

General Pharmacology

Pharmacology- the study of medications and how they affect the body

Overview - The importance of medications and the dangers associated with their administration.

Medications/drugs- chemical agents =used in diagnosis, treatment, and prevention of disease

Dose- the amount of the drug that is given

Action- the effects the drug is expected to have on the patient's body

Indication- condition where a drug had proven to be of therapeutic value

Contraindication - conditions that make it harmful to administer a drug

Side effects - undesired effects that a drug often causes, may or may not be predictable.

Absorption - the process by which medications travel through body tissues until they reach the bloodstream.

Transdermal - drug placed on the skin and absorbed into the circulatory system through the skin
i.e. nitroglycerin

Subcutaneous (SC) - drug is injected directly into the fatty tissue under the skin that overlies a muscle.

- Absorption is slow resulting in delay of action and prolonged effect

Intramuscular (IM) -drug is injected into the muscle tissue from which it is absorbed into the bloodstream (epinephrine)

- Method of administration has a predictable rate of absorption but onset is slower than IV
- This is the most common route

Intravenous (IV) - majority of medications in the pre-hospital setting are administered IV

- The rate of absorption is rapid and predictable
- Has the most potential for causing adverse reactions

Inhalation- medication is breathed directly into the lungs (Albuterol)

By Mouth (PO) - taken into the digestive system and absorbed

Sublingual (SL) - drugs placed under the tongue to dissolve and is absorbed across mucus membrane (nitroglycerin) (Do not Swallow)

Rectal (PR) - administered into the rectum (Valium)

Oral - administered by mouth (activated charcoal) Absorbed from the stomach or intestinal tract.

Trade name - Name given to the drug by the manufacturer, used to market drug

Generic name- abbreviated version of the chemical name. Listed in U.S. Pharmacopoeia

Medications – Activated Charcoal, Oral Glucose and Oxygen (carried on EMS unit)

EMT may assist patient with administration of Prescribed inhaler, Nitroglycerin, and Epinephrine

Drug forms

Solutions - preparations in which drugs are dissolved in solvent, usually water

Suspensions - liquid drug preparations that do not remain dissolved

Capsules - gelatin containers in which powdered drugs have been placed

Tablets-similar to pills, they are powdered drugs that have been compressed

Liquid for injection - a liquid substance with no particulate matter

Gel - viscous substance that the patient swallows

Fine powder for inhalation - crystalline substance mixed in liquid and compressed into
Cylinder

Gas - medication that is inhaled

Key Steps in Administering Medications

- Obtain an order from Medical Control.
- Select the proper Medication
- Verify the Patient's Medication
- Check the expiration Date
- Check for Discoloration or impurities
- Verify the form, route and dose
- Documentation

Reassessment following administration

- Mental status
- **ABC's**
- Vitals
- Change or relief of patient
- Medication side effects

5 "R's"

- Right Patient
- Right Route
- Right Drug
- Right Date
- Right Time

Oxygen- colorless, odorless, tasteless gas used as one of the most important emergency drugs

Indications

- Hypoxia
- Chest Pain
- Cardiac Arrest

Contraindications

- None in the Emergency setting

Precautions

- COPD patients, watch for decreased respiratory effort
- Newborn patients- prolonged exposure to high concentrations
- Pressurized cylinder

Dosage

- 10-15 lpm by NRB

Activated Charcoal

Indications

- Poisoning
- Drug Overdose

Contraindications

- Unconscious patient
- No gag reflex or unable to swallow
- Caustic or petroleum products

Precautions

- • May cause vomiting
- • Black stools

Dosage

- 1 g per kg
- Usual dose Adult 25-50g, Pediatric 10-25g

Oral Glucose

Indications

- Hypoglycemia

Contraindications

- Unconscious patient
- No gag reflex or unable to swallow

Precautions

- Protect the airway
- Watch for aspiration
Watch for Lower LOC

Dosage

- 1 tube, may need to administer additional tubes based on patient condition

Nitroglycerin -used to manage chest pain associated with angina and myocardial infarction

Indications

- Chest pain associated with angina or myocardial infarction
- Pulmonary edema

Contraindications

- Systolic BP less than 100 mmHG
- Head injury
- Patient has already taken max. dose
- Any ED drugs in last 36 hours
- Sex enhancing drugs Viagra = 24 hours

Dosage

- 0.4 mg SL repeated every 5 minutes up to Max. Of 3 doses

Epinephrine Auto-Injector- used in the treatment of allergic reactions

Indications

- Severe, systemic allergic reactions

Contraindications

- None when indicated for severe allergic reactions

Precautions

- May precipitate angina or myocardial infarction in cardiac patients
- Side effects: Anxiety, tremors, palpitations, tachycardia, and headache

Dosage

- Adult 0.3 mg IM
- Pediatric 0.15mg IM

Albuterol (Preventil) (Ventolin)- one of the most frequently used Broncodilator

Indications

- Bronchial Asthma
- Bronchospasm associated with chronic bronchitis or emphysema

Contraindications

- Inability to use inhaler
- Patient has met the prescribed dose

Precautions

- Use caution with cardiac and hypertensive patients
- Side effects: Palpitations, anxiety, nausea, dizziness

Dosage

- The number of puffs indicated by prescription usually 2 puffs 4 X a day

