Chapter 17 Medication Administration

Medications
° Substance administered to diagnose, cure, treat, relieve, or prevent diseases
° Prescription -written direction for preparation and administration of a drug
  o Dispensed by a pharmacist under the order of a physician or dentist
° Drugs may have four names:
  o Generic - name before drug becomes official
  o Official- name listed in an official publication
  o Chemical- name describing drug constituents or chemical formulation
  o Trademark or brand - name given by drug manufacturer
° Drugs are produced from:
  o Plants
  o Minerals
  o Animals
  o Synthetics
° Types of drug preparations [corresponds to Table 17-1]
  o Oral – pill, tablet, capsule, caplet, elixir, extract, syrup or troche
  o Topical – spray, foam, cream, gel, liniment, ointment, or paste
  o Suppository
  o Transdermal - patch
  o Parenteral – solution, suspension

Drug Standards
° Legal aspects of drug administration
  o Nurses legal responsibilities for drug administration are
    • Defined by the Nurse Practices Act
    • Controlled by law [corresponds to Table17-2]
    • Controlled by policies and procedures of health care agencies
  o Nurses are responsible for:
    • Own actions whether or not a written order exists
    • Administering correct medication dosage
    • Proper documentation of administration
    • Assessing drug effects
    • Recognizing unfavorable reactions
    • Recognizing incorrect or illegible medication order
    • Following health care agency policies and procedures
    • Proper witnessing and disposal of controlled substances
    • Handling controlled substances properly

Effects of Drugs
° Therapeutic effect or desired effect: [corresponds to Table 17-3]
  o Reason drug is prescribed.
° Side effects or untoward effect:
  o Adverse effect – severe side effect
  o Drug toxicity – overdose, buildup of drug in blood
  o Drug allergy – immunologic reaction [corresponds to Table 17-4]
  o Drug tolerance – increasing doses to maintain the therapeutic effect
- Drug interaction – effects of one drug interact with another drug
- Unintended drug action
- Idiosyncratic effect – unexpected and unique body response.
- Iatrogenic disease – disease caused unintentionally by drug

**Actions of drugs on the body [corresponds to Box 17-1]**
- Drug levels in the body are determined by:
  - Onset of action
  - Peak plasma level
  - Drug half-life
  - Plateau
  - Absorption

**Factors affecting medication action:**
- Idiosyncratic effect
- Ethnicity/culture
  - Genetic influences which affect metabolism and excretion of drugs
- Cultural practices
  - Herbal remedies – may interact with prescribed drugs
- Routes of administration
- Age and physiological factors [corresponds to Box 17-2]
  - Infants – immaturity of organs
  - Children/adolescents – increased tendency for allergic reactions
  - Adult – more effects from acute or chronic illnesses
  - Pregnancy & fetus – teratogenic effects
- Older adult
  - ↑ Impaired drug absorption
  - ↑ Increased drug toxicity
  - ↑ Decreased effectiveness of blood-brain barrier
  - ↑ Impaired circulation
  - ↑ Impaired memory and visual acuity
- Lifestyle factors
  - Smoking/alcohol – interferes with drug metabolism
- Routes used to administer medications: [corresponds to Table 17-5]
  - Oral
  - Sublingual
  - Buccal
  - Rectal
  - Vaginal
  - Parenteral
  - Topical/Transdermal
  - Nasogastric or gastrostomy tube
  - Intravenous
  - Inhalation

**Medication Orders**
- Four common medication orders are:
  - Stat – immediately, only once
  - Single – once at specific time
○ Standing – may be for specific length of time or indefinite time
○ PRN – as-needed

° Essential parts of an order [corresponds to Box 17-3]
   ○ Full name of client
   ○ Date and time the order is written
   ○ Name of the drug to be administered
   ○ Dosage of the drug
   ○ Route of administration
   ○ Frequency of administration
   ○ Signature of the person writing the order

° Communicating a medication order
   ○ Actions required if drug order is ambiguous, unusual, or contraindicated:
     • Discuss the order with the RN and/or nursing supervisor.
     • Contact the physician and discuss the drug order with the physician.
     • Document in nurse’s notes:
       ↑ Time physician notified and by whom
       ↑ Information conveyed to physician
       ↑ Physician’s response as stated by physician
     • If physician cannot be contacted, document all attempts to contact and reason for withholding drug.
     • If someone else gives medication, document client’s condition before and after drug administration.
     • If an incident report is indicated, clearly document facts regarding the drug administration.

Systems of Measurement [corresponds to Table 17-6]
° Metric system – multiples of ten
° Apothecaries’ system – predates metric
° Household system – not precise
° Converting units of weights and measures
   ○ Physician orders morphine gr _.
     • Convert ordered dose to milligrams
     60 mg = 1 gr
     If X mg = _ gr (or 0.25 gr)
     X = (60 mg x 0.25 gr)
     Then X = 15 mg
   ○ Convert milligrams to grams
     1 g = 1,000 mg
     If X g = 500 mg
     Then X = 0.5 g
   ○ Convert pounds (lb) to kilograms (kg)
     1 kg= 2.2 lb
     If X kg = 66 lb
     then 66 divided by 2.2 = 30 kg
     30 kg = 66 lb

° Calculating dosages [corresponds to page 394]
Dosages for children
- Body surface area – nomogram [corresponds to Figure 17-3]

Equipment
- Equipment required for parenteral medication injections:
  - Syringes
    - 3 parts: tip, barrel, plunger
    - Types most commonly used: hypodermic, insulin, and tuberculin
    - Milliliter and minim scales are along the sides for accurate measurement
  - Needles
    - 3 parts: hub, cannula, and bevel
    - Bevel length varies – longest is sharpest
    - Length of shaft – varies from 1.25 to 5 cm
    - Gauge (diameter) of shaft – varies from size 17 – 28
      - Larger the gauge number, the smaller the diameter of the shaft
      - Smaller gauge produces less tissue trauma

Routes of Administration
- Oral medications [corresponds to Procedure 17-1]
  - NPO, sublingual, buccal
- Nasogastric and gastrostomy medications
- Parenteral medications [corresponds to Figure 17-11]
  - Intradermal
  - Subcutaneous
  - Intramuscular
  - Intravenous
- Topical medications

Nursing Care
- Providing safety in medication administration
  - Six essential steps to follow when administering medications [corresponds to Table 17-7]
    - Double check client’s identification
    - Inform the client about the medication
    - Administer the drug using the correct procedure
    - Provide additional interventions as needed
    - Properly record the drug administered
    - Evaluate client’s response to the drug.
  - Five rights and three checks [corresponds to Box 17-4]
  - Observing client response to drug
    - Influence of culture [corresponds to Box 17-5]
- Administering oral medications
- Administering nasogastric and gastrostomy medications [corresponds to Box 17-6]
  - Check pH of gastric contents
- Preparing injectable medications [corresponds to Procedure 17-2]
  - Ampule [corresponds to Procedure 17-3]
    - Clear glass container designed to hold a single dose of a drug
Sizes – 1 ml to 10 ml or more
Have colored scored markings for opening

- Vial
  - Small glass bottle with a sealed rubber cap
  - Single dose or multidoses
  - Metal or plastic cap that protects the rubber seal

- Injectable medications can also be administered by:
  - Using prefilled syringes
  - Using a needleless injection systems
  - Mixing medications in one syringe [corresponds to Procedure 17-2]

- Preventing needle stick injuries [corresponds to Box 17-8]

- Giving injections
  - Intradermal [corresponds to Figure 17-16]
  - Subcutaneous [corresponds to Figure 17-17]
  - Intramuscular [corresponds to Figure 17-18 and Procedure 17-3]
    - Ventrogluteal site [corresponds to Figure 17-19]
    - Vastus lateralis site [corresponds to Figure 17-20]
    - Dorsogluteal site [corresponds to Figure 17-21]
    - Deltoid site [corresponds to Figure 17-22]
    - Z track [corresponds to Procedure 17-3A]

- Topical applications
  - Skin
  - Ophthalmic [corresponds to Procedure 17-4]
  - Otic [corresponds to Procedure 17-5]
  - Nasal – rebound effect
  - Vaginal [corresponds to Procedure 17-6]
  - Rectal - [corresponds to page 405]
  - Respiratory inhalation [corresponds to Box 17-9]
  - Irrigation [corresponds to Box 17-10]

Nursing Process Care Plan: Client with an Emergency Appendectomy
Critical Thinking Care Map: Caring for a Client with IDDM (Insulin-Dependent Diabetes Mellitus)