

## **4.3PHARMACY**

### **4.3.1Overview**

The pharmacy is one of the most extensively used therapeutic facilities of the hospital and one of the few areas where large amounts of money are spent on purchases on a recurring basis.

It is also one of the highest revenue-generating centres.

A fairly high percentage of the total expenditure of the hospital goes for pharmacy services.

This emphasizes the need to plan and design the pharmacy in a manner that results in efficient clinical and administrative services.

A good pharmacy is a blend of several things:

- qualified personnel,
- modern facilities,
- efficient organization and operation,
- sound budgeting,
- the support and cooperation of the medical, nursing and administrative staff of the hospital.

Automation, pre-packaging, unit dose drug distribution, decentralization are some of the methods that are being increasingly used in addition to computer-based ordering system, computer-assisted pricing, billing, cash collection checking of reorder level, out-of-stock and overstock over-stock position, expiry dates and a host of other functions.

Pharmacy is a specialized area and its operation calls for intimate knowledge of drugs and drug therapy.

Because of this and the amount of drugs and supplies involved, pharmacists usually handle their own purchases and stocking of drugs rather than leaving it to the purchasing department.

In large hospitals, there is a pharmacy and therapeutic committee of which the chief pharmacist is a member, to oversee the activities of the pharmacy.

### **4.3.2Functions**

The following are the primary functions of the pharmacy, some of which are performed directly by its chief:

1. Purchase, receive, store, compound, package, label and dispense pharmaceutical item.
2. Serve as a source of drug information to physicians, pharmacists and other health care professionals, and the patients. This involves compiling, storing, retrieving and disseminating drug information and providing pharmaceutical advice and consultation regarding drug therapy.

3. Participate in hospital's educational programmes.
4. Plan and organize the pharmacy department, establish policies and procedures, and implement them in accordance with the hospital's policies.
5. Serve as a member of the pharmacy and therapeutics committee, be actively involved in its functions and activities, and implement its decision.
6. Carry out research and participate in the evaluation of new drugs.
7. Participate in performing therapeutic assessment of drugs and in the preparation of a hospital formulary so that equally effective but less expensive drugs may be put on the formulary.  
(A formulary is a list of drugs approved by the medical staff and the pharmacy committee for hospital use and kept in the inventory).
8. Keep track of drugs and formulations or combinations banned in the country and elsewhere, and keep abreast of WHO's revision of "essential list of drugs" and other notification.
9. Carry out quality assurance programme to ensure quality when in doubt of the efficiency or potency of a drug by sampling and analysing it either in the hospital or through the drug inspectorate.
10. Comply with statutory regulations, initiating licenses to be obtained maintaining records as legally required.
11. Wherever recognized, provide pharmacy students practical training which is in partial fulfilment of their course requirements.

#### **4.3.3 Drug Distribution**

- The pharmacy distributes drugs primarily to nursing units, where they are administered to inpatients. Generally, the drugs distributed or dispensed by the pharmacy fall into three categories.
  - Drugs sent to the nursing units for floor stock inventory. These are items generally stored in the units for the use of patients but not charged to them.
  - Drugs that are sent to nursing units specified for individual patients as prescribed by the doctors and are charged to them. In most of our hospitals this is not done. Patients are asked to buy their medicines from the pharmacy which are then given to the unit nurse to be stored in medication carts with individual drawers for each patient.
  - Prescription drugs by the pharmacy on the strength of a prescription given by a physician. These are largely paid for in cash and represent the vast majority of drugs both in terms of quantity and cost.

#### **4.3.4 Location**

In determining the most suitable location for the pharmacy, the following factors should be considered:

- Flow of outpatient traffic through the hospital.
- Flow of drugs and other raw materials into the pharmacy.
- Flow of drugs and services from pharmacy to the inpatient areas and other departments.
- Need for future expansion.

These factors make it evident that pharmacy should be conveniently accessible from the outpatient department, central receiving store and the inpatient areas.

A ground floor location close to the outpatient department and to elevators servicing the inpatient areas is ideal.

It is assumed that the outpatient and inpatient dispensing activities are combined.

Many hospitals, however, find that when the outpatient department is the overriding consideration in determining the location of the pharmacy, the result is a less than optimal location for the inpatient dispensing activities.

They may soon find that one or more separate inpatient or satellite pharmacy facilities need to be established.

In many of our hospitals, inpatients are required to buy their requirements of medicines directly from the pharmacy on a cash down basis.

Medicines are not supplied and billed.

Every hospital, sooner than later, and much to its consternation discovers that its pharmacy facility is woefully inadequate.

Keeping in mind, the pharmacy should have at least one outside wall to allow the expansion, and must be adjacent to an area that can be relocated easily, for example, a storeroom.

#### **4.3.5 Design**

Each hospital must its own pharmacy and solve its individual pharmacy-programming problems, while adhering to the accepted norms of good pharmacy practice and legal requirements.

The pharmacy has 4 main functional areas:

- Dispensing area
- Production/ preparation area
- Administrative area
- Storage area

These areas must be designed and located for convenient access, staff control and security.

#### **4.3.6 Organization**

The head of the pharmacy services is usually a chief pharmacist who may possess a B.Pharm. or M.Pharm. degree and adequate experience.

He is normally responsible to the medical director or the medical superintendent.

In large hospitals, he may be required to work in conjunction with the pharmacy and therapeutics committee.

Every pharmacist has to register with the pharmacy council without which he cannot practise.

Other personnel in the pharmacy department are the registered staff pharmacists, pharmacy aides or helpers, pharmacy storekeeper and pharmacy clerks.

The normal working hours of the pharmacy in most hospitals are from 7.00.a.m to 11.00.p.m, seven days a week although some pharmacies provide round-the-clock service.

Where 24-hour service is not available, coverage during the late night (between 11.00.p.m and 7.00.a.m) is provided by on-call staff.

### **4.3.7 Facilities and Space Requirements**

#### **4.3.7.1 Dispensing Area**

- Patient working area. It should be recessed so that the usually large waiting crowd does not obstruct the free flow of traffic on the corridor nor is it jostled by it.
- Patient dispensing counter, preferably glass panelled with pan-through windows, with space for computer-assisted pricing, billing, and receiving cash on one side and for dispensing on the other.
- Active storage. Adequate space for a large number of active drugs stored in routine shelves laid out efficiently.
- Pick up and receiving counter and space for temporary storage of carts.
- Area for review and recording of drug orders.
- Extemporaneous compounding area.
- Work counters and cabinets for pharmacy activities.
- Refrigerated storage.
- Storage for alcohol and for volatile and flammable substances.
- Second storage for narcotics and other controlled drugs.
- Space for maintain patient medication profiles and cross-checking of medication, for providing drug information, and a room for pharmacist to meet patients who require extensive consultation, instructions or counselling, if these functions are performed.

#### **4.3.7.2 Manufacturing Area**

- Bulk compounding area.
- Provision for packing and labelling.

- Provision for packing assurance activities.
- Clinical sinks and hand washing facilities.

Preparation of parenteral fluids comes under the mandatory regulations of the Drug Control Act that has now been made stricter and more comprehensive.

Hospitals which want to manufacture these fluids are advised to thoroughly study the regulations and procedures.

#### **4.3.7.3 Administrative Area**

- Reception and clerk-typist's area for clerical functions including filing, communication, references, etc.
- Chief pharmacist's office and office space for assistant chief pharmacist and clinical pharmacist.
- Waiting area for visitors, medical representations and salesman.
- Conference room-cum-library.
- Staff facilities like lockers, toilets, lounge, duty room for on-call duty pharmacists, etc.

#### **4.3.7.4 Storage Area**

- Bulk storage.
- Active storage.
- Refrigerated storage.
- Volatile and alcohol storage.
- Secured storage for narcotics and controlled drugs.
- Storage for general supplies, equipment, filter, stationary, etc.

#### **4.3.7.5 Other Considerations**

Traditional pharmacy services are rapidly undergoing a change all over the world, especially in the dispensing and distribution system.

Many innovative approaches and methods have been introduced in recent years.

Though not all hospitals can implement these changes, it is hoped that some of the larger and progressive hospitals in our country will introduce and test these newer systems and set the pace for other hospitals, some of these changes are described below:

##### **i) Clinical Pharmacy**

In most of our hospitals, the pharmacy is engaged in traditional activities such as drug ordering, preparation, distribution and dispensing.

Of these, dispensing prescription as ordered by physicians is the most important.

Except for monitoring drug incompatibilities occasionally, pharmacists have no role in determining

what to order.

But hospital pharmacists are now increasingly becoming involved in what is called “Clinical Pharmacy”.

This includes activities like taking medication history, monitoring drug use, drug selection, patient counselling and surveillance of adverse reaction of drugs.

In other words, they are becoming involved in determining what to order, thus becoming a part of the team effort in determining treatment.

## **ii) Unit Dose Dispensing System**

Another important change that has taken place in the field of pharmacy is in the medication dispensing system – from the traditional pharmacy system to a considerably refined unit dose system.

In the traditional system, the pharmacy sends to each patient in the nursing unit, several day’s supply of medication.

The nursing unit then prepares the individual dose from the supply.

In the unit dose system, the doses are premeasured by the pharmacy so that the nurse has only to administer the medication.

The system uses a cassette mechanism that designates one drawer for each patient in the medication cart or cabinet.

The nurse rolls the unit dose cart to each individual patient room, removes the dose of medication to be given from the respective patient drawer in the cart, and administers it to the patient.

In the emergency cart maintained in the nursing units, certain drugs are kept in single- dose packages that are ready and convenient to administer.

While the unit dose system is expensive-initial one-time cost largely involves the purchase of unit dose carts and packaging equipment and increased pharmacy personnel these are several advantages.

It reduces nursing time for pouring, counting and dispensing, reduces medication errors, and increases control and recording of medication by the pharmacy.

## **iii) I.V Additive System**

The concept of a unit dose system can be extended to intravenous (IV) solutions, for which there are two methods:

- The traditional method
- IV additive method.

The activity relates to mixing medications with IV solutions.

In the traditional system, IV solutions are stocked in the nursing unit.

Medications are sent to the unit by the pharmacy, and the nurse mixes or adds medications to the IV

solution.

In the additive system, the medications and the IV solutions are mixed in the pharmacy itself.

The pre-mixed bottles are then sent to the nursing unit and the nurse merely administers the solution.

As in the case of the unit dose system, this saves the nurses time and prevents wastage and medication errors.

#### **iv) Pharmacy and Therapeutics Committee**

Every hospital should have a pharmacy and therapeutics committee consisting of physicians representing the various divisions of medical staff, pharmacists, and representatives of administration, to oversee the work of the pharmacy.

The following are some of the duties and responsibilities of the committee:

1. Develops a formulary of accepted drugs for use in the hospital.
2. Serve the medical staff, pharmacists and hospital administration in an advisory capacity in all matters pertaining to the use of drugs and in the selection of drugs to be stocked.
3. Evaluate clinical data concerning new drugs requested to be included in the formulary and for use in hospital.
4. Add or delete specific drugs from the formulary.
5. Prevent unnecessary duplication of the same basic drugs to be stocked.
6. Recommend drugs to be stocked in the nursing units and other areas.
7. Study problems or reported adverse reactions to the administration of drugs.
8. Issue communication(s) to physicians, pharmacists, nurses and administrative staff regarding proposed change in the formulary such as addition to and deletions from the list, changes in the working of the system and in the contents of the formulary.
9. Adoption of a policy that the inclusion of drugs in the formulary should be by their non-proprietary names.
10. Ensure that the labelling of medication containers be by the non-proprietary names of the contents.
11. Issue written communication to the nursing and pharmacy staff regarding the existence of a formulary in the hospital and the policies and procedures governing its operation.
12. Issue guidelines for the control, appraisal and use of drugs not included in the formulary, investigational drugs and non-formulary drugs.

### v) Hospital Formulary

One of the major responsibilities of the pharmacy and therapeutics committee is to develop or adopt a suitable formulary of selected medication.

A formulary is the official compilation of drug products that have been selected and approved for use within the hospital.

The two main objectives of the formulary are:

1. It promotes rational therapeutics
2. It prevents unnecessary duplicates, waste and confusion and thus promotes economy for both the hospital and the patient.

When many brands of the same drug are stocked and prescribed, it results in a loss to the patient as well as to the hospital.

It should be remembered that a mere list of medications placed on the shelves does not constitute a formulary.

The drug list should be expanded to include specifications about how a medication should be used.

Formularies should also include recommended daily dosage and cautions, warnings, restrictions, pharmacology and other similar information to facilitate correct use of drugs.

The following steps are some of the steps involved in the process:

1. Appointment of a pharmacy and therapeutics committee by the medical staff composed of physicians, pharmacist(s), and representatives of the administration.
2. Outlining the purpose, organization, function and scope of the committee and an organized method for this committee to evaluate the therapeutic claims of competing or suggested drug products.
3. Periodic publication of authorized drugs.
4. Procedures for revising the list.

#### 4.3.8 Problem Situations: - Theft in Pharmacy

The pharmacy is one of the most theft-prone places in the hospital and what is worse, pharmacy theft can be costly, difficult to check and may go unnoticed.

Theft is usually by the employees themselves or in collusion with them.

The most common points where thefts take place are the dispensing area, stores, purchasing process, receiving and invoice payment and the nursing units.

Substantial losses may take place in the dispensing and purchasing areas and continue for a long time without being discovered.

The chief pharmacist or the person responsible for purchasing may in collusion with the vendors,

manipulate supply or bills and divert part of the supply to privately owned drug stores. With an incredibly large number of items kept in open shelves of the dispensing pharmacy, the task of exercising any meaningful control over the drugs is a formidable one even with all checks and balances and control measures.

The problem becomes serious during evening and night shifts when there may be only one pharmacist on duty and even more serious when, in smaller hospitals, the pharmacist doubles up as the cashier as well.

Every hospital must recognize that it has a moral obligation to make theft and fraud as difficult as possible; if not altogether impossible by instituting proper control systems.

Too often, the general climate in the hospital provides ample scope for employees to indulge in such activities without anybody taking cognizance of such offences or punishing the offenders.

A sound system of controls acts as a deterrent and creates fear in the employees that frauds and thefts will be detected and punished.