1 Chapter 7 Principles of Pharmacology

2 Giving Medications

• You will be _______________________________ for administering certain drugs
• You will be responsible for assisting patients self administer other drugs
• Not understanding how medications work, places the patient and yourself in _______________________________
• Giving medications is _______________________________ business

3 Pharmacology Definitions (1 of 2)

• Pharmacology
  • The study of the _______________________________ and effects of drugs and medications
• Pharmacodynamics
  • process by which medication works on the body
  • _______________________________
    • Amount of medication given
  • _______________________________
    • Therapeutic effects expected on the body

4 Pharmacology Definitions (2 of 2)

• _______________________________
  • Therapeutic uses for a particular drug
• Contraindications
  • Conditions in which a medication should not be given
• Side _______________________________
  • Actions of a drug other than the desired ones

5 How Medications Work

• _______________________________ are sites on cells where chemicals (medications included) can bind and cause reactions.
• Receptors are located throughout the body
• _______________________________: causes stimulation of receptors
• _______________________________: binds to a receptor and blocks other medications

6 Medication Names

• _______________________________ name
  • Brand name given by manufacturer
• _______________________________ name
  • Original chemical name

7 Routes of Administration (1 of 4)
• Medications: enter the body through the digestive system
  • Absorbed slowly
  • Oral and via rectum

• Medications: enter the body through other than the digestive tract
  • Absorbed more rapidly

8 Routes of Administrations (2 of 4)
  • Intravenous (IV) injection (quickest route)
    • Injected directly into the _______________________________
  • ________ (PO)
    • Taken by mouth; enters body through digestive system

  • Placed under the tongue; absorbed by mucous membranes

9 Routes of Administrations (3 of 4)
  • ________ (IM) injection
    • Injection into the muscle
  • ________ (IO)
    • Injection into the bone marrow
  • ________ (SC) injection
    • Injection into tissue between skin and muscle

10 Routes of Administration (4 of 4)
  • _______________________________
    • Medications absorbed through the skin
  • _______________________________
    • Medications inhaled into the lungs
  • Per _______________________________ (PR)
    • Administration by rectum
  • _______________________________
    • Given into lungs via an endotracheal tube

11 Dosage Forms (1 of 4)
  • _______________________________
    • Materials mixed with medication and compressed under pressure
  • _______________________________
    • Gelatin shells filled with powdered or liquid medication

12 Dosage Forms (2 of 4)
  • _______________________________
    • Liquid mixture of one or more substances
• Mixture will not separate by filtering or letting it stand.
  
• Mixture of fine particles distributed throughout a liquid by shaking

13 Dosage Forms (3 of 4)
• Metered-dose _______________________________
  • Miniature spray canister, used to direct medication through the mouth into the lungs
  
• _______________________________ medications
  • Lotions, creams, and ointments applied to skin

14 Dosage Forms (4 of 4)
• _______________________________ medications
  • Designed to be absorbed through the skin
  
• _______________________________
  • Semi-liquid substances administered orally
  • _______________________________ for inhalation
  • Oxygen
  • Nitrous Oxide

15 Medications Carried on EMS Unit

16 Oxygen
• Required by all _______________________________ of the body
• Administered as a _______________________________ for inhalation
• Enhances _______________________________ , requiring caution near sources of ignition

17 Activated Charcoal
• _______________________________ used to absorb ingested poisons
• Often combined with a _______________________________
• Administered orally as a suspension

18 Oral Glucose
• Glucose is used by cells for _______________________________ .
• Patients with low blood glucose are _______________________________ .
• It is administered orally as a gel.

19 Other Medications
• Aspirin (ASA)
  • -_____________________________ function inhibitor
  • -Given to patients with cardiac chest pain
• Nitroglycerin (NTG)
  • -_____________________________
  • -Given for cardiac chest pain
- ________________ must be monitored before each dose
- Available in tablet or spray form

20 Other Medications

- Albuterol (Ventolin)
  - ________________
  - Given for respiratory distress
  - Given via ________________
- Xopenex (Levalbuterol)
  - Bronchodilator
  - Given for respiratory distress (normally after Albuterol or if patient is already taking Xopenex)
  - Given via nebulizer

21 Other Medications

- Glucagon:
  - Polypeptide ________________ identical to human glucagon
  - Increases blood glucose and relaxes ________________ muscles of the GI tract
  - Acts only on liver ________________ , converting it to glucose
  - Given IV, IM, or SC

22 Assisted-Administration Medications

23 Epinephrine

- Increases heart rate and blood pressure and decreases muscle tone of ________________
  - Eases breathing problems in asthma or ________________ reactions
  - May be delivered by MDI, SC, or IM

24 Administering Epinephrine by Injection

- Sterilize skin.
- Insert needle at ___________degree angle and draw plunger back.
  - ________________ medication.
  - ________________ of needle.

25 Metered-Dose Inhaler

- Medication should be delivered as the patient is ________________.
  - Device may include ________________.

26 Weights and Measures
Based primarily on Metric system

- _________________________________ : basic unit for measuring mass (weight)
- _________________________________ : basic unit for measuring volume (cc’s)
- _________________________________ = 1,000
- _________________________________ = 1/1,000th
- 1 Kilogram = 2.2 pounds
- 1 liter = 1.05 quarts

6 “Rights of Drug Administration
- Right Patient
- Right _______________________________
- Right Dose
- Right _______________________________
- Right Time
- Right _______________________________

General Steps to Administer Medications (1 of 2)
- Obtain _______________________________ from medical control.
- Repeat orders back to medical control.
- Verify proper _______________________________ and prescription.
- Verify form, dose, and route of the medication.
- Check _______________________________ date and condition of the medication.

General Steps to Administer Medications (2 of 2)
- _______________________________ vital signs, especially heart rate and blood pressure, at least every 5 minutes or as the patient’s condition changes.
- ! Time, Drug, Dosage, Route, Effects

Patient Medications
- _______________________________ you in to patient conditions
- Especially helpful when patient has altered _______________________________ status
- Include over-the-counter medications and dietary supplements