Unit 9

ADMINISTRATION OF MEDICINE

LEARNING OBJECTIVES

At the end of this chapter, the students will be able to

- define the terminologies used in pharmacology
- gain basic knowledge regarding drugs, forms and prescription of medication
- understand the effects of drugs on body
- compare and contrast the routes of administration of drugs
- discuss how the medicines are stored and safety measures to be followed
- extrapolates the rights for administration of drugs
- identify the ethical and legal aspects involved in administration of medicines

HHCKKJ

திருக்குறள்:

உற்றவன் தீர்ப்பான் மருந்துழைச் செல்வானென்று
அப்பால் நாற்கூற்றே மருந்து.

விளக்கம்:

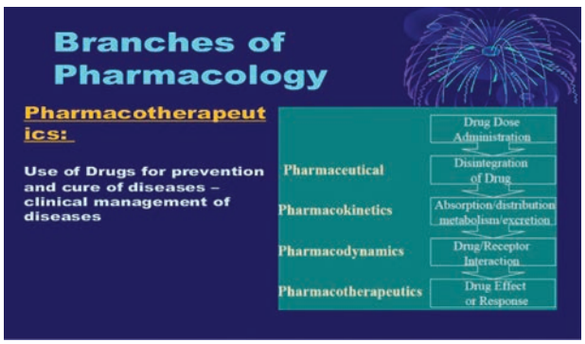
நோயுற்றவன், நோய் தீர்க்கும் மருத்துவன், மருந்து, மருந்தை அங்கிருந்து கொடுப்பவன் என்று மருத்துவ முறை நான்குவகைப் பாகுபாடு உடையது.

Explanation:

For patient, leech, and remedies, and him who waits by patient's side, The art of medicine must fourfold code of laws provide.

9.1 INTRODUCTION

The science of man is also changing and human physiology has changed a lot since the time, the branch of pharmacology began. Science in general changed completely as far back as 1925 with Werner Heisenberg's uncertainty principle. Drug administration is the major responsibility of the nurses. To handle the drugs, nurses should have the basic knowledge of action, adverse effects, indication and contraindication of commonly used drugs and nursing responsibilities while administering the drug.



9.2 DEFINITIONS

Pharmacology is the study of the interaction of chemicals with living systems. The term pharmacology is obtained from the Greek word "pharmakon" which means as drug and "logos" means the study of science.

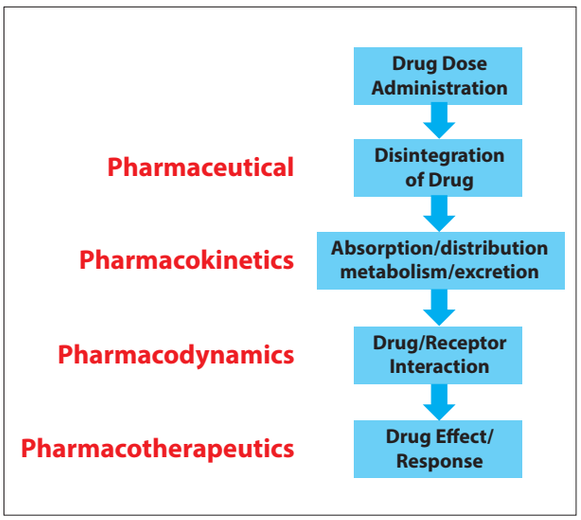
Drugs are chemicals that act on living systems at the chemical (molecular) level. The term drug is derived from the French word "drogue" which means "dry herb".

Medical pharmacology is the study of drugs used for the diagnosis, prevention, and treatment of disease.

Toxicology is the study of the untoward effects of chemical agents on living systems. It is usually considered an area of pharmacology.

Pharmacodynamic properties of a drug describe the action of the drug on the body, including receptor interactions, dose-response phenomena, and mechanisms of therapeutic and toxic action.

Pharmacokinetic properties describe the action of the body on the drug, including absorption, distribution, metabolism, and excretion. Elimination of a drug may be achieved by metabolism or by excretion



9.3 BASIC KNOWLEDGE REGARDING DRUG

The Nature of a Drug

The drug molecule interacts as an agonist (activator) or antagonist (inhibitor) with a specific molecule in the biologic system that plays a regulatory role. This molecule is called a receptor. Drugs may be synthesized within the body like hormones or may be chemicals not synthesized in the body like xenobiotics.

Poisons are also drugs that have exclusively harmful effects. Toxins are usually defined as poisons of biologic origin, i.e., synthesized by plants or animals. A drug is

often administered at a location distant from its intended site of action. Therefore, a useful drug must have necessary properties to be transported from its site of administration to its site of action.

The Physical Nature of a Drug

Drugs may be solid at room temperature (e.g, aspirin, atropine), liquid (e.g, nicotine, ethanol), or gaseous (e.g, nitrous oxide). These factors often determine the best route of administration.

Drug Size

The molecular size of the drug varies from very small to larger one. If the molecular size of the drug is very small it easily diffuses the cellular compartments, in case of larger, the drug is administered directly into the vascular compartment by intravenous or intra-arterial infusion.

Drug reactivity and Drug-receptor bonds

Drugs interact with receptors by means of chemical forces or bonds. There are three major types like Covalent, Electrostatic, and Hydrophobic.

Drug Shape

The Shape of a drug molecule must be such as to permit binding to its receptor site via the bonds.

9.4 SOURCES OF DRUGS

Drugs are obtained from various sources like plants, animals, microbial, mineral, synthetic and semi synthetic after repeated extraction and purification.

Plant Sources

Most of the drugs are obtained from the plant sources.

E.g. Morphine extracted from the plant OPIUM through the principle of ALKALOID.

Opium Alkaloid Extraction

Animal Sources

Microbial Source: *Example:* **Penicillin**

Mineral Source: *Example:* **Aluminium Hydroxide**.

Synthetic Source: *Example:* **Analgesics**

Semi Synthetic Source: *Example:* **Atropine**

Animals

Animal	Part	Drug	Use
Cow	Pancreas	Insulin	Antidiabetic hormaone
Fish	Sperms	Protamine sulphate	Antidote of heparin
Pig	Intestine	Heparin	Anticoagulants
Ox	Lungs	Heparin	Anticoagulants

9.5 PICTORIAL REPRESENTATIONS OF ABSORPTION OF DRUGS

1st Pass Hepatic Metabolism

After oral administration

Absorption from GIT

↓

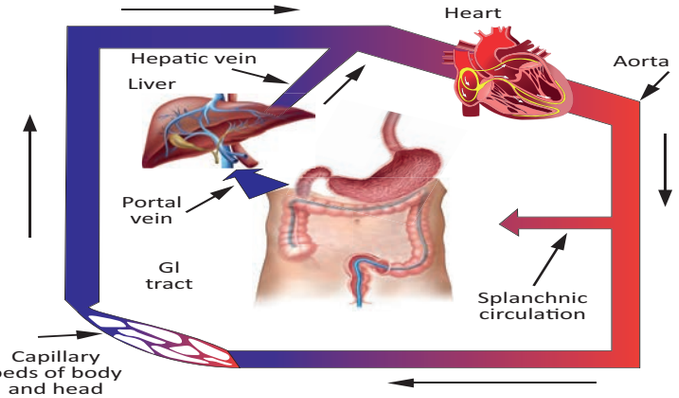
Portal Circulation

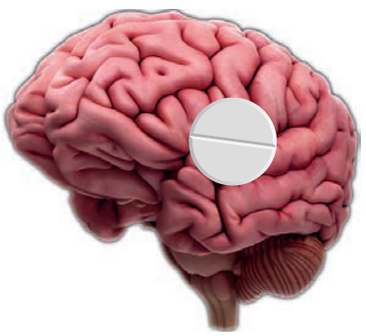
↓

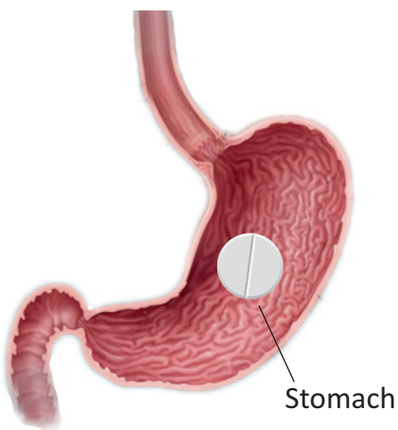
Liver

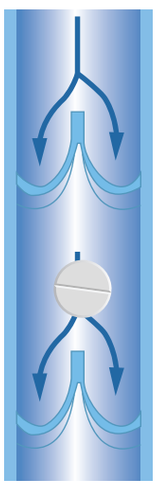
↓

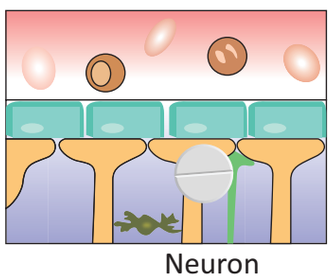
Systemic Circulation











Most drugs are absorbed primarily in the small intestine. In general takes approximately 30 minutes for most medication to dissolve. Special coated medicine may take longer time for the therapeutic to reach the bloodstream.

9.6 DRUG FORMS

We take medications to diagnose, treat, or prevent illness. They come in lots of different forms and we take them in many different ways. You may take a drug yourself, or a healthcare provider may give it to you.

Drugs can be dangerous, though, even when they're meant to improve our health. Taking them correctly and understanding the right way to administer them can reduce the risks. A dosage form of a drug is a product designed for administration to the body in the diagnosis or treatment of disease. The most important dosage forms of drug are as follows:

DIFFERENT FORMS OF DRUGS

SL. NO.	FORMS	DESCRIPTION
1	Tablet	Tablets coated with gelatin that gets dissolved in stomach
2	Capsule	Powder or gel form of drug encased in a hard or soft outer casing that gets dissolved in a stomach
3	Liniments	Mixture of drugs with oil, soap, water , alcohol that is applied on the skin
4	Ointment	Semisolid preparation of a drug in petrolium form

5	Paste	Semisolid form of a drug , thick and stiff than the ointment, that is applied to and observed by the skin
6	Patch(transdermal)	Drugs encased in a manufactured material that allows continuous drug absorption through the skin at a steady manner
7	Plaster	Solid preparation used as a counter irritant or as an adhesive externally
8	Suppository	A several drugs mixed in a firm base such as glycerinated gelatin and shaped for insertion into the body cavity.
9	Syrup	Drugs dissolved in a solution containing water and sugar
10	Lotion	Drugs in liquid suspension intended for external use

9.7 PRESCRIPTION OF MEDICATION

The prescription is a written order by a physician to the pharmacist to prepare, dispense specific medication for a specific patient. A specific pattern should be followed in writing prescriptions in order to safe guard the patient.

The following points should be remembered in writing a prescription.

1. The writing should be legible. The name of the drugs to be in capital letters
2. Indelible ink should be used for writing
3. Abbreviations should be avoided.
4. Generic names of the drug should be written below the brand names
5. In writing quantities, decimals should be avoided
6. Less than 1gm should be written as milligrams. Eg. 200mg and not 0.2g
7. Blank spaces should be avoided between direction and the signature of the doctor.

9.7.1 Parts of a Prescription

Date, address of the prescriber- preferably, the orders should be in the letter pad., name, age ,sex of the patient, IP or OP number, superscription(Rx) drug name and strength, directions to the patient and signature of the prescriber.

Model prescription

1. Name: Mr. A
2. Date: 13.10.2018
3. Age: 70 years
4. Sex: Male
5. Address: Chennai
6. IP No: xxx
7. Diagnosis: Idiopathic parkinsonism

8. Rx
9. Tab. Levodopa 100mg
   Tab. Carbidopa 25mg
10. Take 2 tablets by mouth 3 times daily with breakfast, lunch and dinner. Take with food.
11. Dr. yy
12. Assistant prof. Neurology
13. MMC, Chennai.
14. Phone no: xxx
15. Reg.no: yy

9.8 CLASSIFICATION OF DRUGS BASED ON THEIR ACTION

Sl. No	Classification	Action
1	Analgesics	Drugs used to relieve pain. E.g. diclofenac
2	Anaesthetics	Drugs which cause loss of sensation. E.g. Nitrous oxide
3	Antipyretics	Drugs which reduce fever. E.g. dolo
4	Antidotes	Substances used to counteract the effect of poison. E.g. charcoal
5	Antacids	Substances which counteracts acidity or neutralizes acid. E.g. gelucil
6	Antiemetics	Drugs that prevent or relieve nausea and vomiting. E.g. emeset
7	Anti coagulant	Drugs used to prevent or inhibit coagulation. E.g. heparin
8	Anti histamine	Drugs used to treat allergies. E.g. avil
9	Diuretics	Drugs which increases the secretion of urine. E.g. lasix
10	Emetics	Drugs which produce vomiting. E.g. apomorphine
11	Hypnotics	Drugs which induce sleep. E.g. diazepam
12	Expectorants	Drugs which increases the expulsion of the bronchial mucus secretion. E.g. mucinex
13	Sedatives	Drugs which exerts a smoothening or tranquilizing effect. They may be general or local. E.g. benzodiazepine
14	Narcotics	Drugs which produce sleep and relieve pain. E.g. morphine
15	Antibiotics	Drugs that have the ability to destroy the growth of microorganisms. E.g. penicilin

16	Vasodilators	Drugs which dilate the blood vessels. E.g. nitroglycerine
17	Vasoconstrictors	Drugs that cause constriction of blood vessels. E.g. amphetamines
18	Hypoglycemic	Drugs that lower the blood glucose level. E.g. insulin
19	Mydriatics	Drugs that dilate the pupils of the eyes. E.g. cyclogyl
20	Myotics	Drugs that contract the pupils of the eye. E.g. pilocarpine

STUDENT'S ACTIVITY:

UNSCRAMBLE THE FOLLOWING LETTERS FOR A WORD

Drugs prescribed for allergy	-	tina histamnei
Drugs to treat hypertension	-	tina perhysivesten
Drugs to combact infections	-	tina ticsiob
Drugs as analgesics	-	sadins
Drugs to relieve constipation	-	xalaivest
Drugs for mentally ill clients	-	tina sypohctics
Drugs to dissolve the clot	-	ticslyromboth

9.9 EFFECTS OF DRUG ON BODY

Here we come across with Pharmacokinetics and Pharmacodynamics of the drug.

Pharmacokinetics – It describes the movement of the drug in our body, about its absorption, distribution, metabolism and excretion.

Pharmacodynamics – It describes about the mechanism of action of a drug at cellular, sub-cellular, and at molecular levels. The important principles of mechanism of action are stimulation, depression, replacement, irritation and cytotoxic action.

9.9.1 Adverse Drug Effects

Side effects: They are the unwanted but often unavoidable consequences of administered drug. E.g., aspirin produces gastric ulcer.

Toxic effects: They are due to over dosage or prolonged use. e.g., paracetamol causes hepatotoxicity..

Teratogenicity: It refers to the capacity of a drug to cause foetal abnormalities when administered to a pregnant mother. E.g., Tetracycline

Idiosyncrasy: It is a genetically determined abnormal reaction to a drug in an unusual manner. E.g., barbiturates.

TAB. PARACETAMOL is dangerous to take more than eight 500 mg or six 650 mg tablets in 24 hours as you may damage your liver, which may be irreversible and fatal.

Drug dependence: Drugs capable of altering mood and feelings on repeated use of such drugs. E.g., morphine

Iatrogenic disease: This a physician induced or drug induced disease. E.g., peptic ulcer by salicylates.

Drug allergy: It is an immunologically mediated unpredictable reactions which are not related to the therapeutic effects.

Carcinogenicity and Mutagenicity: It is the capacity of a drug to cause cancer. e.g., anabolic steroids.

9.10 STORING OF MEDICINE AND SAFETY MEASURES

1. Most medications should be stored in a dry place away from heat and humidity.
2. If the medication needs to be protected from light, it should be stored in a container that keeps out light.
3. If the medication needs to be refrigerated, and you do not have a fridge available, use a cooler with an ice pack.
4. Keep track of the expiry dates of the medications by asking the pharmacy team to put this information on your medication vial.
5. Don't store multiple medications in the same vial, as this makes it hard to keep tracing of which medications are which, which doses have been taken, and what are the expiry dates.
6. Put all medicine up and away, out of children's reach and sight.
7. Close your medicine caps tightly after every use.
8. Choose child-resistant caps for medicine bottles. If pill boxes or non-child resistant caps are the only option, it's even more important to store these containers up high and out of sight when caring for kids.

9.10.1 How to administer medicine Safely

1. Use the dosing device that comes with the medicine. Proper dosing is important, particularly for young children.
2. Kitchen spoons aren't all the same, and a teaspoon or tablespoon used for cooking won't measure the same amount as the dosing device.
3. Keep all medicine in their original packages and containers.
4. Take the time to read the label and follow the directions. Even if you have used the medicine before, sometimes the directions change about how much medicine to give.

The important life saving drug also has its own side effects.

5. Even if your child seems really sick, don't give more medicine than the label says. It won't help your child feel better faster, and it may cause harm.
6. Read the label and know what's in the medicine. Check the active ingredients listed on the label.
7. Make sure you don't give your child more than one medicine with the same active ingredient, because it puts your child at risk for an overdose.

9.10.2 Get Rid of Medicine Safely

1. Clean out your medicine cabinet. Reduce the risk of kids getting into medicine by getting rid of unused or expired medicine.
2. Many communities have a medicine take-back program. This is an easy way to get rid of your unused or expired medicine.
3. To dispose of it yourself, pour the medicine into a sealable plastic bag. If the medicine is a pill, add water to dissolve it. Then add kitty litter, sawdust or coffee grounds to the plastic bag.
4. The Food and Drug Administration (FDA) says that the drugs which are so dangerous , should be flushed down the toilet.

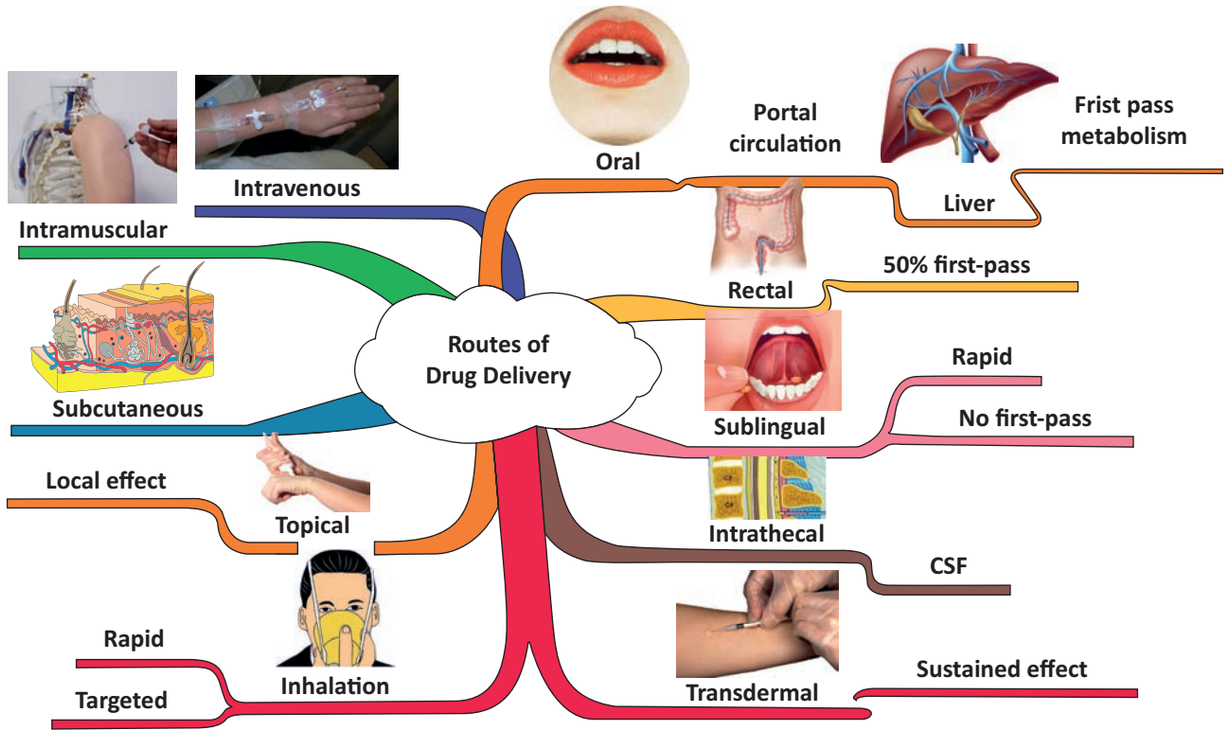
9.11 ROUTES OF ADMINISTRATION

A route of administration is the path by which a drug, fluid, poison or other substance is brought into contact with the body. For instance, some drugs are destroyed by stomach acid if they are taken by mouth. So, they may have to be given by injection. The principle method of giving drugs is by mouth, and the doses which are not otherwise specified are assumed to be oral doses.

The route used to give a drug depends on three main factors:

- The part of the body being treated
- The way the drug works within the body
- The formula of the drug

Guidelines for administering medication
Full name, address, license number, phone number of prescribing physician
Name of medication
Date of order
Strength and dosage of drug
Frequency
Indication
Stop dates if applicable
Physician signature
Verbal orders should be written correctly in a separate Paper and signed.



Doctors, nurses, and other healthcare providers are trained, how to administer medication safely. Administration of medication requires thorough understanding of the drug including,

- how it moves through the body
- when it needs to be administered
- possible side effects and dangerous reactions
- proper storage, handling, and disposal

Sl. No.	Route	Explanation
1	Buccal	Held inside the cheek
2	Enteral	Delivered directly into the stomach or intestine
3	Inhalable	Breathed in through a tube or mask
4	Infused	Injected into a vein with an IV line and slowly dripped in over time
5	Intramuscular	Injected into muscle with a syringe
6	Intrathecal	Injected into your spine
7	Intravenous	Injected into a vein or into an IV line
8	Nasal	Given into the nose by spray or pump

9	Ophthalmic	Given into the eye by drops, gel, or ointment
10	Oral	Swallowed by mouth as a tablet, capsule, lozenge, or liquid
11	Otic	Given by drops into the ear
12	Rectal	Inserted into the rectum
13	Subcutaneous	Injected just under the skin
14	Sublingual	Held under the tongue
15	Topical	Applied to the skin
16	Transdermal	Given through a patch placed on the skin

9.11.1 Pros and Cons of different routes of Administration of Drugs

Sl. No.	Route	Advantage	Disadvantage
1	Oral	➢ Easy ➢ Preferred by patients ➢ Slow-release preparations may be available to extend duration of action ➢ Drugs can be formulated in such a way as to protect them from digestive enzymes, acid, etc.	➢ Unsuitable in patients who are uncooperative, strictly "nil by mouth", are vomiting profusely or have ileus ➢ Most orally administered drugs are absorbed slowly ➢ Unpredictable absorption due to degradation by stomach acid and enzymes
2	Rectal	➢ Good absorption – the haemorrhoidal veins drain directly into the inferior vena cava, avoiding hepatic first pass metabolism	➢ May not be suitable after rectal or anal surgery ➢ Some patients dislike suppositories
3	Subcutaneous or Intramuscular	➢ Good absorption, especially for drugs with a low oral bioavailability ➢ Onset is more rapid than the above routes ➢ Depending on formulation can have very long duration of action, e.g. depot antipsychotics and contraceptives	➢ Absorption may still be unpredictable if peripheries are poorly perfused ➢ Injections hurt, cause bruises and frighten children and needle phobics

4	Intravenous	➢ Dependable and reproducible effects ➢ Entire administered dose reaches the systemic circulation immediately ➢ The dose can be accurately titrated against response	➢ Requires a functioning cannula ➢ More expensive and labour intensive than other routes. ➢ Cannulation is distressing to some patients, especially children ➢ Cannulae are prone to infection ➢ IV injection of drugs may cause local reactions
5	Topical	➢ Easy ➢ Non-invasive ➢ High levels of patient satisfaction	➢ Most drugs have a high molecular weight and are poorly lipid soluble, so are not absorbed via skin or mucous membranes ➢ Very slow absorption
6	Inhaled	➢ Very rapid absorption due to the huge surface area of the respiratory endothelium ➢ Bronchodilators and inhaled steroids can be targeted to lungs with low levels of systemic absorption	➢ Bioavailability depends on patient's inhaler technique and the size of drug particles generated by the delivery technique

9.12 RIGHTS OF DRUG ADMINISTRATION

It is the responsibility of the nurse to understand the basic concept of safe, therapeutic and rational use of drugs. Healthcare providers are trained in all of these issues. In fact, many healthcare providers keep in mind the "Eight rights" when they administer drugs. But the recent advancements says depending upon the institutional policies these may vary in number.

- ❖ Right drug
- ❖ Right patient
- ❖ Right route
- ❖ Right dose
- ❖ Right frequency/time
- ❖ Right response
- ❖ Right reason
- ❖ Right evaluation
- ❖ Right education
- ❖ Right documentation
- ❖ Right to refuse
- ❖ Right principle of care
- ❖ Right prescription
- ❖ Right nurse clinician

STUDENT'S ACTIVITY

Visit a pharmaceutical company and Visit a medical shop and prepare a report.

COMMON CONVERSION FACTORS	
1 kilogram (kg)	2.2 pounds (lb)
1 pound (lb)	454 grams (g or gm)
1 kilogram (kg)	1000 grams (g or gm)
1 gram (g or gm)	1000 milligrams (mg)
1 milligram (mg)	1000 micrograms (mcg)
1 cc (cubic centimetre)	1 ml millilitre (ml)
1 inch (in)	2.54 centimetres (cm)
1 grain (gr)	60 milligrams (ml)
1 cup	240 millilitre (ml)
8 ounces (oz)	1 cup
16 ounces (oz)	1 pint (pt)
1 ounce (oz)	30 millilitre (ml)
1 teaspoon (tsp)	5 millilitre (ml)
1 dram	4 millilitre (ml)
1 tablespoon (T or tbs)	15 millilitre (ml)
2 tablespoons (T or tbs)	1 Ounce
3 teaspoons (tsp)	1 tablespoon (T or tbs)
1 teaspoon (tsp)	75 gtt (drops)
1 millilitre (ml)	16 minims
1 millilitre (ml)	15 drops (gtt)
1 litre (L)	1000 millilitre (ml)
37.0 ° C (Centigrade degrees)	98.6° F (Fahrenheit degrees)

The Nursing Students and the Nurses should be familiar with commonly used conversion tables and commonly used abbreviations. Below are few important list.

COMMON ABBREVATION	
O.S.	*LEFT EYE*
O.U.	*BOTH EYES*
P.C.	*AFTER MEALS*
P.M.	*EVENING; AFTER NOON*
P.O.	*BY MOUTH; ORALLY*

P.R.	*RECTALLY*
P.R.N.	*AS NEEDED (FOR)*
P.V.	*VAGINALLY*
Q	*EVERY; PER*
Q12; Q. 12 H.; Q12°	*EVERY 12 HOURS*
Q1-2; Q. 1-2 H.; Q1-2°	*EVERY 1 TO 2 HOURS*
Q.A.D.; Q.O.D.	*EVERY OTHER DAY*
Q.A.M.	*EVERY MORNING; EVERY DAY BEFORE NOON*
Q.D.	*EVERY DAY*
Q.H.S.	*EVERY DAY AT BEDTIME*
Q.I.D.	*4 TIMES A DAY*
RX	*PRESCRIPTION*
SL; S.L.	*SUBLINGUALLY; UNDER THE TONGUE*
T.I.D.	*3 TIMES A DAY*
BD	*2 TIMES A DAY*
OD	*ONCE A DAY*

9.13 LEGAL AND ETHICAL ASPECTS

Indian pharmacopoeia: Drug complying with standards are prescribed in the Drugs and Cosmetics Act Standards include standards for identity, purity and potency. The government of most of the countries have established the drug standards which are published in the pharmacopoeia. In our country, the ministry of health and family welfare of Indian government, published third edition by the year 2000.

The drug and cosmetic act provides for the establishment of three control agencies to regulate, manufacture, sale, distribute, import and export of drugs.

1. Advisory agencies
2. Analytical agencies
3. Executive agencies

9.13.1 Drug Laws

1. The pharmacy act 1948
2. Dangerous drug act 1930
3. Drug and cosmetic act 1940
4. Medicinal and toilet preparation act 1956
5. Poisons act 1919

9.13.2 National Patient Safety Goals

These safety goals are based upon needs that are identified in the healthcare through research, patient reports, and clinician input.

1. To improve accuracy and identification of patient
2. Report critical lab tests that could affect medication administration
3. Improve the safety of using medication

9.13.3 General Instruction for Legal Consideration

- Always check patient's identification tag
- Ask patient to state their name and birth date.
- Compare medication order to identification tag and patient's stated name and birth date.
- Verify patient's allergies with chart and with patient.
- Perform a triple check of the medication's label
  - When retrieving the medication.
  - When preparing the medication.
  - Before administering medication to patient.
- Always check the medication label with the physician's orders.
- Never administer medication prepared by another person
- Never administer medication that is not labeled
- Check label for medication concentration.
- Compare prepared dose with medication order.
- Triple all medication calculations.
- Check all medication calculations with another nurse.
- Verify that dosage is within appropriate dose range for patient and medication.
- Verify schedule of medication with order.
  - Date
  - Time
  - Specified period of time
- Check last dose of medication given to patient.
- Administer medication within 30 minutes of schedule.
- Verify medication route with medication order before administering.
- Medication may only be administered via route specified in order
- Inform patient of medication being administered.

- Inform patient of desired effects of medication.
- Inform patient of side effects of medication.
- Ask patient if they have any known allergies to medication
- The legally responsible party (patient, parent, family member, guardian, etc.) for patient's care has the right to refuse any medication.
- Inform responsible party of consequences of refusing medication.
- Verify that responsible party understands all of these consequences.
- Notify physician that ordered medication and document notification.
- Document refusal of medication and that responsible party understands consequences.
- Properly assess patient and tests to determine if medication is safe and appropriate.
- If deemed unsafe or inappropriate, notify ordering physician and document notification.
- Document that medication was not administered and the reason that dose was skipped.
- After medication has been administered
- Assess patient for any adverse side effects.
- Assess patient for effectiveness of medication.
- Compare patient's prior status with post medication status.
- Document patient's response to medication.
- Never document before administration of medicine.

Do's and Don'ts

- Do not give out dated or expired medication
- Do not give medication beyond stop date
- Do not administer medication that have changed colour or consistency
- Administer medication that are taken only from properly labeled or prescribed container

CONCLUSION

Considering the needs of the nursing students, the subject matter is prescribed very briefly to understand the essence of pharmacology and know their responsibilities while practicing as a nurse at all settings. Drugs may be prescribed to promote healing, cure disease control or slow progression of disease, prevent disease, decrease risk of complications, increase comfort level, reduce excessive activity in the body. Therefore it's the duty of the nurses to flourish with adequate knowledge, skill and attitude among the health care professionals to make our profession in flying colours.

A-Z GLOSSARY

Pharmacology (மருந்தியல்)	-	The branch of medicine concerned with the uses, effects, and modes of action of drugs.
Principle (கொள்கை)	-	A fundamental truth that serves as the foundation for a system of belief or behaviour or for a chain of reasoning.
Contraindication (தேவைப்படாதவர்கள்)	-	A particular technique or drug should not be used in that case
Opioids (அபின்)	-	A compound resembling opium in addictive properties or physiological effects.
Toxicology (நச்சியல்)	-	The branch of science concerned with the nature, effects, and detection of poisons.
Sources (ஆதாரங்கள்)	-	A place, person, or thing from which something originates or can be obtained.
Antihistamines (ஒவ்வாமை முறி)	-	A drug or other compound that inhibits the physiological effects of histamine, used especially in the treatment of allergies.
Antipsychotic (மனநோய் எதிர்ப்பு)	-	A drug used to treat psychotic disorders.
Analgesics (வலி நிவாரணி)	-	Painkilling drug, pain reliever, palliative.
Pharmacopoeia (மருந்தின் குணங்கள்)	-	An official publication containing a list of medicinal drugs with their effects and directions for their use. A stock of medicinal drugs.

ICT Corner

Learning Abbrevations

This activity enables the students to enrich themselves With abbrevations they have learnt

Step 1: Type the URL link given below in the browser or scan the QR code. A page opens with " Flash Cards, Matching, Concentration and word search"

Step 2: Click the image to explore the functions. There are four types of games. Each have their own individual value

Step 3: When you click open the games you can play as per direction

Step 4: If you open the concentration game two upside down cards have to match ie one abbreviation another one expansion

Step 1

Step 2

Step 3

Step 4

LEARNING ABBREVATIONS URL:
https://www.quia.com/jg/1662950.html

B290_12_Nur_Voc_EM

*Pictures are indicative

EVALUATION

HHVCNU

I. Choose the correct answer:

1. The study of dose, distribution, metabolism and excretion of drugs in the body is known as
   b. Dose effective body
   c. Pharmacodynamics
   d. Pharmacotherapy
   e. Pharmacokinetics

2. Morphine is extracted from the plant opium through the principle of
   a. alkaloid b. alkaline
   c. crystalloid d. acidic

3. The pharmacy act was formulated in the year
   a. 1943 c. 1945
   b. 1948 d. 1949

4. A type of iatrogenic disease
   a. peptic ulcer c. cancer
   b. heart attack d. head ache

5. T.I.D stands for
   a. 2 times a day c. 3 times a day
   b. one time a day d. all the above

6. Analgesics are used to
   a. relieve pain c. relieve tension
   b. both a & b d. none of the above

7. The following is the drug prepared from animals except
   a. Tab. Para c. Tab. Taxim
   b. Inj. Insulin d. all the above

8. To administer a drug 4 time a day, the abbreviation to be used
   a. Q.I.D c. OD
   b. TDS d. BD

9. One pint is equal to
   a. 350 ml c. 500ml
   b. 510ml d. 450ml

10. The abbreviation PO stands for
    a. by rectal c. by vaginal
    b. by intrathecal d. none of the above

II. Write short answer for the following questions:

1. List the sources of drugs
2. Name any four forms of drugs available
3. State the effects of drugs on body
4. Mention routes of administration of drugs pertaining to sense organs
5. Different forms of drugs are available. Each drug has its own nature. Explain the physical nature of a drug.

III. Write short notes for the following questions:

1. Write the advantages and disadvantages of oral route of drug administration.
2. Illustrate the absorption of drugs.
3. What do you mean by shape and size of a drug?
4. Describe the parts of a prescription of a drug.
5. State any five general instructions for administering medicines safely.

IV. Answer the following questions in detail:

1. Classification of drugs.
2. Explain the routes of administration of drugs.

3. Describe the rights of administration of drugs.
4. Discuss the ethical and legal aspects in administration of medicines.
5. Each drug has to be stored in a different manner. Now explain the storage of medication and the safety measures to be followed generally for the drugs.

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