

NDEG 26 A – Pharmacology I  
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## CHAPTER 1

### The Nursing Process and Drug Therapy

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## The Nursing Process

- An organizational framework for the practice of nursing
- Orderly, systematic
- Central to all nursing care
- Encompasses all steps taken by the nurse in caring for a patient
- Flexibility is important

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## The Nursing Process (cont'd)

- Assessment
- Nursing diagnosis
- Planning (with outcome criteria)
- Implementation
- Evaluation

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## The Nursing Process (cont'd)

### Assessment

- Data collection
  - Subjective, objective
  - Data collected on the patient, drug, environment
- Medication history
- Nursing assessment
- Physical assessment
- Data analysis

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## The Nursing Process (cont'd)

### Nursing diagnosis

- Judgment or conclusion about the need/problem (actual or at risk for) of the patient
- Based upon an accurate assessment
- NANDA format

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## The Nursing Process (cont'd)

### Planning

- Identification of goals and outcome criteria
- Prioritization
- Time frame

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## The Nursing Process (cont'd)

### Goals

- Objective, measurable, realistic
- Time frame specified

Refer to Box 1-1 on page 8

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## The Nursing Process (cont'd)

### Outcome criteria

- Specific standard(s) of measure
- Patient oriented
- More succinct

Example:

Goal: Patient will not injure self during insulin regimen.

- The patient will verbalize the correct and safe process of insulin administration.
- “The patient demonstrates safe insulin self-administration technique.”

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## The Nursing Process (cont'd)

### Implementation

- Initiation and completion of the nursing care plan as defined by the nursing diagnoses and outcome criteria
- Follow the “five rights” of medication administration
- RouteTimeDose-Monterey(med) Park(patient)
- David(Drug) drew(dose) tiny(time) rose(route) petals(patient)

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## The “Five Rights” of Medication Administration

- Right drug
  - Check label 3 times prior to administration
  - Be familiar with generic and trade name
- Right dose
  - Is dose appropriate for pt's age?
  - Recheck dosage calculations
  - Pay careful attention to decimals

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## Sample Medication Label

15

**Rx only**  
See package insert for dosage and complete product information.

Warning: Not for injection  
Store unconstituted product at controlled room temperature 20° to 25°C (68° to 77°F) (see USP). Store constituted suspension in a refrigerator 2° to 8°C (36° to 46°F). Shake well before using. Keep container tightly closed. The mixture may be used for 14 days. Discard unused portion after 14 days.

Directions for mixing: Shake bottle to loosen granules. Add approximately 1/2 the total amount of distilled water required for constitution (total water = 29 mL). Shake vigorously to wet the granules. Add remaining water and shake vigorously.

Each 5 mL of suspension contains cefpodoxime proxietyl equivalent to 100 mg cefpodoxime.

U.S. Patent Nos. 4,486,425; 4,409,215  
Licensed from Sankey Company, Ltd., Japan  
Manufactured by Pharmacia & Upjohn S.A.-N.V., Puurs - Belgium for Pharmacia & Upjohn Company  
Kalamazoo, MI 49001, USA  
817 150 101  
K24358

NDC 0009-3615-03  
50 mL (when mixed)

**Vantin**<sup>®</sup> (For Oral Suspension)  
cefpodoxime proxietyl  
for oral suspension

**100 mg per 5 mL**

Equivalent to 100 mg per 5 mL cefpodoxime when constituted

Pharmacia & Upjohn

## Sample Medication Label

NDC 63322-280-02 28002

**FUROSEMIDE**  
Injection, USP

**20 mg/2 mL**  
(10 mg/mL)

For IM or IV Use Rx only  
**2 mL** Single Dose Vial

Preservative Free  
Discard unused portion.  
**PROTECT FROM LIGHT.**  
Do not use if discolored.

American Pharmaceutical  
Parbiers, Inc.  
Los Angeles, CA 90024

401803A

LOT  
EXP

Mosby Items

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## Sample Medication Label

NDC 0002-1497-01  
VIAL No. 767

**Slay**

**KEFZOL®**

STERILE  
CEFAZOLIN  
SODIUM, USP

Equiv. to  
**500 mg**

Cefazolin

CAUTION—Federal (U.S.A.) law prohibits dispensing without prescription.

**Dosage**—See literature.

To prepare solution add 2 mL Sterile Chloride Injection. Provides an approximate volume of 2.2 mL (225 mg per mL).

**Prior to Reconstitution**—Store at Controlled Room Temperature 59° to 86°F.

**After Reconstitution**—Store in a refrigerator. For Storage Time—See Accompanying literature. Use within 24 hours of room temperature.

WV 4293 AMK  
Lympholized  
Eli Lilly and Company, IN 4628, USA  
Exp. Date/Control No.

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## Sample Medication Label

N 0071-0418-24

**Nitrostat®**  
(Nitroglycerin  
Tablets, USP)

**0.4 mg (1/150 gr)**

℞ only

100 **SUBLINGUAL TABLETS**

**PARKE-DAVIS**

Usual Dosage—0.3 to 0.6 mg sublingually as needed.

See package insert for full prescribing information.

Keep this and all drugs out of the reach of children.

Dispense in original, unopened container.

Store at Controlled Room Temperature 20°-25°C (68°-77°F) [See USP].

Manufactured by: Parke Davis Pharmaceuticals, Ltd.   
Weybridge, Surrey, Middlesex, England

Distributed by: **PARKE-DAVIS**   
Div of Warner-Lambert Co.   
Morris Plains, NJ 07950 USA   
© 1999, PDP.

6805-00-687-8683

0418G030

**Warning**—To prevent loss of potency, keep these tablets in the original container. Close tightly immediately after each use.

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## Sample Medication Label

NDC 10019-017-56

**Lidocaine HCl Injection, USP 1%**

(10 mg/mL) ℞ only

FOR INFILTRATION AND NERVE BLOCK  
NOT FOR SPINAL OR EPIDURAL ANESTHESIA

30 mL Multiple Dose Vial

**Baxter** **ESILEDERLE™**

Mfd. for Baxter Healthcare Corporation affiliate  
by: Elkins-Sinn, Cherry Hill, NJ 08003 400-741-01

Each mL contains lidocaine hydrochloride 10 mg, sodium chloride 7 mg and methylparaben 1 mg in Water for Injection, pH 5.0-7.0; sodium hydroxide and/or hydrochloric acid used, if needed, for pH adjustment.

**Usual Dosage:** See package insert for complete prescribing information.

Store at controlled room temperature 15°-30°C (59°-86°F).

Lot: \_\_\_\_\_  
Exp.: \_\_\_\_\_

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## Three Steps to Dosage Calculations Formula Method

- Step 1. Convert** Ensure all measurements are in the same system of measurement and the same size unit of measurement. If not, convert before proceeding.
- Step 2. Think** Estimate what is a reasonable amount of the drug to be administered.

**Step 3. Calculate** Apply the formula:

$$\frac{D}{H} \times Q = X$$

Labels:  $D$  = desired amount,  $H$  = have,  $Q$  = quantity,  $X$  = amount

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## Math Order of Operations

- Follow the rules of math in this order:
  - Multiply, Divide, Add, Subtract

*You can remember this by:*

My Dear Aunt Sally

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## Approximate Equivalent: gr i = 60 mg (continues)

See Package Insert for Complete Prescribing Information.

NDC 0054-4156-25 100 Tablets EXP. LOT

Store at Controlled Room Temperature 20°-25°C (68°-77°F)

**30 mg** **CODEINE** **Tablets USP**

PROTECT FROM MOISTURE

Change to a new container after all tablets in the old container are used.

Each tablet contains Codeine sulfate 30 mg

℞ only

**Roxane**

4153101 010 010  
© HLL 1999

- The drug order reads Codeine sulfate gr  $\frac{3}{4}$  p.o. q.4h p.r.n., pain.
- The drug supplied is Codeine sulfate 30 mg per tablet.
- Calculate one dose.

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Approximate Equivalent: gr i = 60 mg  
(continued)

• **Step 1. Convert**

- Convert to equivalent units in the same system of measurement. Convert gr to mg.  
Approximate equivalent: gr i = 60 mg.  
Conversion factor is 60. Larger to Smaller (×)

$$\text{gr } \frac{3}{4} = \frac{3}{4} \times \frac{15}{1} \times \frac{60}{1} = 45 \text{ mg}$$

- Order: Codeine gr  $\frac{3}{4}$  = 45 mg
- Supply: Codeine 30 mg tablets

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Approximate Equivalent: gr i = 60 mg  
(continued)

• **Step 2. Think**

- You estimate that you want to give more than 1 tablet but less than two tablets.

• **Step 3. Calculate**

$$\frac{D}{H} \times Q = \frac{45 \text{ mg}}{30 \text{ mg}} \times 1 \text{ tablet}$$

$$\frac{45}{30} \times 1 \text{ tablet} = \frac{3}{2} \text{ tablets} = 1\frac{1}{2} \text{ tablets;}$$

given every 4 hours as needed for pain

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Approximate Equivalent: gr i = 65 mg  
(continues)

- Order: Tylenol gr x p.o. q.3-4h p.r.n., headache
- Supply: Tylenol 325 mg per tablet
- Approximate equivalent: gr i = 60 mg
- Convert: gr 10 × 60 mg = 600 mg

$$\frac{D}{H} \times Q = \frac{600 \text{ mg}}{325 \text{ mg}} \times 1 \text{ tablet} = 1.8 \text{ tablets}$$

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Approximate Equivalent: gr i = 65 mg  
(continued)

- An amount of 1.8 tablets is not reasonable. Remember that gr i = 60 mg, but in some instances gr i = 65 mg is more relevant.
- This is true because it is an *approximate* equivalent. In this case, gr i = 65 mg is more accurate.

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Approximate Equivalent: gr i = 65 mg  
(continued)

- Order: Tylenol gr x p.o. q.3-4h p.r.n., headache
- Supply: Tylenol 325 mg per tablet
- Approximate equivalent: gr i = 65 mg
- Convert: gr 10 × 65 mg = 650 mg

$$\frac{D}{H} \times Q = \frac{650 \text{ mg}}{325 \text{ mg}} \times 1 \text{ tablet} = 2 \text{ tablets}$$

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Calculation of Drug Dosage by  
Formula Method: Parenteral (continues)

Single Dose Container  
See package insert for complete product information. Store at controlled room temperature 20° to 25°C (68° to 77°F) Use USP1. Do not refrigerate.  
Pharmacia & Upjohn Co.  
Kalamazoo, MI 49001, USA

LOT/EXP  
81278808

NDC 0009-0870-21 2 mL Vial  
**Cleocin Phosphate®**  
clindamycin injection, USP  
**300 mg/2 mL**  
Equivalent to 300 mg clindamycin

- Order: Cleocin 150 mg IM q.12h
- Available: Cleocin (clindamycin phosphate) 300 mg per 2 mL

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## Calculation of Drug Dosage by Formula Method: Parenteral (continued)

- **Step 1. Convert**
  - No conversion is necessary.
- **Step 2. Think**
  - You want to give less than 2 mL. Actually, you want to give 150 mg, which is  $\frac{1}{2}$  of 300 mg and  $\frac{1}{2}$  of 2 mL, or 1 mL. Calculate to double-check your estimate.

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## Calculation of Drug Dosage by Formula Method: Parenteral (continued)

- **Step 3. Calculate**
$$\frac{D}{H} \times Q = \frac{150 \text{ mg}}{300 \text{ mg}} \times 2 \text{ mL} = \frac{2}{2} \text{ mL} = 1 \text{ mL}$$

Given intramuscularly every 12 hours.

Select a 3 mL syringe, and measure 1 mL of Cleocin 300 mg/2 mL.



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## The “Five Rights” of Medication Administration

- Right time
  - Are there any special considerations?
    - Drug-drug or food-drug interactions
    - Drug effect
    - Bioavailability of drug
  - Routine meds must be given within  $\frac{1}{2}$  hour before or after the actual time
  - Stat drugs must be given within  $\frac{1}{2}$  hour of the order

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## The “Five Rights” of Medication Administration

- Right route
  - Never assume the route of administration
- Right patient
  - Ask pt to state his or her name, compare with ID band
  - Use 2 patient identifiers:
    - Name, medical record #, DOB, SS#, etc.

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## Another “Right”—Constant System Analysis

- A “double-check”
- The entire “system” of medication administration
- Ordering, dispensing, preparing, administering, documenting
- Involves the physician, nurse, nursing unit, pharmacy department, and patient education

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## Other “Rights”

- Proper drug storage
- Proper documentation
- Accurate dosage calculation
- Accurate dosage preparation
- Careful checking of transcription of orders
- Patient safety

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## Other “Rights” (cont'd)

- Close consideration of special situations
- Prevention and reporting of medication errors
- Patient teaching
- Monitoring for therapeutic effects, side effects, toxic effects
- Refusal of medication

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## Evaluation

- Ongoing part of the nursing process
- Determining the status of the goals and outcomes of care
- Monitoring the patient’s response to drug therapy
  - Expected and unexpected responses

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## CHAPTER 6

### Patient Education and Drug Therapy

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## Patient Education: Assessment

- Adaptation to any illness
- Cognitive abilities
- Coping mechanisms
- Cultural background
- Emotional status
- Environment: home and work
- Family relationships

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## Patient Education: Assessment (cont'd)

- Financial status
- Growth and development level
- Health beliefs
- Information patient understands about past and present medical conditions, medical therapy, medications

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## Patient Education: Assessment (cont'd)

- Language(s) spoken
- Level of education
- Limitations (physical, psychologic, cognitive, motor)
- Current medications, including OTC
- Mobility
- Nutritional status

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## Erikson's Stages of Development

- Infant (birth to 1 year)
    - Trust vs. mistrust
  - Toddler (1 to 3 years)
    - Autonomy vs. shame
  - Preschooler (3 to 6 years)
    - Initiative vs. guilt
  - School-age child (6 to 12 years)
    - Industry vs. inferiority
- Refer to Box 6-1 on p 70*

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## Erikson's Stages of Development (cont'd)

- Adolescent (12 to 18 years)
  - Identity vs. role confusion
- Young adult (18 to 45 years)
  - Intimacy vs. isolation
- Middle-aged adult (45 to 65 years)
  - Generativity vs. stagnation
- Older adult (older than 65 years)
  - Integrity vs. despair

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## Patient Education: Nursing Diagnoses

- Deficient knowledge
- Ineffective health maintenance
- Ineffective therapeutic regimen management
- Risk for injury (self)
- Impaired memory
- Noncompliance

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## Patient Education: Implementation

- Teaching-learning sessions
- Consideration of age-related changes
- Consideration of language barriers
- Safe administration of medications at home
- For adults, it is recommended that materials be written at an 8th grade level

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## Patient Education: Teaching-Learning Sessions

- Individualize the teaching session
- Use positive rewards or reinforcement for accurate return demonstration of procedures or technique
- Complete a medication calendar

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## Patient Education: Teaching-Learning Sessions (cont'd)

- Use audiovisual aids
- Involve family members or significant others
- Keep teaching on a level that is meaningful to that patient

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## Patient Education: Evaluation

- Validate whether learning has occurred
  - Ask questions
  - Have patient provide a return demonstration
  - Behavior, such as compliance and adherence to a schedule
  - Occurrence of few or no complications

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## Patient Education: Evaluation (cont'd)

- Develop and implement new plan of teaching as needed for:
  - Noncompliance
  - Inadequate levels of learning

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