and issues. In some hospitals, a Stock Register is maintained for each item of materials, while in other cases, one Stock Register is maintained to record the receipts and issues of all materials dealt with in the store. In the latter case, a monthly summary statement is prepared to show the total receipts and issues for each item of material.

Weaknesses

There is no means of checking the book balance of each item of materials as revealed from the Stock Register with the physical balance. This usually results in inadequate inventory control. It is also very difficult to ascertain the stock on hand of any item at any time for various purposes. No clear documentary evidences are used for writing up the Stock Register. The accuracy of the Register cannot be ascertained since there is no means of cross-checking the entries shown therein. Moreover, the person authorised to maintain the Register is not held directly responsible for any surplus or deficiency in stock.

Recommendations

There should be a Bin Card for each item of materials kept in the Central Store and Pharmacy in addition to the existing Stock Register. The Bin Card facilitates effective inventory control and cross-checking. Every Bin Card should be recorded after each receipt and issue of each item of material.

The Bin Card should be attached to the receptacle where each item of material is stored. With the help of Bin Card, it will be possible to know the stock position of every item at any time. Any discrepancies between the book balance and the physical balance can be located easily and quickly.

F26

BIN CARD

Name :..... Bin No..... Maximum level.....

Description:..... Stores Ledger Minimum level.....

Unit:..... Folio:..... Reorder level.....

Reorder quantity.....

Date	Receipts		Issues		Balance	
	Material Received Note No.	Quantity	Material Requisition No.	Quantity	Quantity	Remarks

It should be made compulsory to record the Bin Card only from the Material Received Note for receipts and from Material Requisition Note for issues. The Stock Register kept in the substores should be checked at regular intervals with the Stock Register kept at the Central Store.

ISSUE OF HOSPITAL MATERIALS & SUPPLIES

Existing System

The existing system of issue of materials from the Central Store and Pharmacy to user departments is outlined as under:-

The Central Store issues materials on the basis of requests made by the user departments to replinish the stock in their sub-stores. Such requests are made sometimes orally and sometimes in writing. There is no specific or standard form for the written requests. Requests are made by any person representing each department. In all cases, the quantity of each item of material demanded varies from time to time. The quantity to be demanded is determined by each department after taking into account its requirements for two to seven days. Issues are made at any time during a day. As soon as materials are issued, the name of materials, the quantity issued and the name of department to which they are issued are recorded in the Stock Register kept in the Central Store. In Pharmacy in some cases, the medicines are issued against cash bills produced by the patients. Only in emergency cases, medicines are issued to In-patient wards. Such issues are made on the oral or written requisition by the nurse-in-charge after ensuring payment for the medicines. In other cases, medicines are issued to the various wards on the basis of the list of medicines submitted by the respective nurse-in-charge. The list of medicines is prepared by each nurse-in-charge after taking into account the work-load

and the requirements of each ward. Emergency issues are also made to wards on proper requests. All the issues of medicines are entered in the Stock Register on a day-to-day basis. In some hospitals, a monthly statement is prepared to analyse the issue of medicines to out-patients and various wards.

Weaknesses

No proper requisitions are used to draw materials from Central Store or Pharmacy. The written requests, if any, are not in standard form. These written requests are also not properly kept in the stores. Proper authority is not fixed in each department to make the requests. No limit as to time or quantity is determined to replenish the stock in the departments. Proper controls do not exist in the distribution of medicines to various In-patient wards.

Recommendations

All the materials issued from the Central Store and Pharmacy must have proper documentation. For this a Material Requisition Note should be used. It can be used as the basis of analysis and of control of consumption of materials. The layout of the Note should be simplified for sorting and summarising. A suggested form of the Requisition is given below:

F27

MATERIAL REQUISITION NOTE

Deliver to ..... Date:.....
Reg. No.....

Description	Quantity		Unit Price	Total	Account Head
	Requested	Issued			
			Rs.	Rs.	

Requested by:..... Issued by:.....

Approved by:..... Received by:.....

There should be at least three copies of the Requisition. The routing of the copies is suggested below:

Original - Stores

Duplicate - Accounts Department

Triplicate - Department/Ward

The practice of issuing of items of small value without requisitions can be introduced. However, the store-keeper or the pharmacist, should, instead, note the issues on a list and get the departmental head to authorise it at the end of each day. Further, proper authority for making and signing the Requisition

should be fixed in each department and ward. The central store and the pharmacy should maintain a list of such authorised persons with their signatures for verification in case of need. It is further suggested to maintain the sub-stores on imprest system. The imprest quantity as well as the period at the end of which issues are made should be determined after taking into account the work-load and the rate of consumption of each item of materials in each department. The Central Store should have a list of imprest quantities which can be incorporated in the Stock Register or maintained separately. Regarding the issue of medicines from the Pharmacy to the various In-Patient wards, the following suggestions are given: Expensive drugs should be issued only as and when necessary especially if the costs are to be debited to the particular patient. The stock levels in each ward should be either controlled by the ward itself or by the pharmacy. In the former case, the ward should make the requisition at definite intervals or when the stock levels get low and the pharmacy should issue items according to the requisition. In the latter case, maximum stock levels for each ward should be pre-determined and at periodic intervals, stores personnel should visit the ward, should carry out a physical inventory of what is available and should arrange to replace the stock to the predetermined maximum level.

Whatever may be the system of stock replenishment in departments and wards, it is very important that adequate controls should be established for issue of medicines and consumables. Departmental heads and Nursing Supervisors, having intimate knowledge of departmental and ward work-load and supplies required, should monitor and regulate the supplies to be replenished by the stores. While sanctioning the requisitions, they should ensure that departments and wards are not allowed to hoard supplies and build up unofficial inventory since such stock is more prone to obsolescence, damage and pilferage.

COMPUTATION OF PURCHASE COST OF HOSPITAL MATERIALS & SUPPLIES

Existing System

All the hospitals usually take into account the following items for the computation of purchase cost:

- Invoice price
- Trade discount
- Quantity discount
- Cash discount
- Transport charges
- Duties and taxes
- Transit insurance, if any
- Cost of containers, if any

These items are related easily to the materials purchased and received. When the consignment consists of more than one item of material, the above items are suitably apportioned among all the items in the consignment.

Weaknesses

Costs connected with buying, receiving, storage and issue of materials are completely left out in the computation of purchase cost. This always results in under recovery of purchase cost. These indirect costs, though non-specific are very important for the calculation of purchase cost. Most of the hospital authorities are totally unaware of these indirect costs and some others are reluctant for their inclusion in the purchase cost in view of their remote

relationship with the materials purchased. Further, cash discount is always considered for the purchase cost. This is against the costing principle since cash discount is an item of pure financial nature.

Recommendations

It is one of the important principles of Cost Accountancy that the receipt price of materials should include all costs increased upto the stage to make the materials ready for issue. Hence, the purchase cost of materials should include both direct costs and indirect costs. Indirect costs include those costs which are dependent upon purchases and those that are dependent upon issues. A method of either dual apportionment or blanket apportionment should be followed for relating the indirect costs to materials purcahsed. However, it may not be practicable to determine the amount of such indirect costs for each lot of materials received. Hence, it is suggested to compute a pre-determined rate in respect of the budget period.It becomes necessary to determine a ratio of budgeted receiving and handling charges to the estimated total cost of materials for the period. The rate should be applied on each purchase to determine the cost of handling charges which should be included with the total cost of materials received. The material should then be issued at this augmented cost. The difference, if any, between the actual and applied receiving and handling cost for the accounting period should be transferred to Income and Expenditure Account in the absence of a Costing Profit and Loss Account.

COMPUTATION OF ISSUE PRICE OF HOSPITAL MATERIALS & SUPPLIES

Existing System

It is seen that hospitals at present follow two different methods of computing the issue prices of materials. Large and medium sized hospitals follow First in First Out Method while small hospitals having 100-150 beds adopt Fixed Last Price Method. In the latter method, the issues and the inventory at stock taking time are valued at the price of the last receipt of the item. No calculations are involved in this method and material cost reflects change in market prices immediately. It is also claimed by these hospitals that stock valuation is conservative under this method as it reflects current market prices.

The method of computing the issue rates of materials under the two methods are shown in the tables following:

T5 Table showing Issue of X-ray Films (Size 10" x 12") under FIFO Method in a 450-bedded Hospital

PURCHASE COST								ISSUE PRICE			
Date	Quantity Purchased Nos.	Components					Unit Cost	Date	Quantity Issued Nos.	Unit Cost	Total Amount
		Invoice Price	Transport charges	Taxes	Cost of Containers	Total					
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.			Rs.	Rs.
1991 March 3	250	10,000	55	1,200	110	11,365	45.46	1991 March 4	150	45.46	6,819.00
16	450	18,000	90	1,800	220	20,110	44.69	17	100) 75)	45.46) 44.69)	7,895.75
26	200	8,000	40	800	110	8,950	44.75	21	200	44.69	8,938.00
								17	100) 75)	45.46) 44.69)	7,895.75
								21	200	44.69	8,938.00
								27	175) 75)	44.69) 44.75)	11,175.00

T6 Table showing issue of X-ray Films (Size 10" x 12") under Fixed Last Price Method in a 100-bedded hospital

PURCHASE			ISSUE		
Date	Quantity Purchased Nos.	Unit Cost Rs.	Date	Quantity Issued Nos.	Unit Price Rs.
1991 March 4	50	44.50	1991 March 5	30	44.50
18	75	44.40	19	50	44.40
29	60	44.45	31	45	44.45

Weaknesses

It is found that the method adopted for the pricing of issues is not always followed strictly, especially when emergency issues are made. A complete list of the quantity purchased during the previous period is not available in the Central store. Delay in the computation of purchase cost also worsens the situation.

Recommendations

The methods of pricing the issues followed in hospitals are found to be satisfactory and suitable. The only step necessary is that the method should be strictly adhered to under all circumstances. The purchase cost of each lot should be arrived at as soon as the materials are received in the Central Store. Bin Cards should be written up promptly after every receipt and issue. It is also suggested that each item of material received is arranged in the store in the order of receipt. Such an arrangement facilitates the issuing as well as its pricing under both the existing methods. It should be ensured that there is only minimum time gap between the issue and its pricing.

STOCK-TAKING SYSTEM

Existing System

The existing system of stock verification in hospitals is physical inventory. This usually involves a physical verification of mateials for comparison of the actual stock units on hand with the number documented in the records. The variance is then expressed in terms of rupee value of stock for each item. Physical inventory is usually carried out once in a year. During the verification, only the most urgent and vital materials are issued. All hospitals try hard to cause only minimal interference with the ongoing hospital work during the process of verification. Physical inventory provides an opportunity for hospitals for identification of damage, shrinkage, stock obsolescence and pilferage.

Weaknesses

Although the hospital authorities claim that physical inventory is sufficient and effective, it cannot be agreed that it provides maximum conrtol over the hospital materials. Hospital materials include very costly, vital and scarce materials. Rigid and strict controls are very essential for these materials. Day-to-day track on the physical stock of such items is needed. Further, there is no provision for cross check with the book balance. Results of physical verification need not be dependable.

Recommendations

It is the defects inherent in the periodic inventory system that should be blamed. The system is definitely feasible for 'C', 'Desirable' and 'Plenty'

category items including sundry stores. But as regards other items of materials, the system is insufficient and ineffective. Perpetual Inventory System coupled with continuous stock-taking is recommended to be adopted for most of the hospital materials which require maximum and medium controls.

Under Perpetual Inventory system, record is done of stores balances after each receipt and issue. As and when the stock reaches the minimum level, a reorder for EOQ is placed for each item. The minimum level is fixed in such a manner so as to equal to the expected demand during the lead time plus buffer stock which is designed to cope with the probable variations in demand and lead time.

The expected demand in lead time and the buffer stock give a specified level of protection against inventory going out of stock during the same lead period. The re-order point and the EOQ can be easily decided at any point in the level to cover a predetermined range of probability.

Bin Card and Stores Ledger constitute the perpetual inventory records. For ensuring accuracy of these records, physical balance of stocks should be verified by a system of Continuous stock-taking. In this system, a number of items are counted or measured at regular short intervals and compared with the balances shown by Bin Cards and Stores Ledger. Discrepancies, if any, should be enquired and necessary steps are taken to correct them. The method of operation of continuous stock taking should be designed by each hospital according to its conveniences and requirements.

MATERIAL COST CONTROL

It is seen that none of the hospitals under study adopts any of the scientific and sophisticated techniques of material cost control. Although the term 'levels' is used in respect of stocks of material, nobody is aware of its importance or the true principles of its fixation. Every hospital authority believes that material cost is under control, but the fact remains that they cannot minimise stock-out costs, locking up of capital, possible pilferage and obsolescence of hospital materials. No sincere efforts have hitherto been made to adopt a system for controlling investment in materials.

The absence of a proper material control system in hospitals has resulted in the following adverse effects on the economic and efficient running of hospitals:

1. Many a time, frantic purchases have been made in respect of certain life-saving medicines in emergencies. This has resulted in increased cost and also affected the goodwill of the hospitals adversely.

2. Large quantities of many types of medicines have been wasted over a period of time due to deterioration arising from the expiry of their shelf-life.

3. Too frequent purchases have increased the ordering cost, thereby enhancing the total material cost.

4. Instances of piling up of certain drugs have been noted with their concomitant obsolescence and locking up of capital.

5. Pilferage has been one of the biggest problems in respect of hospital materials.

6. Turnover of materials has never been ascertained with the result that it becomes always difficult to detect non-moving and slow-moving materials and the irregularities connected with the stock replenishment.

7. Rejections and wastages of materials are found to be a common cause of increase in material cost.

8. Inventory carrying costs are higher in hospitals when compared to other industries.

9. Costlier materials have not been closely monitored and controlled on a day-to-day basis.

10. There are no guiding principles as to how the cost of each item of material can be controlled, how the materials can be used efficiently and how the investment in materials can be kept at the minimum.

Recommendations

There are important material control techniques in Cost Accountancy System. Of these, the following control techniques are recommended for hospitals where these can be suitably applied for effective materials management:

1. Fixation of Stock levels

It is very essential that both over-stocking and stock-out should be avoided. For this, it becomes necessary to fix pre-determined levels for each item of material stored in sub-stores and central store. These levels help to determine the time of purchase of each item of material. Three levels are considered for the purpose. The Minimum Level, also known as Safety stock or Buffer stock, is determined by taking into consideration the following factors:

a) Lead time or the time lag between placing an order externally or internally and receiving the delivery.

b) Nature of item especially its durability and shelf-life.

c) Rate of consumption per day, week or month.

d) Availability of substitutes which determines the ready availability of the item.

e) Stock out costs.

The minimum level fixed would be such that it minimises the annual total stock-out costs and carrying costs.

The Maximum level is fixed for each type of material after taking into consideration the following factors:

a) Nature of material
b) Rate of consumption per day, week or month
c) Lead time
d) Economic Order Quantity
e) Storage Cost and Storage space available
f) Financial considerations
g) Maximum requirements for rendering services.

The Maximum level should be the total of Minimum level quantity and the economic order quantity.

Re-order level is set between the maximum and the minimum levels in such a way that before the material ordered is received into the store, there is sufficient quantity on hand to cover both normal and emergency

situations. Lead time and the rate of consumption during the lead time are the factors considered for its fixation.

All the hospitals should fix the stock levels for the materials they purchase and stock for use. The difficulties in fixing these levels are practically nil. They can easily determine the normal, minimum and maximum usage of each type of materials for a day, a week or a month. It is also possible to determine the best quantity to order and also the lead time. With these information on hand, it remains only to apply suitable formula to determine the various levels.

2. Order Cycle Method

This method of control is chiefly applicable to critical items of hospital materials. A schedule of control is maintained in which a review is done of the inventory status at fixed intervals of time. When limits are set, then the actual stock reviewed is related to these limits. A closer review period is necessary for critical and scarce materials. Different items must have different order cycles. The substores in the different in-patient wards can be controlled very effectively by this method.

3. Economic Order Quantity

To maintain an optimum level of investment in materials and to strike a balance between the Ordering Costs and Carrying Costs, Economic Order Quantity should be fixed to determine the exact quantity to be ordered at a time. Economic Order Quantity should be determined for all hospital materials except for a few type of medicines. The practical application of EOQ in hospitals involve the following steps:

a) Computation of Ordering Costs

When regular cost records are maintained, it will not be a difficult task to work out the Ordering Cost. For the sake of convenience, it is necessary to distinguish between the fixed and variable portions of ordering cost. Fixed cost includes salary of the staff, establishment cost, rent and the cost of unalterable services in running the purchase department. Elements of variable costs include the cost of forms, postage and stationery, cost of follow-up, telephones and telegrams and the cost of all efforts that go with an additional order placed from the time the requisition is lodged by the user department. When well-designed Cost Accounting procedures are laid down for the purchase of materials, it will not be a problem for calculating the total ordering cost for a specified period. When the total ordering cost for a specified period is divided by the total number of purchase orders placed for the same period, the Ordering cost in terms of Rupees per order can be obtained. Item-wise ordering cost can also be worked out in the like manner.

b) Computation of carrying costs

Carrying costs include the following:

i) Investment costs such as interest locked in the inventory investment, and opportunity cost of investment expressed as the normal interest rate available from the best alternative investment.

ii) Storage costs such as rent, watch and ward, electricity, maintenance and cleanliness, and handling and equipment costs. Only variable portion of these costs are to be included.

iii) Wastage costs such as deterioration and damage, obsolescence, redundancy and handling losses.

iv) Miscellaneous costs such as insurance and pilferage.

The total carrying cost for a specified period is divided by the total quantity of materials purchased and stored for the same period to get the carrying cost per unit for the period. The carrying cost is also expressed as a percentage of average inventory value.

c) Ascertaining of total requirements of the material and its purchase cost

The total requirements of each item of material for a specified period, preferably, a year, should be ascertained. The purchase cost per unit should also be calculated.

d) Calculation of Economic Order Quantity

Economic Order Quantity can then be ascertained either by Tabular method, or by Graphic method or by Formula method.

Certain practical considerations should be borne in mind while determining the EOQ. Measurement of Ordering Costs and Carrying Costs is very complex and only realistic approximations should be used. Although EOQ can be determined for each item of hospital materials, it is advisable to apply this sophisticated technique to high-value and critical items or to group of similar items and strike an average result. Further, the aggreate EOQ for all the materials may exceed available financial resources of hospitals. In such cases, suitable modifications should be made on EOQ by appropriate mathematical limits.

An analysis is made of the Ordering and Carrying Costs of one single item of medicine, the annual consumption of which in quantity is on an average 50,000 numbers. It is seen that this item of medicine is being used by all the hospitals under study. The result of the analysis is shown in the Table.

T7 Table showing Ordering and Carrying Costs of a single item of Medicine in Ten hospitals.

Name of Hospitals	COST PER ORDER			CARRYING COST (as 15% of Average Inventory cost)		Total Inventory Cost (4 + 6)
	Fixed Cost	Variable Cost	Total Cost	Cost of Average Inventory	Carrying Cost	
1	2	3	4	5	6	
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
A	38	23	61	9725	1459	1520
B	41	34	75	8459	1269	1344
C	28	19	47	9795	1469	1516
D	35	29	64	3253	487	551
E	59	40	99	8897	1334	1433
F	43	39	82	6521	978	1060
G	38	27	65	3242	486	551
H	36	28	64	8540	1281	1345
I	21	18	39	4230	634	673
J	26	12	38	7255	1088	1126

The computation of EOQ for a particular item of medicine in a selected hospital is shown below:

T8 Table showing compuation of EOQ of a particular item of medicine in a hospital

Orders per year	Units per order Nos.	Value per order Rs.	Ordering cost Rs.	Carrying cost Rs.	Total cost Rs.
1	50,000	1,00,000	65	7,500	7,565
2	25,000	50,000	130	3,750	3,880
3	16,667	33,333	195	2,500	2,695
4	12,500	25,000	260	1,875	2,135
5	10,000	20,000	325	1,500	1,825
6	8,333	16,667	390	1,250	1,640
7	7,143	14,286	455	1,071	1,526
8	6,250	12,500	520	937	1,457
9	5,555	11,110	585	833	1,418
10	5,000	10,000	650	750	1,400
11	4,545	9,090	715	682	1,397
12	4,167	8,334	780	625	1,405
13	3,846	7,692	845	577	1,422
14	3,571	7,142	910	536	1,446
15	3,333	6,666	975	500	1,475

There should be 11 orders in a year. The numbers per order should be 4545 and the total of Ordering Cost and Carrying Cost is minimum at Rs.1397 at this point. Hence the best quantity to order is 4545 numbers in the case of this selected medicine.

4. ABC Analysis

ABC Analysis deals with selective control of high value to low value items of materials. Control is exercised on the bais of value of items. It is a highly practical and useful control technique that can be applied in hospitals, especially, on medicines. In this analysis, all items issued during the year are listed out; the unit cost of each item is multiplied by the number of units consumed to obtain the consumption value and the items are then arranged in order of their annual consumption values. It can then be seen that 5-10% of items account for 78-80% of material consumption costs (A items), the next 10-20% of items constitute 10-20% of annual consumption costs (B items) and the balance 70-80% of items account for 5-10% of annual consumption expenditure (C items).

The ABC Analysis essentially follows the principle of control by exception which gives best total reward in hosptials. The A category items should be subjected to the closest attention. The techniques of control must include the order cycle method coupled with min-max technique, full application of EOQ Principle and a perpetual inventory system. It can be seen that by monitoring purchase, stocking and issue of just 5-10% of the total items, 70-80% of costs can be controlled. The B category items need to have only a relatively summary treatment. Control can be exercised on these items by the system of periodic inventory method and budgetary control. The C category items can be controlled by setting up norms of consumption at different activity levels of various departments.

All life-saving medicines, anaesthesia and certain essential supplies for operation should also be classified as A category irrespective of values. These are very critical items in the shortage or absence of which can bring calamities to the hospitals.

ABC analysis is practically tested on selected medicines in a hospital and the result is given in the Table following:

T9 Table showing ABC Analysis of selected medicines

Name of Medicine	Unit Cost Rs.	Quantity per annum Nos.	Annual Cost Rs.	Class
1. Inj. 5% Dextrose	10.00	11,000	1,10,000)	
2. Inj. Roscilin	14.00	5,600	78,400)	A - 68.83%
3. Tab. Crocin	0.25	2,00,000	50,000)	
4. Liq. Halothane	53.00	300	15,900)	B - 24.08%
5. Cap. Sporidex	5.00	2,500	12,500)	
6. Syrup Santevine	16.00	300	4,800)	C - 7.09%
7. B.G. Phos	21.00	100	2,100)	
TOTAL		2,19,800	2,73,700	100

5. <u>VED Analysis</u>

Hospital materials especially medicines and surgical materials can also be classified as Vital, Essential and Desirable based on their criticality, stock-out costs and inconvenience caused to work of the hospital because of their absence.

V categroy items require a large safety stock while D items require only a small safety stock. The Vital items are required to be monitored most closely for stock availability, over-stocking and usage. These items are to be controlled in the same manner as that of A category items in ABC Analysis. As far as Essential items are concerned, these require less intensive monitoring. Desirable items are subject to same controls as that of C category items. Of all the hospital materials, an average of 17% of the total quantity can be classified as Vital, 45% Essential and 38% Desirable. VED Analysis should be applied to each type of material and a frame work of controls should be formulated for each category of materials.

6. SAP Analysis

Hospital materials can also be classified on the basis of their availability. It can be seen that certain materials such as life-saving medicines, anaesthesia, certain surgical supplies and laboratory chemicals should be available in hospitals at all times. In order to ensure their availability, each of the type of hospital materials can be classified as 'Scarce', 'Available' and 'Plenty' categories. 'Scarce' materials are hardly available and require more stock and lengthier lead times. Close control is necessary for their purchase, storage and consumption. 'Available' category of materials are obtainable with reasonable effort. Even though such materials are available, sufficient stock should be maintained at all times and they also require close control but with less intensity. 'Plenty' category of materials are available with the least effort and hence less stock and least lead time

are only required. It is estimated that 16% of the total quantity of materials consumed in a hospital can be included in scarce category, 47% available category and 37% 'Plenty' category.

7. Cost-Criticality-Availability Analysis

For a nearly perfect decision in respect of stocking of materials required for rendering various services in a hospital, there is really a need to classify the range of materials as per their individual characteristics of cost, criticality and availability. Materials, within individual attributes of cost, criticality and availability, develop an altogether different feature. In a hospital, it is often seen that a material which is scarce and is vitally required are stocked more within the constraints. Due to more stocking, it gets into 'A' cost class. It is also seen that the high, medium and low cost would never exactly correspond to high, medium or low holding of material and its utility. The total effect of all these features can be conveniently combined in a Cost-Criticality-Availability analysis. One important outcome of this analysis is that it is not cost alone that should be the determinant factor for paying more attention in selective inventory control. The other factors of vitality, availability etc. should also be considered in the inventory control process. This is especially true in a hospital where service is the ultimate objective.

The combined effect of this analysis is exhibited in Table T10. This analysis is done on the medicines used in a hospital.

T10 Table Showing Three-Way Analysis of Medicines

Techniques of Analysis	ABC ANALYSIS				VED ANALYSIS				SAP ANALYSIS			
	Quantity	% of total Qty.	Cost	% of total Cost	Quantity	% of total Qty.	Cost	% of total Cost	Quantity	% of total Qty.	Cost	% of total Cost
A/V/S	60,000	12	6,03,500	71	85,000	17	4,76,000	56	75,000	15	2,72,000	32
B/E/A	1,05,000	21	1,70,000	20	2,25,000	45	2,80,500	33	3,00,000	60	4,50,000	53
C/D/P	3,35,000	67	76,500	9	1,90,000	38	93,500	11	1,25,000	25	1,27,500	15
TOTAL	5,00,000	100	8,50,000	100	5,00,000	100	8,50,000	100	5,00,000	100	8,50,000	100

8. FSN Analysis

Materials in the Central Store can also be classified on the basis of their frequency of issue or consumption. All the hospital materials should be classified into Fast-moving which are used at a rapid rate, Slow-moving which are used consistently, but at a slow rate, and Non-moving which remain in stock for several months without being used. Both slow-moving and Non-moving items should be reviewed periodically to prevent date-expiry, obsolescence, damage-in-storage, etc. A standard rate of consumption should be determined for each type of material, and the actual rate of consumption should be compared with the standard rate at periodic intervals. Reasons for the deviation, if any, should be investigated and appropriate remedial measures should be taken. It is very important that the Non-moving materials which become obselete sooner or later should be found out without delay and disposed of them as early and as profitably as possible.

9. Inventory Performance Index

Computation of certain important inventory ratios helps the hospital management to locate the strong and weak points in relation to inventory and also to take corrective actions wherever necessary. As far as hospital materials are considered, a turnover rate of 12 per year is considered ideal, though 8-10 per year is found more realistic. A standard rate should be determined against which the actual rate compared to identify the degree of efficiency of the hospital materials management. Other control techniques should be regulated suitably to ensure a close follow of actual rate with the standard.

Table T11 shows the Computation of Inventory turnover ratios of selected materials in a hospital for three years.

T11 Table showing Inventory Turnover Rates of selected Hospital Materials from 1988-89 to 1990-91

	Medicines			X-ray films			Laboratory Chemicals			Medical & Surgical items		
	1988-89	1989-90	1990-91	1988-89	1989-90	1990-91	1988-89	1989-90	1990-91	1988-89	1989-90	1990-91
Actual Total Consumption Cost (Rs.)	918218	1123897	1092350	158846	149566	152008	177282	179493	169777	205218	191253	198498
Average Stock (Rs.)	89147	111277	106571	16546	15911	16523	16264	16467	15793	23320	21489	22303
Inventory Turnover ratio (Times)	10.3	10.1	10.25	9.6	9.4	9.2	10.9	10.9	10.75	8.8	8.9	8.9

It can be seen from the table that the materials under study maintain almost constant rate of inventory turnover during the three year period. While medicines show the highest turnover, medical and surgical materials show the lowest. This is due to the fact that consumption is at a rapid rate for medicines. Patients make use the service of the hospital most effectively. Medical and surgical materials are consumed at a comparatively slow rate due to the fact that the number of operations performed during the period is lesser when compared to other hospitals. Both Radiological and pathological investigations show consistency in the use of materials and the movement of the materials is quite satisfactory.

Table T12 shows the turnover rates of specified hospital materials in different hosptials. It clearly indicates the rapidity with which the materials are purchased, stocked and consumed within a year.

T12 Table showing Inventory Turnover Rates in 10 hospitals in the year 1990-91 for selected Hospital Materials.

Name of Hospitals	Classes of Materials			
	Medicines	Laboratory Chemicals	X-ray Films	Medical and Surgical Materials
A	10.80	10.30	9.80	8.70
B	11.70	11.10	9.90	10.20
C	9.30	9.20	8.90	9.50
D	10.90	10.80	10.90	10.20
E	12.00	11.90	11.70	11.80
F	11.90	11.80	11.10	12.10
G	12.50	12.20	11.80	10.90
H	10.90	11.80	10.30	10.20
I	10.25	10.75	9.20	8.90
J	10.10	10.90	10.50	10.40

10. Pilferage and Wastage Control

Hospital pilferage mainly includes frauds in buying and theft of hospital materials. Frauds involving buyer-vendor collision are found in some very large sized hospitals having super-speciality services. It is seen that for a commission or kickback, either in cash or kind, persons authorised to make the purchase compromise the interests of the hospitals. The vendor finances such payment by inflating the price, overstating the quantity, supplying sub-standard materials or through fraudulent payments. Theft of hospital materials is also not uncommon. It is noted that materials are pilfered by the shipper, by the receiver, by the stores personnel and by the users. Unofficial inventory which has accumulated in sub stores in in-patient wards is very susceptible to theft. Maintenance personnel are also notorious for theft of hospital maintenance and repair materials. Samples of medicines received from medical representatives are usually piled up and taken away conveniently by the hospital staff.

Wastage of materials occur in hospitals in no small measure. Wastage of medicines, laboratory chemicals, X-ray films and stationery items are more frequent in hospitals. Carelessness and ignorance in use and certain deliberate attempts are the usual causes of waste. Storage problems also lead to wastage. Table 13 shows the cost of wastages in five hospitals in respect of selected materials.

T13 Table showing cost of wastages of selected Hospital Materials in Five hospitals in the year 1990-91

Name of Hospital	Medicines		Laboratory Chemicals		X-ray Films		Stationery		Total	
	% of total cost of item	Cost of Wastage	% of total cost of item	Cost of Wastage	% of total cost of item	Cost of Wastage	% of total cost of item	Cost of Wastage	% of total cost of item	Cost
		Rs		Rs		Rs		Rs		Rs
B	0.05	1920	0.06	106	0.07	110	0.09	50	0.27	2186
E	0.06	1088	0.04	113	0.06	170	0.07	79	0.23	1450
F	0.02	350	0.07	224	0.07	220	0.06	101	0.22	895
G	0.05	1393	0.07	149	0.07	140	0.08	81	0.27	1763
H	0.04	899	0.06	115	0.05	100	0.08	91	0.23	1205
TOTAL	0.22	5650	0.30	707	0.32	740	0.38	402	1.22	7499

Recommendations

Pilferage involving fraud in purchases can be prevented by intensive internal audit and by involving two or more departments or persons in purchase transactions. Cost Accounting procedures in respect of purchases especially at the point of payment of invoice should be rigorously followed. It is always advisable for the hospitals to set up separate departments or sections for purchase and for stores. Pilferage from the sub-stores can be made good by short order filling of requisitions as nurses rarely count inventory that is replenished. Perpetual inventory and continuous stock-taking prevent pilferage to a great extent. Overstocking of any items must never be permitted. Unauthorised use of items should be done away with. Samples of medicines should be collected by the pharmacy at regular intervals and proper records should be kept for the receipt and issue. Imprest system should be strictly followed for the issue and use of stationery items. The use of maintenance materials should be closely supervised. On the whole, it can be said that control of hospital theft is possible only with intensive vigilance, although the ultimate solution is the "honest hospital employee".

Inventory control techniques can bring about substantial savings in materials cost, but these savings are relatively small percentage when compared to the savings that can accrue through economical and efficient use of materials. Evey effort must therefore be made at all levels in each hospital to utilise materials in the most conscientious manner by avoiding any form of wastage. The wastage of medicines can be avoided if all the medicines are regularly monitored keeping in view the expiry period of each type of medicine. It should be ensured that the medicines prescribed by the doctors are fully administered to each patient or

stored safely until they are consumed. It should be seen that only the necessary doses of medicines are prescribed by the concerned doctors and a hundred percent compliance should be observed by the ward nursing administration. Proper storage facilities must be provided in each sub-store and in the central store for certain drugs, solutions and injections to prevent them from deterioration. Regarding X-ray films, the technician is the sole authority to take the necessary steps to avoid wastage completely in his department. His alertness, vigilance and the directions given to the patients can save the X-ray films from spoiling. Close control should be established over the use of X-ray films and the chemicals and the technician should be held responsible for any form of wastage. In the case of Laboratory Chemicals, the chemicals should be used very carefully. The solutions for conducting various tests should be prepared only after taking into account the quantity of solution and the number of tests for which it can be used. It should be ensured that such solutions are fully utilised before they loose their efficacy. When laboratory test kits are used, it should be seen that the workload is planned properly so that the kits are opened and used fully before the end of their definite and limited life span. The chemicals should also be preserved and protected from heat, sun and deterioration. In the use of stationery items, it should be checked that each item of stationery is used only for the purpose for which it is intended. Imprest system of replenishment must be followed strictly for all stationery items. Deliberate attempts to waste the stationery materials must be detected and suitable actions should be taken to prevent their recurrence.

11. Narcotics Control

Existing System

In India, the narcotics or dangerous drugs are covered by the Dangerous Drugs Act of 1930. Every state in India has framed its own rules to implement the Central Act. The law seeks, among other things, to regulate the possession, transport, dispensing and administration of Narcotic substances by doctors, pharmacists and nurses as well. All hospitals have a narcotic stock register to record the details of receipt and issue of each narcotic. A separate sheet is provided in the register for each item. The register is maintained by the pharmacy department. Every Inpatient Ward, the Out-patient department, operating and delivery rooms maintain a record of narcotics to show the details of doses administered on the patients. This record is sent to the pharmacy at frequent intervals for checking. The same procedure is adopted for rectified and methylated spirit. The issue of narcotics to the user departments is made on the basis of the record of narcotics maintained by them. It is only on the written order of the concerned doctors that the nurses administer the doses to the patients.

Weaknesses

It is not proper for the pharmacist to assume the entire responsibility for the control of narcotics. No proper requisition is used for the issue from the pharmacy. This sometimes result in the unauthorised use of the controlled substances. Daily control is not exercised on the narcotics with the result that chances of abuse are frequent. Telephonic or verbal orders are often made by doctors in emergencies for the administration of the narcotics for which there is no systematic procedure for the

confirmation of such orders. Further, there is no reporting system as to the narcotics lost or wasted in the user departments.

Recommendations

The Medical Superintendent must be the person responsible for the proper safeguarding and handling of controlled substances within each hospital. Proper authority can be delegated to the Chief Pharmacist or to a Medical Officer for the purchase, storage, accountability and proper dispensing of narcotics. Similarly, the Matron or the Head Nurse in each nursing unit should be responsible for the proper storage and use of narcotics in her respective unit. The same Cost Accounting procedures as appplied to other hospital materials should be applicable to narcotics also in respect of purchase, receipt, storage and issue. However, additional precautions should be taken to ensure maximum control.

1) A form printed with the names of available narcotics should be used by each user department as requisition. This should be filled, signed and authorised by each Matron of the nursing unit. A suggested form of requisition is given below:

F28

NAME OF HOSPITAL

NARCOTICS REQUISITION

Department ..... Date .....

Serial No.	Name of drugs with Strength	Quantity required
1	Codeline Sulphate tabls. 15 mg.	20
2	Morphine Sulphate tabls. M.T.	25
3	Pethidine hydrochloride injection	30
4	Pentobarbitone injection 50 ml./20 ml.	1
5	Phenobarbitone tabls 1 P.	20
6	Secobarbitone capsules 50 mg.	15

Filled by ..... Checked by.....

Authorised by .....

2) Before any new controlled substances are issued to a department, the previous supply should be fully accounted for. For this, each requisition should be accompanied by a "Daily Control Sheet" which should be prepared by each department and authorised by the respective heads. A suggested form of "Daily Control Sheet" is given below:

F29

NAME OF HOSPITAL

DAILY CONTROL SHEET

Drug ..... Date .....

Department .....

Date	Time	Patient	I.P/ O.P.No.	Dose	Ordered by	Given by

Entered by ..... Checked by ..... Authorised by .....

This sheet should be written each day and submitted to the pharmacy when fresh supply is needed. The pharmacy should verify the 'Daily Control Sheet' with the respective issue entered in the Stock Register. The pharmacy should issue narcotics to meet only two or three days' requirements of each department.

3) Whenever a dose of drug is lost or wasted in a department, the nurse-in-charge must prepare a report to cover the incident. A special form of such a report as shown below can be used for the purpose:

F30

NAME OF HOSPITAL

REPORT ON NARCOTICS

LOST OR WASTE

Name of Drug.....
Quantity lost .....

Date .....
Daily control
Sheet No.....

Statement of what happened

Signature of Nurse-in-charge
making the Report

Attested by Matron

Reviewed by
Pharmacist .....

The report should be sent to the pharmacy immediately on noting the loss or waste and it should be accompanied by a requisition for a new supply of the lost narcotic. Necessary action should be initiated by the Medical Superintendent on the basis of the report submitted to him by the pharmacy.

4) The telephonic or verbal orders by the doctors in emergencies should be fully complied with in the first instance. However, the nurse-in-charge must write the order on the Doctor's Order Sheet stating the nature of order, the nature of emergency, the doctor's name and her own initial. The order must then be signed by the doctor concerned within 24 hours.

e) Although the rectified and methylated spirits do not come under the definition of controlled substances, a perpetual inventory system must also be instituted for the receipt and issue of these spirits. Since these items are subject to Government inspection at any time, it is essential to maintain full-fledged records to account for their use. Controls on the line of narcotics should also be exercised for these items.

MATERIAL COST ACCOUNTING

Recommendations

Since all the hospitals adopt only Financial Accounting System, it is not possible to analyse the method of Cost Accounting to record the material transactions. Hence the need arises to recommend a procedure of accounting of material cost. The objective of such an accounting procedure is to ascertain material cost in total, department-wise and item wise.

It is an integrated system of Cost Accounting which is recommended for hospitals. Following is suggested as the accounting procedure for material cost in an integrated system;

a) In the general ledger, a Material Control Account should be opened for all the hospital materials taken together except medicines. The Account records the total cost of receipt and issue of all materials put together and the balance in the account indicates the value of stock in hand at any point of time. A separate "Medicine Control Account" should be preferred since medicines are always issued at a profit. In this account, the purchase cost and hence the cost of issue and the issue price are recorded in total. The profit made and the cost of stock in hand can be ascertained at any point of time.

b) A Stores Ledger Card should be maintained for each type of hospital material including medicines. The card records the quantity and value of receipt, issue and balance in hand of each such item of material. The card for each type of medicine must also disclose the selling price. Periodic totals are posted to Material Control Account and Medicine Control Account. The cards should be arranged and maintained under each sub-division of the classification of hospital materials into Medical and Non-medical.

c) If it is desired, a subsidiary ledger can be opened for each class of materials. In each ledger, there should be as many ledger accounts as the number of items in each class. The values of receipts and issues are recorded in each account. Each subsidiary ledger should be totalled periodically and the totals should be compared with the figures in the respective class of Stores Ledger Cards. After ensuring agreement, the total should be posted to the General Ledger.

d) A classified record of materials issued to various departments should be made at the end of each month. The document on which this analysis should be made may be known as Material Issue Analysis Sheet. All the material requisitions received in the Central Store and Pharmacy and against which issues are made should be sorted according to departments. This analysis helps to know at regular intervals the cost of materials consumed by each department.

e) In the Central Store and Pharmacy, there should be a Bin Card which records only the quantity of receipts and issues for each specific type of material and the quantity of balance in hand. At any time the quantity shown in the balance section of the bin card for any specific type of

material should agree with that shown by the respective Stores Ledger Card. And the total value of the Stores Ledger Card balances should agree with the Materials and Medicine Control Accounts in the General Ledger.

MATERIAL COST REPORTING

Recommendations

The absence of Material Cost Reporting in hospitals has manifold adverse consequences, the most important of which are given below:

1. Proper control cannot be exercised over the functions of material purchasing, inspecting, receiving, storing and issuing.

2. It is not possible to take prompt and right decisions on the various aspects of Material Control.

3. It cannot be possible to minimise the overall incidence of material cost per unit of service.

4. A large number of diversified and costly materials is used in hospitals. Unless a proper Material Cost Reporting is introduced, hospitals cannot claim maximum efficiency of materials management.

5. Any cost containment programme should aim at reviewing the management actions in various areas of activities. Reporting System, thus, helps the hospital management to review the effectiveness of its decisions on materials.

Material Reports

Following are certain special purpose Material Reports that should be used in hospitals:

1. Material Price Variance Report

The purpose of this report is to measure the efficiency of purchase section and trend of price movements. The report should be prepared once in a month and should be sent to the Purchasing Authority.

F31

NAME OF HOSPITAL

MATERIAL PRICE VARIANCE REPORT

Month:..... Report No.....

To Purchase Manager

Material	Standard Price per unit Rs.	Actual Price per unit Rs.	Actual Quantity purchased	Variance		Reasons for variance
				Adverse -	Favourable +	

Prepared by ..... Verified by ..... Authorised by .....

2. Supply-Usage Report

The purpose of this report is to monitor the consumption of materials in each department and also to identify high-volume users so as to design effective management control techniques. Its frequency is monthly and sent to the Hospital Administrator.

F32

NAME OF HOSPITAL

MATERIAL SUPPLY-USAGE REPORT

Month: ..... Report No.....

Departments	Quantity of materials consumed	Total cost of materials consumed Rs.	Units of services rendered	Cost of Material per unit of service		Increase or decrease
				This month Rs.	Previous month Rs.	

3. Material Special Report

The purpose of the report is to reduce the carrying costs of materials which are slow and non-moving. It is prepared quarterly and sent to the Hospital Administrator.

F33

NAME OF HOSPITAL

MATERIAL SPECIAL REPORT

Quarter ended ..... No.....

Items of Materials	Slow-moving				Non-moving			
	Total Cost of the material Rs.	% of Total Hospital material cost	Carrying cost of the material Rs.	% of Total Hospital carrying cost	Total cost of the material Rs.	% of Total Hospital material cost	Carrying cost of the material Rs.	% of Total Hospital carrying cost

4. Physical Verification Report

The purpose is to control shortage of materials. It is prepared after stock verification is completed and sent to the storekeeper and the Pharmacist.

F34

NAME OF HOSPITAL

PHYSICAL VERIFICATION REPORT

Date.....

Item of Materials	UNITS			COST			Reasons for Descri-pancies
	Physical Balance	Book Balance	Shortage Surplus	Physical Balance Rs.	Book Balance Rs.	Shortage Surplus Rs.	

5. Purchasing Report

The purpose is to determine the trend and the result of policies decided on the purchase and consumption of materials. It is a monthly report which is sent to the Hospital Administrator.

F35

NAME OF HOSPITAL

PURCHASING REPORT

Month .....

Items of Materials	PURCHASE		CONSUMPTION		STOCK BALANCE CARRIED	
	Quantity	Total cost Rs.	Quantity	Total cost Rs.	Quantity	Total cost Rs.

EVALUATION OF MATERIALS MANAGEMENT EFFORTS

Recommendations

Every hospital should like to evaluate the effectiveness of its materials management efforts to ascertain how well it is doing in this regard. Four methods are proposed here to carry out such an appraisal:

1. Supply-Performance Review

This appraisal should reflect how well material control efforts are meeting the needs of individual hospital and individual departments in terms of availability of materials, quality of materials supplied and stock outs. Specific performance standards need to be set up in advance. Reveiw of actuals versus standards should be carried out at least once a year.

2. Supply Price comparison

It is seen that prices paid for the same material vary from hospital to hospital, from region to region, and from dealer to dealer. It is observed that such price variation occur because of greater volume of purchase by a hospital, distance of the hospital from the supplier, negotiation skill of the purchaser, mode of supply, prestige or reputation of the hospital, and supplier's promotional offer. If a supply-price comparison is carried out across hospitals, it should be possible to identify purchasers who have paid high price, average price or low price for identical items.

3. Management Audit

The purchase-stores department should set up objectives for itself in terms of recommended material management and control practices, a plan of proposed action and persons responsible for the action. These objectives should relate to materials administration, purchasing, receiving, storage and issue of materials. Through the process of appraisal by objectives, it should be possible to evaluate the performance of the department and staff.

4. **Material Cost per patient day formula**

It involves dividing total material costs per day by total hospital patient costs per day and projecting a ratio of material costs to hospital costs. This ratio should be compared uniformly across hospitals irrespective of size, location and age as the factors that make the material costs increase also make the patient per diem costs increase and vice versa. This formula is probably the most objective and reliable method of evaluating the material control effectiveness.

3.2 HOSPITAL LABOUR

IMPORTANCE OF LABOUR IN HOSPITAL

Hospital is a labour intensive organisation. A large expenditure on building, equipments, facilities and supplies cannot ensure quality of medical care to patients. The quality is primarily dependent on the entire hospital staff in respect of their attitude, behaviour, scientific knowledge, experience, professional skill, application of sound technology, commitment to allievate the sufferings of fellow human being and dedication to improve health. Human effort of the highest order is the hallmark to quality of care. Physicians are the focal point in hospital set up and the decisions made by them affect two-third of hospital care expenditure. The nurses, para medical staff and others have also important roles in cost containment programmes in hospital.

The technological changes demand requirement of more skilled and dignified employees in hospitals. Therefore the involvement of different categories of hospital employees in the management of various services has become the need of the day. Further, a hospital is such a sensitive organisation that any slip on the part of the hospital staff may cost to the life of many. Every effort, therefore, should be made to maintain harmony and efficiency at all levels.

Quality of care is the pivot around which every hospital activity completes its rotation. Quality of service is the sole determining factor contributing to the success, sustenance, growth and development of a hospital. Quality of patient care, in turn, solely depends on the labour force employed in hospital. It is the dedicated team effort of professional, semi-professional and non-professional employees which provides the very basis of better patient care. Hence there is the need to analyse the different aspects of hospital

labour and set them in the right perspective with a view to project the importance of hospital labour.

CLASSIFICATION OF HOSPITAL LABOUR

The hospital employees can be classified on the basis of services rendered to patients. Since all hospital activities are based on patient care, it is considered as the most suitable classification. On the basis of patient care, the hospital employees are classified as shown below:

FIG 9

Chart showing classification of Hospital Labour on the basis of Patient Care

Professional Patient Care	Supportive Services
1. Doctors	1. House keeping Staff
2. Anaesthesiasts	2. Laundry Staff
3. Nurses	3. Engineering personnel
4. Nursing aids	4. Medical Records Personnel
5. X-ray technicians and other staff	5. Dietary Services staff
6. Laboratory technicians and assistants	6. Watch & Ward staff
7. Pharmacist & assistants	7. Motot Service staff
8. Other Specialists and assistants rendering technical services to patients.	8. Administrative staff
	9. Accounts staff

It can be seen from the table that a hospital employes different catagory of employees ranging from supra-specialists to unskilled labour. Hospital requires the services of highly professional, semi-professional and non-

professional team of employees. Each of the category of employees has its own values and costs. Hence it becomes necessary for every hospital to set for each category of employees its own standards, to draw up careful plans and to make a sustained effort to develop a conducive atmosphere for true dedicated work by employees.

LABOUR COST

Staff salary alone constitutes 50 to 60 percent of the total operating expenses of the hospital. Salary is the single largest expenditure incurred by a hospital either on month basis or annual basis. This is because of the simple fact that a hospital has to employ highly technical, supra-special and professional employees of various categories. All of them have to be suitably rewarded for getting the best out of them. Personal charisma has a great influence on hospital especially with regard to doctors and a hospital has to retain such doctors at any cost in order to attract more and more patients. The size of the hospital has a direct influence on labour cost. The larger the size of hospital in terms of numbers of beds, the higher the labour cost. Further, the degree and nature of specialities of treatment offered is also a determinant factor of labour cost. The more and diversified specialists a hospital employs, the more will be the total labour cost. It can also be stated that the larger the number of medical departments, the higher will be the labour cost. It is thus evident that because of the special nature of services rendered by a hospital, labour cost assumes the largest proportion of the total operating cost.

The labour cost as a percentage of total operating cost of hospital is shown in the table T14:

T14 Table showing important elements of Hospital Operating Cost

Elements	% of each element in Total Hospital Operating Cost
Materials	33
Labour	56
Other Expenses	11
	100

T15 Table showing distribution of Hospital Labour Cost among the different categories of Hospital Employees

Category of employees	As a percentage of total Labour Cost
1. Doctors including anaesthesiasts	54.00
2. Nurses and nursing aids	29.10
3. X-ray technicians and assistants	2.50
4. Laboratory technicians and assistants	2.25
5. Pharmacist & assistants	2.30
6. Other technicians	1.00
7. House keeping staff	0.75
8. Laundry staff	0.65
9. Engineering personnel	1.00
10. Medical Records personnel	0.80
11. Dietary staff	0.90
12. Watch & Ward staff	1.00
13. Motor Services staff	1.25
14. Administrative staff	1.00
15. Accounts personnel	1.50
TOTAL	100.00

It is of crucial important for hospitals to have a proper system of labour management with a view to excercise maximum control on labour cost. Labour routine deals with such a system of labour control. It is proposed to analyse the various aspects of labour routine in hospitals in order to improve the labour efficiency and productivity:

MANPOWER PLANNING

Existing System and Weaknesses

There exists no system in hospitals to plan the manpower needs. The hospital authorities are unable to decide in advance what type of skills will be needed in a specified future period, how many such skills will be needed, when will these be needed and where. They are not in a position to bring up and develop the required personnel needed in a future period. At times, the work flow has been adversely affected due to shortage of manpower. Lack of proper training facilities have also resulted in grave problems which affected the reputation of some hospitals. There are also instances where delay in filling vacancies caused serious set backs. In some cases, there is the problem of surplus human resources on which no effective remedial measures are taken. Labour turnover is high among doctors and nurses and many hospitals fail to forsee this consequence which is almost a regular feature. The arrangements made to minimise the employee turnover are practically nil. No sincere efforts are made to make the best use of human resources in many hospitals. Non-availability of specialist doctors in certain areas also cause serious concern to hospital authorities. Many a time, hospitals fail to get the required manpower to meet their programmes of expansion and diversification. Programmes directed to improve the standards, skill, ability, knowledge, discipline, etc. of various category of hospital employees are lacking and as a result, the

employees' morale is very low in all hospitals. There is also more to do to strengthen the employer-employee relationship in hospitals.

On the whole it can be stated that lack of manpower planning has resulted in a number of adverse consequences in hospitals and in a sensitive organisation like hospital, the intensity of labour force should be given the utmost attention it deserves, especially when hospitals deal with human life instead of commodities.

Recommendations

The following practical suggestions can be made in respect of manpower planning in hospitals:

All hospitals should evolve a programme of manpower planning which should embrace all the aspects of hospital employees' problems. It should be borne in mind that manpower planning is a process which involves a number of steps to be followed for its practical execution. The practical steps suggested here are designed in such a manner that all hospitals find them easy to put into practice. The steps for manpower planning given here are in summary form for the sake of convenience of presentation:

1. **Analysing the Hospital Plans**

   Assuming that all hospitals have their own organisational plans, such plans are analysed into various units and sub units which cover all the hospital activities like X-ray, Laboratory investigations, delivery, operation, In-patient, Out-patient etc. This analysis helps in forecasting the demand for manpower as it provides the quantum of future work activity.

2. Forecasting the Overall Man Power Requirements

This step involves a thorough review of existing job design and analysis. This review keeps in view the future capabilities, knowledge and skills of present employees and also the hospital and unit wise plans. It also takes into account both quality and quantity of manpower required for a future period. The Medical Superintendent, Nursing Superintendent and other departmental heads who are well acquainted with the work load, efficiency and ability of employees should think about their future work load, future capabilities of employees and should decide on the number and type of human resources to be required. Job analysis and forecasts about the future components of manpower facilitates demand forecasting. Other techniques like statistical techniques, econometric models and work study can also be used for demand forecasting.

3. Supply Forecasting

In order to forecast future supply of manpower, it becomes necessary in the first step to collect the data about the present manpower inventory and then to analyse the sources of supply. Data for present manpower inventory includes the information about manpower components, number, designation-wise, sex-wise, age-wise and department-wise. It also includes data relating to salary, skill, experience, qualifications and training of all employees in the hospital. The potential losses of manpower for the future as well as potential additions should also be ascertained. The net result of these factors give the future supply of manpower as follows :

Future supply of manpower = Present Inventory of manpower + Potential additions - potential losses

The next step in supply forecasting should be the analysis of sources of supply to ensure availability of future supply. For this, both the internal and external factors affecting manpower supply should be analysed.

4. **Estimating the Net Human Resource Requirements**

In this step, the difference between demand forecast and supply forecast should be found out. The net manpower requirements should be determined in terms of number and components of manpower.

5. **Action plan for surplus and deficit**

If future surplus is estimated, the hospital should plan for redeployment, redundancy and retrenchment of surplus manpower. If deficit is estimated, then it should be necessary to forecast the future supply of manpower from all available sources.

6. **Action plan for Recruitment and development**

If supply is available from internal sources, the hospital should make plans for promotion, transfer, training and development. If supply is not available from internal sources and if the external sources have to be tapped, then the hospital should plan for recruitment and selection of required manpower. In view of shortage of certain specialists, technicians and specially trained nurses, the hospital has to take care not only of recruitment but also retention of existing employees. It is

always preferable to devise a retention plan in such instances of acute shortage of employees. Provision of career development, training and development facilities etc. should be incorporated in the retention plan.

RECRUITMENT

Existing System

Employees are selected in hospitals after following the usual recruitment procedures. Vacancies are notified in newspapers for specialist doctors and experienced nurses. Other category of employees are recruited either by tapping private sources or by newspaper advertisements. Recruitment procedures are begun only after vacancies really exist. Interviews are conducted and qualifications and experience are the basic factors upon which final selections are made. All the employees have probation period during which they have to satisfy the requirements of management. Two copies of appointment letters are prepared wherein the terms and conditions of appointments are incorporated. One copy is given to the concerned employee and the other retained in the administrative office.

Weaknesses

The weaknesses inherent in the existing system of recruitment in hospitals are given below:

There is no proper policy for the selection of employees. It is seen that many hospitals suffer from serious inconveniences caused due to delay in filling up the vacancies. Suitable candidates cannot be found out even by newspaper advertisements. There are no proper methods of measuring the skill and suitability of the new recruits. Intimation about the new appointments is incomplete and complete records are not maintained in this regard.

Recommendations

At the very outset, it can be said that recruitment of all category of employees should be guided by a proper policy which should be set out well in advance. Important factors to be considered for the purpose should include availability, nature of work, volume of activity, labour turnover, remuneration etc. Man power planning, if implemented, should take care of the recruitment policy. All the sources should be tapped to ensure quickness in filling the vacancies. Systems of Job Description, Merit Raling. Job Evaluation, etc. should be designed with a view to measure the skills and capabilities of new recurits. It is stongly recommended that all policies relating to payroll be spelled out in written standing orders, with copies given to every new recurit along with their appointment letters. It is also equally important that, prior to appointment, each new staff member should agree, in writing to abide by these rules. It is suggested that there should be a proper payroll authorisation procedure. All the new staff members should be given in writing the information about their salaries or positions changed. Such a written form duly signed by the Hospital Administrator should be the only authorization for making changes in the payroll. The payroll authorisation form should be retained as a permanent record. Three copies should be prepared, one for the administrative office, one for Accounts office and one for the personnel department. A specimen form of Pay Roll Authorisation is given below:

F36

PAYROLL AUTHORIZATION

Name		Date of Employment
Address		Position
Marital Status	Number of children	Department
Date of Birth	Proof by:- Birth Certificate	School Certificate Other
Name of Nearest Relative		Relationship
Address		
Beginning Salary Increment	Salary Grade Effective Date	Allowance : Dearness Meals House Rent Others
Change in Job	New Position	Department
New salary	Effective Date	Salary Grade
Reasons for change		
TERMINATION	Date Resigned	Discharged
Reasons		

Approved
By _____
Department Head

Date

Authorized
By _____
Medical Superintendent
(Hospital Administrator)

Date

It is desirable to have a formal system of notifying vacancies of additional staff requirement by using a Staff Requisition Form. It should be very simple and should give only the basic details of vacancies. It should be prepared by the head of the department where staff is required. One copy should be sent to the Personal Department and the other retained in the department initiating the requisition. A typical Staff Requisition Form is given below :

F37

STAFF REQUISITION FORM	
Department	Job title
No. of Vacancies ..... Date Required by	Whether additional or replacement
Brief discription of Duties	
Day or shift work	Hours of work
Permanent or temporary	Age limits
Educational Requirements	Physical Requirements
Special skills Required	Experience Required
Prepared by Department Head	Authorised by Hospital Administrator

It is also suggested that the technique of Job Analysis should be inroduced in hospitals. This technique produces two docuements, namely. Job Description and Personnel Specification. A job description must set out the duties, objects of

job and conditions of service. All the candidates should be given the job description so that they can decide in advance whether to pursue their application or not. A job description should always be accompained by a personnel specification. It is a docuement against which applicants for jobs should be measured at interview. It should describe the sort of person considered for the job suitable in terms of the qualifications, training and practical experience required. It should be helpful to distinguish between essential and desirable qualities. The requirements listed in Personnel specification, should wherever possible, be measurable in objective terms.

It is also important to keep an up-to-date checklist of the progress of all applicants for each vacancy. This should include the name and address of the applicant and source of reccruitment. It is important to keep the applicant fully informed at each stage of the recuritment procedure. In particular it is most important for the reputation of the hospital that all unsucessful candidates receive a suitably worded 'regret' letter as soon as it is decided that they are not suitable for the job.

TRAINING

Existing System

Training is usually given to newly qualified doctors, nurses and other technicians. The period of training ranges from one to three months. This is also the probation period at the end of which the new employees are given confirmation of their appointment. Others are also given training, but because of their qualification and experience, their period of training is restricted to a maximum of three weeks. All of the newly appointed staff are given on the job training. Since most of the members of staff have professional and

technical qualification and experience, hospitals do not conduct training programmes in a large scale. Supervision is effected on the trainees on a regular basis. A record is maintained of the performance of the trainees and it forms the basis of the decisions taken by the management in respect of the confirmation of appointments.

Weaknesses

The present system of training of new recruits in hospital is sufficient to serve its needs. However, in some hospitals, certain specialist doctors are directly appointed without giving training. This procedure results in various inconvenienies to the new recruits, other staff and the patients. Further, proper direction and supervision lack and this often results in confusion among new recruits. Proper training programmes are not drawn up and little attention is paid in this regard.

Recommendations

As a part of training programme, an induction training should be introduced. The new staff should be given sufficient opportunities to familiarise themselves with the systems, methods and various procedures in the hospital. They should also familiarise with the departments, their working and with the existing members of staff. The induction training should be made compulsory for all new staff including specialist doctors. A suitable training programme should be specially designed for newly qualified nurses and labortary technicians and aids. The training programme should include the nature of training, period, method of appraisal, nature and degree of supervision, records to be maintained etc. It should always be borne in mind that the potential of even the best selected person is not fully realised without training.

ATTENDANCE

Existing System

Recording of attendence is compulsory for almost all the members of staff in hospitals. Attendance Register is used for the purpose. In some hospitals only one register is kept for all employees. In others, Attendance Registers are kept in different departments. Only one entry is made by each employee indicating his attendance for a day. Leave or absence is marked by the department head, Medical Superintendent or the Hospital Administrator, as the case may be. Attendance Registers form the basis for the computation of salary.

Weaknesses

Some senior and specialist doctors do not mark their attendance regularly. This practice often results in diffculties when salary is computed. Further, in most of the hospitals, the Attendance Registers are available within the reach of employees at any time. They are not kept under lock and key. Late marking is not at all regular and the late comers are escaped by lame excuses. Leave of absence are not marked properly and regularly. Discrepancies in the amount of salary have been noted in certain cases and often attendance registers have failed to settle the disputes. It is also found difficult to compute salary each month due to incomplete information in the Attendance Register.

Recommendations

There should be three Attendance Registers, one each for Doctors, Nurses and others. Doctor's Register should be kept by the Medical Superintendent, Nurses' Register by the Nursing Superintendent, and the Register for all other

category of employees should be kept in the Administrative Office. It should be ensured that all the Registers should be kept open for marking by the staff only for a fixed duration of time. There should be a proper policy to deal with late-comers, and late marking of attendance. Leave or absence should be marked promptly by the respective authorities. In addition to Attendance Registers, it is essential to maintain time records to facilitate salary computation. For this a time sheet should be used. The time sheet should provide a permanent record of details of hours worked by the staff in each payroll period. Each department must have a time sheet. The department head should record each employee's name and position, and the daily number of hours worked in the columns provided. Time sheet should be prepared in duplicate. The orginal should be sent to the payroll section of the Accounts Department while the duplicate is retained by the department which prepares the time sheet. Each time sheet should be approved by the department head before it is sent to the Accounts Department.

A typical form of Time Sheet that should be used in hospitals is suggested below:

TIME SHEET

DEPARTMENT_____PAYROLL FROM_____TO_____

DO - Regular Day Off
UDO - Unauthorised Day Off
ILLP - Illness with Pay
ILL - Illness withour Pay
LOAP - Leave of Absence with pay
LOA - Leave of Absence without pay
H - Holiday

Name of Staff	Position	TIME RECORD																Time worked during period		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		Regular	Overtime	Total Hours Worked
		16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	No. of Hours	No. of Hours	

Approved By : _____
Department Head

Checked By: _____
Accounts Department

LEAVE

Existing System

Hospital employees usually avail of two types of leave, namely, sick leave and casual leave. The period of both the types of leave varies from ten to fifteen days in a year in most of the hopitals. It is usual for the employees to avail of leave either before or after applying for the same. Leave is sanctioned by the Hospital Administrator. Leave applications are usually forwarded to the Administrative Office where they are recorded in the Attendance Register. In all hospitals, nursing staff are advised to inform the authorities about their absence beforehand so that alternative arrangements can be made. Except in emergencies, the nursing staff usually adhere to these directions.

Weaknesses

Leave records are not properly maintained. Timely and sufficient intimation is not given to the Payroll Section about the leave for inclusion in the Salary Register. Written applications are not forwarded in all cases. Leave is granted even on oral application.

Recommendations

Every leave should be confirmed by written application. Whenever leave is granted, a copy of the leave application should be sent to the Payroll Section for inclusion in Salary Roll. The Administrative Department should maintain a Leave Record with up-dated entries. Any leave in excess of the admissible leaves, should be treated as a leave without pay and should be intimated to the Pay Roll Section.

METHOD OF REMUNERATION

Existing System

Salary and wages are determined in hospitals according to the nature of work of each category of staff. The method of remuneration for the important category of hospital personnel is stated below:

1. Doctors

An analysis of the salary pattern for the doctors is given below:

FIG 10

Category of doctors	Salary pattern
Physicians	A fixed sum in a month irrespective of the number of patients consulted and attended OR A fixed minimum sum in a month plus a fixed rate for each consultation for each patient OR A fixed minimum sum in a month plus a fixed consultation rate for each patient valid for a month OR The entire amount of consultation fee from all patients attended in a month
Surgeons	A fixed sum in a month irrespective of the number of operations performed OR A fixed consultation fee for each patient during pre-and post operation period plus a fixed sum for each operation OR The entire amount of consultation fees plus amount charged for all operations in a month.

Category of doctors	Salary pattern
Anaesthesiasts	A fixed sum in a month OR Amount charged for the administration of anaesthesia in a month
Obstetricians & Gynaecologists	A fixed sum in a month OR A fixed consultation fee for each patient during pre- and post delivery period plus a fixed sum for each normal and abnormal delivery. OR The entire amount of consultation fees plus amount charged for all deliveries in a month OR A fixed sum in a month plus a fixed amount for each abnormal delivery.

2. **Nurses**

The salary pattern of staff nurses are determined on the basis of time devoted to work in a month. Hospitals are free to fix the salary of each nurse. The monthly salary is determined after considering the experience, seniority, nature of work, efficiency etc. The nursing aids are usually paid a monthly salary which is very far below than the nurses' salaries. The remuneration fixed for nursing aids is purely on arbitrary basis.

3. **Others**

Other category of hospital staff are paid monthly remuneration based on the time devoted to work. Salary is fixed on the basis of experience,

qualification and efficiency. In the case of highly specialised jobs, the concerned staff are paid high and attractive remuneration in order to retain them in the hospital.

Weaknesses

There is wide disparity in the salary of various category of hospital staff in different hospitals. There are no clear-cut service conditions and terms. No accepted norms are followed for the determination of remuneration for hospital staff. Except for the doctors, all other hospitals staff are paid remuneration which is highly disproportionate to the volume of work. Neither scientific principles nor useful techniques are followed in the method of remuneration in any hospital. Unscientific method of remuneration is the most important cause of high rate of labour turnover in hospitals. Further, the visiting doctors are often paid the entire consultation fees in many instances and this results in under recovery of cost of facilities provided to them for attending their patients.

Recommendations

It is a fact that every hospital has its own method of remuneration and it is at the discretion of the owners to fix salary for each category of its employees. However, it becomes essential to remove the disparities and anomalies existing in the method of remuneration. For this, the following suggestions are made for the practical consideration of hospital authorities:

1. Every hospital should adopt well designed job evaluation programme and merit rating. This will enable the hospital to reward its employees most reasonably.
2. The system of remuneration for doctors should be designed in such a manner so as to facilitate complete recovery of costs of all facilities utilised by all doctors.

3. Method of remuneration should be based on quality aspect and the important factors influencing the quality of care of patients should be taken into account while designing the appropriate method of remuneration.

4. The incidence of fixed overhead is greater in hospitals. Hence any reduction in fixed overhead cost due to increase in volume of patient care should not exceed increased higher amount paid as salaries to employees. This important aspect should be given serious attention while a method of remuneration is adopted.

5. Since the employees determine the sucess of a hospital, the method of remuneration adopted should be such that there should stay a satisfied team of employees in hospital.

6. Service terms and conditions should be clearly formulated and clear-cut norms should be strictly followed for remunerating the hospital employees.

CONTRIBUTED SERVICES OF PERSONNEL

Existing System

In hospitals run by christian missionaries, it is usual to see that certain personnel contribute their services without receiving no salary or full salary or other monetary compensation. Employees who donate services may be full time or part-time personnel. Doctors, nurses, nursing aids and technicians in x-ray and laboratory departments are the usual category of employees who render contributory services.

Weaknesses

There is no system in hospitals to evaluate the contributed services. The cost of such services is not accounted for also. The need for such evaluation does not arise simply because of the fact that no cost system is in practice in hospitals.

Recommendations

It is strongly recommended that such contributed services should be evaluated on sound basis. The basis should be the salary and wage scales for similar posts in the hospital. Appropriate entry should be made in the books of account and the cost of contributed services should be taken into account for the computation of labour cost in hospital.

FRINGE BENEFITS

Existing System

The indirect forms of monetary compensation for hospital employees include medical facilities and canteen facitity. Free or subsidised medical facilities are common in all hospitals while canteen facilities are not common. Only a few hospitals have their own canteens. Of these, some provide food to the employees at concessional rates. Some others provide free food to doctors and senior personnel holding managerial positions. In others, free food is provided to all the hospital employees. In the case of medical facilities to employees and their dependents, policy of management differ from hospital to hospital. In some hospitals, the medical facilities are provided free to the employees and their dependents. In others, they are provided at concessional rates. The concessional rates vary from hospital to hospital.

The nature of fringe benefits in hospitals is given in the table below :

T16 Table showing nature of fringe benefits provided to hospital employees

Name of the hospital	MEDICAL FACILITIES				CANTEEN FACILITIES	
	Consultation & Treatment	Medicines	Operat-ion	Room Rent	Tea & Snacks	Meals
A	F	F	FC	60% F	F	F.C.
B	F	60% F	60% F	F	-	-
C	F	F	50% F	FC	F	F
D	F	70% F	FC	50% F	-	-
E	F	50% F	FC	70% F	F	FC
F	F	F	60% F	FC	F	50% F
G	F	F	50% F	F	-	-
H	F	75% F	FC	60% F	-	-
I	F	F	70% F	FC	-	-
J	F	60% F	FC	50% F	F	60% F

"F" Indicates 'Free'

"Fc" Indicates 'Full Charge'

Weaknesses

No attempt has yet been made to account for the cost of fringe benefits allowed to the employees.

No sepatate records are maintained for the purpose. In some hospitals, policy regarding fringe benefits is not rigid and it varies from period to period and from employee to employee.

Recommendations

First of all, all the hospitals should frame a policy regarding fringe benefits to the employees. The policy once formulated should be strictly followed and deviations should not be permitted except in exceptional cases. Further, full and complete records should be kept for all fringe benefits and proper accounts should be maintained in this respect. The cost of fringe benefits should be considered as labour-related costs and hence should be taken into consideration for the computation of Labour Cost.

NIGHT SHIFT

Existing System

A hospital renders services to patients during twenty four hours a day. There must be at all times sufficient number of employees from almost all the categories. This is essential especially at night. Doctors, nurses, laboratory technicians and other employees engaged in life saving activities work at night in shifts. Physicians, nurses, laboratory technicians and other category of employees engaged in essential services work on a three-shift basis. Each shift is of eight hours duration. Each nurse has to work in one night shift for a week in a month. This is true for all category of employees whose service is essential at night. There is no extra payment for working in night shifts. Night work is the part of duty and it is agreed by the employees at the time of appointment.

Weaknesses

Night shift cannot be avoided under any circumstances. However, absence of any form of incentives for night work often causes frustration and lower morale among the employees, especially the female nurses. Further, the discriminating

attitude of management in selecting employees for night work also causes conflicts between such employees and management. There is no uniform policy in this regard in most hospitals.

Recommendations

All the employees who work in night should be paid night-shift allowance. The allowance should be considered while determining the salary of employees and the same should be communicated to the employees in specific terms. There should be a proper policy regarding distribution of night shift among the employees. No employee should feel that he or she is unnecessarily burdened with work at nights. It is also better to set up a machinery which should be able to tackle the problems of night shift employees. Further, the night shift allowance should be taken into account for the computation of hospital labour cost.

OFF-DAY SALARY

Existing System

All the hospital employees are given regular breaks in a week. Of the seven days, one Off-day is allowed for each employee. Off-day in respect of essential services is allowed in such a way that the flow of hospital work is not affected adversely. The details of off-day for each employee are incorporated in the Attendance Register. All the employees are allowed off-days with full salary.

The existing system of Off-days is found to be perfect. The only shortcoming is that the cost of off-days is not separately computed.

Recommendations

It is recommended that the cost of off-days should be computed separately. Total number of off-days can be ascertained separately for each category of employees and the cost should be calculated accordingly. The calculation of cost of offdays enables the hospital to know the amount expended in respect of those days for which employees have not engaged in work.

OVER TIME

Existing System

In hospitals there is no system of overtime existing as a management policy. All the hospital employees are given fixed time schedule of work and it is seen that each employee strictly adheres to the schedule. In emergency cases, certain category of staff especially doctors and nurses have to work beyond their stipulated time of work. In any case, this will not extend for more than three hours on average. Management does not pay any additional payment for this extra time. Most of the employees are willing to work a few more hours per day for saving the life of very serious and critically ill patients. In a hospital set up emergencies are regular features. Employees are therefore naturally inclined to exceed their time schedule. In certain hospitals, staff who work extra time on a day are allowed to report for duty on the succeeding day at an extended time. In certain other cases, staff who do double duty continuously are given off-day in addition to the regular off-days in a week.

Weaknesses

Although hospitals deal with human life and requires dedication and sincerety on the part of the hospital staff, they should not be exploited or oppressed. Hospital employees have already long, tiresome usual working hours. They

should not be in the ordinary course asked to work extra time. If the situation badly requires extra work during extra time, the only requirement is that they should be adequately and deservingly considered by the management. At present, frustration and dissatisfaction are dominant among the staff who work extra time. Low morale and high labour turnover are seen as the advertse effects of the present attitude of the management towards overtime. No financial incentives are given to such employees.

Recommendations

Overtime should be avoided as far as possible. The entire hospital work should be distributed over 24 hours a day in such a manner that all the essential category of staff are available at any time for any emergency. Leave should be properly planned so that there is only minimum disturbance in the flow of work. If there is a crisis in a hospital, management may be compelled to order overtime. It becomes inevitable in the particular context. But the management should have a very sympathetic attitude towards the staff working overtime. The management must not be reluctant to provide certain financial incentives to such employees. They should be rewarded suitably and they should feel that the management gives them due consideration they deserve. This will definitely help to increase employee morale, productivity and efficiency.

IDLE TIME

Existing Condition

Idle time is an unavoidable and natural wasted time in hospitals. Idle time is inherent in the nature of hospital services. All the hospital authorities are of the opinion that the employees including doctors should be paid their agreed salary irrespective of the hours actually devoted to their jobs.

On an analysis, it is seen that following are the common causes of idle time in hospitals:

a) Waiting for work especially in the departments of X-ray, Laboratory, Pharmacy, Operation theatre, Out-patient, transport, Nursing etc.

b) Delayed instructions from the related departments.

c) Sudden and unexpected breakdown of certain hospital equipments and machines.

d) Recurring low turnover of patients.

e) Absenteeism of employees.

f) General slackness of employees causing their own idle time and idle time of employees down the sequence of operations.

Abnormal idle time is comparatively lesser in hospitals since all the category of hospital employees have to be more responsible and vigilant in respect of patient care. Further, the hospital employees are not paid at hourly rates. Hence, hours lost due to less work do not bother the hospital management.

Recommendations

It is advisable to prepare a monthly statement covering the idle time per month together with its causes. This report enables the management to ascertain the idle time and remedial actions can be taken for avoidable idle time. The report also facilitates to fix proper responsibility for controlling avoidable idle time. The report should be prepared by each head of the department and preferably for each employee. A proforma of the Idle Time Report is suggested below :

F39
IDLE TIME REPORT

(IN HOURS)

Department		Name of employee		Month	
Total Estimated Working hours	Total Actual Working hours worked	Analysis of Time Lost			
		Waiting for work	Delayed instructions	Break down of Equipments	Absenteeism of workers

Prepared by _____ Action Taken _____

Along with the report, it should be necessary to compute the cost of idle time and the same should be reported to the management. The job of each employee in a month should be expressed in estimated monthly working hours and given the monthly salary, the rate per hour can be computed. The salary paid to each employee for idle time can thus be ascertained. The cost of idle time then should be analysed into the various causes and then it would not be a difficult task to ascertain the cost of avoidable idle time. The heads of the

departments should be made responsible for the cost of avoidable idle time and they should see that this cost is completely avoided or reduced to minimum. As far as the cost of inevitable idle time is concerned, the management should plan its operations in a proper manner. Work schedules of the employees should be properly rearranged and the hospital procedures streamlined to keep the unavoidable idle time at a minimum level.

PAYROLL PROCEDURE

Existing System

The existing system of payroll procedure in hospitals involves the maintenance of Salary Register and Salary Slips. Salary Register is kept for all the employees in hospital. It contains the details of gross salary and the deductions of each employee. It is prepared on the last working day of each month. It is prepared on the basis of service records and leave statement. Service records give the details of basic pay, allowances, increments etc. of each employee while the leave statement gives the details of leave availed of by each employee in a month. Salary slips are given to the employees along with pay packets. The slips are the summarised forms of salary register. Each employee can know the details of salary from such slips.

Weaknesses

Salary register does not provide information as to cost of labour according to departments. It fails to disclose summarised salary according to cost centres. It cannot give data as to the labour hours engaged on productive work in hospital. Further, late information as to details of leave, absence and certain deductions often necessitate the payment of salary without completing the salary register. In some hospitals, there is the practice of allowing

advance salary to employees. In all such cases, it is quite common to see that such advance of salary cannot be entered in the salary register either because of late information or the employees concerned are going on leave. There is also no specific time schedule of working days required for the preparation of the Salary register.

Recommendations

It is essential to devise a suitable system for calculating and recording salary payable to hospital employees. For this it becomes necessary to use regularly Pay Roll or Salary Sheet. It can be used as a document to show at a glance gross salary earned, deductions made under different heads and net amount payable to employees. It is preferable to constitute a separate section called Pay Roll Section to deal with the preparation of Pay Roll. The pay rolls should be printed so that standard information can be included therein. Separate Pay Rolls should be used for each department to facilitate the identification of departmental labour cost and labour hours. The pay roll should be written up with the necessary documentary evidences such as employee Pay Roll authorisation sheet, leave summary statement, deduction statement, time cards etc. A suggested form of payroll is given below:

F40

NAME OF HOSPITAL

PAY ROLL

Month ended _____ Department_____

Sl. No.	Name	Hours/ Days	Basic Salary	Total
			Rs.	Rs.

D.A.	HRA	CCA	Bonus	Other Allowances	Gross Salary

		Deduction					
PF	ESI	Fines	Others	Advances	I.T.	Total	Net Salary

Compiled by _____ Checked by _____

Authorised by _____

Late information and salary advance are the two most important problems faced in all hospitals with respect to payroll procedure. The following suggestions

are recommended to facilitate smooth flow of work relating to Payroll procedure :

It is necessary to prepare a time schedule of working days required for the preparation of payroll. It should also be necessary to specify a closing date for receiving information on the current payroll. Under no circumstances, any information received after the specified closing date should be included in the current payroll. Any salary advances made to staff because they were going on leave, or because information was late, should be paid to them by the cashier on a cashier's voucher duly counter signed by the proper authority. Such advances should be noted in the individual's payroll sheet before the advance voucher is passed for payment, so that the amount would be deducted from individual's salary when the monthly salary is paid.

In addition to the above steps, it should be preferable to maintain an Individual Earnings Record for each staff member. The record should provide a history of days worked, taxable earnings, deductions and net pay. This record enables cross reference with Salary Register and Pay Roll. It also acts as a valuable guide in the process of merit rating and other job evaluation techniques. A suggested form of Individual Earnings Record is given below:

F41

INDIVIDUAL EARNINGS RECORD

NAME_____ DATE OF JOINING_____

ADDRESS_____ GRADE_____

POSITION_____ DATE OF INCREMENT_____

DEPARTMENT_____ DATE OF LEAVING_____

FOR THE MONTH OF	1 Rs.	2 Rs.	3 Rs.	4 Rs.	5 Rs.	6 Rs.	7 Rs.	8 Rs.	9 Rs.	10 Rs.	11 Rs.	12 Rs.	Total for year
Basic Pay													
Dearness Allowance													
House Rent													
Other Allowances													
Total Earnings													
Provident Fund													
Food Medical facility													
Other deductions													
Total Deductions													
Net Cash Paid													
SIGNATURE :													

PAYMENT OF SALARY

Existing System

Most hospitals pay salary to staff members during the first week of each month. Each staff member has to sign the Salary Register on receiving the pay packets. In most cases, staff members are given the facility of taking note of the entries in the Salary Register against their names. It is the Accounts Section which distributes pay packets. Unclaimed salary, if any, is retained and collected later by the absentee employees.

Weaknesses

The main defect in the system is that staff members are not given any advice slip on payment of salary. This practice does not help the staff to know and verify the details of cash salary received by them. Any complaints as to the amount received are settled very lately.

Recommendations

Each staff member should be given a salary advice slip. The slip should show the details of pay for the period, which can be inserted in the individual salary envelope or given to the employee directly with the net cash payable. A specimen of Salary Advice slip is suggested below :

F42

HOSPITAL NAME

SALARY ADVICE
SLIP

NAME _____

FOR THE MONTH OF_____

		Rs
EARNINGS	Basic Pay	
	Dearness Allowance	
	House Rent	
	Other Allowances	
	Total Earnings	
DEDUCTION	Provident Fund	
	Food	
	Medical facility	
	Others	
	Total Deductions	
	Net Cash Paid	
Prepared by _____		

It should also be made compulsory to sign in the employees' Individual Earnings Record to maintain privacy, if required. Further, the cash department should prepare pay packets only on the basis of the copy of payrolls received from the Accounts department. The pay packets should contain the exact amount as shown in each department's pay roll copy. All the pay packets should be arranged in the same order of names as in the departmental payrolls.

COMPUTATION OF LABOUR COST

Recommendations

No attempt has hitherto been made in hospitals to compute Labour Cost. At present, the total labour cost is spread over a number of different heads of expenses which relate to the staff members of hospitals. The management is not interested to ascertain the total Labour Cost for an accounting period, or departmental Labour Cost or Labour Cost per man-day. The management has not yet realised the importance of computing Labour Cost. Labour Cost for a number of periods, its linking with the quantum of services rendered and its comparison with the hospital turnover are a few measures which reveal certain important aspects related to labour productivity.

It should be made a regular feature by all hospitals to compute labour cost every year. The existing account heads related to labour need not be changed at all. However, all the labour-related expenses should be clubbed into one head under 'Labour Cost' so that it will not be an additional strain for the Accounts department to ascertain the hospital Labour Cost. The existing accounting procedure in hospitals can itself be adjusted to compile departmental labour cost. It should also be possible for the hospitals to compute labour cost for different category of hospital employees. Given the number of employees and number of days worked, it should not be a difficult task for hospitals to compute hospital Labour Cost per man-day.

It is recommended that hospitals should compute labour cost on the following lines :

T17 Table showing Total Hospital Labour Cost and Labour Cost per manday of 8 hours

Month_____ Working days_____

	Rs
Salary and Allowances	2,25,000
P.F. Contribution (Management)	12,000
Uniform Allowances	14,450
Staff Welfare Expenses	16,210
Medical Aid to Staff	13,050
Outside Consultation	55,250
Wages for temporary workers	18,225
Total Hospital Labour Cost	3,54,185
Cost per manday of 8 hours	Rs. 14,164.90

The above computation is made in relation to a hospital having 350 beds for inpatients. The number of working days in a month is taken as 25. "Salary and allowances" include the cost of contributed services of certain hospital employees.

LABOUR TURNOVER

Existing Condition

Labour Turnover is a very serious and complicated problem in all hospitals. The employee turnover costs lakhs of rupees to a hospital over a long period. It is essential that a stable work force exists in hospitals especially when the hospital employees are highly developed professionals and technicians.

Labour turnover in hospitals is an unnecessary loss with attendant disruption of organisational efficiency and employee morale. The real problem of many hospital managements is that of retaining the employees in the hospital. It can be truly stated that a hospital with a high labour turnover is trying to build an organisation on shifting sand.

The gravity of the problem of Labour Turnover in hospitals can be gauged from the Table T18 . Flux Rate Method is adopted to compute the Labour Turnover Rates. All the category of hospital employees are combined to get the requisite data for computing Labour turnover rates.

T18 Table showing Labour Turnover Rates in percentage in Hospitals for the year 1990-'91

Name of Hospital	Labour Turnover Data			Labour Turnover Rate
	Number of Leavings	Number of Replacements	Average number of employees	
A	15	10	103	24.27
B	10	12	95	23.16
C	70	75	400	36.25
D	60	65	520	24.04
E	12	10	112	19.64
F	32	30	258	24.03
G	11	14	110	22.73
H	28	25	175	30.29
I	20	18	210	18.10
J	10	9	100	19.00

The table reveals that Labour Turnover Rate in hospitals ranges from 18.10% to 36.25%. This is undoubtedly a case of excessive labour turnover. A minimum level of labour turnover is unaviodable and useful also. However a high rate of turnover of labour causes administrative difficulties and financial loss. It can also be gathered from the table that either the size of the hospital or the number of employees employed have little influence on the rate of labour

turnover. The conclusion is that private hospitals have higher degree of flexibility and mobility of professional and technical personnel.

Table T19 shows the labour turnover rate among the different categories of hospital employees. Separation Rate Method is used to compute the labour turnover rates for the various categories. For ease in computation of rates, the entire stream of hospital employees are divided into five categories.

T19 Table showing Labour Turnover Rates in percentage of different catagories of Hospital Employees for the year 1990-91

Name of Hospitals	Category of hospital employees					Total separations as a percentage of Average working force
	Doctors	Nurses	Para-medical staff	Clerks	Others	
A	1.94	5.83	2.91	0.97	2.91	14.56
B	1.05	3.15	2.10	2.10	2.10	10.50
C	2.50	9.50	3.00	1.00	1.50	17.50
D	2.11	3.85	1.92	1.73	1.92	11.53
E	1.78	4.46	2.67	0.89	0.89	10.69
F	1.16	6.59	1.94	1.16	1.55	12.40
G	1.82	3.64	1.82	1.82	0.91	10.01
H	2.29	6.29	4.57	1.71	1.41	16.00
I	0.48	4.29	1.43	0.48	2.86	9.54
J	1.00	3.00	2.00	2.00	2.00	10.00

It is seen from the Table that in all hospitals labour turnover rate is higher for nurses and nursing aids. The turnover rate is also high for paramedical

staff and doctors. The inference is that labour stability cannot be claimed for any of the category of hospital employees.

Table T20 shows the cost of labour turnover for a specified period. Preventive cost and Replacement cost constitute total labour turnover cost. Preventive costs are computed by taking into account the staff welfare expenses, security expenses, and cost of facilities provided for on the job training. Replacement costs consists of cost of selection of new employees, increase in overhead costs, cost of spoilage of materials and loss in income due to inefficiency of new employees.

T20 Table showing Preventive and Replacement Costs and Total Cost of Labour Turnover for the year 1990-'91

(IN RUPEES)

Name of Hospitals	Preventive Costs	Replacement Cost	Total Labour Turnover Cost
A	56,658	26,700	83,358
B	48,949	35,970	84,919
C	1,05,690	1,76,800	2,82,490
D	1,56,000	56,700	2,12,700
E	76,700	32,800	1,09,500
F	95,750	46,600	1,42,350
G	86,000	22,990	1,08,990
H	59,890	69,770	1,29,660
I	42,975	39,000	81,975
J	44,500	40,400	84,900

The above Table shows an average behaviour pattern of the preventive and Replacement Costs. It can be seen that any savings in preventive costs result in the increase of replacement costs. In all cases except two, preventive costs are higher than replacement costs. It can undoubtedly be stated that additional preventive costs tend to decrease the replacement costs.

Table T21 shows the true nature of cost of labour turnover. The cost of labour turnover is expressed per employee employed in the hospitals for a specified period.

T21 Table showing Total Cost of Labour Turnover per average number of employees employed for the year 1990-'91

Name of Hospitals	Total Cost of Labour Turnover	Average number of employees employed	Labour turnover cost per number of employees employed
	Rs.		Rs.
A	83,358	103	809
B	84,919	95	894
C	2,82,490	400	706
D	2,12,700	520	409
E	1,09,500	112	978
F	1,42,350	258	552
G	1,08,990	110	991
H	1,29,660	175	741
I	81,975	210	390
J	84,900	100	849

The cost of labour turnover may also be expressed as a percentage of total hospital cost or total patient fees.

An analysis of the causes of Labour turnover in hospitals shows the leading factors contributing to high labour turnover. Some of such factors are as follows:

1. Very low salary
2. Heavy work load
3. Unsympathetic attitude of management
4. Job dis-satisfaction
5. Lack of promotion facilities
6. Lack of adequate welfare measures

7. Inadeuqate leave facilities

8. Unsatisfactory working environments.

The management is responsible for the above reasons. In additioOn to the above, the employees are forced to leave the employment on their own reasons. Further, inefficiency, long absence, criminal prosecution, negligence and irresponsibility etc. of the employees also force the management to terminate the employment of certain employees.

Recommendations

Following suggestions can be made to maintain the rate of labour turnover in hospitals at a minimum and reasonable level. The management of hospitals should pay special attention to implement the practical and corrective steps to control the alarming rate of labour turnover :

1. It should be made a regular feature yearly to compute the labour turnover rates. Proper comaprison of turnover rates between different periods enables the management to ascertain the trend of labour turnover. Yearly reports of labour turnover should be forwarded to management,.

2. Computation of total cost of labour turnover and its break-up on an yearly basis should also be made a regular practice. Comparison of labour turnover cost per average number of employee of dfferent periods also help to realise the situation and prompt actions can be taken effectively. Regular reports should be forwarded to the management in this connection.

3. It should be necessary to measure labour stability also along with labour turnover. Labour stability indicates whether the old or the new employees have left the hospital. A length of service of 3 years can be taken for

measuring the labour stability. The following two indicators should be used for this purpose:

a) Skill wastage Index = $\frac{\text{No. of employees over 3 years service now}}{\text{Total employees employed 3 years ago}} \times 100$

b) Skill dilution Index = $\frac{\text{No. of employees over 3 years now}}{\text{Total employed now}} \times 100$

It is very important that Labour Turnover Rates should be considered simultaneously with the length of service in the different categories of hospital employees. The stability indicators should be computed yearly and reported to the management along with the Labour Turnover Rates.

4. An Exit Interview should be properly structured for those employees who leave the hospital. The exit interview helps the management -

- to get information from dissatisfied employees
- to retain the employee's goodwill
- to improve employment situation
- to improve personnel policies and practices.

Each employee leaving the hospital should be interviewed. Proper and suitable techniques should be used to elicit maximum information from the employees. It is desirable to prepare exit interview cards on which to record and preserve the data that are obtained. Proper corrective actions can be taken on the basis of these cards to minimise the incidence of labour turnover in future.

5. The following corrective steps should be taken by the management giving them top priorities:

   a) An adequate and satisfactory salary appreciated by the employees.

   b) Improvement in recruitment policies.

   c) Compulsory induction training.

   d) Adequate on-the-job training.

   e) Improvement in the quality of supervision.

   f) Reasonably pleasant physical environment.

   g) Introduction of a routine of settling-in-interviews.

   h) A satisfactory grievance procedure.

   How to avoid or minimise Labour Turnover is a problem which should not be treated in isolation. It should intimately reflect the level of efficiency and managerial ability throughout the organisation. All remedial actions aimed at cutting back on staff wastage should be viewed economically as a cost-benefit exercise. To conclude, labour turnover is really an invisible waste which every wise management must fight against with all lethal and scientific weapons with the help of all hospital employees.

TECHNIQUES FOR IMPROVING LABOUR EFFICIENCY

The following techniques are recommended to be applied in hospitals to improve labour efficiency. These recommendations are made after considering the peculiar situations existing in hospitals:

JOB EVALUATION

The technique of job evaluation has not yet been introduced in hospitals. Hospital, being a labour-intensive organisation, has wide scope for job

evaluation technique. There are a variety of jobs in hospitals and each job requires experienced and skilled persons to perform it. All jobs should be priced systematically in order to attract the most efficient and effective team of staff which in turn determines the quality of patient care. There exists serious problems of salary administration in hospitals which require corrective steps. All these factors point to the need of Job Evaluation in hospitals.

Job Evaluation can be applied to all hospital jobs ranging from supra-specialist functions to unskilled watch and ward jobs. Even the job of doctors varies in worth and difficulty. Nurses working in Operation theatres, intensive care unit, wards etc. require different degrees of responsibilities, effort required, skill needed etc. Para medical staff and staff engaged in other supportive services have jobs involving varying degree of worth or difficulty. The hospital jobs need to be classified on the basis of worth so that anomalies or inequities in salary can be corrected.

Benefits to Hospitals

If Job Evaluation is introduced in hospitals, they are benefitted in the following way :

1. It permits hospitals to establish salary differentials between various categories of jobs.

2. It helps to formulate manpower planning programmes.

3. Job satisfaction and staff morale can be boosted by eliminating salary inequalities, if any.

4. Maximum dedication to work is facilitated and this ensures better quality care.

5. Expansion and diversification programmes can be introduced as supra specialists can be attracted to jobs which are evaluated and thus made more attractive and remunerative.

6. Best selection of staff can be made and the working conditions can be improved.

7. Complaints and conflicts among staff can be minimised and the relation between the staff and management can be improved very much.

Planning of Job Evaluation Programme

The steps for implementing a Job Evaluation Programme in hospital are outlined as follows :

1. A decision by the Hospital Administrator for implementing the programme with whole-hearted support from all the members of the staff should be taken. This is necessary for the discovery and systematic tabulation of facts about the jobs in hospital.

2. To decide about the authority to carry out the programme. It can be operated by the management alone or by a joint committee of the management and staff or by an outside consultant. The management should weigh the pros and cons of each choice and a decision should be taken accordingly.

3. To select and to train the staff in the programme if staff participation is needed. It is very important to see that the staff has the requisite participation in the programme.

4. To determine how the job evaluation should be done. In this connection, the following aspects merit special consideration:

   (a) Name and nature of jobs to be evaluated.

   (b) The nature and manner in which information and explanations should be given to staff members.

   (c) the extent of participation of individual employees in the programme.

   (d) Arrangements to be made for salary administration based on job evaluation.

5. To set up the tools and procedures that should be used in actually doing the job. This should include Job Evaluation Manual, Job Analysis Procedure and Job Information Forms.

The above steps prepare the ground for the actual implementation of the Job Evaluation Programme. The steps should be made as simple as possible and every effort should be made to overcome the difficulties arising in any stage of planning.

Job Evaluation Method

Since Job Evaluation is a new concept in relation to hospitals, Job Ranking method should be used for Job Evaluation. This method is recommended in hospitals for it is useful as a first and basic step of job evaluation. Evaluating jobs by the ranking system consists of the following major steps :

1. Job Analysis
2. Selecting the jobs
3. Choosing the rankers
4. Ranking by using cards or by the method of paired comparison.
5. Integrating departmet rankings to obtain a single set of rankings for all the jobs in hospital.

JOB ANALYSIS

Job Analysis helps a hospital to procure the right kind of personnel required and to establish a scientific standard in advance against which the right candidates can be selected. Following techniques of Job Analysis are recommended to be adopted in hospitals as an important step towards overall manpower planning:

1. **Job Analysis Data Sheet**

   This form should be used for the collection of complete information about each job in hospitals. Once such a form is designed and the information is collected in it, this can be retained as a permanent record. A suggested design of the form is given below:

F43

JOB ANALYSIS DATA SHEET	
JOB TITLE _____	CODE _____
OTHER TITLES_____	
SUGGESTED TITLE _____	DEPARTMENT HEAD _____
DEPARTMENT _____	
PERSONS INTERVIEWED _____	LOCATION OF JOB _____
OTHER IDENTIFICATION _____	
JOB SUMMARY :	
WORK PERFORMED :	WHAT - HOW - WHY
MAJOR DUTIES :	
OTHER TASKS :	
EQUIPMENT, MACHINES :	

Skill Involved

Experience (Type and Amount)

Education and Training

Responsibility for Patient

Responsibility for Equipment and Machinery

Responsibility for work of others

Other Jobs directly affected

Resourcefullness

Monotony

Physical effort

Surroundings, etc.

2. **Job Description**

Job Description helps the hospital authorities to identify, define and describe clearly the job to be rated, and thus to give a fairly detailed picture of the duties and responsibilities of the job. The work contents of each hospital job can be accurately ascertained by preparing a Job Description Sheet. It is suggested that certain specific standard rules should be framed for the style of writing Job Description. A suggested form of Job Description Sheet is given below:

F44

JOB DESCRIPTION SHEET

JOB IDENTIFICATION DATA

PRESENT JOB TITLE :

DEPARTMENT/SECTION :

SUGGESTED JOB TITLE :

JOB CODE :

EMPLOYEES INTERVIEWED :

JOB SUMMARY :

(A) REGULAR TASKS :

(B) CASUAL TASKS :

(C) EQUIPMENT OR MACHINES USED :

(D) WORKING CONDITIONS AND HAZARD :

3. **Job Specification**

Job Specification helps the hospital authorities to assign values to each job factor for evaluation purpose. It helps to analyse the skills involved in each type of job in hospital. It is suggested to frame standard rules for writing the Job specification. Following is a suggested form of Job specification Sheet that should be adopted in hospitals:

F45

JOB SPECIFICATION SHEET			
JOB IDENTIFICATION DATA JOB CODE DEPT SUGGESTED TITLE			
TOTAL POINTS		CLASSIFICATION	
JOB SPECIFICATION :		DEGREE	POINTS
1. EDUCATION	:		
2. EXPERIENCE	:		
3. PHYSICAL AND MENTAL EFFORT	:		
4. RESPONSIBILITY FOR THE WORK OF OTHERS	:		
5. RESPONSIBILITY FOR MATERIALS AND EQUIPMENTS	:		
6. WORKING CONDITIONS	:		
TOTAL POINTS			

It is important that the Job Analysis forms are verified and edited for consistency, completeness, accuracy and conciseness. All the members of the hospital staff should be given participation in the process of verification. Suggestions, if any, made by the staff members should be given proper consideration and if the suggested changes are justified by the facts, revisions should be made.

ACTIVITY SAMPLING

There is wide scope for Activity sampling to be applied in hospitals. As a fact finding tool, activity sampling should be applied in hospitals to measure the utilisation of time by doctors and nurses. A possible framework of activity sampling which can be applied to the work of doctors and nurses is suggested below:

1. Identification of the activities carried out by doctors and nurses in the wards by observation and classification of such activities into the following broad groups :

   (a) Direct Patient Care
   (b) Indirect Patient Care
   (c) Administrative Activities
   (d) Non-productive activities

2. Designing a form for recording observations. Seperate forms should be kept for Morning, Afternoon and Night shifts. For each individual doctor and nurse, an observation form should be maintained in which daily observations, being duty hours put in and off day taken are recorded for each day. Time for recording observations should be selected for each shift.

3. A master sheet should be prepared in which ward activities by different group of doctors and nurses are noted to compute the work load and time utilization by the doctors and nurses. Doctors should be grouped into senior and junior and nurses into senior, junior and nursing aids.

4. The findings indicate the percentage of time devoted to various activities by doctors and nurses in each ward. The findings should be presented in tables as given below :

(1) <u>Overall Time Utilisation</u>

A broad distribution of time to various activities by doctors in each ward is shown in the form suggested below :

F46
Time Utilisation by different categories of doctors
(Percentages)

Activities	Senior Doctors	Junior Doctors	All Doctors Combined
Direct Patient Care Indirect Patient Care Administration Non-productive			

(2) <u>Time utilization of Nurse during Different shifts</u>

Time spent on various activities by all nurses combined for each ward is presented in a form given below :

F47
Time Utilisation by Nurses during different shifts
(Percentages)

Activities	Morning shift	Afternoon shift	Night shift
Direct Patient Care			
Indirect Patient Care			
Administration			
Non-productive			

(3) <u>Time utilization by various categories of nurses during different shifts</u>.

The time devoted to various activities by different categories of nurses during three shifts is presented in the form given below:

F48

Time Utilisation by different categories of Nurses during three shifts
(Percentages)

Activities	Senior Nurses			Junior Nurses			Nursing Aids		
	Morning Shift	Afternoon Shift	Night Shift	Morning Shift	Afternoon Shift	Night Shift	Morning Shift	Afternoon Shift	Night Shift
Direct Patient Care									
Indirect Patient Care									
Administration									
Non-Productive									

The analysis of time utilisation through the above forms reveal very important information for man power planning in hospitals. The application of activity sampling should be diversified in a hospital setting and it should be gainfully employed to know the pattern of working, adequacy of time being devoted to patient care and the various elements of patient care. It should also help to pin point any deficiences in the existing system of patient care. It can also be used to define the role of various categories of doctors, nurses and other staff, to know the level of their training and its inadequacies, and variations in activity pattern under different conditions of staff need and availability.

MERIT RATING

The technique of Merit Rating, when applied in hospitals, offers the following benefits :

1. Appointments can be made permanent on the basis of accurate judgement.
2. Training needs of hospital can be assessed.
3. Special talents of the staff can be discovered.
4. It can be used as a performance appraisal technique.

Since human asset is the most important deciding factor in quality care of patients, merit rating has a special effect if applied in hospitals.

A Merit Rating Chart should be used for each employee for the purpose. The form of the chart is suggested below :

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MERIT RATING CHART

NAME_____ DEPARTMENT_____

POSITION_____ DATE_____

Performance Factors	P E R F O R M A N C E G R A D E				
	Far exceeds requirements of this job	Exceeds requirement of this job	Meets requirement of this job	Partially meets requirement	Does not meet requirement
1. QUANTITY OF WORK Accuracy Material Economy Economy of time Neatness Thoroughness	consistently superior	Sometimes superior	Consistenly Satisfactory	Usually Acceptable	Consistenly unsatisfactory
2. QUANTITY OF WORK Productive work	Consistently exceeds requirements	Frequently exceeds requirements	Meets requirements	Frequently below requirements	Consistenly below requirements
3. DEPENDABILITY Follows instructions judgement attendance sincerity	Consistently dependable	Dependable in most respects	Ordinarily dependable	Frequently undependable	Consistenly undependable
4. COMPATIBILITY Attitude towards-Hospital/Seniors co-operation with fellows	Inspires and assist co-workers	Quick to volunteer and assists others	Generally works well with or assist others	Seldom works well with and assist others	Does not work well with or assist others
COMMENTS					

METHOD STUDY

As a technique of work study, Method Study helps the hospitals to develop and apply easier and more effective methods of doing work and to reduce costs. It improves efficiency by elimination of unnecessary work, avoidable delays and other forms of waste. Most effective use can be made of human effort and the human work can be evaluated by method study. Since human effort is a great factor in hospital, method study has greater application in hospitals.

Method study can be applied in hospital laboratory, X-ray, laundry, operation theatre and other departments where activities follow in a certain sequence. Wherever it is applied, Method study should involve the following basic steps.

1. Define the problem
2. Obtain all relevant facts
3. Examine the facts critically and impartially.
4. Consider the alternatives and decide which to follow.
5. Act on the decision
6. Follow up the development

The result of the application of method study in the Bacteriology laboratory of a hospital is given below:

T22 Table showing method study in a Bacteriology Laboratory

Name of department Date _____

Name of observer

Sl. No.	Time in	Time Out	Activity	Symbols
1.	9.00 am	9.15 am	Waiting for work	D
2.	9.15 am	9.20 am	Taking out culture plates	O
3.	9.20 am	9.25 am	Filling up spirit lamp & cleaning it	D
4.	9.25 am	9.40 am	Checking up forms and cultures	□
5.	9.40 am	10.00 am	Drying prepared slides on the flame	O
6.	10.00 am	10.15 am	Staining slides	O
7.	10.15 am	10.30 am	Washing & packing slides	O
8.	10.30 am	10.35 am	Taking slides to bacteriologist	→
9.	10.35 am	11.00 am	Storing old slides returned by bacteriologist and coffee break	▽
10.	11.00 am	11.30 am	Waiting for the bacteriologist instructions on the slides sent to him.	D

The symbols used in the study indicate the following :

1) O - Operation

2) □ - Inspection

3) → - Transport

4) ▽ - Storage

5) D - Delay

Detailed analysis of each activity is called for to eliminate unnecessary motions. Ineffective movements should be located and the overall time for all the activities put together should be minimised. It should be borne in mind that there is always room to introduce better method of work.

WORK STUDY

Work study in hospitals mainly aims at improving the overall productivity. Volume of work done by all category of hospital employees can be increased without further capital investment in most of the cases. All the work can be made systematic to achieve good results.

The basic procedure of work study involves the following steps :

1. Selection of job to be studied.
2. Recording from direct observation everything that happens using suitable recording techniques.
3. Examination of the recorded facts critically.
4. Developing the most economic method
5. Measurement of the quantity of work involved in the selected method and determining a standard time for doing it.
6. Defining the new method and the related time.
7. Installing the new method with the standard time as agreed standard practice.
8. Maintaining the standard practice with the help of proper control procedures.

Areas of Study

The following are suggested areas where work study techniques should profitably be employed in hospital:

A. Planning

1. Wards, operating theatres, kitchen, waiting rooms etc.
2. Usage of consulting rooms, bath rooms etc.
3. Preparation and serving of meals.
4. Administering medicines and infusions.
5. Disinfecting instruments and sterilisation procedures.
6. Centralising dish washing
7. Ward routine like taking temperature, cleaning floors, sending specimens to laboratory, bed making, cleaning of bed clothes etc.
8. Collection of refuse and swill.
9. Collection of linen from wards and departments.
10. Linen control
11. Theatre instrument supply.

B. Equipment

1. Usage of microscopes
2. Usage of E.E.G, E.C.G, X-ray and Scanning equipment.
3. Usage of autoclaves.
4. Usage of ambulance and other vehicles.
5. Usage of typewriters and cycles.
6. Location and usage of telephones

C. Staffing

1. Usage of technicians
2. Usage of nurses
3. Usage of stenographers
4. Portering
5. Standard timing for laboratory, X-ray, Scanning and Nursing procedures.

D. Miscellaneous

1. Emergency admission
2. Waiting time in O.P.D and X-ray and laboratory Reports.
3. Enquiries
4. Document Copying.

MEASURES OF LABOUR PERFORMANCE

Recommendations

Labour Performance is an important factor which merit utmost consideration in a hospital. Measurement of labour performance in non-financial terms is essential for proper control. Quality of service rendered should be assessed from time to time. Present day hospitals have no system of appraising the performance of their staff members on a regular basis. It is therefore proposed to suggest certain techniques of measuring the labour performance in hospitals. These techniques, if applied in hospitals, have far-reaching favourable effects on the working of hospitals.

1. Medical Audit

Medical Audit is the evaluation of the medical care in retrospect through analysis of clinical records. It is the actual analysis of the recorded data in the clinical records and the filed reports pertaining to the professional work of the hospital along with other related information. It is necessary to regulate the quality of medical care.

It helps in streamlining hospital procedures by exposing the bottlenecks in diagnostic, therapeutic and supportive services of the hospital. Medical Audit may be carried out either by an external agency of medical

experts or by a Medical Audit Committee constituted within the hospital. The methodology of carrying out Medical Audit includes statistical analysis. Statistical data prepared ward-wise or unit-wise on a monthly basis is critically examined. Gross deviations from the accepted norms are further investigated. Some of the statistical data analysed are Bed Occupancy Rate, Average Length of Stay, Gross results, Death Rates, Consultations, Infections in Surgery, Incidence of post-operation complications, unnecessary and incompetent surgery, Autopsy rate etc. Medical Audit is really a technique of measuring the efficiency and performance of the entire team of doctors including physicians, surgeons and others. Medical Audit is a helping guide not only to the management but also to the patients, doctors and the society.

2. Nursing Audit

Hospital Nursing Audit is a retrospective evaluation of patient care given in a hospital through analysis of nursing components of medical records. It is actually a review of the professional work of the nurses in hospitals. The nursing unit in a hospital occupies a unique position in respect of direct patient care. The unit's performance and efficiency are the corner stones of success of a hospital. As such, it is important and necessary to institute nursing audit in all hospitals. The audit may be conducted by either an external agency or a committee constituted for the purpose. Statistical data compiled from the nursing notes should be analysed and compared against the accepted norms.

3. Use of Ratios

Certain major ratios should be used to measure the hospital labour performance. Typical ratios are suggested here and more may be added according to the needs of management:

a) Labour Turnover Ratio

$$\frac{\text{Number of Leavers Replaced}}{\text{Average Total Number of employees employed}} \times 100$$

b) Absenteeism Ratio

$$\frac{\text{Number of Absentees}}{\text{Average number of employees employed}} \times 100$$

c) Labour Time Ratio

$$\frac{\text{Labour Hours directly engaged on Patient Care}}{\text{Man-hours worked}} \times 100$$

d) Labour Utilisation Ratio

$$\frac{\text{Actual Hours}}{\text{Available Hours}} \times 100$$

The above ratios should be computed regularly for a specified period and compared to detect the trends in the labour performance.

LABOUR COST REPORTING

Recommendations

Hospitals do not have a system of reporting of Labour Cost to the management. Hospital management is unable to exercise proper control of labour cost only due to the fact that it has no facility to analyse the actual labour cost incurred for a particular period. Minimising waste and optimising performance are the two anvils on which control of labour costs rest. This is possible only if there exists a sound system of flow of labour-related information to the management. Analysis of actual labour cost is extremely important and essential in a labour intensive hospital organisation. Hence it is suggested

that following aspects of labour costs should be reported to management at regular intervals of time:

1. Labour Cost Report

Its purpose is to know the total labour cost and is prepared each month. This report should contain the monthly total labour cost, classification of labour cost into different categories of hospital employees and labour cost per man-day.

2. Absenteeism, leave and attendance Report

This report enables the management to adjust work schedule, work loading and utilising the available manpower for the smooth functioning of the hospital. It should be prepared daily and submitted to the management as early as possible.

3. Performance Report

This report should include the actual work performed by each staff member in each department both in physical and monetary terms. Each departmental head is responsible for its preapration and it is submitted to the management monthly.

4. Report on salary increase

It is a report prepared occasionally and its contents is the analysis of the impact of increase in salary on different elements of costs. This report facilitates the management to deal with employees' grievances properly.

5. **Labour Turnover Report**

This report should indicate the rate of labour turnover for a period of three months each. The causes as well as the cost of labour turnover should be revealed in this quarterly report.

6. **Idle Time Report**

This report should disclose the hours not worked by the employees in each department. It should be a monthly report which should also indicate the cost as well as reasons for idle time in each department.

OTHER LABOUR COST CONTROL MEASURES

Recommendations

In addition to the cost control procedure in respect of labour outlined above, a few more practical measures that can be easily implemented in hospitals are suggested below:

1. **Elimination of positions**

   Periodical appraisals of job positions should be necessary. Such appraisals should review the need for existing posts, their productivity and contribution to overall objectives, possibility of amalgamation of jobs currently assigned to different individuals, etc.

2. **Manpower substitutability**

   Delivery of health care involves a continum of activities ranging from the most sophisticated intellectual activities to the most ordinary physcial ones. As health care personnel higher up in the hierarchy are paid more than those at a lower level, it is necessary to identify which employee can perform each task needed in patient care at an optimum balance of cost and quality. There are also numerous gray areas of overlap where a task can be performed well by a highly trained medical specialist as also by a much lower trained technician. When a task falls in the gray area between two skill levels, it is advantageous to allot the same to the personnel at the lower skill level. Beyond having lesser cost implications, the lower skilled individual does a better job as this task is seen as a challenge to his competence, while the higher skilled individual sees the task as drab and routine and hence does a poorer job.

3. **Manpower sharing**

It is seen in certain hospitals that a particular category of staff is continuously available on hand, though the individual may not be kept fully occupied during the whole period. So as to utilize the full potential of the employee, and also to cut down manpower cost, management must identify ways and means of sharing such an individual across departments and across tasks. While doing this, it is important to additionally assign the person a job of a higher skill level as this leads to job-enrichment.

4. **Adjustments for Low Census**

Leave of employees should be planned to coincide with period when patient census is low. In situations of very low activity, it may be possible to shut down an entire nursing unit and utilize those personnel in other areas requiring more help during these periods.

3.3 HOSPITAL OTHER EXPENSES

Hospital Operating Cost includes other expenses besides material and labour costs. Hospitals make use of a number of general utility services for their operations. Hence every hospital has to incur a handsome amount of cost for such general utility services. The efficiency of the supporting systems which render services of varied nature has an important effect on the quality of patient care in hospitals. The effectiveness with which these services are utilised also merit special consideration in the context of better patient care.

It is seen that about 11% of the total hospital operating cost is in respect of cost of general utility services in hospitals. Based on this finding, it can be said that in a large-sized hospital, the cost of utility services may run to lakhs of rupees in a year. The modern hospitals which use highly sophisticated medical equipments and instruments and which have supra-specialisation for patient care must incur a substantial amount of cost for utility services. Management should be very cautious about this cost. Every effort should be made to contain and minimise the cost of utility services without impairing the quality of patient care. Cost Accountancy system provides very useful and effective techniques and methods to collect, classify, analyze, report and control this important component of hospital operating cost.

KINDS OF OTHER EXPENSES

There are various heads under which expenses are incurred in hospitals. Once a particular pattern of heads of expenses is adopted, it is not usually changed. However, additions are made to the existing groups of heads of expenses as and

when it becomes necessary. On an analysis, it is found that the following heads of expenses are almost common to all hospitals.

FIG 11
Chart showing kinds of other expenses incurred in Hospitals

1. Insurance	11. Travelling Expenses
2. Postages	12. Education Expenses
3. Hire Charges	13. Entertainment Expenses
4. Legal Expenses	14. Depreciation
5. Audit fees	15. Interest
6. Bank Charges	16. Motor Vehicle Expenses
7. Telephone Charges	17. Repairs and Maintenance of Hospital Assets including instruments & equipments.
8. Electricity Charges	
9. Water Charges	18. Miscellaneous Expenses
10. Advertisement	

CLASSIFICATION OF EXPENSES

Recommendations

At present, no scientific classification of expenses exist in hospitals. The hospital expenses are classified on the basis of heads of accounts to which they are related. Classification is based on the nature of expenses incurred.

In a Cost Accountancy system, all expenses should be classified in a manner which facilitates the computation of various types of costs. The process of classification of hospital expenses in a Cost Accountancy system is suggested below:

1. The classification of expenses should be on suitable bases for the purpose of cost ascertainment and cost control. The hospital expenses should be classified department-wise and also on the basis of variability. All hospital expenses should be classified on the basis of Revenue-producing and Non-Revenue producing departments. These departments should be treated as the cost centres in a hospital. Classification of expenses according to these cost centres facilitate cost control. It is also suggested that the cost of each department should be classified into the sections into which the activities of the department are grouped. A process of apportionment on equitable and suitable bases should be designed for such sub-classification.

2. Classification of expenses should also be made according to variability. This classification is most important for cost control and computation of unit cost of hospital services. It is desirable to classify the expenses into Fixed and Variable groups. Since hospitals incur a very huge amount for fixed expenses, this classification is appreciably warranted. In respect of semi-variable expenses, appropriate and practicable method should be adopted for seggregating them into fixed and variable portions. Each item of expenses should be analysed to ascertain the degree of behaviour towards changes in the volume of turnover of patients. It should be stated here that material and labour costs should also be classified into Fixed and Variable Costs on ultimate analysis for the purpose of preparing the Operating Cost Sheet. This kind of classification is also essential for preparing Budgets and for decision-making.

   After the process of classification, it is suggested to assign Cost Account Numbers on the expenses. All hospitals have already suitable

accounting heads for the expenses. It only remains to have suitable coding of such expenses. Coding through Cost Account Numbers facilitates systematic control and proper grouping of like items of expenses. Any method of coding can be selected by hospitals, but clarity and ease in identification should be ensured. It should be seen that each type of expense must be denoted by a specific Cost Account Number. A list of expense heads with the respective Cost Account Numbers should be maintained and preserved for ready reference.

A suggested form of cost Account Number is given below:

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COST ACCOUNT NUMBER .....

Period ..... Department .....

	January			February			March			Total	
Date	Fixed	Variable	Total	Fixed	Variable	Total	Fixed	Variable	Total	Fixed	Variable

COLLECTION OF EXPENSES

Existing System

The expenses are collected in Cash Book and Journals. The expenses are grouped under the account heads and monthly totals are arrived at for each type of expense. The source documents from where expenses are collected are mainly vouchers and bills.

Weaknesses

The weakness in the system of collection of expenses is that departmentalisation of expenses is not facilitated. It also does not ensure classification of expenses into fixed and variable.

Recommendations

It is suggested that the expenses should be collected against the respective Cost Account Numbers. Since each department has a series of and specific Cost Account Numbers, it ensures departmentalisation of expenses. The expenses collected in Cost Account Numbers also show division of expenses into fixed and variable. The same source documents may be used to collect expenses in Cost Account Numbers.

COMPUTATION OF TOTAL AND DEPARTMENTAL EXPENSES

Recommendations

The collection and recording of expenses help hospitals to compute monthly total of hospital expenses. The monthly totals are carried forward till the end of the accounting period when final accounts are prepared. The computation of total expenses for a specified period in this manner is not adequate for

Cost Accounting purpose. It should be devised in such a manner that a summary of departmental expense should be obtained periodically, also indicating the fixed and variable expenses. Hence, it is suggested that for each department a summary of expenses should be made out in the following form:

F51

DEPARTMENTAL EXPENSE SUMMARY

Department ..... Month .....

Cost Account Number	Expenses	Variability		Total
		Fixed	Variable	
		Rs.	Rs.	Rs.
	TOTAL			

CONTROL OF EXPENSES

Recommendations

The hospitals should design certain control techniques for other expenses. Although major part of other expenses are fixed in nature, it should be

ensured that these costs are not increasing disproportionately in relation to volume of hospital activites. Following are some techniques that can be adopted in hospitals to control other expenses:

1. Classification of expenses under appropriate heads with the help of Cost Account Numbers facilitates control. Comparison of present costs with the past costs at different levels of activity helps to bring to light notable variations which can be analysed for taking appropriate measures.

2. A cost-benefit approach has also an effect on control of expenses. The nature and size of each type of expense should be related to the benefit to be derived. The benefit may be expressed in quantifiable terms. These may be the hospital services expressed in measurable units or beneficial activities which are conducive to rendering of hospital services to patients. There should be a system of continuous appraisal of the linking of each expense with its direct or derived benefit.

3. Control through budgets should be practised in all hospitals. Preparation of flexible budgets helps to reveal the deviations of actual expenses from budgeted expenses at each possible level of hospital activities. It is suggested to prepare flexible budgets for those individual departments which deal with direct patient care in addition to the flexible budget for the entire hospital. It can be ensured that expenses are incurred only for productive and effective purposes and wastes are minimised by preparing budgets.

4. Control of expenses is also possible by setting up standards. Fixation of standards is more helpful to control variable expenses effectively. Standards help to identify the responsibility more closely at the proper

level. It is also possible to fix standards for fixed expenses although these are not amenable to easy standardisation.

REPORTING OF EXPENSES

Recommendations

There should be a proper reporting system in respect of hospital expenses. All the reports of expenses should ensure maximum control. Following may be suggested as the reports of expenses that should be used in hospitals:

1. **Departmental Expense Report**

   This report should include the details of various items of expenses incurred for each department. It should be a monthly report and it can be used for analysing the expenses and for taking remedial steps for abnormal expenses.

2. **Expense Comparative Report**

   This report should contain the results of comparison of expenses with past data. The expense of current month should be compared with the expense of previous month and also with the expense of the same month in the previous year. This report should deal with all the hospital expenses incurred in a month.

3. **Expense Budget Report**

   This report should be prepared monthly and its purpose is to compare the actual expense with budgeted allowances. This report helps to control the hospital expenses.

4. Expense Variability Report

This report should be a quarterly report prepared to ascertain the degree of variability of each expense. Each item of expense is shown in the report as divided into its fixed and variable portions and each of these is related to the levels of hospital activities expressed in number of In-patient days and number of out patient visits in a month. The controllability of each expense can thus be ascertained and proper measures can be determined to control the expenses.

DEPRECIATION

Hospitals utilise a number of fixed assets which share a substantial portion of total capital outlay for the varied activities. Safeguarding and proper utilisation of such assets therefore need special attention in the Hospital Accounting system. Depreciation as an important item of operating cost of hospital thus requires particular consideration in the study.

1. CLASSICIATION OF ASSETS

Existing System

Assets are classified in hospitals according to departments. Assets located in the different departments are grouped under the name of the respective departments. They are classified department-wise irrespective of the nature, size, cost and use of such assets.

Weaknesses

The present system of classification of assets does not provide for proper accounting and the treatment of the same in the accounts. It also

fails to distinguish between the assets which are depreciable over a long period of years and the assets which should be written off every year.

Recommendations

It is suggested that a two-way classification of assets should be adopted in hospitals·Departmental classification should be continued and it helps to ascertain the exact location of various assets in hospital. In addition to this type of classification, the following classification should be carried out in hospitals:

All the hospital fixed assets should be broadly classified into three categories. This classification is based on the life, size and depreciability of assets.

1. Fixed Depreciable Equipments to include

Benches (built in)
Cabinet (built in)
Telephone System
Shelves (built in)
Sinks and drain boards
Switch board & wiring
Water storage tanks
Heating fixtures & Piping
Plumbing fixtures & Piping

It should be noted that the above items of equipment should be capitalised and included under Building.

2. Depreciable Major Movable Equipment

Autoclaves
Autopsy tables

Air Conditioners

Hospital beds

Metal & Wood benches

Bleach tanks

Boilers

Dental treatment units

Distilling apparatus

Elevators

Automatic Exercises

Fluoroscopes

Generators

Incubators

I.V Stands

Laryngoscopes

Microscopes

Oxygen tents

Projection machines

Refrigerators

Safes

Short wave units

electric suction pump

Trolleys

Ultra-violet units

Washing Machines

Wheel Chairs

Wheel Stretchers

X-ray Machines

3. Minor Equipments

Adapters, hypodermic needles, catheter syrinches

Albuminometer

Waste baskets

Bed pans

Medical books

Breathing tubes

Buckets

Clamps, bone holding, intestinal etc.

Paper clips

Crutches

Dressing baskets

Face masks

Obstetrical forceps

Gloves

Hot water bottles

Instrument trays

Kitchen utensils

Bed linen

Mattresses

Nipples

Stethoscopes

Sutures

Vases

The above list of assets is not exhaustive. It is for the purpose of categorising the hospital assets that certain typical items are given. The classification of assets should be preferably done on the above line.

Besides the above classification, natural classification based on the individual fixed asset Accounts is also possible. However, there is no need for deliberate classification. The keeping of ledger accounts for each type of fixed asset itself form the natural classification.

Along with classification, a system of codification should also be introduced for easy identification and location. It will facilitate recording and accounting of fixed assets. Any convenient method of coding can be adopted by hospitals for this purpose.

2. RECORDS OF ASSETS

Existing System

There are two types of records of assets available in hospitals. One is a list of hospital equipments and instruments maintained for each department. In some hospitals, the list is kept in a register form which records the quantity and number of hospital equipments in each department. The other record of assets is the Fixed Assets Ledger maintained in the financial books. It is observed that in some cases a seperate Fixed Assets Ledger and in other cases a General Ledger containing individual accounts of fixed assets are maintained in different hospitals. The Fixed Asset Ledger shows the value of the assets.

Weaknesses

Majority of the hospitals do not maintain the fixed assets register properly. There is no complete record of assets available in any hospital. The existing register of assets shows only either the quantity of each item or the value of assets. The records do not provide reliable information for calculating depreciation charges properly. Further, the existing records also do not show proper information regarding repairs and maintenance cost, errection and installation cost, useful life, replacements etc.

Recommendations

Bearing in mind the importance of fixed assets in hospitals, the following suggestions are made with a view to maintain a complete and permanent record of assets:

Since hospitals have a large variety of equipments and instruments, they should maintain a Hospital Equipments and Instruments Register. The Register should be divided into a number of sections. Each section of the register should be allotted to each department in the hospital. All the equipments and instruments in a department should be recorded in the respective section of the register. One page of the register should be allotted to record the particulars of one type of equipment only. This method of maintaining the register will meet fully the requirements of both Cost Accounting and Financial Accounting.

A form of a Hospital Equipment and Instruments Register is suggested below :

F52

HOSPITAL EQUIPMENTS AND INSTRUMENTS REGISTER

DEPARTMENT .....

Name and specification .....

.....

Code Number .....

Year, Month & Date	Date of Purchase and Supplier's Name	Purchase Price, Errection and Installation Cost	Estimated useful life and Estimated scrap value	Particulars of additions	Details of Replacement or part disposal	Method and Rate of depreciation	Depreciation charged every year	Record of repairs & maintenance carried out	Closing value at the year end after charging depreciation
		Rs.		Rs.	Rs.		Rs.	Rs.	Rs.

3. METHOD AND RATE OF DEPRECIATION

Existing System

There are two methods which are presently adopted for charging depreciation on hospital assets. Some hospitals follow Original Cost method while others adopt Written down value method. The same method is applied for all the types of assets irrespective of their value or size. The rates of depreciation are computed on the conventional accounting line. Majority of the hospitals charge depreciation on the various assets at the following rates:

T23 Table showing Rates of Depreciation on Hospital Assets

Nature of Asset	Rate of depreciation as a percentage of Original Cost or Book Value
Fixed Depreciable Equipments (capitalised under building)	2 1/2
Movable Major Equipments	10
Furniture	10
Motor Vehicles	20
Electrical Fittings	10
Bedding	10
Library	10
Minor Equipments	15
Land Improvement	5

Weaknesses

The method adopted for depreciation of hospital assets is reasonable. However, different rates of depreciation are charged for the same type of assets by different hospitals. Further, all the items included under Minor Equipments are subject to same rate of depreciation.

Recommendations

It is suggested that the Major Movable hospital equipments and minor medical and surgical equipments and instruments should be depreciated under Written down value method. This is due to the fact that this method takes into account any possible loss due to setting in of obsolescence. It is desirable to treat as expense items those minor equipments which have less than a five-year life. The cost of such items should be written off during their shorter period of life. For other minor equipments, yearly inventory should be taken to determine the amount of equipment on hand and in use. Revaluation method should be adopted for the purpose.

4. SCHEDULE OF DEPRECIATION

It is suggested that a schedule of depreciation of all depreciable hospital assets should be prepared at the end of each accounting year. This schedule helps the hospitals to compare the amount of depreciation between two periods, accumulated depreciation to date etc. A suggested form of the schedule is given below :

F53
Schedule of Depreciation

Sl. No.	Description of Assets	Total Depreciation upto the end of previous year	Rate	Depreciation for the year	Depn. for the previous year	Total Depreciation upto the end of Current Year
		Rs.		Rs.	Rs.	Rs.
	TOTAL					

DONATED ASSETS

Existing System

There are a few hospitals which are voluntary and charitable in nature. These hospitals secure their fixed assets by donations and non-recurring grants from their sponsors and philanthropic organisations. They do not provide for depreciation of such contributed assets in the income statement. These hospitals do not require any funds for replacements of these assets.

Weaknesses

There are certain important defects in the treatment of donated assets. Firstly, depreciation expense is not included in the operational cost

structure and hence the fees charged from patients do not reflect this substantial element of costs in providing patient services. As a result accurate cost of various hospital services cannot be ascertained. Secondly, proper control cannot be effected over the use of such assets in the absence of their accounting in the books of accounts. Lastly, the investment status of the hospital cannot be assessed properly.

Recommendations

It is recommended that the donated assets should be brought into the accounts through appropriate entries. Under-recovery of costs should not be allowed to exist under any circumstances. Although the charitable hospitals have no intention of charging fees high enough to cover depreciation expense, it is suggested that depreciation should be reflected in the income statement as well as in the Operating Cost Sheet. For bringing the donated assets in the books for the first time, the following procedure should be adopted:

1. Prepare a list of all donated assets in each department.
2. Fix a price according to the present value of each item.
3. Tabulate the total value of each item and apply suitable rates of depreciation.

3.4 HOSPITAL COST BOOK-KEEPING

Recommendations

A comprehensive accounting procedure in respect of cost of various activities should be interwoven within the framework of Hospital Cost Accountancy System. Hence, it is proposed here to design a cost book-keeping system which records all the transactions affecting the cost of operating a hospital. The suggested cost book-keeping system can be conveniently fitted within the financial accounting scheme for hospital. It is felt that an independent cost book-keeping system is not required in hospitals at this juncture. An integrated system is therefore recommended to be followed in hospitals. In point of fact, even in the absence of a Cost Accounting system, Financial Accounting systems are now a days organised on the two-tier model, with a number of Controlling Accounts and corresponding Subsidiary Ledgers. Wherever such a two-tier financial accounting system is in use, it is more feasible and easy to design an Intregrated Accounting System.

LEDGERS

Besides the various hospital journals, the following ledgers are necessary under Integrated Accounting System.

1. SUBSIDIARY LEDGERS

   i) Patient's Accounts Receivable Ledger consisting individual accounts for each patient which shows all charges collected for hospital services. Monthly summary posing is made in the General Ledger.

   ii) Accounts Payable-Suppliers Ledger to include individual supplier's account which shows the amount due to each supplier in respect of

medicine and other hospital materials supplied. Monthly summary posting is made to the respective control account in the General Ledger.

iii) Inventory Ledger which is divided into Medicine Ledger and other Hospital Materials and supplies Ledgers. Individual Account is opened for each item of medicine and other materials purchased.

iv) Plant & Equipment Ledger to contain individual accounts for each item of fixed asset in the hospital.

GENERAL LEDGER

This ledger includes control account for each of the subsidiary ledgers and other accounts emerging out of the various hospital transactions.

3. SCHEME OF LEDGER ENTRIES

The scheme designed here should help the hospital authorities to ascertain the surplus or deficit at definite intervals. It should also help the management to analyse the costs of operating the hospital for a specified period. The management's job of cost finding procedure is also facilitated by the scheme of integrated approach. The suggested scheme of Ledger Entries is given in the form of a chart below :

FIG. 12

CHART SHOWING SCHEME OF LEDGER ENTRIES UNDER HOSPITAL INTEGRATED ACCOUNTING

Sl.No	Nature of transaction	Entry	Subsidiary Cost Records	Primary Documents
1	Purchase of Medicines			
	a) Cash	Medicine Control A/c Dr To Cash	Medicine Ledger	Receipt Voucher, Invoice & GRN
	b) Credit	Medicine Control A/c Dr To Suppliers	Medicine Ledger Accounts Payable Suppliers Ledger	Credit Invoice, GRN
2	Purchase of other hospital Materials & Supplies			
	a) Cash	Hospital Materials & Supplies Control A/c Dr To Cash	Hospital Materials and Supplies Ledger	Receipt Voucher, Invoice & GRN
	b) Credit	Hospital Materials & Supplies Control A/c Dr To Suppliers	Hospital Materials & Supplies Ledger Suppliers' Ledger	

Sl.No	Nature of transaction	Entry	Subsidiary Cost Records	Primary Docuements
3	Returns to Suppliers :	Suppliers A/c Dr To Medicine Control A/c or To Hospital Materials & Supplies Control	Medicine Ledger Hospital Materials & Supplies Ledger	Debit Note or Voucher
4	Payment to Suppliers :	Supplier's A/c Dr To Cash	Accounts Payable Suppliers Ledger	Payment Voucher
5	Issue of Materials : a) Medicines b) Other Hospital Materials & Supplies	Cost of service A/c Dr To Medicine Control A/c Cost of service A/c Dr To Hospital Materials & Supplies Control A/c	Medicine Ledger Stores Ledger Card Hospital Materials & Supplies Ledger Stores Ledger Card	Requisitions, Prescriptions Requisitions, Prescriptions
6	Materials Lost/Spoilt (Abnormal)	Income & Expenditure A/c Dr To Medicine Control A/c or To Hospital Materials & Supplies Control A/c	Stores Ledger	Wastage or Spoilt Report

Sl.No	Nature of transaction	Entry	Subsidiary Cost Records	Primary Docuements
7	Adjustment of Deficiencies or Surplus in material stock on physical stock-taking a) Deficiencies	Inventory Adjust-ment A/c Dr To Medicine Control A/c or To Hospital Materials & Supplies Control A/c	Stores Ledger & Cost Account Number	Stock Verification Sheet
	b) Surplus	Medicine Control A/c Dr or Hospital Materials & Supplies Control A/c Dr To Inventory Adjust-ment A/c	Stores Ledger & Cost Account Number	Stock Verification Sheet
8	Payment of Salary	Payroll Control A/c Dr To Tax To Insurance To PF To Cash	Pay Roll Sheets	-

Sl.No	Nature of transaction	Entry	Subsidiary Cost Records	Primary Docuements
9	Payment for other Expenses	Other Expenses Control A/c Dr To Cash	Cost Account Number	Vouchers
10	Recording of Depreciation	Depreciation A/c Dr To Individual Assets	Cost Account Number	Depreciation Schedule
11	Outstanding Expenses a) Salary	Pay Roll Control A/c Dr To Outstanding Salary A/c	Pay Roll Sheet	Salary Register
	b) Other Expenses	Other Expenses Control A/c Dr To Outstanding Expenses A/c	Cost Account Number	Expense paybale vouchers
12	Pre-Payments	Pre-payment A/c Dr To Payroll Control A/c To Other Expenses Control A/c.	Pay roll sheet Cost Account Number	Vouchers
13	Transfer of Costs except materials :	Cost of Service A/c Dr To Pay Roll Control A/c To Other Expenses Control A/c To Depreciation	Pary Roll sheet	-

Sl.No	Nature of transaction	Entry	Subsidiary Cost Records	Primary Docuements
14	Recording Income	Cash A/c Dr To Patient's Income	Charge slips, hospital bills	Vouchers
15	Recording donated supplies	Medicine Control A/c Dr or Hospital Materials & Supplies Control A/c Dr To Donated supplies	Stores ledger	Despatch Note, Delivery Order
16	Recording Contributed Services	Pay Roll Control A/c Dr To Contributed Services A/c	Pay Roll Sheet (attached sheet)	-
17	Recording contributed Assets	Assets A/c Dr To Contributed Assets A/c	-	Despatch Note, Delivery Order

Along with the Ledger Entries, it is also necessary to adopt the following procedures to facilitate cost analysis and control:

1. The issue of medicines and other hospital materials and supplies should be analysed in detail to ascertain the quantity and cost of each item consumed or sold by each of the hospital departments. The Medicine and Material Issue Analysis Sheet provides the purpose of such an analysis of material cost.

2. In similar fashion, the total amount of salary and other expenses including depreciation should be analysed according to the various departments to which they relate. A properly designed Cost Analysis Sheet will be found useful for the purpose.

3. It should become a necessity to analyse the patient income in the above manner. The income should be analysed into Inpatient and Out-patient and also according to the revenue-producing departments of the hospital. The In-patient and Out-patient Fees Journal are designed in such a way that detailed break-up of the hospital income can be readily obtained without much effort.

4. The above analysis of all costs and income should be done for each month and suitable reports and statements should be prepared and submitted to the management. It is also suggested that comparisons should also be made on a month-to-month basis so that the management can take appropriate actions whenever differences are significant.

5. The end products of the Integrated Accounting system are the Operating Cost Statement and Income and Expenditure Account. In addition, a number of Cost Statements and Reports can also be obtained through the Accounting System.

CHAPTER 4

COST-FINDING PROCEDURE IN HOSPITALS

The Cost-Finding Procedure recommended for hospitals lays down the sequential order of the steps that should be followed in computing the unit cost and total cost of hospital services. The suggested costing procedure intends to present in a very clear manner the various processes and techniques that should be adopted to ascertain the cost of various types of services rendered to patients. It also includes the procedure for computing cost per patient-day and the cost per outpatient visit.

It is proposed to present the cost-Finding procedure in two sections. Section I outlines the basic requirements that should be available in hospitals for adopting the appropriate costing procedure. Section II deals with the core of cost finding procedure recommended for hospitals.

4.1 SECTION I: BASIC REQUIREMENTS FOR COST-FINDING PROCEDURE

Following pre-requisites should be considered for the costing procedure. Each of the aspects should be given importance and once it is decided and put into practice, there need not be unnecessary changes in each period. However, when new services and facilities are added, they should be easily incorporated in the system. The suggested pre-requisites are given below:

1. COSTING PERIOD

The period for which costs should be collected, accumulated and computed should be determined. It is suggested that costs should be computed on a monthly basis, because it facilitates cost control and cost comparison more easily. Since most of the fixed items of costs are incurred monthly, compilation of cost statements also becomes a matter of routine. The costing procedure should be repeated in the beginning of each month following. It should be necessary to prepare and present the cost statements for each month during the first week of the month following. Annual cost statements should also be prepared along with the financial statements.

2. HOSPITAL COST CENTRES

For the purpose of collection, computation and control of hospitals Costs, it is found necessary to divide the hospital into a number of Cost Centres. The cost centres are determined for hospitals after taking into consideration the following factors:

1. Major activities of hospital
2. Ability to earn revenue by the hospital departments

3. The need to compute costs of various types of services rendered to patients.
4. Ease in computing and collecting the various items of costs.
5. Management's desire to know the cost per patient-day and also the cost per out-patient visit.

The following three types of cost centres are suggested for hospitals. For all practical purposes, these cost centres are found most suitable and adequate for cost computation.

1. Revenue - producing cost centres which include X-ray department, Laboratory, Operation theatre, Delivery room, Pharmacy, Scanning, ECG, EECG etc.

2. Non-revenue producing cost centres which include Administration, House-keeping, Laundry & linen, Medical Records, Hospital Engineering etc.

3. Terminal Cost Centres which are In-patient and Out-patient departments.

3. COST UNITS

Cost Units in hospitals should be regarded as the work units in which costs are expressed for each cost centre which renders service directly to patients. The workable cost units in the Revenue- producing cost centres and Terminal Cost Centres are suggested below:

FIG 13

Chart Showing Cost Units in Revenue -producing Cost Centres & Terminal Cost Centres

Revenue-producing Cost Centres	Cost Units
1. Laboratory	Per Test
2. X-ray	Per X-ray examination
3. Operation Theatre	Per Operation
4. Delivery room	Per Delivery
5. Scanning	Per Scan
6. EECG	Per EECG Examination
7. ECG	Per ECG Examination
8. Pharmacy	Per Prescription

Terminal Cost Centres	Cost Units
1. In-Patient	Per Patient-Day
2. Out-Patient	Per Out-patient visit

4. BASIS OF ALLOCATION AND APPORTIONMENT

To facilitate costing procedure, it becomes necessary to establish specific bases for distributing costs among the hospital cost centres. It is suggested that the following bases should be adopted by hospitals for the allocation and apportionment of Costs:

FIG 14
Chart showing Bases of Allocation and Apportionment

I. PRIMARY DISTRIBUTION

Nature of Expenses	Base
1. Hospital Materials	Direct
2. Salary	1. Direct 2. Time Ratio 3. Total of (1) & (2)
3. Administrative Expenses	Direct
4. Electricity	Wattage
5. Water charges	Estimated Use
6. Insurance	Capital value of Assets
7. Printing & Stationery	Direct
8. Advertisement	Direct
9. Employee Benefits	Direct
10. Repair & Maintenance	Direct
11. Depreciation of Building	Area occupied
12. Depreciation of Equipments, Instruments, and Other Assets	Book value of assets
13. General Expenses	Salary
14. Any other expenses	Salary

II. SECONDARY DISTRIBUTION

Non-Revenue Producing Cost Centres	Bases of Allocation
1. Administration	Salary
2. Hospital House keeping	Area occupied
3. Hospital Engineering	Area occupied
4. Hospital Laundry	Number of Soiled linen
5. Medical Records	Number of cases attended

III. TERMINAL DISTRIBUTION

In the final stage of distribution of costs, no separate bases are required for allocation. The costs of Revenue-producing cost centres should be directly allocated between In-patients and Out-patients on the basis of actual work units of services rendered to the In-patients and Out-patients.

There can be other possible bases for allocation for primary and secondary distribution, but the suggested bases are more practical and useful.

5. CLASSIFICATION AND COLLECTION OF COSTS

It is already suggested that the Cost Accountancy System designed for hospitals has its own specialised systems of classifying and collecting all items of hospital costs. However, as a preliminary to costing procedure, it becomes necessary to recapitulate the procedures of classification and collection of costs as follows:

Hospital costs should be classified into material cost, labour cost and other expenses. They should also be classified as Fixed and Variable costs.

The costs of all hospital materials and supplies consumed during the costing period should be compiled from the summary of Material Requisition and also from the respective Material Control Accounts. Hospital Labour Costs should be collected from Pay Roll Sheets and also from Pay Roll Account. Other Expenses should be collected from Cost Account Numbers and also from Expense Summary Statement.

It is recommended that all the items of hospital costs should be collected at one place for costing procedure. A work sheet should be used for this purpose. The work sheet should show the Expense Account Head, Nature of Element of Cost, Nature of Variability and the amount for each item of cost during the cost period.

4.2 SECTION II - DISTRIBUTION OF HOSPITAL COSTS

The proposed Cost Finding Procedure for hospitals is to consist of the following three distinct stages, each stage culminating into the other in a progressive fashion:

1. Primary Distribution involving the allocation and apportionment of costs among all the hospital cost centres.

2. Secondary Distribution dealing with the re-distribution of the costs of Non-revenue producing cost centres among the Revenue producing cost centres and Terminal cost centres.

3. Terminal Distribution presenting the final distribution of costs of Revenue - producing cost centres among the Terminal cost centres and also the final absorption of all hospital costs by the final cost units.

The entire costing procedure that can be adopted in a hospital is presented in a logical sequence in the following pages. The cost data presented here represents the actual figures for the year 1990-91 taken from the books of accounts of a hospital having 350 beds with all the necessary and sophisticated diagnostic and treatment facilities.

TOTAL COST STRUCTURE OF THE HOSPITAL

The total cost structure of the hospital for which the cost is analysed is given for the year 1990-91. The total cost is classified into the elements of cost. The total cost structure is given below:

T24 Table showing total cost structure of a hospital for the year 1990-91

Elements of Cost	Total Cost
	Rs.
1. Materials & Supplies	77,06,194
2. Salary, Allowances & Fees	77,62,405
3. Other Expenses	52,30,666
TOTAL COST	2,06,99,265

T25 Table Showing Break-up of Material Cost

Elements of Cost	Total Cost
	Rs.
I. MATERIALS & SUPPLIES:	
1. Washing Materials	87,789
2. Cleaning Materials	68,202
3. Consumables	6,33,547
4. Medicines	31,46,336
5. X-ray Films	9,06,913
6. X-ray Film Chemicals	58,216
7. Barium & Dye for X-ray	5,20,836
8. Contrast for Scanning	6,56,700
9. Laboratory Chemicals and Reagents	9,93,220
10. Anaesthesia Materials	4,86,912
11. ECG Papers	38,548
12. Cloth & Linen	1,08,975
TOTAL MATERIAL COST	77,06,194

T26 Table showing Break-up of Labour Cost

Elements of Cost	Total Cost
	Rs.
II. SALARY, ALLOWANCES & FEES:	
1. Salary and Allowances to Doctors	28,84,000
2. Fees to Doctors:	
Operation	10,82,980
Delivery	4,72,130
Scanning	1,09,800
EECG	1,82,250
3. Salary and Allowances to Nursing Personnel:	
In-Patient & Out-patient	15,67,046
Operation theatre	2,15,698
Delivery room	89,256
ECG & EECG	28,800
Scanning	32,400
4. Salary and Allowances to Nursing Aids	1,95,000
5. Salary and Allowances to other Personnel :	
Administration	1,64,734
House keeping	66,038
Laundry	51,890
Medical Records	46,259
Engineering	1,22,285
X-ray	68,676
Laboratory	1,32,575
Pharmacy	88,688
Scanning	1,13,600
Others	48,300
TOTAL SALARY	77,62,405

T27 Table showing Break-up of Other Expenses

Elements of Cost	Total Cost
	Rs.
III.OTHER EXPENSES	
1. Sterilisation expenses	1,68,853
2. Administrative expenses	2,41,947
3. Printing & Stationery	4,77,724
4. Electricity charges	5,47,891
5. Water charges	91,521
6. Insurance	14,341
7. Advertisement	8,916
8. General expenses	30,212
9. Repairs & Maintenance	6,59,150
10. Employee benefits	1,19,131
11. Interest	6,84,675
12. Depreciation:	
Building	1,75,135
Equipments & Instruments	18,69,422
Other Assets	86,963
Bedding	54,785
TOTAL OTHER EXPENSES	52,30,666

The processes of Primary Distribution, Secondary Distribution and Terminal Distribution are presented in the following pages:

T30 Table Showing Terminal Distribution -
Distribution of Costs of Revenue Producing Cost Centres between Terminal Cost Centres

Revenue Producing Cost Centres	TOTAL		IN-PATIENT		OUT-PATIENT	
	Units of Service	Total Cost	Units of Service	Total Cost	Units of Service	Total Cost
		Rs.		Rs.		Rs.
As per Secondary Distribution	--	--	--	49,46,838	--	20,41,092
Laboratory	68,644 Tests	14,05,310	30,596	6,26,375	38,048	7,78,935
X-ray	6,667 Investigations	12,10,838	2,281	4,14,267	4,386	7,96,571
Operation Theatre	2,459 Operations	25,12,935	2,459	25,12,935	--	--
Delivery Room	1,141 Deliveries	9,48,767	1,141	9,48,767	--	--
Scanning	3,941 Scans	39,42,456	242	2,42,089	3,699	37,00,367
EECG	729 Examinations	4,35,378	299	1,78,571	430	2,56,807
ECG	3,214 Examinations	46,479	2,085	30,152	1,129	16,327
Pharmacy	2,37,242 Prescriptions	32,09,172	1,26,836	17,15,710	1,10,406	14,93,462
TOTAL		2,06,99,265		1,16,15,704		90,83,561

T31 Table showing the Cost per Terminal Cost Unit

Particulars	In-Patient	Out-Patient
TOTAL COST	Rs.1,16,15,704	90,83,561
Cost Units	1,26,836 Patient - Days	82,006 Out-Patient visits
Cost per Patient - Day	Rs. 91.58	--
Cost per Out-patient Visit	--	Rs. 110.77

The unit costs computed above represent the overall and combined cost and they include the cost of all hospital services.

4.3 COMPUTATION OF COSTS OF HOSPITAL SERVICES

In the following pages, the detailed procedure of computing the total cost and unit cost of various types of services rendered by Revenue - Producing and Terminal Cost Centres are shown:

REVENUE-PRODUCING COST CENTRES

I LABORATORY

The Cost sheet of Laboratory and the computation of total cost and unit cost of different types of Laboratory Tests are presented below:

T32 Laboratory Cost sheet for the period 1990-91

Elements of Cost	Total
	Rs
Chemicals & Reagents	10,96,019
Consumables	91,284
Variable Cost	11,87,303
Fixed Cost	3,20,810
TOTAL COST	15,08,113

COMPUTATION OF COST PER TEST

For the purpose of unit cost computation of laboratory tests, the following information and data are collected and used:

1. TYPE OF TESTS

The tests done in the hospital laboratory are classified into nine broad types. This categorisation is generally accepted and followed by all laboratories all over India. The name of each type together with the number of tests done under each type is given below:

T33 Table showing types and number of laboratory tests during 1990-91

Name of type of tests	Number of tests
1. Motion	3,647
2. Urology	8,451
3. Haematology	9,704
4. Bio-Chemistry	32,118
5. Bacteriology	4,617
6. Pathology	1,206
7. Serology	3,622
8. Immunology	3,015
9. Miscellaneous	2,264
TOTAL	68,644

2. CHEMICAL & REAGENTS

The cost of chemicals and reagents is the most important and major item of variable cost in the laboratory. The unit cost of each item of chemicals, reagents, antigen, disc, culture etc. required for each test is calculated after considering the following:

a) Reference to the packing price as per the price list published by the producers concerned. The price list includes the price per pack and the number of tests that can be done with each pack.

b) The actual quantity of each item of chemicals used in the laboratory and the number of tests done with the chemicals are ascertained by consultation with the laboratory technicians in the hospital concerned and also in the specialist laboratories in and around the area where the study is done.

c) The amount of expense incurred by the hospital in respect of chemicals and reagents consumed by the laboratory is ascertained from the financial records of the hospital.

d) The unit cost of each item of reagent arrived at is the cost at the hospital. The unit cost is calculated in multiples of five paise in order to facilitate easy calculations.

e) The cost is subject to price changes. The cost is calculated at the price of chemicals prevailing during 1990-91.

3. CONSUMABLE STORES

a) Consumable stores in the laboratory includes glasswares, spirit, cotton, rubber tubes, low-cost pippettes and test tubes and such other items which are consumed in the laboratory in the process of conducting the tests. The cost of consumables is a variable item and it is also variable among the nine categories of tests.

b) On the basis of the best estimates made by a number of technicians in different hospitals including the hospital under consideration, the total cost of consumables in the laboratory is apportioned among the different types of tests as shown below:

T34 Table showing computation of Unit Cost of consumables for the different categories of tests.

Type of Tests	Number of tests	Total Cost of consumables	Cost per test
		Rs.	Rs.
1. Motion	3,647	1,349	0.369
2. Urology	8,451	3,895	0.461
3. Haematology	9,704	11,342	1.169
4. Biochemistry	32,118	48,268	1.503
5. Bacteriology	4,617	7,766	1.682
6. Pathology	1,206	2,587	2.145
7. Serology	3,622	4,225	1.166
8. Immunology	3,015	6,432	2.133
9. Miscellaneous	2,264	5,420	2.393
TOTAL	68,644	91,284	--

4. FIXED COST

a) Except the cost of chemicals and consumables all other costs are treated as fixed. Secondary Distribution of hospital costs gives the total fixed cost for the laboratory. The total fixed cost for the laboratory is apportioned among the nine types of tests on the basis of time.

b) The weighted time ratio is calculated for each type considering the time required to get the result of each test. Total time for each test consists of the time required for the collection of specimen, preparation for the test, observation and preparation of the report of the result. The time for each test is finally determined after

long discussion with the expert technicians in different hospitals. Since all the hospitals do not have the same sophisticated equipments to conduct the tests, any variation in the time of a test due to the use of such equipments is ignored. This is done to get a uniform procedure for calculating the time of each test.

c) The calculation of weighted time ratio and the apportionment of fixed cost on its basis is shown below:

T35 Table showing Apportionment of Laboratory Fixed Cost

Type of tests	Time Group in minutes	Number of tests in the time Group	Total weighted time	Apportioned fixed cost
				Rs
1. Motion	10	620		
	15	1,295		
	30	1,732		
			77,585	12,017
2. Urology	10	2,722		
	15	2,047		
	20	1,069		
	30	1,168		
	45	1,445		
			1,79,370	27,782
3. Haematology	10	727		
	15	1,612		
	20	1,493		
	30	3,035		
	60	2,837		
			3,22,580	49,963
4. Bio-chemistry	15	4,771		
	20	10,107		
	30	8,350		
	35	394		
	40	1,505		
	45	1,936		
	60	4,588		
	120	467		
			10,16,635	1,57,464
5. Bacteriology	15	723		
	30	3,019		
	45	875		
			1,40,790	21,807

Type of tests	Time Group in minutes	Number of tests in the time Group	Total weighted time	Apportioned fixed cost
				Rs
6. Pathology	30	487		
	60	719		
			57,750	8,945
7. Serology	5	573		
	10	925		
	15	1,571		
	20	335		
	50	218		
			53,280	8,252
8. Immunology	15	2,566		
	45	449		
			58,695	9,091
9. Miscellaneous	45	651		
	60	482		
	90	865		
	120	152	1,64,565	25,489
TOTAL	--	68,644	20,71,250	3,20,810

d) The fixed cost of each of the nine types is finally apportioned among the different varieties of tests in each type. This is again done in the weighted time ratio calculated exactly in the same manner as above.

T36 Computation of Unit Cost and Total Cost of Different Types of Motion Tests

Types of Tests	No. of Tests	VARIABLE COST						FIXED COST		TOTAL COST	
		Chemicals And Reagents		Consumables		Total		Per Test	Total	Per Test	Total
		Per Test	Total	Per Test	Total	Per Test	Total				
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1. Regular Examination	1,732	2.500	4,330	0.370	641	2.870	4,971	4.647	8,049	7.517	13,020
2. Occult blood	1,295	3.750	4,856	0.370	479	4.120	5,335	2.323	3,008	6.443	8,343
3. Reducing Substances	620	1.250	775	0.370	229	1.620	1,004	1.548	960	3.168	1,964
TOTAL	3,647	--	9,961		1,349	--	11,310	--	12,017	--	23,327

T37 Computation of Unit Cost and Total Cost of Different Types of Urology Tests

Types of Tests	No. of Tests	VARIABLE COST						FIXED COST		TOTAL COST	
		Chemicals And Reagents		Consumables		Total		Per Test	Total	Per Test	Total
		Per Test	Total	Per Test	Total	Per Test	Total				
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1. Albumin	1,123	1.250	1,404	0.461	518	1.711	1,922	1.549	1,739	3.260	3,661
2. Sugar	1,599	1.350	2,159	0.461	737	1.811	2,896	1.549	2,477	3.360	5,373
3. Albumin & Sugar	1,069	2.150	2,298	0.461	493	2.611	2,791	3.097	3,311	5.708	6,102
4. Acetone	607	3.200	1,942	0.461	280	3.661	2,222	2.323	1,410	5.984	3,632
5. Bile Pigment	494	2.250	1,111	0.461	228	2,711	1,339	2.323	1,148	5.034	2,487
6. Bile Salt	518	1.600	829	0.461	239	2.061	1,068	2.323	1,203	4.384	2,271
7. Urobilinogen	673	3.350	2,255	0.461	310	3.811	2,565	4.648	3,128	8.459	5,693
8. Sp.gravity reaction etc	889	7.250	6,445	0.461	410	7.711	6,855	6.969	6,196	14.680	13,051
9. Microscopy	428	1.300	557	0.461	197	1.761	754	2.323	994	4.084	1,748
10. Bence Jone's Protein	556	3.450	1,918	0.461	256	3.911	2,174	6.969	3,875	10.880	6,049
11. Pregnancy Test	495	37.000	18,315	0.461	228	37.461	18,543	4.648	2,301	42.109	20,844
TOTAL	8,451	--	39,233	--	3,896	--	43,129	--	27,782	--	70,911

T38 Computation of Unit Cost and Total Cost of Different Types of Haematology Tests

Types of Tests	No. of Tests	VARIABLE COST						FIXED COST		TOTAL COST	
		Chemicals And Reagents		Consumables		Total					
		Per Test	Total	Per Test	Total	Per Test	Total	Per Test	Total	Per Test	Total
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1. Haematocrit (Pcv)	570	2.50	1,425	1.168	666	3.668	2,091	4.647	2,649	8.315	4,740
2. Hb%	605	1.25	756	1.168	707	2.418	1,463	2.324	1,406	4.742	2,869
3. T.C.	506	1.35	683	1.168	591	2.518	1,274	3.097	1,567	5.615	2,841
4. D.C.	628	1.20	754	1.168	733	2.368	1,487	3.097	1,945	5.465	3,432
5. E.S.R	2,837	2.10	5,958	1.168	3,313	3.268	9,271	9.293	26,365	12.561	35,636
6. Platelets count	502	7.50	3,765	1.168	586	8.668	4,351	4.647	2,333	13.315	6,684
7. R.B.C.Count	599	1.30	779	1.168	700	2.468	1,479	2.324	1,392	4.792	2,871
8. Recticulo-cyte counts	359	2.60	933	1.168	419	3.768	1,352	3.097	1,112	6.865	2,464
9. Malarial Parasite	521	3.75	1,954	1.168	609	4.918	2,563	4.645	2,420	9.563	4,983
10. Bleeding & Clotting time	551	5.00	2,755	1.168	644	6.168	3,399	4.645	2,560	10.814	5,959
11. Microfilaria	116	3.80	441	1.168	135	4.968	576	4.646	539	9.614	1,115
12. Prothrombine Time	727	14.70	10,687	1.168	849	15.868	11,536	1.549	1,126	17.417	12,662
13. Clott Retraction Studies	566	1.25	708	1.168	661	2.418	1,369	4.647	2,630	7.065	3,999
14. Blood Group & Rh Type	408	12.65	5,161	1.168	477	13.818	5,638	2.324	948	16.142	6,586
15. Blood Group & Cross matching	209	22.50	4,703	1.168	244	23.668	4,947	4.646	971	28.314	5,918
TOTAL	9,704	--	41.462	--	11,334	--	52,796	--	49,963	--	102,759

T39 Computation of Unit Cost and Total Cost of Different Types of Bacteriology Tests

Types of Tests	No. of Tests	VARIABLE COST						FIXED COST		TOTAL COST	
		Chemicals And Reagents		Consumables		Total		Per Test	Total	Per Test	Total
		Per Test	Total	Per Test	Total	Per Test	Total				
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1. Gram Staining	723	8.75	6,326	1.682	1,216	10.432	7,542	2.324	1,680	12.756	9,222
2. Throat Swab	1,065	13.75	14,644	1.682	1,791	15.432	16,435	4.646	4,948	20.078	21,383
3. Sputum for A.F.B.	505	8.60	4,343	1.682	850	10.282	5,193	4.648	2,347	14.930	7,540
4. Culture & Sensitivity	875	20.75	18,156	1.682	1,472	22.432	19,628	6.970	6,099	29.402	25,727
5. 24 hrs. Urine A.F.B	763	11.25	8,584	1.682	1,283	12.932	9,867	4.646	3,545	17.578	13,412
6. Vaginal smear Examination	686	12.50	8,575	1.682	1,154	14.182	9,729	4.647	3,188	18.829	12,917
TOTAL	4,617	--	60,628	--	7,766	--	68,394	--	21,807	--	90,201

T40 Computation of Unit Cost and Total Cost of Different Types of Immunology Tests

Types of Tests	No. of Tests	VARIABLE COST						FIXED COST		TOTAL COST	
		Chemicals And Reagents		Consumables		Total		Per Test	Total	Per Test	Total
		Per Test	Total	Per Test	Total	Per Test	Total				
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1. Direct antiglobulin	769	16.25	12,496	2.133	1,640	18.383	14,136	2.324	1,787	20.707	15,923
2. Indirect antiglobulin test	461	21.25	9,796	2.133	983	23.383	10,779	2.324	1,071	25.706	11,850
3. HBS Ag. Testing	717	20.00	14,340	2.133	1,529	22.133	15,869	2.323	1,666	24.456	17,535
4. Anti-Streptolysin 'O' Test	449	50.00	22,450	2,133	958	52.133	23,408	6.969	3,129	59.102	26,537
5. C - reactive Protein	619	18.75	11,606	2,133	1,320	20.883	12,926	2.324	1,438	23.207	14,364
TOTAL	3,015	--	70,688	--	6,430	--	77,118	--	9,091	--	86,209

T41 Computation of Unit Cost and Total cost of Different Types of Bio-chemistry Tests

Types of Tests	No. of Tests	VARIABLE COST						FIXED COST		TOTAL COST	
		Chemicals And Reagents		Consumables		Total		Per Test	Total	Per Test	Total
		Per Test	Total	Per Test	Total	Per Test	Total				
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1. Blood Sugar random	2,619	3.75	9,821	1.504	3,939	5.254	13,760	3.098	8,113	8.352	21,873
2. Blood Sugar AC	1,620	3.55	5,751	1.504	2,436	5.054	8,187	3.098	5,018	8.152	13,205
3. Blood Sugar PC	2,159	3.65	7,880	1.504	3,247	5.154	11,127	3.098	6,688	8.252	17,815
4. Blood Sugar AC & PC	1,505	7.50	11,288	1.504	2,264	9.004	13,552	6.195	9,324	15.199	22,876
5. Blood Urea Nitrogen	1,124	6.25	7,025	1.504	1,690	7.754	8,715	3.098	3,482	10.852	12,197
6. Serum Creatinine	967	6.30	6,092	1.504	1,454	7.804	7,546	6.970	6,740	14.774	14,286
7. Serum Cholestrol	620	12.50	7,750	1.504	932	14.004	8,682	4.647	2,881	18.651	11,563
8. Serum Uric acid	1,098	10.00	10,980	1.504	1,651	11.504	12,631	4.647	5,102	16.151	17,733
9. Serum Tring-lycerdes	1,622	37.50	60,825	1.504	2,439	39.004	63,264	3.098	5,025	42.102	68,289
10. Serum total lipids	1,196	31.25	37,375	1.504	1,799	32.754	39,174	9.293	11,115	42.407	50,289
11. Serum bilirubin total	794	8.75	6,948	1.504	1,194	10.254	8,142	4.646	3,689	14.900	11,831
12. Serum bilir-ubin direct	489	6.25	3,056	1.504	735	7.754	3,791	3.098	1,515	10.852	5,306

T41 Computation of Unit Cost and Total cost of Different Types of Bio-chemistry Tests (Contd.)

Types of Tests	No. of Tests	VARIABLE COST						FIXED COST		TOTAL COST	
		Chemicals And Reagents		Consumables		Total		Per Test	Total	Per Test	Total
		Per Test	Total	Per Test	Total	Per Test	Total				
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
13. Icterus index	838	4.25	3,562	1.504	1,260	5.754	4,822	4.647	3,894	10.401	8,716
14. Serum Proteins	969	10.00	9,690	1.504	1,457	11.504	11,147	6.970	6,754	18.474	17,901
15. Serum albumin	1,157	8.75	10,124	1.504	1,740	10.254	11,864	2.323	2,688	12.577	14,552
16. Serum proteins & A/C ratio	734	18.25	13,396	1.504	1,104	19.754	14,500	9.293	6,821	29.047	21,321
17. Thymol turbidity test	824	6.25	5,150	1.504	1,239	7.754	6,389	4.647	3,829	12.401	10,218
18. S.G.O.T.	501	12.50	6,263	1.504	754	14.004	7,017	2.323	1,164	16.327	8,181
19. S.G.P.T.	365	12.50	4,563	1.504	549	14.004	5,112	2.323	848	16.327	5,960
20. Alk Phos-phates	411	12.50	5,138	1.504	618	14.004	5,756	2.324	955	16.328	6,711
21. B.S.P.	394	56.25	22,163	1.504	593	57.754	22,756	5.421	2,136	63.175	24,892
22. Acid Phos-phates	328	12.50	4,100	1.504	493	14.004	4,593	9.293	3,048	23.297	7,641
23. Inorganic Phosphorus	541	8.75	4,734	1.504	814	10.254	5,548	4.647	2,514	14.721	8,062
24. Sercum Calcium	1,470	12.50	18,375	1.504	2,211	14.004	20,586	4.647	6,831	18.651	27,417
25. Serum electrolytes	624	40.00	24,960	1.504	938	41.504	25,898	4.646	2,899	46.150	28,797

T41 Computation of Unit Cost and Total cost of Different Types of Bio-chemistry Tests (Contd.)

Types of Tests	No. of Tests	VARIABLE COST						FIXED COST		TOTAL COST	
		Chemicals And Reagents		Consumables		Total		Per Test	Total	Per Test	Total
		Per Test	Total	Per Test	Total	Per Test	Total				
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
26. Lithium	714	12.50	8,925	1.504	1,074	14.004	9,999	4.647	3,318	18.651	13,317
27. Serum Amylase & Urine Amylase	857	31.25	26,781	1.504	1,289	32.754	28,070	9.293	7,964	42.047	36,034
28. Serum Copper	489	62.50	30,563	1.504	735	64.004	31,298	9.292	4,544	73.296	35,842
29. G.T.T	321	33.75	10,834	1.504	483	35.254	11,317	4.648	1,492	39.902	12,809
30. Serum Iron	373	31.25	11,656	1.504	561	32.754	12,217	9.292	3,466	42.046	15,683
31. Bio-carbonate	1,159	10.00	11,590	1.504	1,743	11.504	13,333	2.324	2,693	13.828	16,026
32. L.D.H.	604	17.50	10,570	1.504	908	19.004	11,478	2.323	1,403	21.327	12,881
33. Serum Amylase	474	15.00	7,110	1.504	713	16.504	7,823	3.097	1,468	19.601	9,291
34. High Density Liipids	506	32.75	16,572	1.504	761	34.254	17,333	4.646	2,351	38.900	19,684
35. Crestinine Clearence Test	611	26.50	16,192	1.504	919	28.004	17,111	9.293	5,678	37.297	22,789
36. Crestinine Phospho-kinase	574	35.00	20,090	1.504	863	36.504	20,953	2.324	1,334	38.828	22,287
37. V.M.A. Examination	467	47.50	22,183	1.504	702	49.004	22,885	18.587	8,680	67.591	31,565
TOTAL	32,118	---	500,075	---	48,301	--	548,376	--	157,464	--	705,840

T42 Computation of Unit Cost and Total Cost of Two types of Pathology Tests

Elements of Cost	CYTOLOGY 487		HISTOPATHOLOGY 719		Total Cost
	Per Test	Total	Per Test	Total	
	Rs.	Rs.	Rs.	Rs.	Rs.
Chemicals & Reagents	22.500	10,958	47.750	34,332	45,290
Consumables	2.145	1,045	2.145	1,542	2,587
Variable Cost	24.645	12,003	49.895	35,874	47,877
Fixed Cost	4.647	2,263	9.293	6,682	8,945
TOTAL	29.292	14,266	59.188	42,556	56,822

T43 Computation of Unit Cost and Total Cost of Different Types of Serology Tests

Types of Tests	No. of Tests	VARIABLE COST						FIXED COST		TOTAL COST	
		Chemicals And Reagents		Consumables		Total		Per Test	Total	Per Test	Total
		Per Test	Total	Per Test	Total	Per Test	Total				
		Rs	Rs	Rs	Rs	Rs	Rs	Rs	Rs	Rs	Rs
1. Widel Test	817	18.75	15,319	1.166	953	19.916	16,272	2.323	1,898	22.239	18,170
2. V.D.R.L. Test	925	12.50	11,562	1.166	1,079	13.666	12,641	1.549	1,433	15.215	14,074
3. R.A.Factor	754	19.20	14,477	1.166	879	20.366	15,356	2.323	1,752	22.689	17,108
4. Paul-Bunnel Test	218	62.50	13,625	1.166	254	63.666	13,879	7.743	1,688	71.409	15.567
5. P.P.D. or Mx Test	573	6.00	3,438	1.166	668	7.166	4,106	0.774	444	7.940	4,550
6. L.E.Cells	335	22.25	7,454	1.166	391	23.416	7,845	3.095	1,037	26.511	8,882
TOTAL	3,622	--	65,875	--	4,224	--	70,099	--	8,252	--	78,351

T44 Computation of Unit Cost and Total Cost of Different Types of Miscellaneous Tests

Types of Tests	No. of Tests	VARIABLE COST						FIXED COST		TOTAL COST	
		Chemicals And Reagents		Consumables		Total		Per Test	Total	Per Test	Total
		Per Test	Total	Per Test	Total	Per Test	Total				
		Rs	Rs	Rs	Rs	Rs	Rs	Rs	Rs	Rs	Rs
1. Sex chromation	106	62.50	6,625	2.382	252	64.882	6,877	9.292	985	74.174	7,862
2. Glycosylated Haemoglobin	376	60.15	22,616	2.382	896	62.532	23,512	9.292	3,494	71.824	27,006
3. Haemoglobin Electrophoresis	489	67.50	33,008	2.382	1,165	69.882	34,173	13.941	6,817	83.823	40,990
4. Protein Electrophoresis	490	63.15	30,944	2.382	1,167	65.532	32,111	13.941	6,831	79.473	38,942
5. IgA	329	88.25	29,034	2.382	784	90.632	29,818	6.969	2,293	97.601	32,111
6. IgM	121	91.75	11,102	2.382	288	94.132	11,390	6.967	843	101.099	12,233
7. IgG	201	89.25	17,939	2.382	479	91.632	18,418	6.970	1,401	98.602	19,819
8. 17-Oxysteroids	152	57.50	8,740	2,382	362	59.882	9,102	18.585	2,825	78.467	11,927
TOTAL	2,264	--	160,008	--	5,393	--	165,401	--	25,489	--	190,890

II X-RAY

The Cost Sheet of X-ray department and the computation of total cost and unit cost of different types of X-ray investigations are presented below:

T45 X-Ray Cost Sheet for the period 1990-91

Elements of Cost	Total Cost
	Rs
X-ray Films	4,12,250
Film Chemicals	20,908
Barium & Dye	5,20,836
Consumables	8,265
Total Variable Cost	9,62,259
Total Fixed Cost	2,48,579
TOTAL COST	12,10,838

COMPUTATION OF COST PER X-RAY

For the Computation of unit cost and total cost of various types of X-rays, the following information are collected and used for the analysis:

1. X-RAY FILMS

Three types of X-ray films are used in the hospital. The details are given below:

T46 Table showing Cost per film

Sizes	Cost per 50 Films	Cost per Film
	Rs.	Rs.
17" x 14"	2,233	44.66
15" x 12"	1,690	33.80
12" x 10"	1,127	22.54

The above prices are quoted for the "Indu" Polyster Films.

The following table gives the details of films used in the X-ray department of the hospital for the year 1990-91.

T47 Table showing total cost of X-ray films

Sizes	Total No. of Films	Total Cost
	Rs.	Rs.
17" x 14"	3,489	1,55,819
15" x 12"	5,138	1,73,664
12" x 10"	3,672	82,767
TOTAL	12,299	4,12,250

2. FILM CHEMICALS

The hospital uses developer and fixer to wash and develop the films. The dark room staff precisely estimates that 2 gallons of developer and fixer each can develop 150 films. According to them, the differences in the sizes of films need not be considered while computing the cost. 2 gallons of developer and fixer cost as follows:

Developer	Rs.117
Fixer	Rs.138
For 150 Films	Rs.255
For 1 film	Rs.1.70/-

Total Cost = Rs. 20,908

3. BARIUM AND DYE

The X-ray department used 450.2 litres of barium costing Rs.86.188 per litre during 1990-91. The details are given below:

T48 Table showing cost of Barium per X-ray

Types of X-rays	Quantity per X-ray in m.l.	No.of X-rays	Total Quantity of Barium in ml.	Total Cost	Cost per X-ray
				Rs.	Rs.
Upper G.I. Series	250	464	1,16,000	10,138	21.85
Aesophagogram	100	350	35,000	2,993	8.55
Barium enema	800	374	2,99,200	25,671	68.51
TOTAL	--	1,188	4,50,200	38,802	--

Six types of Dyes are used for eight different types of X-rays. One or two dyes are used for one patient, depending upon the thickness of the body of the patients. The details of dye used for the year 1990-91 is given in the following table:

T49 Table showing cost of Dye per X-ray

Types of X-ray	No. of X-rays	No. of Dyes	Cost per Dye	Cost of Dye per X-ray	Total Cost of Dye
			Rs	Rs	Rs
Intravenous Pyelogram	499	2	109.76	219.52	1,09,540
Cholecystogram	251	2	130.80	261.60	65,662
Hystero- Salphin-gogramm	238	2	86.76	173.52	41,298
Myelogram	191	1	390.22	390.22	74,532
Angiogram Reinal	111	2	82.843	165.68	18,390
Angiogram Carotid	264	2	86.76	173.52	45,809
Bronchography	116	1	318.28	318.28	36,920
Cholangiography	518	2	86.76	173.52	89,883
TOTAL	2,188	--	--	--	4,82,034

4. FIXED COST

The total fixed cost for the X-ray department shall be obtained from the Secondary Distribution Sheet. The total fixed cost is apportioned among the various types of X-rays in the weighted time ratio. The process of apportionment is shown in the table given below:

T50 Table showing Apportionment of Fixed Cost among various types of X-ray

Types of X-ray	Numbers of X-rays	Time in minutes	Weighted time	Apportioned fixed cost
1. Chest	1,950	15	29,250	40,776
2. Bones	1,341	15	20,115	28,041
3. Upper G1 Series	464	45	20,280	29,108
4. Aesophagogram	350	20	7,000	9,758
5. Barium Enema	374	30	11,220	15,641
6. Intravenous Pyelogram	499	60	29,940	41,738
7. Cholecystogram	251	30	7,530	10,497
8. Hystero-Salphingogram	238	35	8,330	11,612
9. Myelogram	191	25	4,775	6,657
10. Angiogram -Reinal	111	75	8,325	11,605
11. Angiogram - Carotid	264	55	14,520	20,241
12. Bronchography	116	30	3,480	4,852
13. Cholangiography	518	25	12,950	18,053
TOTAL	6,667	--	1,78,315	2,48,579

The time for each type of X-ray is fixed after consulting with the expert and experienced X-ray technicians. The time takes into account the time required to administer the dye, and to complete the X-raying process.

5. CONSUMABLES

In cases when dyes are administered to patients, consumables are used in the department. The cost of consumables consists of the following items:

Disposable syringes	Rs. 6,017
Cotton, rubber tubes, spirit etc.	Rs. 2,248
	Rs. 8,265

The total cost of consumables is evenly distributed among 2188 cases where dyes are administered.

T51 Computation of Unit Cost and Total Cost of Different types of X-ray

Types of X-ray	Number of X-rays	UNIT VARIABLE COST					TOTAL VARIABLE COST	FIXED COST		TOTAL COST	
		Film	Film chemicals	Barium & Dye	Consumables	Total Unit Variable Cost		Per X-ray	Total	Per X-ray	Total
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1. Chest	1,950	22.54	1.70	-	-	24.24	47,268	20.91	40,776	45.15	88,044
2. Bones	1,341	33.80	1.70	-	-	35.50	47,606	20.91	28,041	56.41	75,647
3. Upper GI Series	464	101.40	5.10	21.85	-	128.35	59,554	62.73	29,108	191.08	88,662
4. Aesophagogram	350	33.80	1.70	8.55	-	44.05	15,417	27.88	9,758	71.93	25,175
5. Barium Enema	374	67.60	3.40	68.64	-	139.64	52,225	41.82	15,461	181.46	67,866
6. Intravenous Pyelogram	499	223.30	8.50	219.52	3.78	455.10	2,27,094	83.64	41,738	538.74	2,68,832
7. Cholecysto-gram	251	67.60	3.40	261.60	3.78	336.38	84,430	41.82	10,497	378.20	94,927
8. Hystero-salphingogram	238	89.32	3.40	173.52	3.78	270.02	64,265	48.79	11,612	318.81	75,877
9. Myelogram	191	101.40	5.10	390.22	3.78	500.50	95,595	34.85	6,657	535.35	1,02,252
10. Angiogram - Reinal	111	135.24	10.20	165.68	3.78	314.90	34,953	104.55	11,605	419.45	46,558

T51 Computation of Unit Cost and Total Cost of Different types of X-ray (Contd.)

Types of X-ray	Number of X-rays	UNIT VARIABLE COST					TOTAL VARIABLE COST	FIXED COST		TOTAL COST	
		Film	Film chemicals	Barium & Dye	Consumables	Total Unit Variable Cost		Per X-ray	Total	Per X-ray	Total
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
11. Angiogram - Carotid	264	90.16	6.80	173.52	3.78	274.26	72,404	76.67	20,241	350.93	92,645
12. Bronchography	116	67.60	3.40	318.28	3.78	393.06	45,594	41.83	4,852	434.89	50,446
13. Cholangiography	518	44.66	1.70	173.52	3.78	223.66	1,15,854	34.85	18,053	258.51	1,33,907
TOTAL	6,667	--	--	--	--	--	9,62,259	--	2,48,579	--	12,10,838

III OPERATION THEATRE

The cost sheet of Operation Theatre and the computation of total cost and unit cost of different types of operations are presented in the following pages:

T52 Operation Theatre Cost Sheet for the period 1990-91

Items of Cost	Total Cost
	Rs.
Anaesthesia	3,91,148
Medicines	50,334
Consumables	1,80,073
Sterilisation Expenses	1,33,329
Operation Fees	10,82,980
Variable Cost	18,37,864
Fixed Cost	6,75,071
TOTAL COST	25,12,935

COMPUTATION OF COST OF OPERATIONS

The Operation theatre complex of the hospital conducted 2126 operations of 262 types in general surgery and ENT. The number and type of eye operations are respectively 333 and 21. For ascertaining the unit cost and total cost of each operation, following information is used:

The variable cost of each operation consists of the following items:

1. ANAESTHESIA

The cost of anaesthesia is calculated for 60 minutes as follows:

General Anaesthetics

		Rs
1.	Pentothol:	
	Rs.14.19 for 1 gm. for 3 hours For 1 hour	4.73
2.	Oxygen:	
	1 cylinder for 14 hours at a cost of Rs.163.52 per cylinder For 1 hour	11.68
3.	Nitrous Oxide:	
	1 cylinder costing Rs.2157 for 4 days For one day of 8.35 hours Rs.539.25 For 1 hour	64.58
4.	Halothane:	
	500ml at a cost of Rs. 1014 for 28 hours For 1 hour	36.21
5.	Scolil:	
	4 cc for 1 hour at a cost of Rs. 1.04 for 1 cc For 1 hour	4.16
6.	Pavolon:	
	2 ampules for 1 hour costing Rs.15.955 per ampule For 1 hour	31.91
7.	Atropin:	
	1 ampule for 1 hour Rs.1.30 per ampule For 1 hour	1.30
8.	Prostigmin:	
	4 ampules for 1 hour at a cost of Rs.1.935 per ampule For 1 hour	7.74
9.	Markane:	
	1 ampule costing Rs.12.35 for 1 hour For 1 hour	12.35
	TOTAL	174.66

Local anaesthetics

Local anaesthesia is administered for adults in eye operations along with the general anaesthesia in certain cases. Two types of local anaesthetics are used costing Rs.12.19 and Rs.5.88 per dose.

2. MEDICINES

In all types of operations, antibiotic medicines are given to all patients who undergo operations. 500 gm of antibiotics at a cost of Rs.20.48 is given to patients. Medicines consumed by patients during pre- and post-operative period are not considered. Medicines other than antibiotics given to certain patients in serious conditions are also not taken into account.

3. CONSUMABLES

a) General Surgery

Consumables used for the operations include sutures, cotton, gauze and plaster. Four different combinations of these materials are used as consumables for general surgery on the basis of type of operation performed. There are many more combinations used in hospitals, but the four mentioned here are commonly used in all hospitals and doctors and theatre personnel are unanimously agree with the suggestions and they opine that it will not distort the cost pattern of different types of operations. The four combinations of different types of consumables are given below:

		Rs
I.	1. 30gms of cotton at a cost of Rs.5.05 for 20 gm.	7.56

	2. 3 rolls of gauze at a cost of Rs.2 per roll	6.00
	3. 4 plasters costing Re. 1 each	4.00
	4. One-half of one foil of suture at a cost of Rs.16/- per foil	8.00
	Cost of consumables per operation	25.56
II.	1. 40gms of cotton at a cost of Rs.5.05 for 20 gm.	10.10
	2. 4 rolls of gauze at a cost of Rs.2 per roll	8.00
	3. 8 plasters costing Re. 1 per plaster	8.00
	4. Three-fourth of one foil of sutures at a cost of Rs.115.44/- per foil	86.58
	Cost of consumables per operation	112.68
III.	1. 40gms of cotton at a cost of Rs.5.05 for 20 gm.	10.10
	2. 4 rolls of gauze at a cost of Rs.2 per roll	8.00
	3. 8 plasters costing Re. 1 per plaster	8.00
	4. One foil of synthetic sutures at a cost of Rs.110.62/- per foil	110.62
	Cost of consumables per operation	136.72
IV.	1. 40gms of cotton as above	10.10
	2. 4 rolls of gauge as above	8.00
	3. 8 plasters as above	8.00
	4. One-foil of nylon sutures at a cost of Rs.137.46/- per foil	137.46
	Cost of consumables per operation	163.56

b) Eye Operations

Three combinations of different types of consumables mentioned earlier are used for Eye operations. These combinations are given below:

		Rs
I.	1. 1/4 of 20 gm of cotton at a cost of Rs. 5.05 per 20 gm.	1.26
	2. 39.5% of one roll of gauze at a cost of Rs. 2 per roll	0.79
	3. One-half of plaster at a cost of Rs.1 per plaster	0.50
	Total	2.55
II.	1. 1/2 of 20 gm of cotton at a cost of Rs. 5.05 per 20 gm.	2.52
	2. 1 roll of gauze at a cost of Rs. 2 per roll	2.00
	3. 2 plaster at a cost of Rs.1 per plaster	2.00
	4. 1/4 of one foil of absorbing and synthetic suture at a cost of Rs.34.84 per foil	8.71
	Total	15.23

III. The cost of third combination is arrived at in the same manner as in I for General Surgery.

4. STERILISATION EXPENSES

a) General Surgery

Sterilisation Expenses are incurred by the hospital for sterilising the surgical instruments and equipments, hands of surgeons and theatre nurses, and the entire operation theatre as a whole. It also

includes the cost for disinfecting the part of the body of the patient where operation is performed. The sterilisation expenses for General Surgery including ENT for one operation are calculated as follows:

		Rs
1.	Formaline:	
	500 ml for 15 operations at Rs.41 for 500 ml. one operation	2.733
2.	Formaline tablets:	
	one operation	0.595
3.	Hexiprep	
	500 cc at a cost of Rs.110 for fifteen operations	7.333
4.	Hexi scrub	
	4 bottles at Rs.110 each for fifteen operations	29.333
5.	Carbolic Acid	
	500 gm. at a cost of Rs.240 for ninety operations	2.666
6.	Cardicide	
	2 litres at Rs.117 for eighty four operations	1.395
7.	Itiol	
	5 litres at Rs.1080 for one hundred and twenty operations	9.000
8.	Detol	
	500 cc at Rs.43.45 for ninety operations	0.475
9.	Vitadin	
	500 cc at Rs.119 for ninety operations	1.325

10.	Savalon	
	500 ml at Rs.138 for ninety operations	1.534
11.	Surgicol	
	500 ml at Rs. 17.5 for ninety operations	0.194
	Total	56.583

b) **Eye Operations**

Following items are used for sterilisation purpose in the Eye operation theatre and the cost of such items constitute the amount of sterilisation expenses for one eye operation.

1. Formaline - liquid and tablets
2. Carbolic acid
3. Cardicide
4. Wexiprep
5. Detol
6. Vitadin
7. Savalon and
8. Surgicol

5. OPERATION FEES

Operation fee is fixed for each type of operation by the surgeons taking into account the time, effort and the technique required for each. Operation fee once fixed for each operation does not vary under any circumstances.

6. FIXED COST

The fixed cost of the Operation Theatre as obtained from the secondary distribution is apportioned among 262 types of general surgery and 21 types of Eye operations in the weighted time ratio. The different systems of the human body are operated by the specialist surgeons in the system. Seperate, intermittent and long discussions with these specialists helped to determine the time for each operation as accurately as possible. It was really a challenge to sit with the surgeons and to fix the time. Cross checking and repeated requests had had their own effect.

All the three operation theatres for General Surgery and one for Eye are utilised for 135605 minutes during the year 1990-91. Approximately, 2260 hours are used for operations. The fixed cost of operation theatre comes to Rs.6,75,071. It is divided among all the types of operations performed in the four theatres taking into account the time of each operation and the number of operations performed in that type.

T53 Table showing Apportionment of Fixed Cost among different types of Operation

Type of Operation	Time Group in minutes	Number of Operat-ions in the Time Group	Total weighted time	Apportioned Fixed Cost
				Rs
1. Skin, Subcutaneous & Areolar Tissues	15	51		
	20	30		
	40	4		
	60	6		
	70	4		
	90	3		
	100	6		
			3035	15108

Type of Operation	Time Group in minutes	Number of Operat-ions in the Time Group	Total weighted time	Apportioned Fixed Cost
				Rs
2. Endocrine System	50	10		
	60	9		
	90	8		
	120	15		
	130	9		
			4730	23547
3. Urinary System	10	11		
	15	20		
	25	39		
	35	30		
	40	6		
	50	12		
	60	26		
	65	5		
	70	24		
	75	7		
	80	22		
	85	5		
	90	7		
	100	15		
	120	4		
	125	6		
	130	7		
			13820	68802
4. Gynaecology & Obstetrics	15	15		
	30	193		
	45	2		
	50	8		
	60	12		
	65	3		
	70	8		
	75	1		
	80	3		
	90	8		
	100	171		
	210	3		
			26745	133142

Type of Operation	Time Group in minutes	Number of Operat-ions in the Time Group	Total weighted time	Apportioned Fixed Cost
				Rs
5. Digestive System	10	22		
	15	8		
	25	13		
	30	42		
	40	17		
	45	81		
	50	44		
	55	25		
	60	41		
	65	14		
	70	14		
	75	10		
	80	9		
	90	17		
	100	15		
	110	18		
	120	27		
	125	5		
	130	7		
	140	4		
	180	6		
	210	9	28960	144170
6. Musculo - Skeletal System	10	23		
	15	95		
	20	27		
	25	61		
	30	43		
	40	16		
	45	22		
	50	8		
	60	86		
	75	18		
	80	10		
	85	12		
	90	48		
	95	5		
	105	15		
	110	5		
	125	3		
	130	20		
	140	9		
	145	14		
	150	12		
	160	2		
	170	7		
	180	12	34025	169382

Type of Operation	Time Group in minutes	Number of Operat-ions in the Time Group	Total weighted time	Apportioned Fixed Cost
				Rs
7. ENT	15	34		
	20	29		
	25	33		
	30	21		
	35	13		
	40	16		
	45	15		
	55	3		
	60	23		
	65	6		
	70	14		
	75	23		
	80	25		
	90	4		
	110	5		
	115	7		
	120	2		
	130	4	13430	66856
8. Visual System	10	19		
	15	27		
	20	7		
	25	15		
	30	105		
	40	139		
	45	10		
	50	7		
	60	4	10860	54064
TOTAL		2459	135605	675701

The computation of Total Cost and Unit Cost of different types of operations in different systems of the human body are given in the sheets attached:

IV DELIVERY ROOM

The cost sheet for the hospital Delivery Room and the computation of total cost and unit cost of the three types delivery are presented below:

T62 Delivery Room Cost Sheet for the period 1990-91

Particulars	Amount
	Rs.
Medicines	39,528
Anaesthesia	95,482
Consumable Stores	54,669
Sterilisation expenses	35,524
Delivery fees	4,72,130
Total Variable Cost	6,97,333
Total Fixed Cost	2,51,434
TOTAL COST	9,48,767

COMPUTATION OF COST OF DELIVERY

The data required for computing the cost of three types of delivery are explained below:

1. MEDICINES

The cost of medicines consumed in each case represents the minimum cost of medicines that should be given to the patients in all cases irrespective of the type of delivery. This cost does not include the cost of medicines administered to the patients during the pre- and post-delivery period.

2. CONSUMABLES

Cost of consumables represents the cost of cotton, gauze, plaster and sutures used for delivery. The cost of consumables for each type of delivery is computed in the same manner as that for Operations.

3. STERILISATION EXPENSES

Sterilisation expenses are computed in the same manner as that of Operations with the exception for Normal Delivery. The sterilisation expenses for Normal Delivery is to include the cost of the following materials:

Formaline liquid	Rs. 2.733 per delivery
Hexiprep	Rs. 7.333 per delivery
Carbolic acid	Rs. 2.666 per delivery
Total	Rs.12.732

4. ANAESTHESIA

The cost of anaesthesia is computed on the same line as in the case of Operation. General anaesthesia is given for Instrumentation Delivery and Ceaserian and local anaesthesia is given for Normal Delivery.

5. DOCTOR'S FEES

The concerned doctor is given a fixed fee for each type of delivery in accordance with the agreement between the doctors and the management. Doctors include Chief Obstetrician, one assistant and one anaesthesiast.

6. FIXED COST

The total fixed cost of delivery room as obtained from Secondary Distribution is apportioned among the three types of delivery in the

weighted time ratio. The time utilised in the delivery room for each type of delivery is given below:

1. Normal - 60 minutes
2. Instrumentation - 90 minutes
3. Ceaserian - 150 minutes

The weighted time ratio is obtained after considering the number of delivery under each type.

The time mentioned above is the time during which the patient remains in the delivery room.

T63 Computation of Unit Cost and Total Cost of Different types of Delivery

Items of Costs	Normal Delivery 683		Instrumentation Delivery 147		Caeserean Delivery 311	
	Per Delivery	Total	Per Delivery	Total	Per Delivery	Total
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Medicines	28.695	19,599	30.587	4,498	49.587	15,433
Anaesthetics	12.190	8,327	130.995	19,256	218.325	67,899
Consumables	12.287	8,392	25.580	3,757	136.720	42,520
Sterilization expenses	12.730	8,695	56.580	8,611	56.580	18,218
Delivery fees	200.000	1,36,600	590.000	86,730	800.000	2,48,800
Variable Cost	265.902	1,81,613	833.722	1,22,850	1261.212	3,92,870
Fixed Cost	149.574	1,02,159	224.367	32,982	373.925	1,16,293
TOTAL	415.476	2,83,772	1058.089	1,55,832	1635.137	5,09,163

V ECG & EECG

The Cost Sheets for ECG and EECG and the Computation of total cost and Unit Cost of ECG and EECG are presented below:

T64 ECG Cost Sheet for the period 1990-91

Items of Cost	Total Cost
	Rs.
ECG Papers	17,677
Variable Cost	17,677
Fixed Cost	28,802
TOTAL COST	46,479

T65 EECG Cost Sheet for the period 1990-91

Items of Cost	Total Cost
	Rs.
ECG Papers	20,871
Consumables	2,014
Doctor's Fees	1,82,250
Variable Cost	2,05,135
Fixed Cost	2,30,243
TOTAL COST	4,35,378

COMPUTATION OF COST OF ECG & EECG

The details of the data used in the computation of cost of ECG & EECG are given below:

1. ECG PAPERS

ECG : 1 roll ECG paper can be used for 12 ECG. 1 roll paper costs Rs.66/-. 267 and three-fourth rolls are used during the year 1990-91. Hence the cost of paper per ECG comes to Rs.5.50 when the total number of ECG are 3214.

EECG : 1 roll paper contains 300 sheets. 10 sheets are used for one EECG. 1 roll costs Rs.858.90. EECG paper worth Rs. 20,871 is used in the year 1990-91. 24.3 rolls are used in the year. Thus the cost of EECG paper per EECG comes to Rs.28.63.

2. CONSUMABLES

The consumables include acetone and electrodes at a total cost of Rs.2014 and the same is distributed equally among 729 EECG taken during the year.

3. DOCTOR'S FEES

The Cardiologist is paid Rs.250 for one EECG in accordance with the agreement between the doctor and the management.

T66 Computation of Unit Cost & Total Cost of ECG & EECG

Items of Costs	ECG 3214		EECG 729	
	Per ECG	Total	Per ECG	Total
	Rs.	Rs.	Rs.	Rs.
ECG Papers	5.500	17,677	28.630	20,871
Consumables	--	--	2.763	2,014
Doctor's fees	--	--	250.000	1,82,250
Variable Cost	5.500	17,677	281.393	2,05,135
Fixed Cost	8.961	28,802	315.834	2,30,243
TOTAL	14.461	46,479	597.227	4,35,378

VI SCANNING

The Cost sheet for the Scanning Unit and the Computation of unit Cost and total cost of each scan are presented in the following pages:

T67 Scanning Cost Sheet for the period 1990-91

Elements of Cost	Total Cost
	Rs.
X-ray Films	4,94,663
Film Chemicals	37,308
Contrast	6,56,700
Consumables	18,357
Risk fees	1,09,800
Depreciation of X-ray tube	11,05,400
Total Variable Cost	24,22,228
Total Fixed Cost	15,20,228
TOTAL COST	39,42,456

COMPUTATION OF COST OF SCANNING

The data required for the computation of cost of different types of scan are given below:

1. COST OF X-RAY FILMS

The cost per x-ray film of size 12" x 10" of 'Indu Polyester' comes to Rs.22.54 and it is calculated in the same manner as that of X-ray Department. One X-ray represents one 'cut' and four 'cuts' can be made in one x-ray film. The details of x-ray films used for scanning are given below:

T68 Table showing Cost of X-ray films for different types of Scan

Types of Scan	Nos. of scans	Cuts per scan	No. of films per scan	Cost per film	Total cost of films per scan	Total No. of films	Total cost of films
				Rs	Rs	Rs	Rs
1. Head/Face (Plain)	1027	16	4	22.54	90.16	4,108	92,594
2. Head/Face (Plain & Contrast)	870	16	4	22.54	90.16	3,480	78,439
3. Neck/Thorax Abdomen	614	25	6	22.54	135.24	3,684	83,038
4. Full Abdomen	698	35	9	22.54	202.86	6,282	1,41,596
5. Spine	732	25	6	22.54	135.24	4,392	98,996
TOTAL	3941	--	-	--	--	21,946	4,94,663

2. FILM CHEMICALS

Film developer and fixer at a total cost of Rs.37,308 is used for washing and developing 21946 films in the scanning department during 1990-91. The cost of chemicals per film comes to Rs.1.70/-

3. CONTRAST

The details of contrast used for getting images through X-raying is given below:

T69 Table showing Cost of contrast for different types of Scan

Types of Scan	No. of scans	No. of contrast	Cost per contrast	Cost of contrast per scan	Total Cost of contrast
			Rs.	Rs.	Rs.
1. Head/Face	870	2	75	150	1,30,500
2. Neck/Thorax/ Abdomen	614	2	75	150	92,100
3. Full Abdomen	698	2	75	150	1,04,700
4. Spine	732	6	75	450	3,29,400
TOTAL	2914	--	--	--	6,56,700

4. CONSUMABLES

The department has consumed consumables at a total cost of Rs.18357. It includes the cost of syringes, cotton, sprit and other items of small value. The total cost of consumables is distributed equally among 2914 scans at a unit cost of Rs.6.30.

5. RISK FEE

The radiologist is given a risk fee of Rs. 150 per spinal scan since utmost care and caution are required when contrast is given for scanning the spine.

6. DEPRECIATION OF X-RAY TUBE

One X-ray tube can make 40,000 cuts during its life time. The cost of one x-ray tube is Rs.5,00,000. The details of depreciation of x-ray tube is given below:

T70 Table showing Depreciation of X-ray Tube for different types of Scan

Type of scan	No. of scan	Cuts per scan	Total cuts Nos.	Depreciation per cut	Depreciation per scan	Total Depreciation
				Rs.	Rs.	Rs.
1. Head & Face (plain)	1027	16	16432	12.50	200.00	2,05,400
2. Head & Face (Contrast)	870	16	13920	12.50	200.00	1,74,000
3. Neck Thoraxl Abdomen	614	25	15350	12.50	312.50	1,91,875
4. Full Abdomen	698	35	24430	12.50	437.50	3,05,375
5. Spine	732	25	18300	12.50	312.50	2,28,750
Total	3941	-	88432	-	-	11,05,400

7. FIXED COST

Total Fixed Cost for the Scanning department as per Secondary Distribution comes to Rs. 15,20,228. This amount is apportioned among the five different types of scan in the weighted time ratio as follows :

T71 Table showing Apportionment of Fixed Cost among different types of Scan

Type of Scan	Nos.	Time per scan (minutes)	Total weighted time	Apportioned fixed cost	Fixed cost per scan
				Rs	Rs
1. Head/Face (Plain)	1027	15	15,405	2,03,671	198.316
2. Head/Face (Contrast)	870	20	17,400	2,30,047	264.422
3. Neck/Thorax/ Abdomen	614	35	21,490	2,84,121	462.738
4. Full Abdomen	698	45	31,410	4,15,275	594.950
5. Spine	732	40	29,280	3,87,114	528.844
TOTAL	3941	--	1,14,985	15,20,228	--

T72 Computation of Unit Cost and Total Cost of different types of Scan

Item of cost	Spine Cervical/ Thoracic Lumbar/ Sacral 732		Full Abdomen/ Full Thorax 698		Neck/Upper Thorax Upper Abdomen 614		Head/Orbit/Face (Plain & Contrast) 870		Head/Orbit/Face (Plain) 1027	
	Cost per scan	Total cost	Cost per scan	Total cost	Cost per scan	Total cost	Cost per scan	Total cost	Cost per scan	Total cost
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1. X-ray films	135.240	98,998	202.859	1,41,596	135.241	83,038	90.160	78,439	90.160	92,594
2. FIlm Chemicals	10.199	7,466	15.299	10,679	10.200	6,263	6.800	5,916	6.800	6,984
3. Consumables	6.300	4,612	6.300	4,397	6.300	3,868	6.300	5,480	--	--
4. Contrast	450.000	3,29,400	150.000	1,04,700	150.000	92,100	150.000	1,30,500	--	--
5. Risk fee	150.000	1,09,800	--	--	--	--	--	--	--	--
6. Depreciation of X-ray tube	312.500	2,28,750	437.500	3,05,375	312.500	1,91,875	200.000	1,74,000	200.000	2,05,400
Variable Cost	1064.239	7,79,024	811.958	5,66,747	614.241	3,77,144	453.260	3,94,335	296.960	3,04,978
Fixed Cost	528.844	3,87,114	590.950	4,15,275	462.738	2,84,121	264.422	2,30,047	198.316	2,03,671
TOTAL	1593.083	11,66,138	1402.908	9,82,022	1076.979	6,61,265	717.682	6,24,382	495.276	5,08,649

VII PHARMACY

The total Cost and Unit Cost in the pharmacy are computed as follows:

The pharmacy department supplies medicines to in-patients and outpatients on the basis of prescriptions. Hence prescriptions are taken as the cost units upon which costs are computed. Each patient has a prescription and it is repeated with necessary changes until the patient is discharged or stops visiting the hospital. The number of times the prescriptions are used for the supply of medicines constitute the total number of prescriptions. All the inpatients are supplied medicines from the pharmacy, while it is estimated that only 60% of the total out-patients are supplied medicines from the pharmacy.

For distributing the cost of pharmacy between In-patient and Out-patient departments, the following factors are considered:

1. Medicines are allocated on the basis of actual figures taken from the records of pharmacy.

2. Fixed cost is apportioned on the basis of number of prescriptions in the absence of any other suitable bases.

3. Medicines are valued at the actual cost at the pharmacy. The profit on sale of medicines, which is the difference between wholesale price and retail price, is ignored in the computation of cost.

   The details of prescriptions are given below:

T73 table showing details of prescriptions

Departments	No. of prescriptions
In-patient	1,26,836
Out-patient	1,10,406
TOTAL	2,37, 242

T74 Computation of Unit Cost and Total Cost of Prescriptions

Items of Cost	In-Patient 1,26,836		Out-Patient 1,10,406		TOTAL 2,37,242	
	Per Prescription	Total	Per Prescription	Total	Per Prescription	Total
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Medicines	18.517	23,48,638	6.401	7,06,721	12.878	30,55,359
Fixed Cost	0.648	82,231	0.648	71,580	0.648	1,53,813
TOTAL	19.165	24,30,869	7.048	7,78,301	13.526	32,09,172

TERMINAL COST CENTRES

VIII IN-PATIENT DEPARTMENT

The procedure for the Computation of various types of Costs in this most important Terminal Cost Centre is presented in the following pages:

PATIENT-DAYS

The terminal cost unit adopted for the final absorption of hospital cost in the In-patient Cost Centre is the Patient-Day. Considering the peculiar nature of service rendered by hospitals, the computation of this composite cost unit is very important.

The patient-days, ward-wise and total, are calculated as follows:

T75 Table showing calculation of Patient-Days

Type of wards	Number of occupied beds	Number of days occupied	Patient days
Intensive Care Unit	7 6 5	289 56 20	2023 336 100
TOTAL	-	365	2459
Special Wards:	279 275 272 270	237 58 25 45	66123 15950 6800 12150
TOTAL	-	365	101023
General Ward:	64 63	359 6	22976 378
TOTAL	-	365	23,354
GRAND TOTAL			1,26,836

COMPUTATION OF COST PER INPATIENT-DAY IN DIFFERENT WARDS

The In-patient ward in the hospital is divided into the following three types as given below.

T76 Table showing details of different In-patient wards

Type of wards	No. of Beds	Bed-days	Patient-Days
1. Intensive care unit	7	2,555	2,459
2. Special Ward	279	1,01,835	1,01,023
3. General Ward	64	23,360	23,354
TOTAL	350	1,27,750	1,26,836

The total cost of in-patient department as obtained from Secondary Distribution is apportioned among the three types of wards on most equitable bases available. Most of the fixed costs are apportioned on the basis of Bed-days, while variable costs are apportioned on the basis of Patient-days. Some costs are also allocated directly to the different wards.

T77 Table Showing Allocation and Apportionment of Total cost of Inpatient department among different wards

Items of costs	Bases of Allocation	Total Amount	WARDS		
			Intensive care unit	Special ward	General ward
		Rs.	Rs.	Rs.	Rs.
Consumables	Direct	1,44,773	36,235	72,976	35,562
Cloth & Linen	Patient-days	1,08,975	2,114	86,799	20,062
Salary & Allowances:					
I	Direct	3,33,228	3,33,228	--	--
II	Time (15:5)	26,91,907	--	25,00,867	1,91,040
Printing & Stationery	Bed-Days	34,330	687	27,364	6,279
Electricity	Wattage	1,96,757	62,758	1,21,164	12,835
Water charges	Patient-days	32,850	637	26,165	6,048
Advertisement	Equal	2,875	--	1,438	1,437
Employee Benefits:					
I	Direct	12,439	12,439	--	--
II	Bed - Days	58,149	--	47,298	10,851
General Expenses	Bed-Days	12,333	247	9,830	2,256
Depreciation:					
1.Building	Area	91,946	1,839	79,557	10,550
2.Equipments & Instruments					
I	Direct (Book value)	26,258	26,258	--	--
II	Equal	14,960	--	7,480	7,480
3.Other assets	Bed-days	31,807	636	25,353	5,818
4.Bedding	Bed-days	54,785	1,096	43,669	10,020
Other Fixed Costs (as per S.D.)	Salary	10,98,466	1,81,615	8,51,784	65,067
TOTAL		49,46,838	6,59,789	39,01,744	3,85,305

T78 Computation of Cost per Patient-Day and Bed-Day in Different Wards

Particulars	Intensive Care Unit	Special Ward	General Ward	Total
COST-PER PATIENT DAY				
Patient - Days	2,459	1,01,023	23,354	1,26,836
Total Cost	Rs. 6,59,789	Rs. 39,01,744	Rs. 3,85,305	Rs. 49,46,838
Cost Per Patient-Day	Rs. 268.316	Rs. 38.622	Rs. 16.498	Rs. 39.00
COST-PER BED-DAY				
Bed - Days	2,555	1,01,835	23,360	1,27,750
Total Cost	Rs. 6,59,789	Rs. 39,01,744	Rs. 3,85,305	Rs. 49,46,838
Cost Per Bed - Day	Rs. 258.234	Rs. 38.314	Rs. 16.494	Rs. 38.723
ANNUAL COST PER BED	Rs. 94,255	Rs. 13,985	Rs. 6,020	Rs. 14,134

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The costs computed above represent the net unit costs in the In-patient department. The Unit Costs are exclusive of the costs of other hospital patient - services.

IX OUT-PATIENT DEPARTMENT

The Computation of Cost of different services rendered by the Out-patient department of the hospital is presented in the following pages:

OUT-PATIENT VISITS

The details of the out-patient visits in the out-patient department of the hospital during the year 1990-91 are given below:

T79 Table showing details of Out-patient visits

Details	No. of Visits
New Visits	41,926
Repeated Visits	40,080
TOTAL	82,006

COMPUTATION OF COST IN OUT-PATIENT DEPARTMENT

The out-patient department of the hospital is engaged in the following three main activities.

1. Consultation
2. Dressing, and
3. Plastering

With a view to compute the unit cost and total cost of these activities, the following information is used:

1. CONSULTATION

Only fixed cost is incurred for consultation.

2. DRESSING

The variable cost for dressing comprises of the following:

a) **Medicine:** Toxide injection and antiseptic cream are used. 0.5 cc toxide injection is given in each of the 604 dressing cases at a cost of Rs.1.20 each. Antiseptic cream of only one brand is used. One tube of 20 gm. of the cream costing Rs.10.96 is used for 20 cases for wounds less than 2.5 cms and of 15 cases for wounds more than 2.5 cms. Thus the cost of the cream per dressing comes to Re.0.55 and Re 0.73 respectively.

b) **Consumables**: The details of consumables are given below:

i. **Sutures**

Synthetic sutures are used for suturing the wounds. Sutures are not used in all cases for wounds less than 2.5 cms. while sutures are used in every case where wounds are more than 2.5 cms. One foil of suture at a cost of Rs.15 per foil is used for 15 suturing on an average for wounds less than 2.5 cms. and for 10 for wounds more than 2.5 cms. The cost of suture per dressing comes to Re.1 and Rs.1.50 respectively. The cost of suture for wounds less than 2.5 cms is not shown in the statement of cost.

ii) **Cotton, gauze and Plaster**

Cotton weighing 20 grams at a cost of Rs.5.05 is used for 12 cases where wounds are less than 2.5 Cms. and for 8 cases on an average for wounds more than 2.5 cms. The cost of cotton per dressing thus comes to Re.0.42 and Re.0.63 respectively.

1 roll of gauze at a cost of Re.2 is used on an average for 12 cases for wounds less than 2.5 cms and for 7 cases for wounds more than 2.5 cms. The cost of gauze comes to Re.0.17 and Re.0.29 respectively.

One plaster costing Re.1 per plaster is used for wounds less than 2.5 cms. and a minimum of 2 plasters are used for wounds more than 2.5 cms. Thus the cost per dressing comes to Re.1 and Rs.2 respectively.

Spirit used for cleaning the wounds is used at the rate of 500 ml. for 150 cases at a cost of Rs.129 per 500 ml. The cost of spirit per dressing thus comes to Re.0.86.

iii) **Anaesthesia**

Local anaesthesia is given in 48 cases in all. Each anaesthesia costs Rs.5.88. The cost of anaesthesia is not shown in the statement of cost.

3. PLASTERING

Following materials are used for plastering.

a) **Plaster of Paris**

The details of plaster used is given below:

T80 Table showing Cost of plaster for different types of plastering

Nature of Plastering	Size of plaster in inches	Quantity in roll	Cost per quantity roll	Total cost per plastering
			Rs.	Rs.
Hand	4"	4	30.80	123.20
Foot	4"	2	30.80	61.60
Arm	6"	4	40.20	160.80
Leg	6"	5	40.20	201.00
Minerva Jacket	6"	8	40.20	321.60

b) Cotton & Gauze

20 grams of cotton is used for hand plastering at a cost of Rs.5.05. The same is applicable to Foot Plastering.

2 rolls of gauze is used for Arm plastering at a cost of Rs.2 per roll. 4 rolls of gauze is used for Leg plastering at a cost Rs.2 per roll and 8 rolls for Minerva jacket at a cost of Rs.2 per roll.

FIXED COST

Fixed cost of out-patient department as obtained from Secondary Distribution is apportioned among the three activities in the weighted time ratio. The time for each procedure is obtained after consulting with the personnel concerned in 5 hospitals including the hospital for which the cost is analysed.

The apportionment of fixed cost in the weighted time ratio is shown below:

T81 Table showing Apportionment of Fixed Cost among Dressing, Plastering and Consultation

Nature of activity	Time per activity minutes	No. of Dressing	Weighted time minutes	Apportioned fixed cost
				Rs.
Dressing				
1. Neck & Face less than 2.5 cm.	20	66	1320	2007
2. Neck & Face more than 2.5 cm.	15	174	2610	3968
3. Other sites less than 2.5 cm.	15	219	3285	4994
4. Other sites more than 2.5 cm.	10	145	1450	2204
TOTAL	--	604	8665	13173

Nature of activity	Time per activity minutes	No. of Plastering	Weighted time minutes	Apportioned fixed cost
				Rs.
Plastering				
Hand	15	215	3225	4903
Foot	15	149	2235	3398
Arm	20	192	3840	5838
Leg	20	167	3340	5078
Minerva Jacket	25	82	2050	3117
TOTAL	--	805	14690	22334
Consultation	15	82006	1230090	1870072
TOTAL	--	--	--	1905579

T82 Computation of Unit Cost and Total Cost of Different Types of Dressing of Wounds

Nature of Dressing	No. of dressing	VARIABLE COST						FIXED COST		TOTAL COST	
		Medicines		Consumables		Total					
		Per case	Total	Per case	Total	Per case	Total	Per case	Total	Per case	Total
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1. Face & Neck wounds less than 2.5 cms	66	1.75	116	2.45	162	4.20	278	30.41	2007	34.61	2285
2. Face & Neck wounds more than 2.5 cms	174	1.93	336	5.28	919	7.21	1255	22.80	3968	30.01	5223
3. Other Sites less than 2.5 cms	219	1.75	383	2.45	537	4.20	920	22.80	4994	27.00	5914
4. Other sites more than 2.5 cms	145	1.93	280	5.28	766	7.21	1046	15.20	2204	22.41	3249
TOTAL	604	---	1115	--	2384	--	3499	--	13173	--	16671

1. The cost of local anaesthesia administered in 48 cases in all is not included in the unit cost and in the total cost. The cost of anaesthesia, whenever given, comes to Rs.5.88 per case. The variable cost and also the total cost will be increased by this amount in such cases.

2. The cost of sutures in dressing of wounds less than 2.5 cms. is not considered in the cost computation since sultures are used only in a few cases. The cost of sutures per case Re.1 if taken into account will increase the variable and total cost.

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T83 Computation of Unit cost and Total cost of Different types of Plastering Casts

Types of cast	No. of casts	VARIABLE COST						FIXED COST		TOTAL COST	
		Consumables									
		Plaster of paris		Cotton and Guaze		Total		Per cast	Total	Per cast	Total
		Per cast	Total	Per cast	Total	Per cast	Total				
		Rs	Rs	Rs	Rs	Rs	Rs	Rs	Rs	Rs	Rs
Hand	215	123.20	26488	5.05	1086	128.25	27574	22.80	4903	151.05	32477
Foot	149	61.60	9178	5.05	752	66.65	9930	22.80	3398	89.45	13328
Arm	192	160.80	30874	4.00	768	164.80	31642	30.41	5838	195.21	37480
Leg	167	201.00	33567	8.00	1336	209.00	34903	30.41	5078	239.41	39981
Minerva Jacket	82	321.60	26371	16.00	1312	337.60	27683	38.00	3116	375.60	30799
TOTAL	805	--	126478	--	5254	--	131732	--	22333	--	154065

T84 Computation of Cost per Consultation

No. of Consultations	Total Cost of Consultation	Cost per Consultation
82006	Rs. 18,700,72	Rs. 22.80

4.4 PATIENT COST CARD

A Patient Cost Card is suggested for use in hospitals. This card will help the hospitals to present the cost of providing various services to patients and also to fix the fees to be charged from them. The Fee Card also constitute the summary of all costs incurred to render different types of services. The card should be designed for In-patients and Out-patients after taking into account the nature of services rendered by the respective departments. One card should be kept for each patient.

IN-PATIENT COST CARD

The In-patient Cost Card shows the following information:

1. BED COST

   It represents the cost of following services rendered to the In-patient:

   a) Providing a bed for the In-patient, showing clearly the type of ward, namely, Intensive Care Unit, Special Ward or General Ward.

   b) Daily visit made by the doctor concerned.

   c) Nursing services, and

   d) Utility Services provided to the patient

2. SERVICE COST

   It represents the cost of the following services:

Laboratory

X-ray

Operation

ECG & EECG

Delivery

Scanning, and

Medicines

A typical form of In-patient Cost Card is designed below:

F54

NAME OF HOSPITAL

INPATIENT COST CARD

1. Name of Patient ..... 2. IP No:.....

3. Date of Admission..... 4. Date of Discharge....

5. Ward..... 6. Length of stay .....days

Nature of costs		Cost Per	Cost Total
		Rs.	Rs.
I. Bed Cost: (Cost per patient -day X No. of days of stay)		X	XX
II. Service Cost:			
1. Laboratory:			
Type	No.		
.....	.....	X	XX
.....	.....	X	XX
		X	XX
2. X-ray			
Type	No.		
.....	.....	X	XX
.....	.....	X	XX
3. ECG	No.	X	XX
4. EECG	No.	X	XX
5. Operation			
Type	No.		
.....	.....	X	XX
.....	.....	X	XX
6. Delivery: Type		X	XX
7. Scanning:			
Type	No.		
.....	.....	X	XX
.....	.....	X	XX
8. Medicines:			
Type	No. of Prescriptions / Qty.	X	XX
.....	....	X	XX
.....	....	X	XX
		X	XX
TOTAL		X	XX

Entered by..... Checked by .....

OUT-PATIENT COST CARD

This card shows the cost for consultation, dressing and Plastering and other Patient Services Costs. A suggested form of the out-patient cost card is given below:

F55

NAME OF HOSPITAL
OUT-PATIENT COST AND CARD

1. Name of Patient ..... 2. OP NO.....
3. Date of visit ..... 4. Nature of visit .....
5. Medical speciality ..... 6. Doctor consulted .....

Nature of costs			Cost Per	Cost Total
			Rs.	Rs.
Service Costs:				
1. Consultation:	No.....		X	XX
2. Dressing:				
Type	No.			
.....	.....		X	XX
.....	.....		X	XX
3. P.O.P. Casts:				
Type	No.			
.....	.....		X	XX
.....	.....		X	XX
4. Laboratory:				
Type	No.			
.....	.....		X	XX
.....	.....		X	XX
5. X-ray:				
Type	No.			
.....	.....		X	XX
.....	.....		X	XX
6. ECG:	No.....		X	XX
7. EECG:	No.....		X	XX
8. Scanning:				
Type	No.			
.....	.....		X	XX
.....	.....		X	XX
9. Medicines:				
Type	Quantity	No. of Prescriptions		
.....	.....	.....	X	XX
.....	.....	.....	X	XX
TOTAL			X	XX

Entered by ..... Checked by .....

CHAPTER 5

COST CONTROL IN HOSPITALS

5.1 BUDGETARY CONTROL IN HOSPITALS

Existing System

No hospitals at present have any system of budgeting in practice. Out of the ten hospitals studied, only two have a practice of estimation which they claim as the process of budgeting. The two hospitals adopt more or less the same method of estimating the revenue income and expenses. They actually make some increases and decreases in the final account figures for the future accounting period. Making such estimations is the task of the accountants only. They just produce the statements of estimates and present to the head of the institution. In the opinion of the accountants, the fate of the statements is not known thereafter. The inference is that the two hospitals have at least the desire to introduce some sort of a system of budgeting, but they usually fail to achieve the success they need. Other hospitals have never adopted even the practice of projecting the financial picture into the future. Most of them are of the opinion that they do not feel the necessity of budgeting and consider it as a waste of time and effort. They feel satisfied with the present financial and accounting practices.

Weaknesses

From among the several deficiencies existing in the present system of budgeting, following may be cited as the most important ones :

1. The causes of various expenses and their effect on the patient turnover cannot be ascertained.

2. Budgets are never used in hospitals as potent instruments in planning, co-ordination and control.

3. There is no commitment on the part of the hospital employees to achieve the objectives of hospital due to lack of participation in budgeting.

4. If it is used at all, then it is used as a restrictive instrument limiting the expenditure to a particular level rather than as a control device guiding the actual results to achieve the objectives.

5. Hospitals fail to visualise the projected activities to assess the financial position and if required, to take appropriate action well in advance.

6. It is very difficult for hospitals to measure the performance of various sectors in the absence of proper yardsticks.

7. Cost awareness throughout the hospital cannot be created in the absence of proper budgets.

8. The adequacy of different rate structure in hospitals cannot be properly assessed without budgeting.

Recommendations

When the hospital authorities realised the tangible benefits of a proposed budgetary control system in their hospitals, they unanimously agreed to its implementation provided they get the necessary guidance and knowledge in the matter. They also assured training for the accounting staff in respect of the procedures, methods, records, forms and techniques of a well-designed budgetary control system suited to the requirements of hospital.

PRE-REQUISITES FOR BUDGETORY CONTROL

The following basic requirements are essential for the successful operation of Budgetary Control in hospitals.

1. Departmental organisation with clearly defined responsibilities.

2. Identification and clear understanding of the hospital financial and service goals by defining in clear cut terms the objectives, plans and policies of hospital.

3. Ensuring an efficient system of accounting to provide the necessary data.

4. Participation of staff members in the preparation of the budgets.

5. Adequate reporting system to provide a measure of performance.

6. Constitution of a Budget Committee to deal with the supervision and effective operation of budgets.

7. Maintenance of a Budget Manual to inform the participants about the responsibilities of the persons related to the budgets and the procedure, forms and records required for Budgetary Control.

8. Determination of the budget period and the costs to be covered under the system.

TYPES OF HOSPITAL BUDGETS

The nature of hospital activities calls for the preparation of three types of budgets. These budgets cover the different financial aspects which require careful planning, co-ordination and control. A comprehensive hospital budgetary control system can be ensured if the following budgets are prepared on a regular basis.

1. The Operating Budget which consists of the accumulated estimates of operating revenues and costs for the next financial period.

2. The Plant and Equipment Budget which consists of investment in assets to be acquired during the period.

3. The Cash Budget which consists of accumulated estimates of inflow and outflow of cash for the budget period.

The Operating Budget can be firstly divided into Statistical Budget, Operating Revenue budget and Operating Cost budget. The Operating Cost budget should again be seggregated into three components as shown below:

1. Hospital Materials & Supplies Budget
2. Salary Budget, and
3. Other Expenses Budget

The Hospital Plant and Equipment Budget should take into account all the types of hospital equipments and instrumehts, both minor and major, movable and immovable and depreciable. This budget should be considred as the Capital Budget.

The Cash Budget should cover all possible inflows and outflows of cash with no exception at all.

PROCEDURE FOR THE PREPARATION OF HOSPITAL BUDGETS

1. STATISTICAL BUDGET

This is a comprehensive budget which covers all statistical data collected from all the cost centres of hospital, namely Revenue-producing, Non-Revenue producing and terminal centres. The statistical

data is the quantified version of all the facilities that should be available in the budget period. The data for each cost centre includes the number of employees with the requisite experience, qualification and specialisation, the quantity of each item of materials and supplies, the number and type of hospital equipments and instruments and other data which are quantifiable. The budget should also include the forecast of Inpatient-days, occupancy rate, Adverage length of stay, New Out-patient visits and repeated visits. The forecast should be made under different specialisations. While making forecast of demand for various services offered by hospitals, the following factors should be considered :

Economic Factors

1. Elasticity of demand for various specialisations.
2. Forces and nature of competition.
3. Changes in the paying capacity of the community served.

Social Factors

1. Living habits of the community
2. Gravity of the problem of pollution, sanitary conditions and others affecting the health of the community.
3. Social status of different types of patients.
4. Frequency of change in climate.
5. Attitude of patients towards hospital and hospitalisation.
6. Accident rate in and around the hospital area.

Internal Factors

1. Nature and degree of specialisation
2. Efficiency of each specialisation

3. Personal Charisma of different specialist doctors
4. Prices of various services
5. Quality and tangible benefits of patient care
6. Patient satisfaction
7. Installed and available facilities
8. Patient fees concessions

There should establsih a relationship between each of the above factors and the volume of activities which centre round the patient care.

The statistical budget should also include the forecast of units of various services to be offered in the budget period. This forecast should be made specially for Laboratory, X-ray, Operation theatre, Delivery Room, In-patient, Out-patient, Scanning, ECG and EEG examinations and the like services which can be coveniently expressed in suitable units. In the case of Laboratory, X-ray and Operation theatre, the maximum possible break-up of each type of service under different categories should be given.

The techniques of forecasting of various units of services and other quantifiable data should be designed to suit the special features of hospital conditions. Following are given the techniques of forecasting the statistical data in hospitals.

1. Projecting the past data into the future through graphs and tables.
2. Patients intentions survey by conducting exit interviews.
3. Time-series analysis to ascertain the future trend of patient turnover and the various services.
4. Multiple Regression analysis which can take into account the important real factors affecting patient turnover and their relative influence.

The procedure for collecting and compiling the statistical data from the various departments can be enumerated as follows:

1. Design a simple uniform format which should contain necessary columns and space to record the data.
2. Circulate the format among the departmental heads well in advance with necessary instructions to record the data.
3. Specify the last date for the return of formats.
4. Stick on to the date
5. Adopt a suitable follow-up procedure
6. See that the formats are returned in time with all the requisite data properly filled in.
7. Scrutinise and edit the formats, seek clarification and finalise the data after correlating with the projected figures obtained through the appropriate forecasting techniques.
8. Prepare the statistical Budget by clubbing all the departmental final formats.

It should be seen that every piece of information required for other hospital budgets should be incorporated in the statistical Budget.

2. OPERATING REVENUE BUDGET

Based on the statistical budget, it will be possible to forecast the amount of operating revenue from routine services. The Operating Revenue Budget clearly shows the income of the hospital for the future period under each head. It reveals the income to be earned from inpatients and outpatients by rendering the available services of hospital. Number of Inpatients and outpatients and the units of services being available from the statistical Budget for the future period, it only remains to price

the services accurately. The probable rates should be based on cost. Possible increases in the various items of costs should be considered. Irrespective of the nature and degree of charity of hospitals, the rates should be fixed in such a manner that full recovery of cost should be ensured. The rates should also cover suitable rate of return on total investment.

It is suggested to prepare the Operating Revenue Budget for each of the Revenue-producing centres in hospital. All these budgets can then be consolidated into one showing the total income from Inpatients and Out-patients.

A proforma of Operating Revenue Budget for Laboratory is given below:

F56
Laboratory Revenue Budget

Period:.....

Nature of test	Number of Tests			Rate per test	Total Amount
	In-patients	Out-patients	Total		
				Rs.	Rs.
1. Haematology:					
ESR					
Microfilaria					
Platelets Count					
2. Bio-chemistry:					
Blood Sugar AC					
Cortisol					
L.D.H					
3. Bacteriology:					
Gram staining					
Culture & sensitivity					

A proforma of Consolidated Operating Revenue Budget is given below:

F57
Consolidated Operating Revenue Budget
Period:.....

Source of Income	Inpatients	Outpatients	Total
	Rs.	Rs.	Rs.
1. Registration			
2. Room Rent			
3. Nursing charges			
4. Consultation			
5. Medicines			
6. Laboratory			
7. X-ray			
8. Operation			
9. Anaesthesia			
10. Delivery			
11. E.C..G			
12. E.E.G			
13. Scanning			

3. HOSPITAL MATERIALS & SUPPLIES BUDGET

Statistical Budget shows the quantity and variety of each item of material & supplies to be required in each of the departments of hospital. Prices of such materials and supplies are determined for the future budget period after taking into consideration important factors like availability, changes in prices, market conditions, inflationary tendencies, nature of contract with the suppliers etc. The Materials Budget should be prepared after considering the quantity and values of opening and closing stocks of each item of material for the budget period.

A proforma of Hospital Materials and Supplies Budget is suggested below:

F58
Hospital Materials and Supplies Budget

Period.....

Name of material	Quantity	Rate per Unit quantity	Total Amount
		Rs.	Rs.
Laboratory Chemicals:			
1.			
2.			
3.			
X-ray Films:			
1.			
2.			
3.			
Housekeeping			
1.			
2.			
3			

It is advised to prepare a Seperate Budget for medicines to be acquired and used in the budget period. This budget should disclose the quantity, rate and the amount for each item of medicine. The form of the budget may be on the above line or in the form of a list.

4. <u>SALARY BUDGET</u>

The Staff requirements for the budget period can be ascertained from the statistical Budget. The staff requirements are projected by using methods like management engineering standards, historical experience, experience of other hospitals, and possibility of future expansion and adding of new

specialisation. From the statistical Budget, a Salary budget is prepared for all personnel required for each department. Later, the departmental budgets should be consolidated in the Master Budget. All possible increases in salaries and allowances should be considered while preparing the budget.

A proforma of Salary Budget is given below:

F59
SALARY BUDGET 19.....

DEPARTMENT .....

Period .....

Name	Designation	Basic	D.A.	HRA	PF	Gross	Incr.	Annual
		Rs	Rs	Rs	Rs	Rs	Rs	Rs

5. <u>OTHER EXPENSES BUDGET</u>

Most of the other expenses are of fixed nature and therefore it is possible to predict the future quantum of each item of expense with a fair degree of certainity. The changes in patients turnover and the mixture of different services in comparison to the past actuals should be considered. The levels of activity in each department should be related to the amount of expenses. Increases in the prices of various utilities

and services like electricity, water, power, Laundry, communication, transport etc. should also be forecast by suitable methods such as understanding the accounting practices, knowledge of expense relationships to units of service, analysis of historical data and identification of technological and environmental changes.

A proforma of Other Expenses Budget is given below:

F60
Other Expenses Budget

Period.....

Nature of Expense	Budget	Actual
	Rs.	Rs.

6. **CONSOLIDATED BUDGET**

This is a master budget which shows the total revenue and total costs under important categories. All the hospital budgets are consolidated into one which should show the total operational plan for the budget period.

A proforma of Consolidated Budget is given as under :

F61
Consolidated Hospital Budget

Period.....

Income/Expense heads	Actual Last Year	Current Year		Budget Year	
		Budget	Actual	Proposed	Approved
	Rs	Rs	Rs	Rs	Rs

7. HOSPITAL PLANT AND EQUIPMENT BUDGET

It is the schedule of capital expenditure and resources available for the budget period. This budget should be prepared only after the Revenue and Operating Cost Budgets are prepared. As the operating budget is being prepared, consideration for the need of replacement or addition to equipment naturally will arise. Also extension projects or additions to buildings should also be considered. This budget should be primarily based on the needs of patients and the existing alternatives. The hospital should also consider the effect of the use of new equipment on

income and expense. The Capital Budget should be preferably divided into the following three areas :

1. Additions to building and fixed equipment.
2. Additions to furnitue and movable equipment.
3. Replacement of equipment.

For each of the above category, the necessary investment and the effect in depreciation expense should be studied.

Since the resources to be invested in fixed assets are scarce, priorities should be set up. The departmental heads who suggest for new equipments and instruments are the proper and fit persons to fix priorities. The benefits to be derived from the new equipment should be stated in terms of savings, increase in efficiency and increase in services to the patients.

It is also essential that the 'source of funds' should be shown against each capital item in the budget. This practice should help the management to make the necessary arrangements in advance to raise the adequate funds.

Lastly, any of the suitable Capital Budgeting techniques can be adopted to select the best alternative of investment from among many. Hospitals can make use of the services of management or financial consultant before making a decision on major hospital investment.

8. CASH BUDGET

Cash Budget in hospitals indicate the future receipts and payments of cash. The inflows and outflows of cash should be calculated as follows :

1. Inflows

The Revenue Budget gives the anticipated incomes for the budget period. Past experience of seasonal fluctuations in Out-patient and Inpatient admissions should be considered along with the Revenue Budget to get the expected cash inflows. The Plant and Equipment Budget also gives the quantum of each capital expenditure together with its source of funds. It will not be a difficult task for the budget committee to calculate accurately the anticipated cash inflows in the light of the ready information available from these budgets.

2. Outflows

The Operating Cost Budget provides the basis for determining the anticipated channnels of outflow of cash. It is a good practice if all hospitals adopt a systematic routine in respect of all hospital payments. The Plant and Equipment Budget also provides information regarding the possible outflow for capital purchase.

3. Margin

It is advisable that a minimum cash balance should be provided in the Cash Budget so that the hospital does not find itself short of cash at any time. The size of the margin largely depends on the accuracy of cash forecast of inflows and outflows.

A suggested design of a cash budget format is given below:

CASH BUDGET YEAR 19.....

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
	Rs	Rs	Rs	Rs	Rs	Rs	Rs	Rs	Rs	Rs	Rs	Rs
CASH BALANCE (Beginning)												
RECEIPTS :												
Inpatients												
Outpatients												
Other Income												
Total :												
PAYMENTS :												
Materials & Supplies												
Salaries & Wages												
Other Expenses												
Capital Expenditure												
Total :												
CASH BALANCE (end of period)												
Less: Margin												
Cash Surplus (Shortage)												

FLEXIBLE BUDGETING

A system of flexible budgeting is more appropriate to hospital conditions. Since the behaviour of different categories of patients is quite unpredictable, the occupancy rate and rate of admissions and thereby the volume of services to be rendered cannot be accurately forecast. Flexible budgeting adjusts the targeted costs for changes in volume of hospital activities. It should facilitate the preparation of budget for each department keeping in view the range within which the volume of activity of the department changes. Management can evaluate the performance of each item of cost with the demand for each type of hospital service.

The preparation of Flexible Budget for each department requires the following basic information:

1. The range of departmental activities expressed in number of units of services, patient-days, percentage of capacity utilisation or any other measurable quantity which clearly indicates the volume of activity. Analysis of past data and Statistical Budget can provide the projected levels of activity.

2. The nature of controllability of each item of cost by classifying the cost into variable and fixed.

3. After obtaining the above information, a budget allowance can be determined for each of the variable and fixed item of cost for a number of anticipated levels of activity in each department. The budgeted allowance for an actual level of activity not mentioned in the budget can easily be computed by interpolation. A flexible budget prepared in this manner is more useful, practical and elastic and acts as an effective tool of cost control in hospitals.

A suggested form of a Flexible budget in hospitals is given below:

F63

FLEXIBLE BUDGET

DATE OF BUDGET ..... DEPARTMENT .....

Operating level : Number of Unit of Service Percentage of Capacity							
Cost Account Number	Expenses	Budget Allowance per month					
		Rs	Rs	Rs	Rs	Rs	Rs
	Total Controllable						
	Total Non-controllable						
	Total Expenses						
	Cost per unit of service						

REPORTING OF BUDGET VARIANCES

Budget Reports are essential to excercise the desired degree of control through the budgetary control system. Budget Reports should be prepared for each hospital department and it should be based on principle by exception. The departments should be significant performance centres on which control become necessary. The frequency of reporting should be determined after taking into account the needs of management. The reports should be simple, manageable and as detailed as possible. It is recommended to prepare budget reports in respect of all the hospital budgets.

A suggested form of Budget Report is given as under:

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BUDGET REPORT

Period.....

Expenses/ Income/ Units of Service	Budget	Actual	Difference		Reasons
			Increase	Decrease	
Controllable :					
1.					
2.					
3.					
4.					
5.					
Non-controllable					
1.					
2.					
3.					
4.					
5.					

REVISION OF BUDGETS

In hospitals, revision of budgets become necessary under the following circumstances :

1. Inaccurate budget estimates and errors and mistakes of forecaste due to inexperience.

2. Additional unforseen expenditure due to sudden crisis and unexpected outbreak of epidemics in the community the hospital serves.

3. Other external factors which influence the hospital operating costs.

It should be seen that the same procedure as practiced for setting the usual hospital budgets should be adopted for the revision. Proper co-ordinating and linking of revisions with other budgets should be ensured.

In conclusion, it can be asserted that there is the scope and need for an effective budgetary control system in every facet of hospital activity. Hospitals are vital organisations without which the very existence of mankind crumbles. With limited resources, they have to meet the increasing demand on services. For efficient and effective management of resources for better patient care, plans and objectives should be devised and executed. Budgetary control aids the hospital management in this most important task.

5.2 STANDARD COSTING IN HOSPITALS

Recommendations

Once the Budgetary Control System becomes a workable proposition in hospitals, the management should make sincere and honest effort to develop a Standard Costing System for their hospitals. The need for a Standard Costing System in hospitals arises for the following specific reasons:

1. It serves as a useful tool of measurement of performance of hospital departments and of specified categories of personnel such as doctors, Laboratory and X-ray technicians, nurses etc.

2. It helps to eliminate the variations in actual costs due to operation of abnormal conditions or existence of idle facilities.

3. There are many external factors the impacts of which on the cost and performance of hospitals are significant. Standard costing indicates clearly where corrective actions are required and how improvement is possible.

4. It is a far better yardstick to control the various hospital operations. This is achieved by pinpointing the controllable and uncontrollable factors.

5. Since it is the most scientific system of management control, it helps the hospital to achieve the highest level of efficiency required for better patient-care.

6. It facilitates inter-hospital comparison and also the measurement of growth and stability of hospitals.

BASIC CONSIDERATIONS FOR SETTING UP THE STANDARD COSTING SYSTEM:

The following preliminary should be given due consideration for the establishment of Standard Costing System in hospitals:

1. It is necessary to select the basis for fixing standards. Normal operating conditions can be taken as the basis since past performance can be ascertained of each activity in hospitals with reasonable accuracy. The current as well as future planned operating conditions can also be assumed under the usual situations. The normal operating condition can also take into account any possible changes or improvements in the services during the operating period.

2. The operating period of standard costs should also be determined. It should be preferrably a twelve month period which should correspond with the hospital accounting period and also the budget period.

3. The activity level assumed to exist in the operating period should also be determined. It should be desirably the budgeted level of activity since it allows for all known and anticipated causes which affect capacity utilisation. The activity level for each type of service in hospitals can be expressed in convenient units.

4. The type of standard to be used also merits consideration. Attainable standard is recommended for hospitals since the conditions and circumstances which would prevail during the operating period can be predicted on the basis of past performance. It is more realistic and useful for cost control in a hospital set up.

5. Representatives of all category of hospital personnel should be given full participation in establishing standards. Responsibility for setting

the standards should be fixed on these representatives who should be the departmental heads and other technical and experienced persons.

6. Engineering and technical studies, special studies, interviews and discussions should be conducted on all hospital procedures. The results of such studies should be forwarded to the persons responsible for setting the standards:

AREAS OF APPLICABILITY AND THE PROCEDURE TO ESTABLISH STANDARDS

The hospital authorities should make an attempt on the following lines for the setting of standards.

1. MATERIALS

Standards can be established for selected and commonly used medicines and other hospital materials mainly used in In-patient wards, Operation theatre, X-ray and Laboratory. Quantities of each item of such materials can be determined from past records, future estimates and present and anticipated volume of activities in each department. Standard prices of such materials can also be determined on the basis of prevalent prices, experience, contact with suppliers, impact of likely changes in the economic policy etc. Incidental costs attached to the price should also be considered.

As far as voluntary hospitals are concerned, the possibility of donated supplies should be ascertained. It is advised not to include such materials in the selected materials for which standards should be developed.

2. LABOUR

As a humble beginning, standards can be developed for hospital labour in Operation theatre, X-ray and Laboratory departments. These departments are selected for the purpose mainly because of the fact that the volume of activity can be directly related to the hours worked in such departments. Firstly, standard performance should be determined for each of the department. Number of operations, number of tests and number of X-ray examinations which can be conducted during a day under usual conditions constitute standard performance. The standard performance should be taken as standard labour quantity which should give due consideration for idle time in the departments. Next, standard hour should be determined. Standard hour should represent the units of service which should be performed in one hour at standard performance under usual conditions. The number of different types of laboratory tests, X-ray examinations and the type of operations that can be conducted within one hour can be determined with utmost accuracy. Once the hourly units of services and the number of employees required are known, it is possible to determine the standard hours for the anticipated volume of activity in each department. Lastly, the standard rate of pay should be determined. Although all the hospitals pay salary to their employees not on the basis of hours worked or quantum of work, yet an hourly rate of pay can be worked out. Increments and all allowances should be considered for fixing the standard rate. Now it only remains to ascertain the standard cost for labour at the anticipated level of activity in each department.

3. OTHER EXPENSES

Even though it is very difficult to set standards for other expenses, an attempt is made here to develop a procedure which will be found useful and practical in a hospital.

i. When a budgetary control system is in operation, the same level of various other expenses can be adopted as standards after making suitable modifications to make them more planned and scientific.

ii. It is advised to fix standards for variable and fixed cost separately. Flexible budget will be a useful guide in this respect.

iii. A process of allocation and apportionment of standard expenses and the final absorption into the units of services determines the standard expense rate per unit of service.

STANDARD COST CARD

The standards set for materials, labour and other expenses in the selected departments should be combined in a Standard Cost Card. One Standard Cost Card for each of the departments like Operation theatre, laboratory and X-ray should be prepared. The proposed card should show at a glance the standard cost for an operation, test and X-ray examination.

A suggested form of Standard Cost Card that can be used in a department is given below:

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STANDARD COST CARD

Department.................. Date of fixation ....

No. of units of Service...... Period of operation...........

MATERIAL	Type of material	Quantity	Price	Cost	
			Rs.	Rs.	
	Total Material Cost				XXX
LABOUR	Category of employees	Standard Hours	Rate per hour	Cost	
			Rs.	Rs.	
	Total Labour Cost				XXX
EXPENSES	Nature of variability			Amount	
				Rs.	
	Total Other expenses				XXX
STANDARD COST	Total Standard Cost				XXX
	Standard Cost per Unit				XX

REVISION OF STANDARDS

Standard Costs require continuous review and, at times, frequent change. It is suggested that the entire standard cost structure should be reviewed and revised at the end of each accounting year to incorporate changes in material prices, labour rates and other expenses. These changes should be considered in the light of changed operating conditions in the concerned departments. Revision becomes necessary especially in hospitals where potentialities for technological advances are greater. Errors in setting standards can also be located on revision. The same procedure followed in setting the standards should be adopted for revising the same.

COMPUTATION AND ANALYSIS OF VARIANCES

Cost Variances should be computed monthly to ascertain the favourable and unfavourable variances of actual costs from the standard costs. It is recommended that only the following variances need to be computed at this stage of development of standard costing in hospitals:

MATERIALS

Total material cost Variance
Material Price Variance, and
Material Usage Variance.

LABOUR

Total Labour Cost Variance
Labour Rate Variance, and
Labour Efficiency Variance.

OTHER EXPENSES

Total Expense Variance
Expenditure Variance
Efficiency Variance, and
Volume Variance.

Each of the above expense variance should be computed separately for variable and fixed costs components.

Appropriate and practical formulae can be selected by the hospitals to compute the different variances.

Each of the above variances should be analysed with a view to ascertain the amount of variance, causes, factors responsible, the responsibility of concerned department and the corrective actions for avoiding or reducing variances. The results of such an analysis of variances should be reported to the management with suitable suggestions for corrective actions. A suggested form of a Report of Variances is given below:

DEPARTMENTAL VARIANCE ANALYSIS

Department .....

Name of the head of Department ..... Month ending .....

Types of Serivces	Actual Cost			Standard Cost			Variance					
							Favourable			Adverse		
	Material	Labour	Expenses	Material	Labour	Expenses	Material	Labour	Expenses	Material	Labour	Expenses
TOTAL												

Depending upon the needs of management, it is possible to prepare and present reports like Material Price Variance, Material Utilization Variance etc. individually for each item of materials. Similar reports can be prepared for labour and expenses.

It is recommended that the reasons for both favourable and adverse variances should be given in a statement which should form a part of the Variance Analysis Report. The statement should indicate maximum possible explanation relating to each cause contributing to variances.

In conclusion, it can be said that the standard costing system should not be incorporated in the accounting system of hospitals. It should be treated as a special control technique to be used in selected departments. As and when it becomes an effective tool of control, it can be used in other departments after having gained sufficient experience and knowledge of operating the system.

5.3 GENERAL COST CONTROL MEASURES

Recommendations

Along with the traditional and specific cost control techniques applicable to hospitals, certain effective and general control measures can be designed in view of the peculiar nature of hospital activities. Following are given the suggestive cost control techniques that should be adopted in hospitals in a general perspective:

1. COST EFFECTIVE PLANNING OF FACILITIES AND SERVICES

Management should aim at providing facilities and services which just meet the community need with minimum outlay of capital and operating expenditure. Cost effective planning guides the management in determining the minimum set of facilities and services required and the least costly way to provide them. The main features of cost effective planning should include the following:

a) More careful and precise decision about facilities and services

b) Determining the optimum size of operations taking into account the economics of scale.

c) Implications of cost and quality on low patient care work load volume.

d) Maximum management control to ensure maximum productivity and efficiency in large-sized hospitals.

e) Considering, selecting and deciding the best alternative methods of providing medical services.

2. SCHEDULING OF PATIENT, PATIENT SERVICES AND STAFF

a) A better patient scheduling system on integrated path schedule for admission, diagnosis, surgery procedure etc. can substantially reduce length of stay, unnecessary investigation, delay in diagnosis or making decisions about surgery procedures etc.

b) There is a great need for scheduling of operations, investigative procedure, therapy, time-consuming radiological and pathological investigation and special investigations. This would definitely result in better utilisation of equipment, facilities and staff.

c) A proper and effective staff scheduling should be designed to determine the required skill, time required in performance of specific tasks, work volume, frequency of occurance of emergency situation etc.

3. MEDICAL CONTROL ON UTILISATION AND QUALITY

Utilisation of patient facilities and maintenance of quality of care are under direct control of doctors. Hence the doctors can help in cost control indirectly by:

a) Improving bed utilisation by cutting down length of stay through quick diagnosis, quick decisions about surgical intervention, investigative procedure, type of therapy, etc.

b) Cutting down unnecessary investigations by following a firm practice of writing preliminary diagnosis against preliminary investigations. If preliminary investigations are made, there should be a continuous system of acquiring the validity of such investigations.

c) Cutting down unnecessary drugs and therapeutics. Frequent clinical meetings will create awareness and they tend to restrain the overuse of medicines.

d) Economy in use of hospital supplies, facilities and manpower. It should be ensured that only absolutely essential fashionable supplies are used. Cheaper alternative facilities maintaining the existing level of quality should be recommended out of the practical experience and training.

4. ADMINISTRATIVE CONTROL ON EXPENDITURE

The administrative structure of the hospitals should be changed with changes in size and complexity of hospitals to exercise much needed administrative control. New management styles and techniques should be mastered and introduced from top down to the head nurse and house-keeping supervisor. The management should design proper control techniques to ensure consistent occupancy goals, better exception oriented reporting and cost-benefit justification for all major expenditure programmes.

5. EDUCATIONAL PROGRAMME

Educational programmes through multiple approaches create a clinical environment that place continued emphasis on cost awareness. A variety of strategies should be designed and utilised to educate the hospital employees particularly the doctors about cost issues to modify their cost generating behaviour. Discussions, clinical meetings, utilisation review committee, budget committee etc. are some of the techniques that can be fitted in the cost education programme.

6. ALTER THE TECHNOLOGY

Consistent with the objectives of the hospital, it may be possible to alter the technology so as to effect major control over costs. Such strategies include:

a) Choice of other systems of medicine in combination with scientific system.

b) Focus on promotive and preventive care in preference to curative services.

c) Preference for domicillary care instead of hospitalisation.

d) Establishment of a day-care centre for diagnostic and treatment procedures normally requiring a short degree of hospitalisation.

e) Focus on productive technology rather than on use of sophisticated and esoteric procedures of disputed and questionable value.

f) Narrowing the service mix so as to increase efficiency and reduce cost per case.

7. COST-TECHNOLOGY MIX

One important finding of the present study is that all hospitals have adopted an unscientific approach towards the nature and degree of technology now being practised. This resulted in the disproportionate mix of cost and technology. The mushroom growth of departments defeat the purpose of flow and functions in the hospitals. It also leads to time consuming procedures and inconveniences for hospital staff in the performance of routine nature of duties. Hence, an effort is made here to

develop a relationship between cost and technology so as to decide about the growth of hospitals. The following chart indicates different mixes of cost and technology that can be used in hospitals for its various services:

FIG 15

A Model for Cost-Technology Mix for Hospitals

	TECHNOLOGY	
	LOW TECHNOLOGY	HIGH TECHNOLOGY
	High Cost - Low Technology	High Cost - High Technology
H	- Mechanical Laundry	- Radioimmunoassary
I	- CSSD	- Enzyme Study
G	- House keeping services	- Physiological function Test
H	- Dietary Services	- Auto analyser
	- Transportation Services	- Radio Surgery
	- Communication Services	- Radiodiagnostic and therapy
C	- Hospital Engineering	- Microscopic Surgery
O	- Radiological Services	- Renal Transplant
S	- Administrative Services	- Dialysis
T	- Operation Theatre	- Cardiac Cathetre lab
	- Physiotherapy	- Heart-lung Machine
	- Air Conditioning	- Computerisation

	Low Cost - Low Technology	Low Cost - High Technology
L	- Pharmacy	- Hospital Information System
O	- General IP Ward	- Medical Records Department
W	- Chronic disease ward	- Stores distribution
	- Injection & Dressing	- Laboratory
C	- Nursing Station	- Medical Audit
O	- Hospital Interior Design	- Out-patient services
S	- Routine Diagnostic & therapeutic procedure	- Medical inn
T	- Nursing Care	- Patient Satisfaction
	- Messenger Service	
	- Miscellaneous Services	
	- Administrative Block	

The applicability of the model can be stated thus:

1. <u>Low Cost - Low Technology</u>

It is required for routine and simple work and facilities.

2. <u>Low Cost - High Technology</u>

It is required in moderately growing hospitals where funds are limited. In this mix, cost-optimisation techniques can be effectively utilised for establishing facilities and services.

3. <u>High Cost - Low Technology</u>

It is required where funds are invested in bulk without much skills required to deal with. It is suited for long lasting and supportive services on which depends the efficiency of the hospital.

4. High Cost - High Technology

It is required for highly specialised services for which heavy investments are required with proportionately highly skilled personnel.

The influence of cost on various services can thus be gauged from the model. Once the vulnerable areas and services are located, it will be possible for each hospital to design an effective cost control system to curb the price rise at all levels.

CHAPTER 6

SPECIAL COST TECHNIQUES IN HOSPITALS

It is recommended that certain special cost techniques should be applied in hospitals. These are special purpose techniques which serve the hospitals in the areas of decision-making, comparison and control of hospital costs. These techniques undoubtedly help the hospitals to improve their overall efficiency.

6.1 APPLICATION OF MARGINAL COSTING IN HOSPITALS

There are many important areas in hospital where principles of marginal costing can be applied effectively. The analysis and presentation of cost data under the marginal costing principles help the hospital management in a number of ways. Following is given a brief sketch of the purposes for which these principles should be applied as an integral part of the Cost Accountancy System in hospitals:

1. COST CONTROL

   Since seggregation of cost into Fixed and Variable is a fundamental requirement in marginal costing, cost control is facilitated. All variable costs are fully controllable while each item of fixed cost can be subject to careful analysis and control. It can be observed that no additional effort is required for hospitals for cost control from this point of view due to the fact that all costs are analysed and presented as Fixed and Variable categories.

2. EVALUATION OF PERFORMANCE

   The revenue earning potentialities of each Revenue-producing departments in hospitals can be accurately evaluated and the performance in terms of

costs and revenue can be assessed. The efficiency and the performance of each Revenue-producing department really determines the success of a hospital. Marginal contribution analysis is the most useful technique for this purpose.

3. DECISION-MAKING

Hospitals have to take many vital short-term decisions which affect their profitability. The following three decisions merit special consideration in this context:

a) PRICING DECISIONS

It is usual in all hospitals that certain speciality services are greatly demanded by the patients, while certain others are unable to attract an expected volume of patient turnover. Although many reasons can be attributed to this feature, the most significant factor is the stiff competition among hospitals. The situation should not be allowed to persist for a long time since it may eventually lead to suspension of such speciality services. Such a situation can be saved if the prices are lowered equal to, or in exigencies, below marginal cost. This action can be justified for obvious reasons. As and when things change for the better, the situation should be reviewed and proper decision should be taken.

Patient fees should also be charged less when a new speciality department is opened and certain types of patients genuinely deserve concessions. In other like cases also, hsopitals should resort to reduction in prices of services which in the long run will be beneficial in many respects. Here also marginal contribution aids the management in determining the extent of price reduction.

b) OPTIMISING THE SERVICE MIX

Service Mix highly influences hospital cost. Every hospital would like to provide the widest range of services consistent with its objectives. It should be admitted that there is a great need for good general hospitals with good facilities for General Medicine, Obstetrics, Gyneacology care, Paediatric care and clean, safe and efficient General Surgical facilities. Sub-specialities like Eye, ENT and Dental clinics can also be added to the hospital system. The departments rendering these services can be made highly efficient and cost effective due to comparatively larger turnover of patients. Supportive services like Laboratory and X-ray can also be made cost effective if there are facilitates for conducting clinical, routine and general investigations.

However, the modern trend in most hospitals is to provide supra-specialisation such as Cardiology, Cardio Thorasio Surgery, Urology, Nephrology, Oncology, Neuro-Surgery, Plastic Surgery, Genito Urinary Surgery and the like. They also prefer to have Histo-pathology and Scanning facilities. Modest facilities of these nature of good standard require unusually large investment in investigations, operations, critical care facilities and a good team of doctors, nurses and para medical personnel. The ultimate result will be that these specialities raise the costs to the maximum level without providing commensurate benefit to patients.

Adding modern specialities definitely bring good reputation for the hospitals. However, resources being limited, because of economies of

scale, it is generally advisable for the hospital to restrict its service mix upto a limit for higher workload results in both higher quality and lower cost per case. The greater work load of different specialities, within limits, account for greater competence as the staff are geared to that higher level of performance. Further costs are minimised as fixed costs on physical infrastructure, equipment and specialists are shared by a larger patient base. Thus there is a strong case for restricting the service mix and also for finding out the most profitable and optimum service mix.

Marginal cost analysis helps the hospitals to select the best service mix from amongst the various alternatives available. The service mix which gives the maximum possible marginal contribution will be the optimum mix and this optimum mix is the maximum profitable service mix. The marginal contribution technique can be applied to the hospital as a whole and also to each department which render various types of mixed services.

c) ASSESSING THE CAPITAL INVESTMENT PLANS

While introducing new departments of supra-specialisation, it becomes necessary to invest huge amount in highly sophisticated and costly equipments and instruments. Among the important factors which should be considered before taking a final decision in this respect, the marginal contribution from the proposed project merit special consideration. If the increase in contribution is more than the increase in fixed cost of additional facilities, a favourable decision can be taken by the management.

4. BREAK-EVEN ANALYSIS

This is a very useful technique which can be applied in hospitals in a number of situations. Following are given the areas, situations and purposes for which this analysis can be applied profitably:

a) The impact of fixed costs on the profitability of the hospital can be clearly measured by analysing the capacity utilisation.

b) The profitability of new investment in new departments can be ascertained.

c) Cost-profit studies on price differentiation of the same service for different patients can be effectively carried out.

d) It indicates the point wherefrom each type of unit of services starts to earn profit. It also tells the number of patient-days which are required by the hospital to break-even.

e) It helps to forecast the cost and profit with each change in the level of patient turnover.

f) It directs the hospital how to plan its activities so as to earn a desired amount of profit.

g) The effect on total cost of an increase in fixed costs can be clearly assessed.

h) It analyses the cause of decrease in profit of each department and suggests the measures to be taken to improve the situation.

These are some of the important aspects which need the immediate application of the Break-even analysis. This analysis has great potentialities which can be utilised by the hospitals so as to save themselves from a number of precarious situations.

6.2 UNIFORM COSTING FOR HOSPITALS

It is suggested that the principles of Uniform Costing should be applied in hospitals after the successful installation and maintenance of Cost Accountancy System in the individual hospitals. Uniformity in the costing principles, techniques and methods practised by hospitals can bring manifold benefits to each hospital. A Central Hospital Association can organise the application and working of uniform costing principles. Areas where uniformity is preferred in hospitals include the following :

1. Computation of cost of each cost centre and cost unit.
2. Seggregation of cost into Fixed and variable.
3. Cost Finding procedure to arrive at cost per inpatient-day and out-patient.
4. Procedure for computing material cost and labour cost per patient.
5. Method of valuation of inventories of medicines and other consumables.
6. Determination of cost centres.
7. Determining the bases for allocation and apportionment of costs.
8. Cost Books, Forms, Reports and statements maintained.
9. Control techniques relating to each element of cost.
10. Service Mix

The objectives and requirements of each individual hospital should be considered while designing a uniform costing system for the hospitals. It is also essential to develop a Uniform Cost Manual which should be circulated

among the participating hospitals. The Manual should lay down the recommended Cost Accounting plan and the procedure for operating it.

The Central Hospital Association should seek whole-hearted co-operation and willingness of all the hospitals. It should educate its members about the benefits they can derive from a Uniform Costing System. It can be hoped that if the hospitals unite together under a Uniform Costing System, it is the community which can get the best quality of care at minimum price.

6.3 INTER-HOSPITAL COMAPRISON

It is strongly recommended that an inter-hospital comparative study should be conducted at reasonably regular intervals to locate the weaknesses, inefficiencies and efficiencies of different hospitals. This study can be conducted irrespective of the size, variety of specialities, amount of investment and number of employees in the hospitals. The necessity of such a study arises from the following reasons:

1. Hospitals charge different prices for the same type of service rendered to the patients.

2. Average length of stay of a patient suffering from same illness differs in different hospitals.

3. It is necessary to ascertain the most profitable service mix suitable to the peculiar conditions in each hospital.

4. Hospitals should also find out a proper method to relate the quality of care with cost.

5. There should be the awareness of social responsibility for hospitals in a much better way.

6. Unfair competition leading to exhorbitant charges in some cases and under-recovery of costs in other cases should be avoided or minimised.

7. The sufferings and frustration of hospital employees should be given proper consideration and something should be done for their betterment.

It is quite evident from my study itself that most hospitals are not reluctant to supply the requisite data if they are ensured of the

benefits of such a study. A central hospital association should organise the inter-hospital comparison in an effective manner. It should also be seen that desirable conditions must exist in hospitals for the comparative study. The participants should decide the nature of data that should be compared. It is left to the participants to select the appropriate techniques of comparison which suit their requirements. The central organisation should provide the results of the study in the most appropriate manner. It is also recommended that the inter-hospital comparison should be done regularly each year after finalising the accounts.

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 increasd 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. Todays' 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.

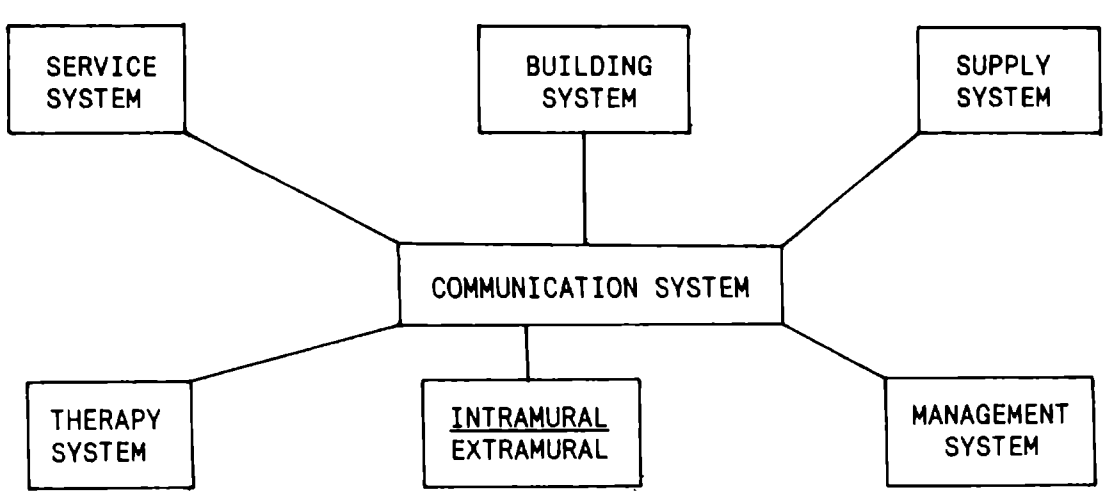
Hospital Information System is an information system for the management of the care of the patient. It is a system in which the flow of information throughout the hospital is purposive and designed specifically to assist in decision-taking which should be automatic and economical of effort. In the present 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 uncertainity 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.

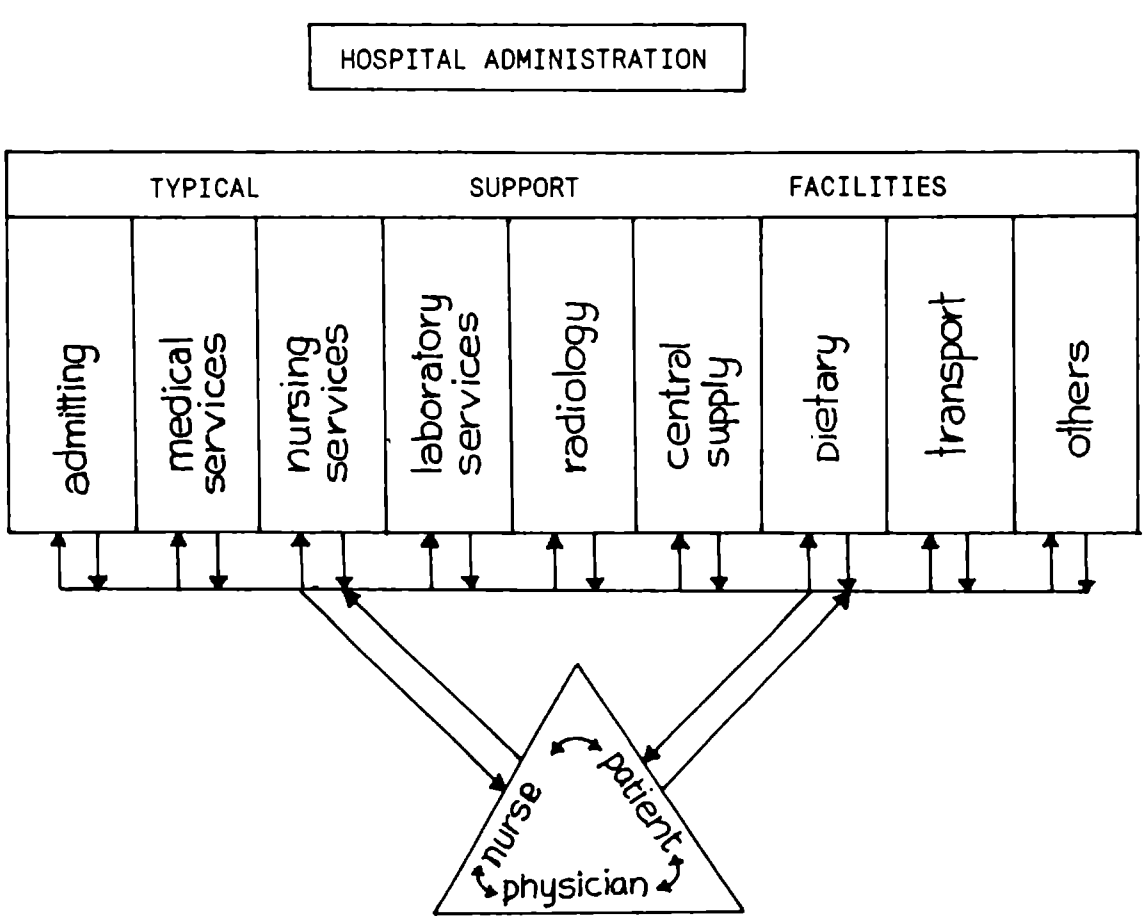
FIG 16
The Hospital System



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.

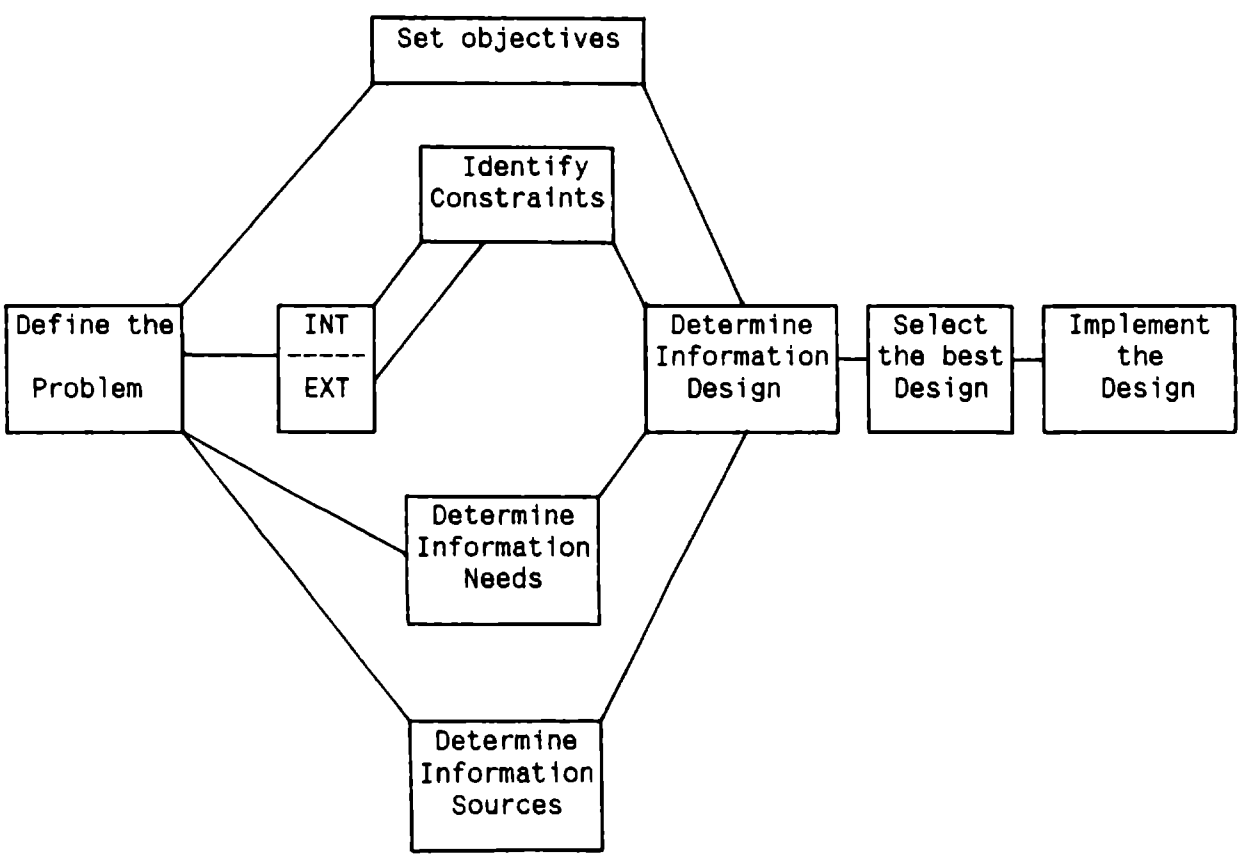
PROVIDERS - Physicians, nurses, all concerned hospital personnel.

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 acccount while designing a Hospital Information System.

FIG 18
Design of Hospital Information System



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

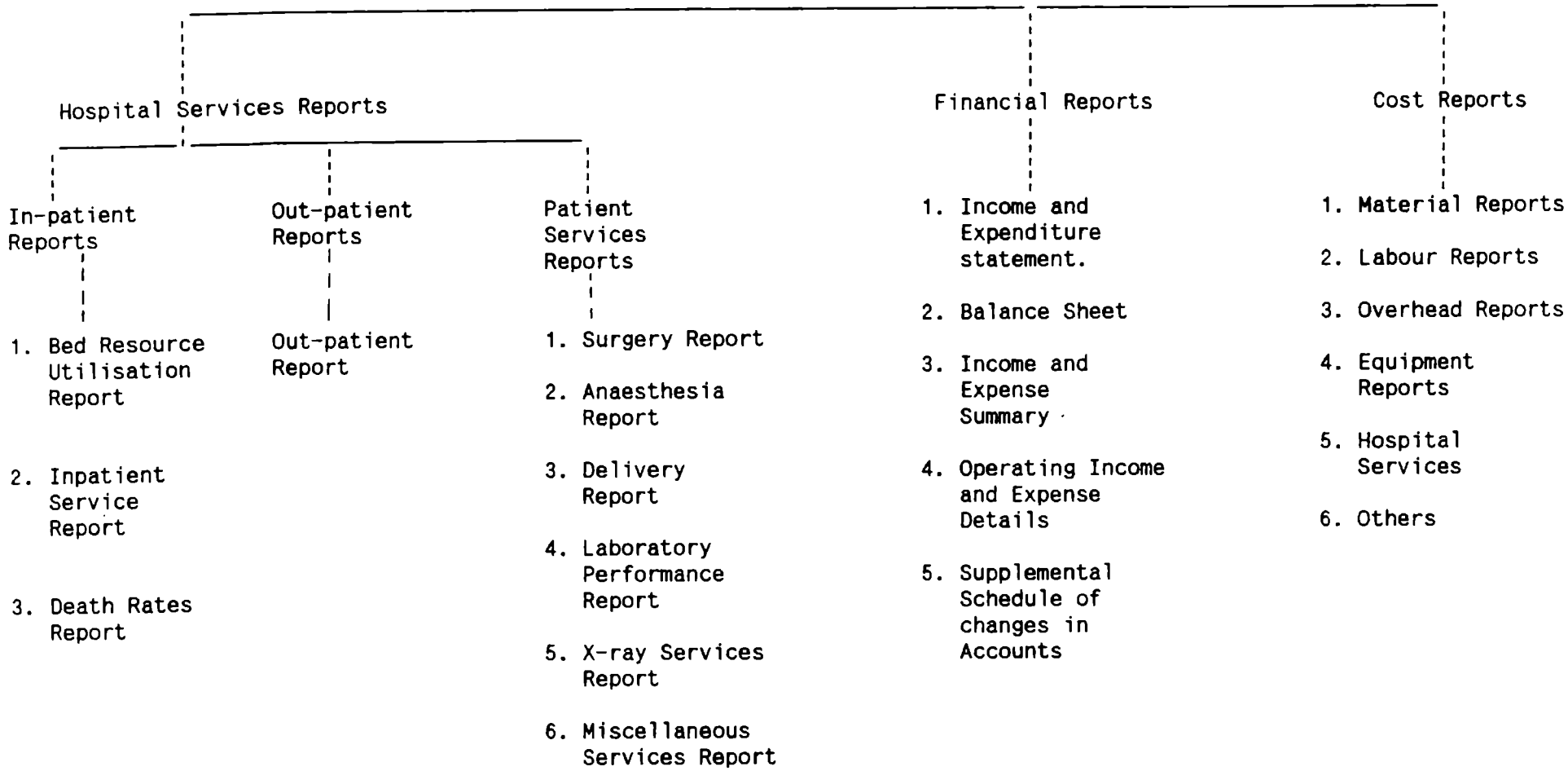
Hospital Services Reports deal with information on patients while Financial Reports deal with the income and expenses and other financial information. Cost Reports deal with detailed information on cost of various hospital services and activities. The chart given in Fig.19 shows the various Hospital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

HOSPTIAL 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



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 deficincies 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 mangement of the hospital. Such a report helps them in proper planning and for taking appropriate and timely decisions relating to the important hospital activities.

F67
Bed Resource Utilisation Report

Quarter .....

Indices	DEPARTMENTS								Overall This Quarter	Last Year This Quarter
	Gen. Medicine		Gynec.		Gen. Surg.		Pediat.			
	This Quarter	Last Year This Quarter	This Quarter	Last Year This Quarter	This Quarter	Last Year This Quarter	This Quarter	Last Year This Quarter		
Bed Occupancy										
Turnover Interval										
Average Length of Stay										
Bed Pressure Per Patient										
Average Daily Census										

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 serrvice activities which indicate the volume of business done in respect of in-patients.

F68
In-patient services Report

Month .....

	Total	Gen. Med.	Surg.	Gyn.	Obs.	ENT	Eye	Pead
Admissions								
Discharges								
Service Days								
Deaths								

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 occuring 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 occuring within the convalascence period. (ie. 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.

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

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

F69
Death Rates Report

Quarter.....

Name of Rates	Death Rates	
	This Quarter	Last Year this Quarter
1. Gross Death Rate		
2. Net Death Rate		
3. Anaesthesia Death Rate		
4. Post-operative Death Rate		
5. Maternal Death Rate		
6. Infant Death Rate		
7. Autopsy Rate		

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** = $\dfrac{\text{Total number of Out-patients during the Quarter}}{\text{Total number of Out-patient admissions during the Quarter}}$

2) **Average daily Out-Patient** = $\dfrac{\text{Total number of new Out-patients admissions during the Quarter}}{\text{Number of working days during the Quarter}}$

The data for the report can be compiled from the Registers maintained at the Registration counters in the Out-patient Departments, Special Clinics and Casuality Services.

F70
OUT-PATIENT REPORT

Quarter .....

Out-Patient Clinics	First Visit		Repeat Visit		Total		Average Out-Patient Admission		Average Daily Out Patient Admission	
	This Quarter	Last Year This Quarter	This Quarter	Last Year This Quarter	This Quarter	Last Year This Quarter	This Quarter	Last Year This Quarter	This Quarter	Last Year This Quarter
General Medicine										
Surgical-General										
Surgical-Specialist										
OB-Gyne										
Pediatrics										
Orthopaedics										
Neurology										
Cardiology										
ENT										
Eye										
(Any other clinic)										
TOTAL										

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.

F71

Surgery Report

Quarter.....

Nature of Operations	Variety of Operations Available			Number of Operations Performed					
				This Quarter			Last Year This Quarter		
	Major	Minor	Total	Major	Minor	Total	Major	Minor	Total
1. Skin, Subcutaneous & Aerolar Tissues									
2. Repair of wounds									
3. Musculoskeletal system									
4. Cardiovascular System									
5. Digestive System									
6. Urinary System									
7. Gynaecology									
8. Endocrine System									
9.Visual System									
10.Neuposurgical System									
11. Others									

2. ANAESTHESIA REPORT

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

4 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.

F74
Laboratory Performance Report

MONTH & YEAR: / Nature of Investigations	Variety of Investigations Available	Number of Investigations conducted					
		In-Patients		Out-patient		TOTAL	
		This Month	Last Year This Month	This Month	Last Year This Month	This Month	Last Year This Month
1. Urinalysis							
2. Parasitology							
3. Haemotology							
4. Biochemistry							
5. Bacteriology							
6. Pathology							
7. Immunology							
8. Serology							
9. Miscellaneous							
TOTAL							

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

MONTH & YEAR	Number of Investigations					
	Inpatients		Outpatients		TOTAL	
Types of X-rays	This Month	Last Year This Month	This Month	Last Year This Month	This Month	Last Year This Month
1. Bones						
2. Chest						
3. Abdomen						
4. Others						
TOTAL						

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

QUARTER ENDED	Number of Examinations					
	Inpatients		Outpatients		TOTAL	
Nature of Services	This Quarter	Last Year This Quarter	This Quarter	Last Year This Quarter	This Quarter	Last Year This Quarter
1. E.C.G.						
2. Exercise E.C.G.						
3. E.E.G						
4. Scanning						
5. Any other Services						
TOTAL						

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 emnate 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.

Volume of activity

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 medial care. The state of affairs of hospitals from the view point 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 beaurocracy 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 hall mark 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**"

APPENDICES

INTERVIEW SCHEDULE

1. GENERAL INFORMATION

1.1 Name of Hospital

1.2 Nature of ownership

1.3 Year of inception

1.4 Nature of hospital on the basis of its objective. If special, specify the area of speciality.

1.5 Number, Name and nature of departments into which the entire hospital activities are broadly divided. Specify the activities of each department as accurately and as detail as possible.

1.6 Number of beds available for inpatient services:

1.7 Details of Hospital staff:

(a) Number of Doctors Serving

(b) Number of Nurses

(c) Number of para medical staff
(x-ray, laboratory pharmacy etc.)

(d) Number of office employees
with their categories
(Clerical work)

(e) Number of other employees
with their categories.

1.8 Designation of the top-most executive managing the entire hospital services.

2. MANAGEMENT

2.1 Does the hospital have a written document stating its objective clearly and in specified terms? If so, attach a copy of the same.

2.2 If there is no written statement of objective, whether one can know the objectives through the various policy guidelines issued by the management

2.3 Whether the objectives are broken into plans?
Are the targets formulated for each department or individual separately?

2.4 Are the objectives revised periodically in the light of changes in internal and external environment?

2.5 Are there clear-cut rules for action in terms of policies in various areas of management?

2.6 Are the objectives expressed in specific quantitative terms? If so, how?

2.7 (a) Does the hospital have a well-defined organisational structure?

(b) Have formal organisation charts been drafted? If Yes, attach a copy of the organisation chart.

2.8 What are the various level in the organisational heierarchy? Are the lines of authority and areas of responsibility clear for each level?

2.9 Is the decision making centralised or is it spread over the various levels of organisation?

2.10 Are the employees subjected to close supervision and detailed directions? If so, the nature of such supervision and directions.

2.11 Is there a regular system of motivation? Is there any relationship between the performance of work and the reward or punishments.

2.12 What type of decisions are decentralised among the professionals? Whether the management decisions can be taken by doctors? If so, the type of decisions.

2.13 Whether the principle, code of ethics and morality of the medical profession are considered while designing the organisation for the hospital? If so, in what respect and how is it achieved?

2.14 Is there any unhealthy conflicts existing in the hospital between the management, medical professionals and other staff? If so, the nature of conflicts and the machinery designed to reduce such conflicts.

2.15 How decisions are made? What are the processes of decision making?

2.16 Does the organisation have a system of long-range and short range planning?

2.17 What are the activities being planned? For what activities, plans are existing?

2.18 Whether only top executive is involved or whether various departmental heads are involved while making plans?

2.19 Are operating plans prepared periodically? Are these expressed in quantitative terms for each area of operation?

2.20 Whether there is a system of preparing budgets? If so, how are they framed and what is the procedure, what persons and what methods are involved?

2.21 How are budget estimates developed? What areas are covered by the budgetary systems?

2.22 What steps are being taken to see that budgets are strictly followed for various activities?

2.23 Where and how controls are made compulsory?

2.24 Whether the plans for each department and the controls in each department are related? If so, how such relations are established?

2.25 Do the controls bring out the differences between the actual performance and the targets? (Plans or standards)

2.26 Is there a system of rewards and punishments linked with the controls? If so, the types and nature of each.

2.27 Are controls reviewed periodically? If so, how reviews made?

2.28 Do controls fix responsibility on individuals? How?

2.29 What are the corrective actions being taken in respect of deviations from actual performance?

3. ACCOUNTING

3.1 Whether the accounting system provides for the accumulation, on the accrual basis, of revenue and expenditure?

3.2 Whether double-entry accounting system is being practised?

3.3 What is the Book-keeping and accounting cycle being adopted? How the money transactions are recorded? Specify the books and accounts involved and the accounting procedure.

3.4 What are the book-keeping records maintained in the Hospital? (Name of books - items recorded in each book)

3.5 (Is there a chart of accounts in the hospital?) Is there a proper classification of account heads? Whether the account heads are in the form of a chart? If so, attach a copy of the chart of accounts.

3.6 How checks are made on the recording of transactions? What techniques are used for such check? Whether these checks are effective?

3.7 Whether proper distinction is made as to capital and revenue expenditure and receipts? If so, the principles and rules followed in that regard?

3.8 How often the financial statements are prepared? What are the records and information used for the purpose?

3.9 Whether the financial statements are audited? If so, what are the suggestions and improvements recommended by the auditor?

4. MATERIALS AND SUPPLIES

4.1 Whether centralised or decentralised purchasing is followed?

4.2 Whether there is any system of codification of materials and supplies for identifying each item of materials and supplies? If so, what is the process and the system of codification practised? (Attach a list of such codified items)

4.3 Whether a system of standardisation for ensuring the procurement of right quality of materials and supplies is practised? If so, the principles and the policies of such standardisation.

4.4 Does the management have a system of deciding well in advance what quantities of each materials should be maintained? If so, what is the nature of such a system?

4.5 Is there any system practised to ascertain how often or when fresh order for materials should be placed? If so, what is the nature of such a system? (Fixation of levels)

4.6 How the management determines the quantity of each item of materials to be purchased each time?(EOQ)

4.7 Whether the management is aware of the "ordering costs" and "carrying costs" of materials and supplies? If so, what factors are considered for their computation and the mode of its computation (EOQ computation)

4.8 Is there any system of controlling the materials and supplies by grouping them according to their rupee value? If so, the procedure of such control and the benefits derived therefrom (ABC Analysis)

4.9 Is there adequate control over obsolescence of materials? Are stock of materials reviewed periodically to identify slow moving, dormant or obsolete items of materials? What are the systems and procedures followed in connection therewith?

4.10 What measures are taken to reduce the investment in materials and supplies to a minimum?

4.11 What is the investment policy of the management in respect of materials and supplies?

4.12 Whether there is a materials budget for determining the quantity of materials required during a specified period? If so, how the material budget is prepared? What are the facts considered for its preparation (Attach a copy of the same)

4.13 Whether standards are fixed for each item of materials and supplies. What are the factors considered for the fixation of standards and how standards are fixed?

4.14 Whether material variances are being developed to pin down responsibilities and whether proper actions are being taken?

4.15 Whether different ratios are being computed in respect of material costs to compare the costs with different periods/

4.16 Is there the use of stock turnover ratio to ascertain the gravity of fast and slow moving items of materials?

Purchasing

4.17 How the purchase requirements are ascertained at a particular point of time?

4.18 Who is the internal agency entrusted with the task of purchasing?

4.19 Whether a purchase requisition or indent is used by a ward or department for supplies? If so, attach a copy of P.R.

4.20 How PRs are prepared? How many copies are prepared? Whether each PR has a distinct number?

4.21 WHo is the authority in wards and in departments to issue PRs?

4.22 When is the PR issued by each ward and department? How each ward or department ascertain that it is time to replinish each item of materials?

4.23 What are the contents of a typical PR?

4.24 Whether the receipt of PR is acknowledged in the purchase section? How acknowledgement is made?

4.25 Whether PR is used for each item or one PR is used for more than one item?

4.26 How PRs are being kept in the Purchase Department?

4.27 What books or records are maintained for recording the PRs? How PRs are recorded?

4.28 Whether requirements of whole organisation are summarised from the PRs received at one time? How are such summaries made?

4.29 Who are the responsible persons signing and countersigning the PRs?

4.30 Are quotations or bids or tenders invited? What are the policies regarding their invitation?

4.31 What are the procedure and rules regarding submission and opening of tenders or quotations?

4.32 What are the criteria for selecting the suppliers? What factors are taken into account for selecting the supplier?

4.33 Whether a comparative statement is prepared from the tenders received to select the best suppliers? If so, attach a specimen of the same.

4.34 Whether a purchase order is prepared for each purchase? If so, attach a copy?

4.35 What are the precautions taken to prepare a Purchase Order?

4.36 Who are the persons consulted with and what are the documents verified before filling up the purchase order?

4.37 Who is the competent authority to sign the Purchase Order?

4.38 How many copies of Purchase Order are prepared? How are the copies routed through the organisation?

4.39 Whether different colours are used for purchase orders to be identified with each department? Whether any imprint is made on each copy to identify the authority by whom it is authorised?

4.40 Whether any acknowledgement is received by the purchase department from the supplier with whom the purchase order is placed?

4.41 Is there a separate book to record the details of purchase orders prepared, sent and pending? If so, the contents of such book.

4.42 How follow up of P.Os is ensured? Give the procedure.

4.43 How much time will the supplier take to supply each type of item?

4.44 Whether prompt delivery is made in all cases?

4.45 Whether irregular deliveries have occured? If so, the reasons there of and the measures taken to prevent its recurrence?

Receiving and Inspection of materials and Payment of Invoice

4.46 How the materials and supplies are received into the organisation? What are the steps involved in the Receipt of materials?

4.47 Who are the personnel entrusted with such receipt?

4.48 How the materials received are being verified? What documents are being verified and referred for this purpose?

4.49 Is there any document which incorporates the details of materials received? If so, the details and the person who enter such details (Attach a copy of such document)

4.50 How the receiving reports are being routed?

4.51 Whether there is a policy of inspecting the materials received? If so, how materials are being checked and the persons connected therewith (Sampling or whole lot checking)

4.52 How shortages, surpluses and damages of materials received being assessed?

4.53 How the discripancies are being recorded? What documents are used to record them? What is the book used for the purpose? (Materials Return Note Book)

4.54 Whether an Inspection Report is prepared? If so, who is the authority for such preparation?

4.55 How many copies are prepared? How are they routed?

4.56 How the contents of Inspection Reports are made known to the supplier? What remedial actions are taken for non-recurrence of such discrepancies?

4.57 When are invoices received in respect of materials received? Whether along with materials or before or after the receipt of materials?

4.58 What are the documents received from the supplier, except the invoice, along with the materials?

4.59 How the invoices are checked? What are the documents used for this purpose ?

4.60 How the checked invoices are filed?

4.61 What type of corrections are usually made in the invoice? Who is the authority to do the corrections?

4.62 How the corrected invoices are passed for payment? What checks and counter checks are taken before the payment?

4.63 What precautions are taken to avoid double payment, non-payment and incorrect payment of invoices? Who are the persons involved in this connection?

4.64 Who authorises the payment of invoices? What sort of internal check is in force in respect of payment of invoices?

Storage

4.65 How the organisation of the stores is planned? What factors are considered for planning? What factors are considered for the lay out of stores?

4.66 How many employees are there in the store? Specify the functions of each employee?

4.67 Are there any sub-stores? If so, what type of items are being stored there in? Where are the locations of sub-stores?

4.68 Whether the store is centralised or decentralised? What are the factors which necessitated the centralisation or decentralisation?

4.69 Who is in charge of the stores? What are his specific functions?

4.70 What type of items are stocked? How do the different items of supplies stocked? What is the nature of such system?

4.71 What are the stores records used? Whether record is maintained for each item of supplies?

4.72 How and when the stores records are written up? Who are the authorities for this?

4.73 What are the contents of such stores records? Are all receipts, issues and balances of each item recorded promptly?

4.74 Whether the materials are being stored in accordance with the pre-determined standards or levels? If so, how are such standards or levels fixed?

4.75 What are the ranges of items to be held in stock? What are the principles for determining the range of items?

4.76 How often the stock is verified? What is the method of stock-taking?

4.77 How the results of stock-taking recorded? What books and records are being used for the purpose?

4.78 Are there any discrepancies found between balances of stock as per book and physical balances? If so, the nature of discrepancies.

4.79 Whether the discrepancies are analysed into their causes? If so, what are the usual causes?

4.80 How the discrepancies are treated in the accounts?

4.81 Whether any stores losses occur? If so, the nature of such lossess and the reasons therefor.

4.82 How the stores losses are accounted? What measures have been taken to minimise the loss?

4.83 Are there any peculiar or special features relating to the storage routine in the organisation? If so, what are they?

Issue of materials and Supplies from Store Department

4.84 What is the method of issuing materials from store?

4.85 Whether issues from stores are made on Stores Requisition slips? If so, attach a copy of the Requisition slip.

4.86 Who are authorised to prepare and sign the SR? How many copies are prepared? What are its routes?

4.87 How often the SRs are summarised and analysed? How the result of analysis recorded?

4.88 Whether any materials are returned to store? If so, the reasons therefor. What measures are taken to avoid such returns to stores?

4.89 Whether materials are transferred from one Department to another? If so, when and how they are recorded?

4.90 What are the records used for return and transfer of materials? Attach copies of such records.

4.91 How the transfers and returns are recorded in the books of accounts? What is the recording procedure?

4.92 How the issue prices for each item of material are computed? What are the principles followed for this? (How the cost of materials issued is determined)

4.93 Whether there are any wastages occur in the use of materials? If so, how such wastages are determined? What are the nature of such wastages?

4.94 What measures are usually taken to lessen the incidence of wastages? Have the causes of wastages ascertained and analysed?

4.95 How the various items such as freight, material handling charges, containers and purchase discounts are treated in the accounts? (Record the procedure of treatment for each item)

4.96 Whether the hospital is in regular receipt of donated supplies? If so, what type of supplies are being received? How such materials are being treated in the accounts?

4.97 What are the controls applied on the receipt and issuance of each narcotic (Dangerous materials)?

4.98 What are the records maintained in the wards relating to narcotics?

4.99 What are the legal rules affecting narcotics? Are they strictly followed?

5. LABOUR ROUTINES

5.1 Whether all the policies relating to pay roll be spelled out in written standing orders? Whether copies of the same are given to every member of the staff? What are such policies?

5.2 Whether appointment letters are being given to every member of the staff? Does each new staff member agree in writing, to abide by the policies and rules?

5.3 Whether there is a system of assessing the manpower needs during a specified period? If so, what are the features of such system?

5.4 What is the selection policy and procedure relating to the staff? How the policies of selection are framed?

5.5 Whether copies of appointment letters are forwarded to the concerned departments including payroll?

5.6 Is there a need to provide training to each new member staff? If so, how the training programme is conducted?

5.7 Whether any change in position or in salary or employment termination is informed to the concerned employees in writing? If so, who is the authority to sign and issue the written form? Is a copy sent to payroll Department?

5.8 What type of work or what type of employees are directly connected with patient - services? What are the categories of employees in direct contact with patient - services?

5.9 What is the nature of work not directly connected with, but assists in patient services? Name the categories of such employees.

5.10 Is there a history card for each employee including Doctors? If so, attach a copy?

5.11 Are there any time records which serve as the basis for salary computation? If so, attach copies of time records.

5.12 What is the frequency of the preparation of time records and their routing?

5.13 Whether the management is aware of idle time? If so, what measures are taken to control the same?

5.14 What are the causes leading to idle time? Whether any analysis is done in respect of this?

5.15 How the cost of idle time is ascertained? How is it recorded and treated in the accounts?

5.16 Whether there is a policy of allowing overtime to employees? If so, what is the nature of the policy?

5.17 How overtime work is recorded? Who is the authority to sanction the overtime work?

5.18 What are the usual causes of overtime work? What measures are taken to reduce overtime work?

5.19 How the employees working on holidays or weekly closed days are paid? How this payment is recorded and treated in accounts?

5.20 Whether the employees are allowed leave with pay? If so, what is the policy adopted in this connection? How leave with pay is treated in accounts?

5.21 How the learner's pay is computed during their training period? Is it treated as a part of training cost or salary or general overhead?

5.22 What are the fringe benefits given to the various categories of employees? How each of the benefit is accounted for in the books of accounts?

5.23 Is there the problem of labour turnover in respect of all categories of employees including doctors? If so, what are the causes? Whether such causes are analysed into avoidable and unavoidable?

5.24 Whether the management has analysed the effect of labour turnover? If so, how and with what result?

5.25 How labour turnover is measured?

5.26 What are the costs of labour turnover? Whether such costs are analysed into preventive and replacement costs?

5.27 How the costs of labour turnover is recorded and treated in the accounts?

5.28 What measures are taken to control labour turnover?

5.29 Whether a salary register is maintained? If so, what data are recorded there in?

5.30 Whether a salary advice slip is issued to each staff member before or at the time of payment of salary? If so, what are the details included therein?

5.31 Whether an individual earnings record is maintained for each staff member? If so, give the form and contents of the record.

5.32 How salary is disbursed? Who is the responsible person authorised for it? (Specify the salary disbursement procedure)

5.33 What is the procedure involved in the preparation of pay roll?

5.34 How salary is recorded in the accounts? Whether salary is grouped by departmental expense centres? If so, how?

5.35 Whether salary is recorded under different categories of employees such as doctors, nurses, others etc?

5.36 Whether salary needs allocation between departments due to an employee working in more than one department? If so, the category of staff whose salary should be so allocated? What are the usual basis of allocation adopted?

5.37 Whether contributed services of personnel are utlized? If so, the category of staff who contribute services. How such services are evaluated and accounted for in the books of accounts?

5.38 How many part-time Doctors are serving the hospital? What are the general nature of their timings? How remuneration is fixed for such doctors?

5.39 Whether there are any indirect incentives given to various staff members? If so, what is the nature and type of such incentives?

5.40 Whether distinction is made between total labour cost and net salary payable to staff members? If so, how the total labour cost and net salary payable are computed?

5.41 Whether a salary analysis book is maintained to record separately the time of work departmentwise nature of work, direct and indirect, etc.

5.42 Whether the labour cost is allocated to each category of patients? If so, what is the basis of such allocation?

5.43 How performance of labour is measured? Whether any ratios are used for measurement? If so, the details and modes of computation of such ratios.

5.44 Whether any reports are sent to various management levels in respect of different aspects of labour? If so, the title, frequency, contents and purpose of such reports?

5.45 How labour cost is recorded in the books of accounts? What are the accounts opened in respect of labour? What is the accounting procedure of labour?

6. OTHER EXPENSES

6.1 Whether a proper classification of various expenses other than materials and supplies, and labour exists? If so, give the nature of such classification.

6.2 What are the different items of expenses which are not directly related to patient-services?

6.3 Whether any system of codification is used in respect of various expenses? If so, the nature of such codification system.

6.4 Whether expenses are classified according to the volume of activity into fixed, variable Or semi-variable? If so, give the nature of such classification.

6.5 On what basis expenses are collected? What are the source documents from which expenses are collected?

6.6 What are the various departments into which the various activities of the hospital are divided? What are the factors considered for such a division of the hospital?

6.7 What are the revenue producing departments and the nature of their services?

6.8 What are the non-revenue producing departments and the nature of their service?

6.9 How the overhead expenses are departmentalised? Is there a system of accumulating all overhead expenses in the revenue-producing departments? If so, how the common expenses and expenses of other departments are apportioned to revenue producing departments? What are the basis adopted for such apportionment?

6.10 Whether an overhead analysis sheet is prepared to show the details of expenses under important heads, department-wise?

6.11 What is the procedure of accounting involved in collecting, classifying and analysing the overhead expenses? Name the books of accounts involved therein.

6.12 What type of expenses are included in the category of "operating expenses" for running the hospital?

6.13 Whether any expenses can be directly allocated to the patient services? If so, the nature of such expenses and the relationship between such expenses and services rendered?

6.14 Whether centralised or decentralised authorisation is there for incurring expenses? What is the extent of authority for each level of management in respect of various items of expenses?

6.15 Whether any expenses are being missed to be recovered from patients? If so, the nature of such expenses and the reasons there of. What controls are exercised to prevent such serious omissions?

6.16 Whether all the assets are properly classified into major, minor, fixed, movable, depreciable and non-depreciable? If so, attach a list of such classification.

6.17 What are the assets and equipments for which depreciation is charged?

6.18 How depreciation rate is computed for each category of assets?

6.19 What are the principles and policies followed in charging depreciation on assets and equipments?

6.20 Whether an asset and equipments register is maintained? If so, give the method of maintaining it and its contents?

6.21 What is the accounting procedure for the purchase, use, maintenance, sale and changing depreciation of various assets and equipments?

6.22 What type of equipments are treated as expense items to be charged fully to current revenue?

6.23 How replacements of equipments are accounted for?

6.24 Whether any assets or equipments are rendered unserviceable but not completely written off? If so, the nature of such items and the reasons there of. How depreciation is calculated on such assets or equipments?

6.25 Are there any assets regarding deliberate retirement? If so, give the nature of such assets and the reasons thereof. How depreciation is calculated on such assets?

6.26 Whether interest on owned capital is charged to revenue? If so, give its accounting treatment and the arguments in favour of inclusion of such interest in the accounts for recovering from patients?

6.27 Whether any reports are prepared and issued to different levels of management in respect of overheads? If so, the name, use, addressee, frequency and contents of each report? Specify.

7. PATIENT - SERVICES

7.1 What are the various services available to the patients in the hospital? Name the services.

7.2 Whether each type of service is rendered by a separate department? If so, give the details of such departments? If not, what is the alternative arrangement?

7.3 What are the delegated authority and powers of each departmental head?

7.4 What are the policies regarding admission of patients to the Hospital? Whether these policies are written or not? If written, attach a copy of the same. How these policies are made known to the various departments?

7.5 How the routine service charges for each patient is recorded?

7.6 How often the billing clerk prepares and presents the bills to each patient in case of surgical cases on long-stay?

7.7 How the patient's bill is prepared? What records and other documents are checked and verified for repairing the bill?

7.8 Whether each patient has an account in the ledger? If so, how this account is maintained and recorded?

7.9 Are there any concessions granted to patients and others? If so, the nature of such concessions? How these concessions allowed are recorded?

7.10 Whether any amounts are uncollected from patients? If so, the reasons therefor and records and accounts maintained to record the same.

7.11 Is there a credit policy in the hospital? If so, the nature of such policy?

7.12 Is there a practise of computing cost of all services per patient? If so, a description of the procedure of such computation?

7.13 What are the factors considered for classifying an operation as major and minor?

7.14 What are the rules governing the care of pre-operative and post-operative patients?

7.15 How each patient is charged for an operation? What are the components of each operation fee?

7.16 Whether records are maintained in the operation theatres in respect of each operation? If so, the nature and contents of such records.

7.17 How many surgeons, nurses and others attend to each type of operation?

7.18 What are the usual facilities utilised in the theatre for conducting each type of operation? (Including anaesthesia) (Indicate each and every type of expenses in the theatre, item-wise)

7.19 Is there a blood bank in the hospital? If so, its organisation and the authorities and powers of its head. Enumerate the functions of the blood bank?

7.20 How the need for blood is assessed for a particular period?

7.21 Whether inventory levels are fixed to minimise the inventory problem of the blood bank? If so, how such levels are determined?

7.22 How the costs of receipt and issue are ascertained?

7.23 How many staff members are engaged in the blood bank?

7.24 What are the various items of expenses in the blood bank? Indicate the cash and non-cash items. What records and accounts are maintained and recorded for such expenses?

7.25 What are the basis upon which the users are charged the fees? How the cost of each unit of blood supplied to the patients is ascertained? What are the items of expenses considered?

7.26 What are the records and accounts maintained in the blood bank?

7.27 Is there a separate laundry and linen department? If so, the organisation and the number of staff engaged in the service? If not, how laundry service is maintained? Indicate the functions of the department?

7.28 Whether the laundry is mechanized? If so, the nature and extent of mechanisation. Indicate the machines and equipments used? (Name of machine - cost price - life - use - method of depreciation)

7.29 Is there a correct record to show the pieces of laundry coming in and out of the department? If so, the nature and details of the record

7.30 How much quantity of soiled linen is processed daily and weekly? Is there any system of classifying the soiled linen? What is the basis of such classification?

7.31 How often the linen are changed for each patient? What is the policy of the hospital in this regard?

7.32 Whether all expenses incurred in respect of laundry and linen are recorded in the department? If so, the nature of records and accounts? Indicate each type of expenses (cash and non-cash).

7.33 Is there a separate department for diet management? If so, the nature of organisation and number of staff engaged with their category or grade?

7.34 How many patients make use of the dietary services per day on an average? How can this number be ascertained? What records are used for this?

7.35 Whether patients are separately charged for the dishes served or included in the total charge? If so, how they are charged?

7.36 What are the records and accounts maintained in the department? How can we know the number of different types of dishes served in a day or each month?

7.37 Is there a system of collecting all expenses incurred in the department for a specific period? Whether cost of providing various dishes to patients can be ascertained? If so, how they are computed? If not, what are the expenses incurred in the department for a month?

7.38 What type of laboratory facilities are available to patients? (What type of tests?) What is the organisation of the pathological services? How many staff members are engaged in the service?

7.39 How many tests are conducted in a day? How many inpatients and outpatients make use of the service in a day? What records are used for the purpose?

7.40 How the details of tests are collected and compiled? Whether records are maintained department-wise or patient-wise?

7.41 How this test charges are made known to the patients, the office and the cash section? What records are maintained in this connection?

7.42 What factors are considered for fixing the charges for each test? (what items of expenses are considered for charging the patient)

7.43 Whether a monthly performance report is prepared? If so, the nature and contents of such report?

7.44 What are the different items of expenses incurred in the department? What are the items of equipment, furniture and other assets used in the department? (An item-wise description is required)

7.45 How the pharmaceutical service is organised? How is it staffed (organisation structure with number of staff)

7.46 What are the functions of the department? Indicate also the functions of different personnel in the department.

7.47 Whether the department purchases the medicament on its own or requistioned from the central store? In both cases, indicate the procedure of purchase or requisitioning?

7.48 a) How the receipt, stock and issue of each type of medicine is recorded? What are the records and accounts kept in this regard? Detailed explanation is needed.

b) What is the stock taking system in practice? Give details with the records and documents used in this connection.

7.49 What is the medicine distribution system in wards, OPD, IC, Operation theatre etc. Explain in detail each distribution and also mention the records in this respect.

7.50 a) How the patients are charged with the medicine? How the charge is arrived at? What are the records and accounts in connection therewith? How can we ascertain the quantity of each type of medicine consumed by each patient? Indicate the contents of such records.

b) What are the expenses incurred in the department (Both cash and non-cash) in a month? What furniture, equipment and other items are used in the department?

7.51 Whether a manufacturing section exists for various formulations and intravenuous fluids? If so, what are the records and books of accounts kept in the section? What is the nature of manufacturing process? What are the inputs and outputs of the section?

7.52 How the X-ray unit of the hospital is organised? How many staff members are engaged therein? Specify the functions of personnel.

7.53 What type of X-ray machines are used? Whether a machine register is maintained to record the addition, maintenance, sale etc? Whether the register is kept in the department or in the accounts office?

7.54 How the X-ray films are purchased? Departmentally or centrally? What are the records and accounts in this regard? How and when the department take the initiative to purchase?

7.55 What is the unit of measurement in respect of the consumption of films? (What are the different items of expenses (Cash and non-cash) incurred in the department.

7.56 What is the basis of charging patients? How the rate is arrived at? What are the records and accounts in the connection? How can one ascertain details of X-ray taken daily for in-patient and out-patient? What records are used for the purpose?

7.57 What is the system to record the receipt, issue and balance of X-ray films? (What records are used for the purpose?) (Both quantity and rupee value)

7.58 Whether a monthly X-ray performance Report is prepared and presented to the appropriate authority? If so, the nature and contents of such report. If not, what is the alternative arrangement to assess the performance of the X-ray Department during a month? Is there any system of forecasting the performance of the department for a particular period? If so, give the details.

7.59 Is there a delivery room exclusively for delivery cases? If not, whether operation theatre is utilised for the purpose?

7.60 Whether delivery is classified into normal and abnormal? What are the basis of such classification?

7.61 How rate is set separately for normal and abnormal delivery? What factors are considered for setting the rates? What types of expenses (Cash and non-cash) are considered for rate-setting?

7.62 Whether full and complete obstetric records are maintained? If so, the nature and contents of such records. Where such records are maintained?

7.63 What are the facilities utilised for conducting normal and abnormal deliveries (in terms of men, money, materials, machines and other expenses for a month for each type of delivery)?

7.64 Whether a monthly performance report is prepared in respect of deliveries. If so, the full particulars in this regard. If not, how the activities are made known to the appropriate level of management?

7.65 Whether a separate nursery for new born babies exists in the hospital? If so, its nature and organisational pattern? How many staff members are serving in the nursery?

7.66 How many beds are there and what is the usual duration of stay of each baby in the nursery? What records are used in this regard.

7.67 What are the facilities utilised in the nursery? What records and other books are maintained to show the activities of the nursery? (Facilities in terms of various expenses (cash and non-cash) and equipments.

7.68 Is there any therapy unit existing in the hospital? If so, what is the nature of therapy and how the unit is organised?

7.69 Who men the unit? What are the equipments used? What other facilities are used in the unit? Indicate the expenses (cash and non-cash) incurred in the department for a month.

7.70 What is the unit of measurement in the therapy unit?

7.71 What records and accounts are kept for the activities? Whether performance reports are prepared? If so, the nature and contents of such reports?

7.72 How the fees are set? What elements are considered for setting the fees? Are all the elements of expenses are included in the fees?

7.73 Is there an E.C.G. Unit in the hospital? If so, what is the nature of organising the unit?

7.74 What are the facilities used in the unit in respect of men, money, material and machines and other expenses during a month?

7.75 What is the unit of measurement adopted to record the activity? What records and accounts are kept to show the daily activities?

7.76 How fees are set in the unit? What factors are considered for setting the fees?

7.77 Whether a monthly ECG performance report is prepared? If so, the nature and contents of such reports. If not, how can we ascertain the activities taking place in the unit in a month.

7.78 Is there an Intensive Care Unit in the hospital? If so, the nature of organising the unit?

7.79 Who man the unit? What are the equipments and machines used in the unit?

7.80 How many beds are there? What is the average minimum and maximum duration of stay of each patient?

7.81 What is the rate of bed occupancy during a specified period? How the rate is computed?

7.82 What are the facilities used in the unit? How the used up facilities are recorded? (Facilities in terms of expenses, both cash and non cash). What records and accounts are kept for the purpose?

7.83 What records are maintained to show the daily activities in the unit?

7.84 What types of services are rendered by I.C. Ward?

7.85 What type of patients are admitted to I.C.Unit? How many patients are admitted to the unit in a week or month?

7.86 How such patient's are charged? What factors are taken to set their fees? How their bills are prepared? What are the records which assist the preparation of such bills?

7.87 How the out-patient department is organised?

7.88 How many doctors, nurses and others are engaged in OPD? (Full & Part Time)

7.89 What is the procedure of an OPD? What are the records and forms which flow with the patient from admission to discharge from OPD.

7.90 How many patients visit the OPD Daily to see doctors or receive treatment? How many new patients coming for the first time in a day, or monthly? How many old patients coming for the second or third time? How can we ascertain this information? Mention the records in this connection?

7.91 Whether record is maintained of patient visits by doctor daily? If so, nature and content of such records. If not, how many patients visit each OP clinic daily and monthly? What is the record used for this? Indicate the type of clinic and the number of OP visiting.

7.92 How the routine service charges are collected and complied for each out-patient? Indicate the records and documents used for this?

7.93 How many out-patients are transferred to wards and treated as inpatients in a month? What records are involved in the conversion? What is the policy of the hospital in this regard?

7.94 How fees are set for out patients? What factors are considered for setting the fees? What type of expenses considered for the purpose.

7.95 What is the total expense (item-wise) incurred for maintaining the OPD in a month? Give all details.

7.96 Will an estimate be made on the probable number of OP who visit the hospital in a future specified period? If so, what data are considered for such an estimate?

7.97 What are the different types of wards available for in-patients? How many beds are available for each type of wards?

7.98 How many daily admissions are taking place? How many discharges are effected daily? What record indicate these information? Give the contents of such record.

7.99 Whether a midnight census is conducted to ascertain admissions and discharges in a day? If so, the nature and contents of census report? If not, what is the alternative arrangement for collecting the details of admissions and discharges say, in a month?

7.100 Whether an assessment is made on the factors which determine demand for beds in hospital? If so, what are the findings and how such findings ascertained?

7.101 What is the Bed Occupancy Ratio? How it is calculated?

7.102 What is the average length of stay? How is it calculated?

7.103 Whether turnover interval is calculated? If so, what factors are considered for its calculations?

7.104 Whether Bed Pressure Index is calculated? If so, how is it calculated?

7.105 Whether a departmental analysis is made in respect of duration of stay, turnover interval and occupancy rate? If so, how the analysis is made? What records are used for this? Give details?

7.106 What are the various records and forms and returns prepared in different wards? Indicate the name, contents and purpose.

7.107 How each in-patient's record is maintained?

7.108 How the routine service charges are allocated to each in-patient? From What records the charges are allocated?

7.109 Whether a sub-store exists in each block of the wards? If so, how the receipt and issues of stores items are arranged and recorded? What records are used for the purpose. What type of items are stocked?

7.110 How the medicines given to each in-patient is recorded? Whether an analysis and summary is made on such medicines?

7.111 What expenses (cash and non cash) are incurred for maintaining each type of IP ward? How the expenses are calculated and recorded?

7.112 How the various services provided to each in-patient is fixed and recorded? What are the records in this connection?

7.113 What is the proportion of nurses and other staff in relation to patients?

7.114 Whether an estimate be made in respect of in-patients who are possibly to be admitted in a future specified period? What is the system of such forecasting? What factors are considered for making such forecast?

7.115 How in-patient's bill is prepared? How often the bill is settled? Whether any advance is received from patients as a policy matter? What records and documents are used for the purpose?

7.116 Whether fatality rate is computed? What factors are considered for such computation?

7.117 Is there a separate emergency or casuality services department? If so, what is the procedure in an emergency services department? What are the records and forms in the procedure?

7.118 What is the organisation of the casuality department? How many staff members are attending in the department?

7.119 What are the equipments and other facilities in use in the department? What are the total expenses (cash and non-cash) incurred for maintaining the department?

7.120 How many patients are admitted in the department in a month? What is the average duration of stay of each patient?

7.121 Whether any register is maintained in the department to ascertain the admissions, discharges and transfer to IP Wards on a monthly basis?

7.122 Whether patients are classified on the basis of seriousness of the case? If so, what are such classification?

7.123 How the patients are charged? What factors are considered for the fixation of such charges? What type of expenses are considered for setting the fees?

7.124 Is there a scanning unit in the hospital? If so, how is it organised?

7.125 How many staff members are working in the unit? Specify their functions.

7.126 What types of Scan are taken in the unit? Specify the details of each type of Scan.

7.127 What are the facilities available for scanning in terms of machine, materials and other utilities?

7.128 Specify the records maintained in the unit showing the details of all expenses incurred.

7.129 What type of scanning machine is used? Indicate the make, year of purchase, life, rate of depreciation etc.

7.130 What are the reports prepared and submitted to the management? Indicate the nature, content, frequency and the form of report.

8. GENERAL SERVICES

8.1 How the repairs and maintenance department is organised? How many employees are serving in the department?

8.2 What are the functions of the department?

8.3 What is the procedure of repairs and maintenance department? What are the records in connection with?

8.4 How each repair and maintenance is executed? How the cost of each work is calculated? What are the records and accounts regarding this aspect?

8.5 What are the supplies and expenses of this department in a month? What records are used to record the details of expenses of the department in a month?

8.6 Whether a separate Transport service department exists? If so, what is the nature of organisation of the department. How many staff members are engaged in the department?

8.7 What kind of transportation facilities are there in the hospital? Whether there is the classification of internal and external transport services? If so, the nature of each type of vehicle for internal and external purpose should be specified.

8.8 How the mileage driven by all hospital vehicles is ascertained?

8.9 Whether a log book for hospital vehicles is maintained? If so, the nature and contents of the book and the authority who maintain the book?

8.10 What are the costs of running the vehicles? How they are ascertained?

8.11 Whether a mileage rate is computed to cover all the costs of running? If so, how the rate is computed?

8.12 Whether proper maintenance is carried out? If so, the record of maintenance? How repairs are made? What are the records used for this?

8.13 How depreciation is calculated on the vehicles? How the depreciation and repair charges are accounted for?

8.14 Which departments and which persons use the hospital vehicle? Whether a record is maintained of the use of the vehicles? If so, what is the nature and contents of such records.

8.15 How power and heating is supplied to the hospital? What is the arrangement for this? How many staff is employed in the department?

8.16 At what rate power is supplied to the hospital? How the rate is ascertained?

8.17 How the consumption of power is recorded and measured?

8.18 How many light points are there in each department? How much power is consumed by each department?

8.19 Whether power is generated in the hospital? If so, what is the method of generation?

8.20 What are the costs incurred in the manufacturing process? How such costs are ascertained?

8.21 How many persons are engaged in the generation and distribution of power?

8.22 What controls are exercised on the consumption of power?

8.23 Has power failure occured during the last one year? If so, what were the reasons? Whether any loss of any kind has resulted? What are the precautions taken to prevent power failure?

8.24 How the cost of consumption of power is calculated? What elements are included in the cost of consumption? What records are used for the purpose? What expenses are incurred in a month for the power and heating department?

8.25 What is the organisation for House-keeping? How many staff members are working in the House-keeping department? What are the duties allocated to each staff?

8.26 What are the functions of house-keeping department? What records are maintained in the department to record the daily activities of the department? Complete details of all records are needed.

8.27 What are the other departments which make use of the services of house-keeping department? What is the nature of such services? What are the records in this case?

8.28 What supplies and expenses are incurred in the department? What are the total expenses of the department in a month?

8.29 Is there a separate medical records department? If so, the nature of its organisation? Also mention the function and the staff details.

8.30 What are the medical records maintained in the department? What is the nature, form and content of each record?

8.31 How the medical records are preserved? How many previous year's records are available? Indicate the details of filing systems?

8.32 Whether the management realises the importance and purpose of medical records? If so, what has been done to improve the medical records? What type of information is gathered from the medical records by the management?

8.33 Are all the departments co-operate fully in the compilation of medical records? Name the departments for which medical records are kept. What type of records are maintained for each department?

8.34 What are the important statistics which are essential for the management from the medical records?

8.35 Are the medical records analysed and summarised periodically? If so, how often? What is the procedure of such analysis and summary?

8.36 What are the expenses, equipments and other facilities used in the department? How these facilities are recorded?

8.37 How plants and grounds are operated? State the procedure.

8.38 Who are the staff members responsible for the operation of plants and grounds? Specify the nature of work performed by each staff member.

8.39 What are the supplies and expenses and other facilities used for such operation? Give the total expenses (Cash and non-cash) item-wise for maintaining the department?

8.40 What are the records and accounts maintained for the operation of plants and grounds?

8.41 How the administration department is organised? Who are the staff members who man it?

8.42 What are the functions of the administration department? Whether authority and responsibility are clearly laid down? How?

8.43 What are the records and accounts maintained in the department?

8.44 What are the supplies, expenses and other facilities utilised in the department? What are the total expenses (cash and non cash) item-wise for running the department.

8.45 Whether the cost of operating the department can be ascertained for a specified period? If so, how the cost is arrived at? If not, what are the practical difficulties.

8.46 What are the reports, records, statements, accounts etc. received from other departments? Name the documents, its purpose and content.

8.47 Whether a departmental analysis is made periodically to ascertain the result of activities of all the departments in the hospital? If so, the nature of such analysis. Whether a departmental analysis is made for each department in respect of revenue and expense on a monthly basis? If so, give the details of such analysis.

8.48 Has any targets, standards or budgets fixed for the performance of each department? If so, the nature of such yardsticks?

8.49 Whether a particular information on any aspect at any point of time can be gathered from the department? If so, how quickly? If not, the reasons therefor? If so, how can the information be gathered?

8.50 Whether cost finding effort has ever practised in the department? If so, what are the findings? If not, why such effort has not been made?

9. BUDGETS AND STANDARDS

9.1 Is there a budgetory system in practice in the hospital? If so, what is the nature of the system? If not, the reasons therefor?

9.2 What are the financial and operational budgets prepared?

9.3 How each budget is prepared? What factors are considered for the preparation of each budget? Name the records and books used in this regard?

9.4 Which persons are involved in the preparation of budget?

9.5 Is there a budget committee? If so, the composition and functions of the committee?

9.6 What is the budget period? Whether the same budget period is adopted for all the budgets?

9.7 How actual results are ascertained? What are the records and accounts from which actuals are drawn?

9.8 How comparisons are made? How they are recorded?

9.9 How deviations are analysed? What are the basis upon which such deviation are measured?

9.10 What are causes of deviations of actuals from budgeted figures?

9.11 What are the remedial measures taken to bring the actuals closer to targets?

9.12 Whether budgets are related to activity levels? If so, how levels of activity are determined? How expenses are classified for the purpose of preparation of budgets related to activity?

9.13 Are standards of any type set for various items of cost? If so the nature of such standards?

9.14 How standards are set? What factors are considered for setting the standards?

9.15 Who are the persons involved in the procedure of setting the standards?

9.16 What organisation is there to supervise the application of the system?

9.17 How actuals are compared with standards?

9.18 How variances are analysed?

9.19 What are the usual and unusual causes of such variances?

9.20 What corrective actions are taken to prevent the recurrence of variances?

9.21 Are the corrective actions effective and sufficient?

10. REPORTING

10.1 Is there a well laid out information system in the hospital? If so, what are the features of such system?

10.2 Whether the top management gets all the necessary information in time? What is the system of information used for this? How the policies and directions of the management are made known to each member of the staff?

10.3 How often the reports are prepared? What kinds of reports prepared daily, weekly, monthly and yearly? For what type of activities reports are prepared?

10.4 Are the contents of reports understood by the receipient? If not, what are the reasons for it?

10.5 Whether each department prepares its own summary of all activities? If so, how often and what is the nature of such summary?

10.6 What actions are taken on reports requiring urgent and speedy attention?

10.7 What are the media of reporting in use in the hospital? What are the circumstances in which each such medium is used? What techniques are used for reporting in different circumstances?

10.8 Are there any difficulties in getting information when needed? If so, what are the nature of such difficulties?

10.9 Who are the persons authorised to prepare reports? Who are the usual receipients of reports?

10.10 Whether reports contain only financial data? If so, how information on non-financial data is collected?

SELECTED BIBLIOGRAPHY

I BOOKS

1. Allshop Michael, Management in Professions, London: Business Books Ltd., 1979.

2. Allwood. M.C., Fell. J.T. (ed.) Text Book of Hospital Pharmamcy, London: Blackwell Scientific Publications, 1980.

3. Banerji, Bhabatosh, Cost Accounting, Calcutta: The World Press Pvt. Ltd., 1981.

4. Barnes, Thomas W., Encyclopedia of Cost Accounting, Volume II.

5. Benjamin, Bernard (ed.), Medical Records, London: William Heinemann Medical Books, 1980.

6. Bentley, Trevor J., Practical Cost Reduction, Berkshire: Mc. Grew - Hill Book Co. Ltd., 1980.

7. Bhattacharya S.K. and Dearden John, Accounting for Management, Text and Cases, New Delhi: Vani Educational Books, 1984.

8. Bierman, Harold and Dyckman Thomas, Managerial Cost Accounting, New York: Macmillan Publishing Co, 1976.

9. Bose, Ashish et.al, Social Statistics: Health and Education, New Delhi: Vikas Publishing House Pvt. Ltd., 1982.

10. Chakraborthy, Hrishikesh, Advanced Accountancy, Calcutta: Oxford University Press, 1978.

11. Copeland, Ronald M. and Dascher Paul E., Managerial Accounting, New York: Wiley and Hamilton, 1978.

12. Cunning, Maurice W., Hospital Staff Management, London: William Heinemann Ltd., 1971.

13. Eggleston, De Witt Carl, Modern Accounting, New York: John Wiley and Sons, 1930.

14. Fanning, David (ed.), Hand Book of Management Accounts, Hauts, England: Gower Publishing Co. Ltd., 1983.

15. Finer, Hermen, Administration and the Nursing Services, New York: The Macmillan Company, 1959.

16. Fisher, Martin, Controlling Labour Costs, London: Kogan Page Ltd., 1981.

17. Ghei P.N. and Khokhar A.K. (ed.), Selected Readings in Hospital Administration, New Delhi: Indian Hospital Association, 1990.

18. Goel S.L., Health Care Administration, New Delhi: Sterling Publishers Pvt. Ltd., 1981.

19. Hibson, Arthur H., Encyclopedia of Accounting Systems - Vol. III, New Delhi: Prentice Hall of India Pvt. Ltd., 1967.

20. Higgins, Lindley and Slidger Ruth, Cost Reduction from A to Z, New Delhi: Tata Mc. Graw Hill Publishing Co. Ltd., 1978.

21. Horngren, Charles.T, Cost Accounting - A Managerial Emphasis, New Delhi: Prentice Hall of India Pvt. Ltd., 1978.

22. Horngren, Charles. T., Introduction to Management Accounting, New Delhi: Prentice Hall of India Pvt. Ltd., 1981.

23. Kapoor, Narinder. N., Interpersonal Relations in Hospitals, New Delhi: Varma Brothers, 1976.

24. Karst, Fremont. E. and Rosenzweig, James E., Organisation and Management, New York: Mc. Graw Hill Book Ltd., 1970.

25. Koontz, Harold et. al, Management, Tokyo: Mc. Graw - Hill Kogakusha Ltd., 1972.

26. Kotler, Philip, Marketing for Non Profit Organisations, New Delhi: Prentice Hall of India Pvt. Ltd., 1985.

27. Lasser. J.K, Handbook of Accounting Methods, New York: D. Van Hostrand Co. Ltd., 1954.

28. Lewton, Murray M and Foy Donald. F, A Text Book for Medical Assistants, Saint Louis: The C.V. Mosby Company, 1971.

29. Livingstone, John Leslie and Gunn Sanford C, Accounting for Social Goals, New York: Harper and Row, 1974.

30. Matz, Adolph et. al, Cost Accounting, Bombay: D.B. Taraporevala Sons & Co. Pvt. Ltd., 1970.

31. Mefarland, Dalton E., Management Foundations and Practices, New York: Macmillan Publishing Co., 1979.

32. Neuner, John J.W., Cost Accounting - Principles and Practice, Illinois: Richard D Irwin, 1955.

33. Newman, William H and Warren Ekirby, The Process of Management, New Delhi: Prentice Hall of India Pvt. Ltd., 1977.

34. Nicks, Herbert G and Gullet Ray C., Modern Business Management, Tokyo: Mc. Graw - Hill Kogakusha Ltd., 1974.

35. Nigam et.al, Principles and Practice of Cost Accounting, New Delhi: S. Chand and Co. Ltd., 1981.

36. Oommen T.K., Doctors and Nurses, New Delhi: The Macmillian Co. of India Ltd., 1978.

37. Osborn, Frank, Costing and Control for Materials, London: the Macmillan Press Ltd., 1980.

38. Prasad N.K., Principles and Practice of Cost Accounting, Calcutta:Book Syndicate Pvt. Ltd., 1981.

39. Raffel, Marshal. W., The U.S. Health System: Origins and Functions, New York: John WIley and Sons, 1980.

40. Rao, Subba P and Rao V.S.P., Personnel/Human Resource Management, Text, Cases and Games, New Delhi: Konark Publishers Pvt. Ltd., 1990.

41. Reynolds, Lloyd. G., Microeconomics - Analysis and Policy, New Delhi: Irwin Publications, Universal Book Stall, 1990.

42. Sahni, Ashok (ed.), Financing of Health Services in India, Bangalore: Indian Society of Health Administrators, 1985.

43. Sahni, Ashok (ed.), Cost Reduction in Hospitals and Health Care, Bangalore: Indian Society of Health Administrators, 1986.

44. Shilling law, Gordon, Cost Accounting - Analysis and Control, Bombay: D.B. Taraporevala and Sons Co. Pvt. Ltd., 1971.

45. Taylor, A.H., Costing for Managers, East Sussex, Hoet: Rinehart and Winston Ltd., 1984.

46. Voluntary Health Association of India, An Accounting Guide for Voluntary Hospitals in India, New Delhi: Voluntary Health Association of India, 1975.

47. Wald. J., Bigg's Cost Accounts, London: The English Language Book Society and Macdonald and Evnas Ltd., 1979.

48. Wilson R.M.S., Cost Control Handbook, Hauts: Gower Publishing Co. Ltd., 1983.

II ARTICLES

1. Aggarwal K.C., "Six Challenges - For the Nursing Profession", Hospital Adminsitration, Vol. XV, June, 1978.

2. Anand K.K., "Income Generation Vs. Cost Reduction", Hospital Administration, Vol. XXV, March, 1988.

3. Anand T.R. and Bhola R.S., "Some Aspects of Hospital Management Requiring Personal attention of a Hospial Administrator", Hospital Administration, Vol. XV, June, 1978.

4. Ananthapadmanabhan U.K., "Relevance of Cost Control and Cost Reduction Techniques in Hospital Materials Management", Hospital Administration, Vol. XXIII, March - September, 1986.

5. Ananthapadmanabhan U.K., "Bio-medical Engineers and Modern Hospitals", Hospital Administration, Vol. XXIII, March - September 1986.

6. De Souza, Marico C., "Cost Versus Quality Conflicts in the Indian Context". Hospital Administration, Vol. XXV, March 1988.

7. De Souza, Mario C., "Cost Effectiveness of Radio immunoassary Services", Hospital Administration, Vol. XXV, June 1988.

8. Dixit U.K., "An Introspection in Personnel Management in Hospitals", Hospital Administration, Vol. XXIII, March - September, 1986.

9. Gangolli, Vrinda, "Dietary Services in Hospital", Hospital Administration, Vol. XXV, March, 1988.

10. Ghei P. (Mrs.), "Impact of Ward Planning in Cost Containment of Hospital," Hospital Administration, Vol. XXV, March, 1988.

11. Ghe P (Mrs.) and Ghei P.N., "Hospital Nursing Audit", Hospital Administration, Vol. XII, September - December, 1975.

12. Ghei P.N. et. al., "Conflicts in Hospitals," Hospital Administration, Vol. XV, June, 1978.

13. Ghei P.N., "Hospital Organisational Development," Hospital Administration, Vol. XV, June, 1978.

14. Gouri. S., "Complaint Management in Hospitals", Hospital Administration Vol. XIX, March - June, 1982.

15. Gupta J.P. and Jayal R.K., "An Exploratory Study on Cost Analysis of an Urban Maternal and Child Health and Family Welfare Centre", Hospital Administration, Vol. XV, June, 1978.

16. Gupta P.D. "Budget and Audit in Non-Government Hospitals," Hospital Administration, Vol. XXIII March - September, 1986.

17. Gupta P.D., "Observation on Cost Control by More Productivity", Hospital Administration, Vol. XXV, March, 1988.

18. Gupta P.D., "The Need of Professionalisation in Hospital Management", Hospital Administration, Vol. XXII, September-December, 1985.

19. Huss, Carol, "Participative Management in - Hospital - A Case Study", - Indian Manager, (Vol. II) January-March, 1971.

20. Kapoor N.N - "Essentials in Purchases", Hospital Administration, Vol. XXV, June, 1988.

21. Kelkar.S.A., "Hospital Management Systems", Hospital Administration - Vol. XXV, March, 1988.

22. Kuppuswami.T.N., "Professionalisation of Hospital Management - The Practical side", Hospital Administration, Vol. XXII, September-December, 1985.

23. Kuppuswami. T.N. "Cost Reduction in Hospitals", Hospital Administration Vol. XXV March, 1988.

24. Mehta J.C - "Financial Norms for Maintenance and Repairs of Hospital Equipments in India", Hospital Administration - Vol. XII, September-December, 1975.

25. Pandit, Daksha D. et. al, "Cost Assessment of an Urban Health Centre", Hospital Administration, Vol. XXV, June, 1988.

26. Patel Kirthi - "MBO in Hospital Management, Hospital Administration, Vol. XXII, September-December, 1985.

27. Ramachandra V., "The Confidentiality of Health Record", Hospital Administration Vol. XXIII, March - Septermber, 1986.

28. Ray D.B., "Hospital for Common Man", Hospital Administration - Vol. XV, June, 1978.

29. Roy, Ashok kumar, "Cost Containment in Hospital", Hospital Administration, Vol. XXIII, March-September, 1986.

30. Roy, Ashok kumar, "Cost Reduction in Hospital", Hospital Administration Vol. XXV, March, 1988.

31. Sarma R.K, "Cost Containment in Hospital, Hospital Administration, Vol. XXII, September-December, 1985.

32. Sathianathan, Ashok M.J, "Management Techniques in Hospitals", Indian Manager Vol. II, January-March. 1971.

33. Satyanarayana .P, "Should we Practice Medical Audit", Hospital Administration, Vol. XXVII, March-April, 1990.

34. Sen, Gautam, "Hospital Planning in Developing Country, Cost and Care. Critical Balance" Hospital Administration, Vol. XXVII, March-April, 1990.

35. Shaligram B.P, "Cost Reduction in Health Care Delivery Systems and Hospitals," Hospital Administration, Vol. XXV, March, 1988.

36. Sharma A.K. et. al, "Role of Standardised specifications in Materials Management, A case study in an Indian Hospital Engineering Department", Hospital Administration, Vol. XXV, June, 1988.

37. Sharma A.K., "Hospital Engineering - A Tool for Hospital Management", Hospital Administration, Vol. XXII, September-December, 1985.

38. Singh Gurudeep and Joseph D.M - "Practical Approaches of Obtaining Quality Data in Hospitals". Hospital Administration, Vol. XXV, June, 1988.

39. Sinha .R.P, "Financial Management in Hospitals". Hospital Administration, Vol. XIX, March-June, 1982.

40. Srivastava M and Ghei P.N. "Myth of Medical Audit", Hospital Administration, Vol. XXV, June, 1988.

41. Sunder Lal - "Funding of Health Services at Secondary Level and Cost of Service Units and Indicators of use of Hospitals - A challenge for Hospital Manager", Hospital Administration, Vol. XXII, September-December, 1985.

42. Sushila Nayar-"Inaugural Address in National Hospital Convention and 16th Hospital Management Seminar", Hospital Administration, Vol. XXV, March, 1988.

43. Tiwari C.K, "Hospital Budgeting", Hospital Administration, Vol. XXVII, March-April, 1990.

44. Trader, Harold et. al, "Management Accounting in a Hospital", Hospital Administration, Vol. XXIII, March-September, 1986.

45. Venkatesan, Benedict .V - "Professionalisation of Hospital Management. - Use of Management Engineering in Hospital", Hospital Administration, Vol. XXII, September-December, 1985.

46. Venkatesan, Benedict .V - "Cost Reduction through Effective purchasing using Value Analysis", Hospital Administration, Vol. XXV, March, 1988.

47. Yesudian C.A.K. "Professional Training for Hospital Administrators". Hospital Administration, Vol. XXII, September-December, 1985.

Government of India, First Five Year Plan, 1951.

Institue of Costs and Management Accountants, Terminology of Cost Accountancy, London: 1988.

Kerala State Government, Norms for Staffing of Medical Institutions in Kerala, Kerala State Government Order, Health Department, 1961.

Medical Market Information Ltd. (Producer), The Directory of Private Hospitals and Health Services, London: 1983.

WHO, World Health, May, 1979.

WHO, Technical Report Series 395, 1968.