HOSPITAL TRAINING REPORT

Submitted By
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Bachelor of Pharmacy

Under the Guidance of
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K. R. Mangalam University, Gurugram - 122003

SEPTEMBER-2022

DECLARATION

We declare that this written submission represents our ideas in our own words and where other's ideas or words have been included, we have adequately cited and referenced the original sources. We also declare that we have adhered to all the principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in our submission. We understand that any violation of the above will because for disciplinary action by the Institute and canal so evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed. We further declare that if any violation of the intellectual property right or copyright, my supervisor and university should not be held responsible for the same.

DEEPAK KOLEKAR

1904120023

Place: K.R. Mangalam University

Date : 13TH September 2022

LETTER FROM THE UNIVERSITY

K.R. MANGALAM UNIVERSITY
THE COMPLETE WORLD OF EDUCATION

Ref/KRMU Training/2022/22

Dated: 06.07.2022

To
HR
Fortis Hospital
Gurgaon

SUBJECT: Request for enrollment of our student for 4 weeks Hospital Training in your Organization
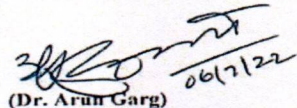
Dear Sir/Madam,

Greetings!

K.R.MANGALAM UNIVERSITY, Sohna Road, Gurgaon is a Premier University and is recognized by UGC, New Delhi. The University promotes and encourages the students to undergo practical training in hospital /industry so as to provide them practical knowledge and improve their technical skills. As per the curriculum, Bachelor of Pharmacy students are required to undergo practical training in a industry. Therefore, it is requested to kindly extend your co-operation in this regard and oblige us by accepting our following students for industrial training in your organization in the month of July-August. We assure you that our students will observe all the rules and regulations of your organization.

1. Dhruv Malik
2. Mohd. Jilani
3. Aniket Verma
4. Nitin Chopra
5. Deepak Suresh Kolekar

I strongly recommend them that they are sincere, hardworking, logical and enthusiastic creative thinker to learn new skills. I request you to positively guide, motivate and nurture them so that the training will prove to be fruitful and they prove to be an asset to the organization. The good will of your organization is always going to add value to their C.V.

Thanking you in anticipation.

Yours truly,

06/7/22

(Dr. Arun Garg)
agarg333@hotmail.com
Dean, School of Medical & Allied Sciences
K.R. Mangalam University, Gurgaon

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Prof. (Dr.) ARUN GARG
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CERTIFICATE

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Aug 24, 2022

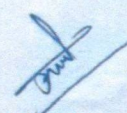### To Whomsoever It May Concern

This is to certify that **Mr. Deepak Kolekar** has undergone an internship from **July 24, 2022 to Aug 24, 2022** at **Fortis Memorial Research Institute** in the **Pharmacy** Department.

During his training he exhibited a high level of professionalism and a tremendous zest for learning.

We wish **Mr. Deepak Kolekar** all the best in his future endeavors.

With Best Wishes,

Shivani Dhir
SBU Head
Learning & Development

Head of Department

ACKNOWLEDGEMENT

The Training opportunity I had with **Fortis Hospital, Gurugram**. It was a great chance for learning and professional development therefore I consider myself as a very lucky individual as I was provided with an opportunity to be a part of it. I am also grateful for having a chance to meet so many wonderful people and professionals who led me through this training period.

I am using this opportunity to express my deepest gratitude and special thanks to **K.R. Mangalam University** for providing organizational support and encouragement.

I express my deepest thanks to **Krishna Sawant (SCM Head)** of Fortis Hospital, for taking part in useful decision and giving necessary advice and guidelines.

I perceive as this opportunity as a big milestone in my career development. I will strive to use gained skills and knowledge in the best possible way and work upon them to improve myself in future.

Thanking You,

Deepak Kolekar

1904120023

Place : - K.R. Mangalam University

Date : - 13th September 2022

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CHAPTER 1 : INTRODUCTION

O About Fortis Hospital

Fortis Healthcare Limited is a leading integrated healthcare delivery service provider in India. Currently the company operates its healthcare delivery services in India, Dubai, Mauritius, and Sri Lanka with 45 healthcare facilities (including projects under development), approximately 10,000 potential beds and over 330 diagnostic centres.

Fortis Memorial Research Institute (FMRI) is a multi-super-speciality, quaternary care hospital with an enviable international faculty, reputed clinicians, including super-sub-specialists and speciality nurses, supported by cutting–edge technology. A premium referral hospital, it endeavours to be the 'Mecca of Healthcare' for Asia Pacific and beyond. Set on a spacious 11-acre campus with 1000 beds.

In a global study of the 30 most technologically advanced hospitals in the world, its flagship, the Fortis Memorial Research Institute' (FMRI), was ranked No.2, by 'topmastersinhealthcare.com, and placed ahead of many other outstanding medical institutions in the world. Fortis Memorial Research Institute is accredited by National Accreditation Board for Hospitals & Healthcare Providers (NABH).

O Sections in Fortis Hospital: -

1. OPD (Out Patient Department)

2. IPD (In patient department)

3. ICU (Intensive care unit)

4. PICU (Paediatrics intensive care unit)

5. Emergency & Trauma

6. Operation theatre

7. Surgical Oncology

8. Haematology

9. General surgery

10. Dermatology

11. Ophthalmology

12. Neurosciences

13. Renal Sciences

14. Anaesthesiology

15. Liver Transplant

16. Robotic Surgery

17. Dental Sciences

18. Geriatric Medicine

19. Radiology

20. Pharmacy

O Objectives of Hospital Pharmacy: -

- Hospital training is an observational-oriented procedure in which a person can learn practically from theoretical knowledge.

- Hospital training helps to study closely the ground-level problems regarding their job profile.

- Hospital training provides practical knowledge to the students.

- Hospital training promotes an environment in which students are induced to adapt themselves quickly to changed circumstances.

- Hospital training puts the students in real-life situations.

- Hospital training removes the hesitation of the students regarding their working skills and personality development.

- Training is mandatory as per A.I.C.T.E, affiliated universities, and the Pharmacy Council Of India.

- To identify the pharmaceutical service component in hospital pharmacy.

- To Acknowledge the minimum standards required to fulfil the pharmaceutical service component in hospital pharmacy.

- To ensure the availability of the right medication, at right time, in the right dose at the minimum possible cost.

- To professionalize the functioning of pharmaceutical services in a hospital.

- To act as a counselling department for medical staff, nurses and for patients.

- To know organizational goals of hospital pharmacy as a department and a service.

• Hospital Pharmacy: -

- Hospital Pharmacy is an area of a hospital where pharmacists distribute prescription medicines to patients.

- Pharmacists' advice patients, physicians and other health care practitioners on the selection, dosages, adverse effects and interactions of medicines. They also monitor the health and progress of patients by ensuring that medicines are taken safely and effectively.

- Compounding or actual mixing of ingredients to form medications is a small part of a pharmacist's practice because most medicines are manufactured by pharmaceutical companies in standard dosages and drug delivery forms.

- Pharmacists work mostly in a community setting such as a retail pharmacy or in a health care facility such as a hospital.

- Hospital Pharmacy may also be defined as a department in which the drugs are procured, preserved, stored, compounded, assayed, manufactured, dispensed, packaged, and distributed to inpatients and outpatients by professionally competent and legally qualified pharmacists.

- A unique feature of hospital pharmacy as compared to traditional physician-pharmacist patient relationship in the practice of pharmacy in the community is a physician-pharmacist- nurse- patient relationship.

- In India, S.H. Merchant was the first person to be appointed as a hospital pharmacist at K.E.M. Hospital, Mumbai, in 1941.

O Functions of Hospital Pharmacy: -

- Practicing pharmacy in a professional and ethical manner

- Arranging proper storage of drugs.

- Dispensing drugs as per the prescription of the medical staff of the hospital.

- Labelling all drug containers from which medicines are to be administered.

- Managing various activities of stores such as purchase of drugs, proper storage conditions and maintenance of records.

- Providing patient counselling services while dispensing drugs especially for outpatients.

- Maintain liaison between medical staff, nursing staff and patients.

- Participating in teaching and research programmes of the hospital.

- Discarding the expired drugs and containers with wrong and missing labels.

- Inspecting all pharmaceutical supplies.

- Coordinating with other departments and services in the hospital.

- Preparing periodical and annual reports about working of the pharmacy.

- Promoting and contributing to the rational use of medicine.

O **OPD & IPD: -**

- An outpatient is a person who is not hospitalized for 24 hours or longer but attends for care and treatment at the clinic or hospital.

The outpatients visiting a hospital may be categorized as follows:

1. **General outpatients:** those given treatment on outpatient basis, for other than emergency conditions and are not referred cases.

2. **Referred outpatients:** those referred directly to the outpatient department by the attending medical or dental practitioner for further treatment.

3. **Emergency outpatients:** those given emergency or accidental care for conditions that require immediate medical attention

- **Inpatients** are those who get hospitalized for the purpose of treatment, cure of disease, surgery, or rehabilitation.

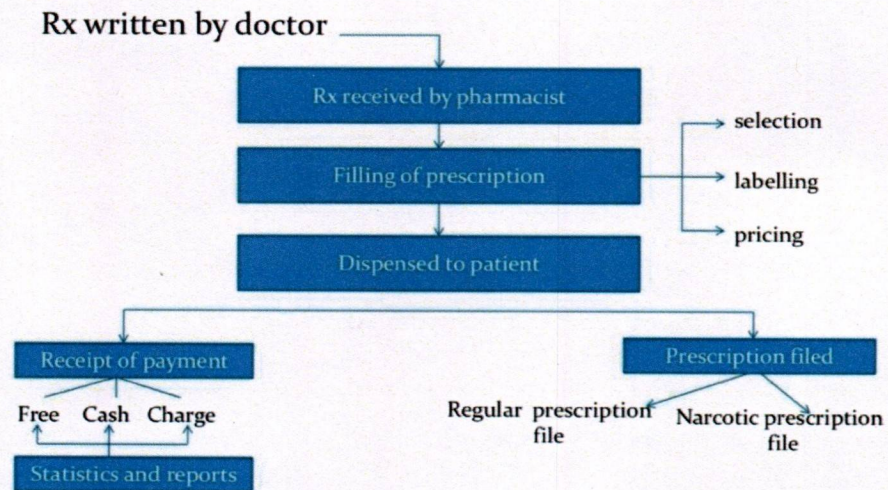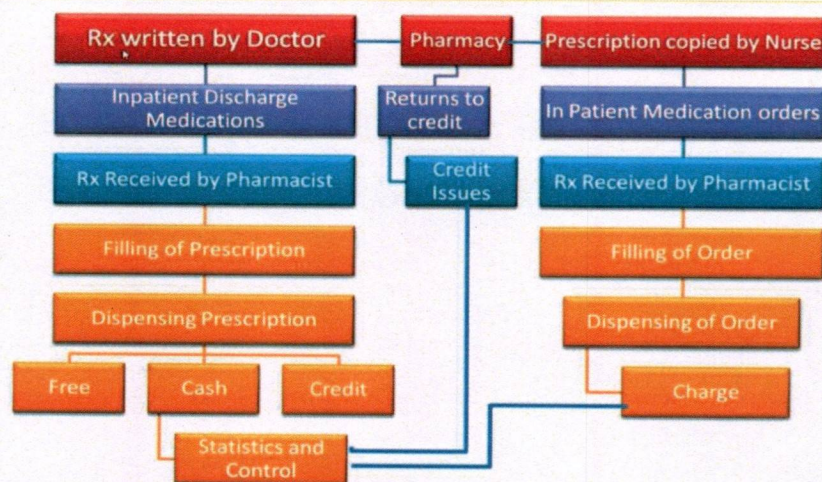Fig 1 represents a flow chart of dispensing to outpatients

Rx written by doctor

Rx received by pharmacist

Filling of prescription → selection, labelling, pricing

Dispensed to patient

Receipt of payment — Free, Cash, Charge

Statistics and reports

Prescription filed — Regular prescription file, Narcotic prescription file

Fig 2 depicts the flow chart for dispensing to inpatients.

Rx written by Doctor — Pharmacy — Prescription copied by Nurse

Inpatient Discharge Medications | Returns to credit | In Patient Medication orders

Rx Received by Pharmacist | Credit Issues | Rx Received by Pharmacist

Filling of Prescription | Filling of Order

Dispensing Prescription | Dispensing of Order

Free | Cash | Credit | Charge

Statistics and Control

O Indent Generation & Maintenance of Inventory: -

- An *Indent* is an official order or requisition for medicine and supplies from the medical store.

- The quantity to be procured is also mentioned in the indent.

- The nurse acquires the drugs, equipment and supplies based on the need estimation, availability, and the budget.

- As the drugs are received it should be inspected and stored as per the classification and rate of consumption.

Types of Indents:

1. **Indents**: any order for a medication which meets at least one of the following criteria:

- Written as "Stat"
- e.g., thrombolytic, or antithrombotic, vasopressors.

  O All orders meeting the above criteria will have an expected pharmacy turnaround time of 20 minutes according to the SOP of the hospital.

2. **Routine Indents:** any order for drug that are routine in nature.

O All orders meeting the above criteria will have an expected pharmacy turnaround time of 60 minutes according to the SOP of the hospital.

3. **Urgent Indents**: any order which has "Urgent" written on it.

  O All orders meeting the above criteria will have an expected pharmacy turnaround time of 30 minutes according to the SOP of the hospital.

4. **Discharge Indents**: any order issued for patients who are scheduled for discharge.

   O All orders meeting the above criteria will have an expected pharmacy turnaround time of 45 minutes according to the SOP of the hospital.

- **Inventory:** an inventory is a detailed list of articles in the ward, their specifications, and standard quality.

   O When we are speaking of inventory means it meant making a count of articles in hand.

Purpose of maintaining Inventory:

- To ensure the availability of the item.
- Provides a chance to determine the condition of articles.
- Time to return the articles to their proper place.
- The inventory management systems gather the information that transforms into analytics, which enables you to use inventory efficiently. You can make better decisions to estimate demands more precisely.
- To expand the effectiveness of the Inventory Management System you should utilize **asset tagging**. As a professional practice do not utilize the serial numbers as they may be have used before hence it can be a duplicate serial number and can lead to error. Tagging equipment is essential in order to track usage.

- As we have mentioned earlier, you can well manage all your pharmaceuticals with the software. It also informs you about the expiry date of medicines and when will be stock exhaust or is overstock. Overall, the software also enables you to track easily the current stock of medicines

- The software provides you real-time tracking which means the inventory is updated all the time. You will always have exact accurate inventory counts. You can also track inventory orders and automatically re-order when stock is less. If the product doesn't reach its destination, you will receive a notification for it.

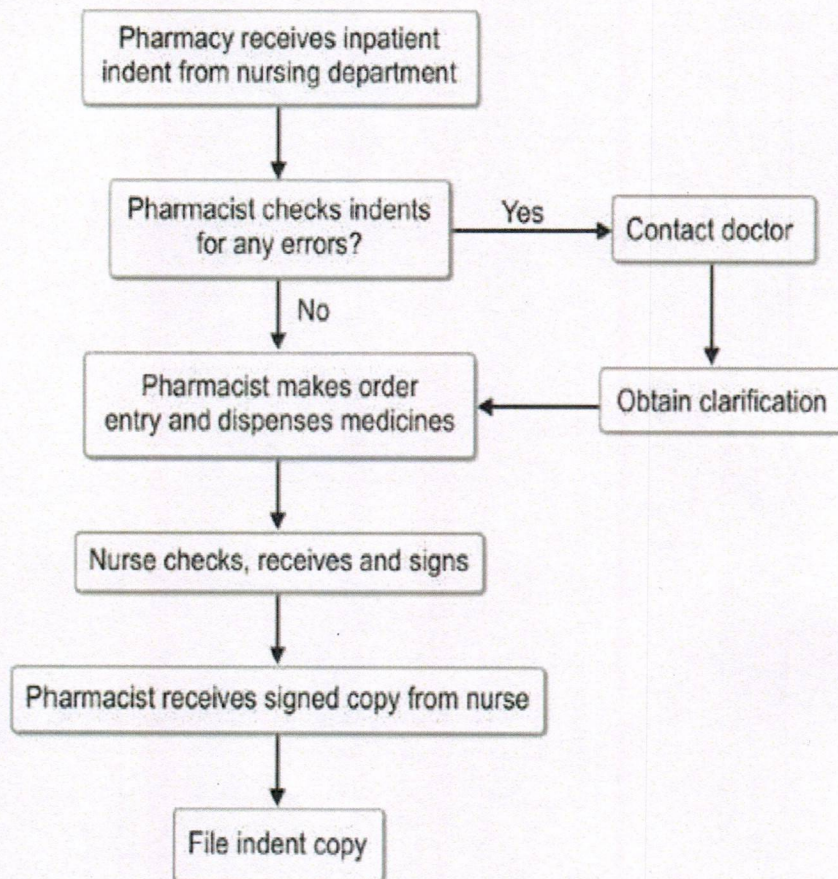- Figure 3: represents a flow chart of Indent Processing & Management,

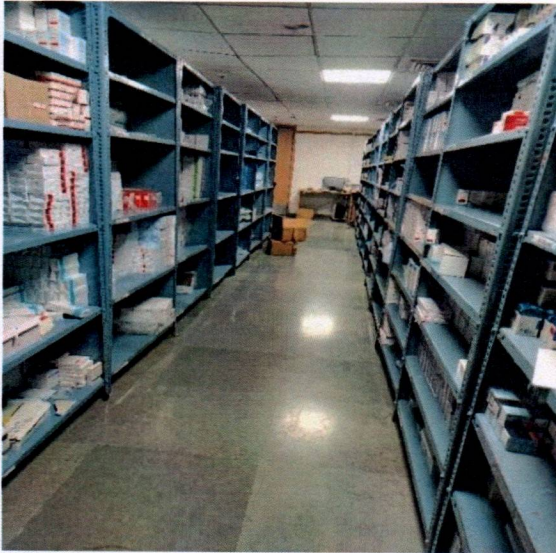Figure 2 - A Flow Chart of Indent Processing & Management

- **Training Area**

Figure 3 - Drug Department

Fig 5 – Surgical Department

Figure 6 - Purchase Department

CHAPTER 2: DRUG DEPARTMENT

- The drugs stored in a drug store can be arranged in such a way that they are easily traceable and when required

    1. According to the pharmacological action
    2. Alphabetically

- In the drug department, all types of medicines are stored and are dispensed when the indent is received.

- All the drugs are cross-checked by the pharmacists before dispensing.

- The high-value drugs and cytotoxic drugs are specifically dispensed by the pharmacist.

- They are placed in Almirahs and racks respectively.

- Schedule X drugs are placed in a locker inside the almirah with a double rack.

- The unused medicines and other items are returned to the drug store with the return order checked by the pharmacists.

- Drugs are arranged in alphabetical order of brand names.

- Each dosage form of the drug is arranged in separate and distinct areas.

- Sufficient empty space should demarcate one drug or dosage form from another.

- Most recently received drugs are placed behind old stock on the shelf except when new drugs have short expiry dates.

- The store must be cleaned daily and mopped at least once a day.

- Some medicines need to be stored in refrigerator or stored at cool or cold place.

- Figure 8 represents the various parts of Prescription: - Date, Name, Age & Weight, Superscription, Inscription, Subscription, Signatura, Signatura, Registration number & Seal,

Parts of Prescription: -

Figure 7 - A Typical Prescription

PARTS OF A PRESCRIPTION

1. Date: ...../...../...........

Name: ....
Age: ....
Weight: ....
2.

R_x —— 3. Superscription

Paracetamol -   500 mg

4. Inscription

tab Paracetamol   10

5. Subscription

BID for   5 days

6. Signatura

7. Signature

....

8. Reg no. & seal

....

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Figure 8- Parts of Prescription

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O A prescription is a written order from Registered Medical Practitioner or Physician to a pharmacist to compound and dispense a specific medication for a patient.

1. **Date:**

    O Every prescription must bear the date on which the medicines are prescribed. This helps the pharmacist to keep day-day patient records in chronological order which keeps the pharmacist or a physician to refer the old case in the future. To avoid misuse of the narcotic or other habit-forming drugs containing prescriptions by the patient several times for dispensing.

2. **Name, Age & Sex of Patient:**

    O Name helps the pharmacist to identify the correct patients avoiding any chance of giving to medicine to a person other than the one it is dispensed for.

    O Note: Patient's full name must be written instead of nicknames or surnames.

    O Age of the patient becomes important in the case of paediatric (children) and geriatric (old people) cases because the dose of the drugs in such cases varies (due to their differences in ability to metabolize the drugs). Hence dose of the drugs are calculated based on the age factor in such cases.

3. **Superscription:**

    O This part of the prescription is represented by the symbol Rx. In ancient times it was considered as a prayer to Jupiter the god of healing for the fast recovery of the patient. Nowadays it is used as an abbreviation for the Latin term "Take thou" which means "you take"

4. **Inscription:**

    O This is considered as the main part of the prescription order. It contains the names and quantities of the prescribed ingredients. The name of each quantity is written on a separate along with its quantity. In the complex prescription containing several ingredients, the inscription can be divided into following parts:

    O Base (active medicament of the therapeutic action

    O Adjuvants (substances added to increase action of medicament / its palatability.

    O Vehicle (a substance used to dissolve medicament/increase volume of preparation).

5. **Subscription:**

   O This part of the prescription contains directions of the prescriber to the pharmacist regarding the type and compounding of the dosage form along with number of doses to be dispensed. This is important because the dose of the drug also depends on the type of dosage form.

6. **Signatura:**

   O This part of the prescription contains directions to the patient regarding the administration of the drug. It is generally represented as "Sig" on the prescription. The instructions may include:

   O The quantity to be taken

   O The frequency of administration

   O The mode of administration

   O The special instructions such as dilution directions

7. **Signatura, Address and Registered number of the practitioner:**

   O The Signatura and registered number of the prescriber turn the prescription into legal and authentic order to the pharmacist. This helps in preventing the use of spurious drugs. Registered number is of utmost importance in prescriptions containing narcotic drugs.

• LASA Drugs

O Look-alike and Sound Alike drugs are drugs that look similar and sound similar.

- Despite their similar names, the drugs often have different actions within the body, and mistaking one for the other could have a devastating effect.

Figure 9- Pictures of Look Alike & Sound Alike Drugs

- Look-alike or sound-alike (LASA) medication names may be mistaken for each other, e.g. mercaptamine and mercaptopurine. If an error of this sort is not intercepted, it can reach the patient and may result in harm.

- Pharmacists should ensure that a patient receives the correct drug, as directed by the physician.
- Fig 10 & 11 represents the tables of Look Alike & Sound Alike Drugs. E.g- Amlodipine and Amiodarone, Cycloserine and Cyclosporine, Dobutamine and Dopamine etc.

Sound-Alike Drug List

No.	Drug Name	Confused Drug Name
1	DOBUTamine	DOPamine
2	DOPamine	DOBUTamine
3	DACTINomycin	DAPTOmycin
4	hydrALAZINE*	hydrOXYzine*
5	NIFEdipine	niCARdipine
6	NIFEdipine	niMODipine
7	prednisoLONE	predniSONE
8	traMADol	traZODone
9	vinBLAStine	vinCRIStine
10	vinCRIStine	vinBLAStine
11	valACYclovir	valGANciclovir
12	sulfaSALAzine	sulfADIAZINE
13	celeXA	celeBREX
14	DEPO-medrol	SOLU-medrol
15	METHyldopa	LEVOdopa
16	penicillIN	penicillAMINE
17	Valacyclovir	ValGANCiclovir
18	Alteplase	Reteplase
19	Losec *(Omeorazole)*	Lasix *(Frusemide)*

Table 1 : The LASA Drugs along with their Confused Drug Name-1

Drug Name With Tall Man Letters	Confused With
acetaZOLAMIDE	acetoHEXAMIDE
acetoHEXAMIDE	acetaZOLAMIDE
buPROPion	busPIRone
busPIRone	buPROPion
chlorproMAZINE	chlorproPAMIDE
chlorproPAMIDE	chlorproMAZINE
clomiPHENE	clomiPRAMINE
clomiPRAMINE	clomiPHENE
cycloSERINE	cycloSPORINE
cycloSPORINE	cycloSERINE
DAUNOrubicin	DOXOrubicin
dimenhyDRINATE	diphenhydrAMINE
diphenhydrAMINE	dimenhyDRINATE
DOBUTamine	DOPamine
DOPamine	DOBUTamine
DOXOrubicin	DAUNOrubicin

Table 2 : The LASA Drugs along with their Confused Drug Name-2

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• High Risk Medications

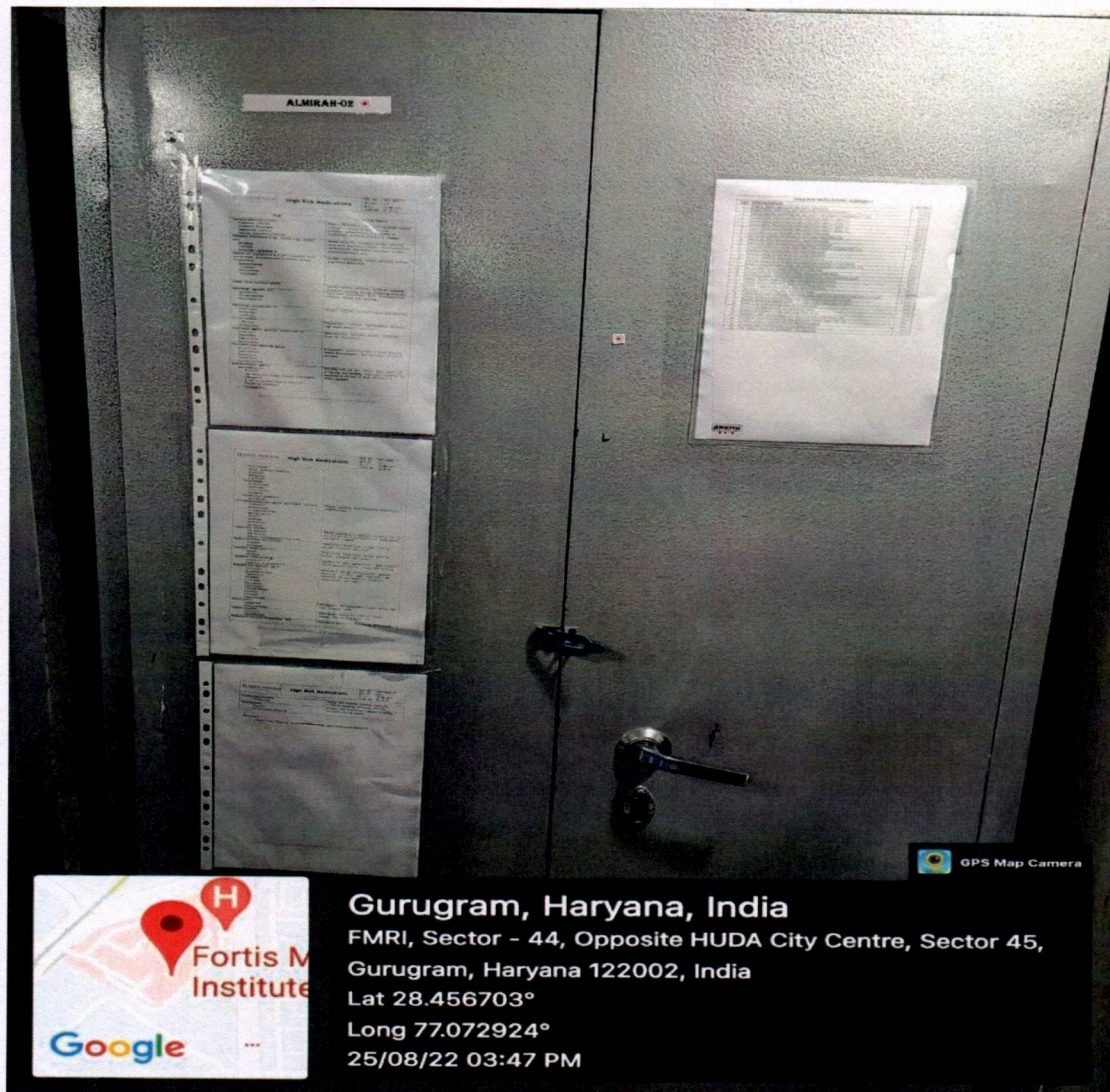Figure 10 - The Almirah inside which High Risk Drugs are kept

O A high-risk medication is a medication that carries a heightened risk of causing significant harm if it's used in error.

O These medications have a narrow therapeutic index, and drugs with a narrow therapeutic index are dangerous because small changes in dosage or blood-drug levels can lead to dose or blood concentration-dependent critical events.

○ Figure 11 and 12 depicts High-Risk Medication along with their known side effects

HIGH RISK MEDICATIONS

Drugs	Known Side Effects
Concentrated Electrolytes - Potassium Chloride - Potassium Phosphate - 3% Normal Saline - Magnesium Sulphate - Calcium Gluconate	Prolong PR interval, respiratory paralysis, mental confusion, cardiac arrhythmia, local irritation/Inflammation, Paresthesia of extremities, areflexia, and E.C.G. changes.
Narcotics (Controlled drugs, stored under double lock) - Morphine - Fentanyl - Ketamine (Schedule X)	Marked sedation, dizziness/vertigo, vomiting, respiratory depression/apnea, altered sensorium, cardiovascular depression/ decreases in blood pressure and heart rate.
Opiates (IV, transdermal and oral (including liquid concentrates, immediate and sustained-release formulations) - Buprenorphine - Tramadol - Pentazocine - Tapentadol	Nausea, constipation, urinary retention, pruritus, respiratory depression.
Insulin (Subcutaneous and IV)	Hypoglycemia, confusion, excessive sweating, headache, fainting, allergy, breathing difficulty.
Adrenergic agonists (IV) - Epinephrine - Norepinephrine	Chest pain, convulsions, hives, increased blood pressure, nausea and vomiting.
Adrenergic antagonists (IV) - Propranolol - Metoprolol - Labetalol	Nausea, vomiting, stomach cramps and diarrhea.
Antiarrhythmic (IV) - Lidocaine (50ML) - Amiodarone	Palpitations, weakness, lightheadedness, dizziness, high blood pressure, confusion.
Anesthetic agents (general, inhaled and IV) - Propofol - Etomidate - Ropivacaine - Bupivacaine	Hallucinations, agitation, anxiety, headache, fever, BP fluctuations.
Neuromuscular blocking agents - Atracurium - Pancuronium	

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Figure 11 - High Risk Medications-1

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Liposomal forms of drugs - Amphotericin B - Liposomal amphotericin B	Muscle/joint pain, ringing in ears, upset stomach, loss of appetite, flushing, nausea and vomiting.
Sedation and Hypnotic agents - Midazolam - Dexmedetomidine - Thiopentone - Diazepam - Lorazepam - Alprazolam - Clonazepam - Phenobarbitone - Zolpidem - Clobazam - Promethazine	Behavioral changes sleep paralysis, anemia, depression, dizziness, upper respiratory tract infections, rebound insomnia, drowsiness, hallucinations, confusion.
Antipsychotic - Haloperidol - Chlorpromazine	Restlessness, BP fluctuations, muscle rigidity, high fever, irregular pulse.
Dialysis Solution: - Peritoneal - Haemodialysis	Hypotension, access site infection, muscle cramps, itchy skin and blood clots
Parenteral Nutrition Preparation -TPN	Electrolyte imbalance, Thrombosis, Dehydration.
Antidiuretic hormone - Vasopressin	Nausea and vomiting, dizziness headache, excessive sweating, increased tiredness
Miscellaneous - Oxytocin - Nitroprusside sodium IV	Redness, loss of appetite, memory problems, confusion, slurred speech

Reference
- https://www.ismp.org/recommendations/high-alert-medications-acute-list

Figure 12 - High Risk Medications-2

• The Pneumatic Tube System:-

Figure 13 - The Pneumatic Tube System

O The Pneumatic Tube System (PTS) also called as Emergency Shoot System is one such advanced microprocessor-based system of transportation that combines speed with reliability in numerous logistical needs.

O These are highly complex systems that are used for a variety of small and medium-sized tasks.

O The Pneumatic tube system ideally connects all wards, surgical rooms and departments with the hospital's laboratory and central pharmacy. It significantly shortens delivery times and handles two of the most important material flows in the hospital -diagnostics and therapy.

O The pneumatic tube system is a valuable alternative to conventional workforce dependent transport.

• Storage & Maintenance of Drugs:-

O Drugs to be stored under condition that prevent contamination and as far as deterioration.

O **Well Closed Container:** precautions to be taken in relation to the effects of the atmosphere, moisture, heat and light.

O **Protect from light:** the product is to be stored either in a container made of material that absorbs actinic light sufficiently to protect the contents from change induced by such light.

O **Protected from moisture:** means that the product is to be "stored in air tight container

O Table 1 represents the Storage Temperature for drug products as per I.P.

O Table 2 represents drug products that require special storage conditions. e.g- vaccines, elixirs, insulin etc.
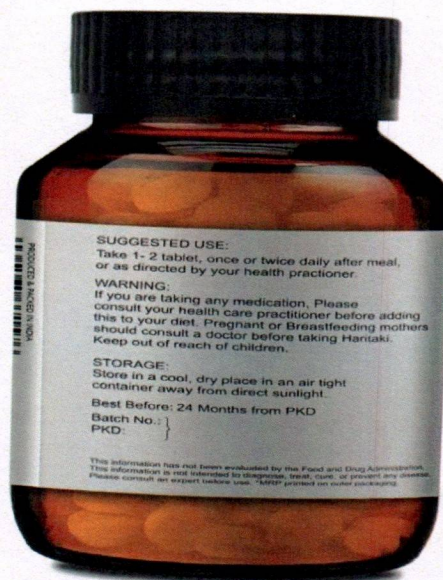

Figure 14 - Air Tight Container

• Storage Conditions as per I.P

Freezer	-25 to -10°C
Cold (refrigerated)	2 to 8°C
Cool	8 to 15°C
Room temperature	The temperature of working area
Controlled room temperature	20 to 25°C
Warm	30 to 40°C
Excessive heat	Above 40°C

Table 1 - Storage Conditions as per I.P

Special Storage Requirements →

Vaccines and Sera: Products to be stored at a certain temperature.

Insulin: Products sensitive to heat & requiring refrigeration

Elixirs and alcohol based products: Flammable products

Expensive & habit forming drugs: Products prone to theft or misuse

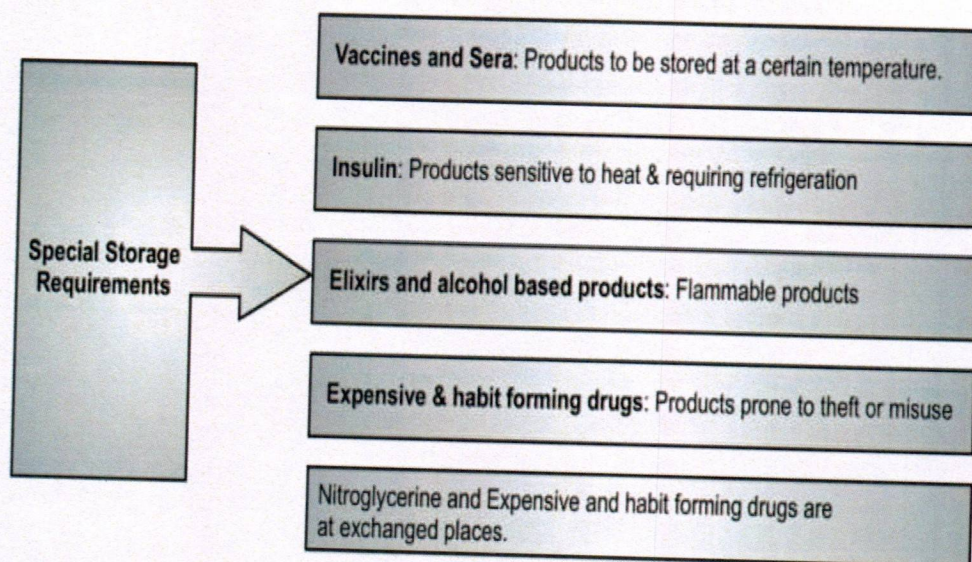Nitroglycerine and Expensive and habit forming drugs are at exchanged places.

Table 2 - Special Storage Requirements for Drug Products

• Expiry Dates & Drug Disposal: -

O Expiry date means that drug cannot be used after this date due to the chance of chemical degradation, harmful to patient or low potency.

O It is important to be aware that there are several potential harms that may occur from taking an expired medicine or one that may have degraded because it was not stored according to the labelled conditions.

O If a drug has degraded, it might not provide the patient with the intended benefit because it has a lower strength than intended. In addition, when a drug degrades it may yield toxic compounds that cause consumers to experience unintended side effects.

O Expired drugs must be disposed off safely, without harming people and the environment. Pharmaceutical products may lose their potency in the degradation process. Physical changes may also lead to reduced absorption, rendering the products less effective. The manufacturer of a pharmaceutical product can only be held responsible for any harmful effects of the product within its shelf life and only if the product was transported and stored under the conditions recommended by the manufacturer.

• **Shelf life:** it is defined as the time necessary for the drug to decay to 90% of its original concentration.

• The best way to dispose of most types* of unused or expired medicines (both prescription and over the counter) is to drop off the medicine at a drug take back site, location, or program immediately.

Figure 15 - The Drug Disposal Options

CHAPTER 3: THE SURGICAL DEPARTMENT

Figure 16 - The Surgical Department

Figure 17 - The Different Surgical Products

○ A surgical instrument is a specially designed tool or device for performing specific actions for desired effects during surgery or an operation, such as modifying a biological tissue.

○ Over time, many kinds of surgical instruments and devices have been invented. Examples: Cannula, catheter, syringe, needles, sutures, etc.

1. **Cannula:**
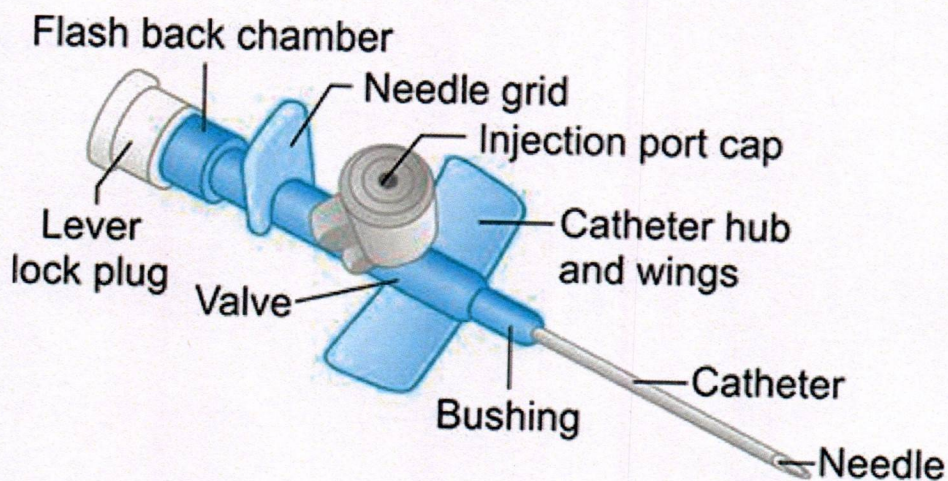
Figure 18 - Parts of Cannula

○ Fig 20 represents the parts of cannula:-

    i.   Flashback chamber
    ii.   Needle grip
    iii.   Valve
    iv.   Luer connector
    v.   Catheter Hub + wings

○ A cannula is a tube that can be inserted into the body, often for the delivery or removal of fluid.
○ Intravenous cannula is the most commonly used cannula in hospitals.
○ Nasal cannula is a part of plastic tubing that extends under the nose and is used to administer oxygen

2. **Intravenous Cannula:** a venous cannula is inserted into a vein mainly for obtaining blood samples and administration of intravenous fluids and medicines.
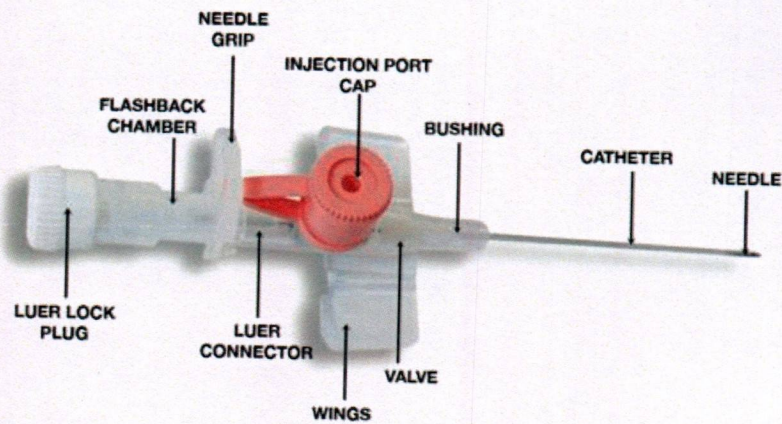
Figure 19 - Intravenous Cannula

3. **Catheter:** A Catheter is a tube that is inserted into a body cavity or a vessel. The process of inserting a catheter is called catheterization.

O Catheter can be large, solid (hard) catheter or a thin, flexible tube (soft catheter).

O Catheterization can be done for administration of intravenous fluids, medication or parenteral nutrition with a peripheral venous catheter, draining urine from the urinary bladder as in urinary catheterization.

Figure 20 - Silicone Foley Catheter (2-way)

4. Hypodermic Needles:

14 GAUGE
COLOR: OLIVE
OUTER DIAMETER: .072IN (1.83MM)

15 GAUGE
COLOR: AMBER
OUTER DIAMETER: .065IN (1.65MM)

16 GAUGE
COLOR: GRAY
OUTER DIAMETER: .064IN (1.63MM)

18 GAUGE
COLOR: GREEN
OUTER DIAMETER: .050IN (1.27MM)

20 GAUGE
COLOR: PINK
OUTER DIAMETER: .036IN (.91MM)

21 GAUGE
COLOR: PURPLE
OUTER DIAMETER: .033IN (.83MM)

22 GAUGE
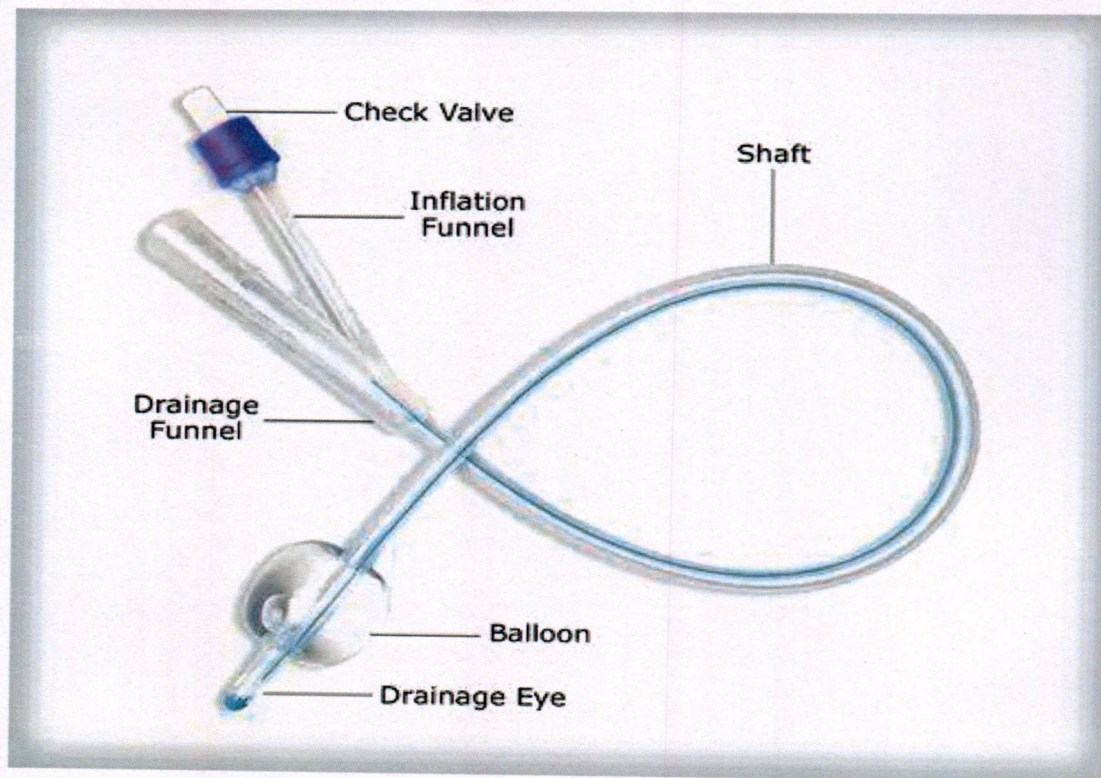COLOR: BLUE
OUTER DIAMETER: .027IN (.70MM)

23 GAUGE
COLOR: ORANGE
OUTER DIAMETER: .025IN (.63MM)

25 GAUGE
COLOR: RED
OUTER DIAMETER: .020IN (.53MM)

27 GAUGE
COLOR: WHITE
OUTER DIAMETER: .016IN (.42MM)

Figure 21 - Hypodermic Needles of Different Size (14G - 27G)

O Hypodermic needles are hollow usually used with a syringe to infuse substances into or to extract fluids from the body.

O Hypodermic needles are normally made from a stainless-steel tube drawn through progressively smaller dies to make the needle.

O The end is furrowed to create a sharp pointed tip. This lets the needle easily penetrate the skin. 21 gauge needles are mostly used for withdrawing blood for testing purposes. 16 oor 17 gauge needles are usually applied for blood donation

O Needles for medical use range from 7 (largest) to 33 gauge (the smallest) on the Stubbs scale.

CHAPTER 4 – PURCHASE DEPARTMENT

- Purchase of materials is one of the important functions of material management.
- A proper purchase of materials and merchandise and the control of stock are of great importance in any business, i.e. manufacturing, wholesale or retail trade.
- The objective of purchasing is not only to procure the raw material at the lowest price but also to reduce the cost of the final product.
- Purchasing is difficult in the hospital and is extremely complex.
- Supply costs are the second largest expense for hospitals.
- Managing materials, supplies, and their associated costs consume 15 to 30% of net patient revenues. • Hospital supply expenses represent 25 to 30% of the organization's total spend.
- Hospitals can't afford inventory failure. Many hospitals work with distributors to manage supplier relationships and deliver goods: Which gives hospital organizations a feeling of security and relief.

9 Steps in the Procurement Process

Procurement processes vary greatly depending on each company's structure and needs, but generally include the following nine core steps:

1. Identify which goods and services the company needs
2. Submit purchase request
3. Assess and select vendors
4. Negotiate price and terms
5. Create purchase order
6. Receive and inspect delivered goods
7. Conduct three-way matching
8. Approve invoice and arrange payment
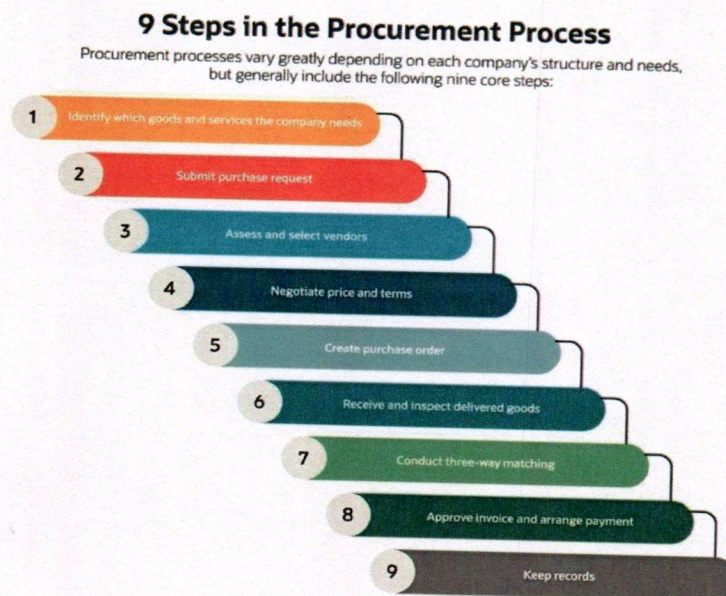9. Keep records

Figure 22 - Steps in the Procurement Process

- The following principles may be followed while purchasing the materials for hospital pharmacy:

1. **Right Source:** the source from where the material is procured must be dependable and capable of supplying items of uniform quality. The buyer has to decide about the proper source to procure the material.

2. **Right quality:** before purchasing the material, a sample should be procured and its quality determined. After verifying the right quality, the order may be placed with the supplier for its purchase.

3. **Right quantity:** it is an important factor in buying. While deciding the right quantity, factors such as price structure, discounts and availability of items are to be taken into consideration.

4. **Right price:** the items should be purchased at right price. The right price doesn't mean the lowest price. For determination of the right price, the cost structure of the product is to be taken into consideration.

5. **Right time:** for determining the right time of purchase, the lead time information is taken into consideration. Lead time means the total time consumed from the recognition of the need of an item till it is received.

6. **Right place of delivery:** the supplier should supply the items at the premises of the business.

7. **Right mode of transaction:** the goods may be supplied by road, rail or air. The mode of transaction is to be decided between the supplier and the purchase.

CHAPTER 5: CONCLUSION

I had a memorable experience when I joined the internship at Fortis hospital. In these four weeks, I have established a good relationship with the employees in the organization. I broadened my views and improved my communication skills.

I have worked in the Drug Department, Surgical department, and Purchase Department.

In the Drug Department, I learned insights and aspects of Indent Generation & Maintenance, Dispensing of drugs, Schedule X Drugs, Cytotoxic Drugs High-Risk Medications, LASA drugs, Storage of drugs, Expiry control, etc.

Inside the Surgical Department, various surgical products like cannula, needles, and catheters of different specifications are placed at room temperature. As per the need of patients, indents are generated through the nursing staff and dispensed.

The purchase department is concerned with the procurement process, inventory management, and maintaining a supplier relationship.

The management and employees at Fortis Hospital were very cooperative and helpful. The pharmacists in each of the departments explained me the working of each of the departments. I believe such experiences are valuable for my career.

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