NUR 201

College Laboratory Guide

Spring 2007

Student Name_____

College Lab – Week 1 – Week of 1/15/07

Objectives **Psychiatric Nursing**
Skills/Demonstration Mental Status Examination
Computer-Assisted Learning
Videotape
Critical Thinking – Medication Administration
Journal Review/NCLEX Questions

College Lab – Week 2 – Week of 1/22/07

Objectives **Psychiatric Nursing**
Skills/Demonstration Mental Status Exam – Therapeutic Communication
Computer-Assisted Learning
Videotape #3 Evaluating language and thought patterns #4 Evaluating intellectual and cognitive function
Critical Thinking – Medication Administration
Journal Review/NCLEX Questions

College Lab – Week 3 – Week of 1/29/07

Objectives **Psychiatric Nursing**
Skills/Demonstration **Mental Status Examination – Therapeutic Communication** **Students will role-play and conduct a mental status exam on each other.**
Computer-Assisted Learning
Videotape
Critical Thinking – Medication Administration
Journal Review/NCLEX Questions

College Lab -- Week 4 - Week of 2/5/07

Objectives

- Describe the nursing management for clients receiving medical/surgical treatment for related disease/illness
- Describe the purpose and types of related treatments and procedures
- Describe the rationale for related nursing procedures
- Compare and contrast the efficacy of medical management and related nursing care via literature review as outlined
- Demonstrate specific procedures and techniques as outlined

Topics covered in readings and theory class:

- Acid-base balance/acid-base imbalances
- Receiving mechanical ventilation
- Tracheostomy
- Postural drainage
- Chest trauma
- Poisoning
- Aspiration
- Adult Respiratory Distress Syndrome (ARDS)
- Respiratory synyctial virus (RSV)

Skills/Demonstration

Tracheostomy Care

Assessment: Breath Sounds

Computer-Assisted Learning - Evolve Learning Web sit at http://evolve/elsevier.com/Iggy/.

Videotape

- "Performing Respiratory Assessment" (Springhouse, 2002) – (30 mins) complete questions & discuss
- "Tracheostomy Care"

Critical Thinking –

Medication Administration:

Pickar, Gloria D. (2004) **Dosage Calculations.** (7th ed.) Clifton Park, NY: Delmar Learning

Chapter 7: Interpreting Drug Orders.

Med-Surg Nursing:

Ignatavicius, Donna & Workman, M. Linda (2006) Critical Thinking Study Guide to accompany Medical-Surgical Nursing Critical Thinking for Collaborative Care

Acid-Base Balance, Chap 18, ques 1-37 (pp 122-125)

Chap 19, ques 1-45 (pp 128 – 133)

Respiratory Tract Assessment Case Study, p 229-230

Tracheostomy Care ques 49, 50, & 52 (p 240)

Critical Thinking -- Journal Review – Group Discussion

Edlund, B., et al. Geriatric Assessment. *Advance for Nurses, Nov, 2003, 19-24.*

Week 4 Math – Interpreting Drug Orders

Chap 7 Interpreting Drug Orders

Short Answer

Answer the following questions by supplying either the medical abbreviation or the interpretation of the medical abbreviation.

1. q.i.d.
2. p.c.
3. O.D.
4. $\overline{c}$
5. q.4h
6. nothing by mouth
7. both ears
8. when necessary

Interpret the following drug orders.

The drug orders are presented for practice only, and actual prescribed dosages will vary according to a patient's age, condition, reaction, additional medications, and other factors.

9. penicillin G procaine 1,000,000 U IM q.d.
10. atrophine sulfate gr $\frac{1}{300}$ SC stat

Chap 7 Interpreting Drug Orders
Answer Section

SHORT ANSWER

1. ANS:
   four times per day
2. ANS:
   after meals
3. ANS:
   right eye
4. ANS:
   with
5. ANS:
   every four hours
6. ANS:
   NPO
7. ANS:
   A.U.
8. ANS:
   p.r.n.
9. ANS:
   Give 1,000,000 units of penicillin G procaine intramuscularly every day.
10. ANS:
    Give $\frac{1}{300}$ grain atrophine sulfate subcutaneously, immediately.

College Lab – Week 5 – Week of 2/12/07

Objectives

- Describe the nursing management for clients receiving medical/surgical treatment for related disease/illness
- Describe the purpose and types of related treatments and procedures
- Describe the rationale for related nursing procedures
- Compare and contrast the efficacy of medical management and related nursing care via literature review as outlined
- Demonstrate specific procedures and techniques as outlined

Topics covered in readings and theory class:

- Upper respiratory infections (URI) in the various age groups
  - Complication: Rheumatic fever
- Otitis media
- Tonsillitis and surgical removal of tonsils and adenoids in children and adults
- Pneumonia – community acquired and hospital acquired
- Respiratory synyctial virus (RSV)
- Tuberculosis
- Communicable diseases:
  - In children: (measles, mumps, pertussis, chicken pox)
  - Related childhood immunization schedules
- Acquired immune deficiency (AIDS)

Skills/Demonstration

- Tracheostomy care and suctioning (cont'd)
- Nebulizer Treatment - bronchodilators
- Oxygen therapy
- **Assessment: Breath Sounds**

Computer-Assisted Learning - Evolve Learning Web sit at http://evolve/elsevier.com/Iggy/.
Web Site Access – Adventitious Breath Sounds

Videotape "A Toddler with Respiratory Difficulty" (20 mins)

Critical Thinking – Medication Administration
Pickar, Gloria D. (2004) **Dosage Calculations.** (7th ed.) Clifton Park, NY: Delmar Learning
Chap 12: Ratio-Proportion dosage calculation –oral & parenteral medications

Med-Surg Nursing:
Ignatavicius, Donna & Workman, M. Linda (2006) Critical Thinking Study Guide to accompany Medical-Surgical Nursing Critical Thinking for Collaborative Care
Chap 25 – HIV - ques 15, 16, 18, 21, 26, 30 (pp 179-181)
Chap 34 – Infectious Problems – ques 18, 24, 25,26, 27, 28, 29, 30 (pp 278-280)
TB – ques 69, 70, 71, 72, 73, (pp 284 – 285) + Case Study ques 1-9 (pp 288-189)
Pneumonia Case Study – ques 1-4 (pp 289-290)

Journal Review/NCLEX Questions + Discussion Group
Critical Thinking: Patient Scenarios – Acid-Base Balance

Week 5 Math – Ratio & Proportion

Chap 12 - Ratio & Proportion

Problem

Compute the amount of medication that will be given to administer one dose of the following medication orders by using a proportion to obtain your answers.

Assume all tablets are scored, when necessary. Round all parenteral administration orders that are over 1 mL to one decimal place. Round all parenteral administration orders under 1 mL to two decimal places. Do not include zeros at the end of decimal numbers.

The problems and drug orders are presented for practice only, and actual prescribed dosages will vary according to a patient's age, condition, reaction, additional medications, and other factors.

1. Order: Axid 0.3 g p.o. at h.s.
   Supply: Axid 150 mg capsules
   Give: _____ capsules

2. Order: Amoxil 0.25 g p.o. q.8h
   Supply: 80 mL bottle of reconstituted Amoxil oral suspension, 125 mg/5 mL
   Give: _____ mL or _____ teaspoons

3. Order: Augmentin 375 mg p.o. q.8h
   Supply: 75 mL bottle of reconstituted Augmentin, 250 mg/5 mL
   Give: _____ mL

4. Order: Klonopin 500 mcg p.o. t.i.d.
   Supply: Bottle of 100 tablets of Klonopin, 0.5 mg per tablet
   Give: _____ tablet(s)

5. Order: nitroglycerin gr $\frac{1}{100}$ SL stat
   Supply: 0.4 mg and 0.6 mg tablets
   Give: _____ tablet, give _____ tablet(s)

6. Order: vitamin B_{12} 100,000 U IM q.d. for 3 days
   Supply: 2 mL vial of vitamin B_{12} with 50,000 U/mL
   Give: _____ mL

7. Order: thiamine HCl 20 mg IM t.i.d.
   Supply: 10 mL multiple dose vial of vitamin B_1 (thiamine HCl) 100 mg/mL
   Give: _____ mL

8. Order: ascorbic acid 150 mg IM q.d.
   Supply: 2 mL ampule of vitamin C (ascorbic acid) 250 mg/mL
   Give: _____ mL

9. Order: heparin 7500 U SC q.8h
   Supply: heparin 10,000 U/mL
   Give: _____ mL

10. Order: methylprednisolone acetate 100 mg IM once per week
    Supply: methylprednisolone acetate suspension, 80 mg/mL
    Give: _____ mL

Chap 12 - Ratio & Proportion
Answer Section

PROBLEM

1. ANS:
   $0.3\text{ g} = 0.3 \times 1000 = 300\text{ mg}$

   $\frac{300\text{ mg}}{150\text{ mg}} \times 1\text{ capsules} = 2\text{ capsules}$
2. ANS:
   $0.25\text{ g} = 0.25 \times 1000 = 250\text{ mg}$

   $\frac{250\text{ mg}}{125\text{ mg}} \times 5\text{ mL} = 10\text{ mL}$

   $10\text{ mL} = 10 \div 5 = 2\text{ t}$
3. ANS:
   $\frac{375\text{ mg}}{250\text{ mg}} \times 5\text{ mL} = 7.5\text{ mL}$
4. ANS:
   $0.5\text{ mg} = 0.5 \times 1000 = 500\text{ mcg}$

   $\frac{500\text{ mcg}}{500\text{ mcg}} \times 1\text{ tablet} = 1\text{ tablet}$
5. ANS:
   $\text{gr } \frac{1}{100} = \frac{1}{100} \times 60 = 0.6\text{ mg}$
   Select 0.6 mg tablets, and give 1 tablet
6. ANS:
   $\frac{100,000\text{ U}}{50,000\text{ U}} \times 1\text{ mL} = 2\text{ mL}$
7. ANS:
   $\frac{20\text{ mg}}{100\text{ mg}} \times 1\text{ mL} = 0.2\text{ mL}$
8. ANS:
   $\frac{150\text{ mg}}{250\text{ mg}} \times 1\text{ mL} = 0.6\text{ mL}$
9. ANS:
   $\frac{7500\text{ U}}{10,000\text{ U}} \times 1\text{ mL} = 0.75\text{ mL}$
10. ANS:
    $\frac{100\text{ mg}}{80\text{ mg}} \times 1\text{ mL} = 1.25 = 1.3\text{ mL}$

College Lab – Week 6 – Week of 2/19/07

Objectives

- Describe the nursing management for clients receiving medical/surgical treatment for related disease/illness
- Describe the purpose and types of related treatments and procedures
- Describe the rationale for related nursing procedures
- Compare and contrast the efficacy of medical management and related nursing care via literature review as outlined
- Demonstrate specific procedures and techniques as outlined

Topics covered in readings and theory class:

- Acute and chronic inflammatory disease of the airways in the various age groups
- Asthma
- Bronchitis
- Emphysema
- Bronchiectasis
- Chronic obstructive lung disease (COPD)
- Cor pulmonale
- Postural drainage

Skills/Demonstration

- Tracheostomy care and suctioning (cont'd)
- Nebulizer Treatment - bronchodilators
- Oxygen therapy
- **Assessment: Breath Sounds**

Computer-Assisted Learning - Evolve Learning Web sit at http://evolve/elsevier.com/Iggy/.

Videotape

- "Pediatric Assessment" (Wiley & Wong, 1996) (from library (20 mins)
- "Pediatric Medication Administration" (from library) (35 mins)

Critical Thinking – Medication Administration

Pickar, Gloria D. (2004) **Dosage Calculations.** (7th ed.) Clifton Park, NY: Delmar Learning
Chap 13: Pediatric & adult dosage based on body weight

Med-Surg Nursing:

Ignatavicius, Donna & Workman, M. Linda (2006) Critical Thinking Study Guide to accompany Medical-Surgical Nursing Critical Thinking for Collaborative Care
Noninfectious upper respiratory problems – Chap 32 – ques 18, 19. 20, 21 (pp 248-249)

Journal Review/NCLEX Questions + Discussion Group

- Kirton, C.(2005). The HIV/AIDS Epidemic. Nursing made incredibly easy, Mar/Apr 2005, 28-41.

Chap 13 Pediatric & Adult Dosages Based on Body Weight

Chap 13 Pediatric & Adult Dosages Based on Body Weight

Problem

Compute the requested information. Round all parenteral administration orders that are over 1 mL to one decimal place. Round all parenteral administration orders under 1 mL to two decimal places. Do not include zeros at the end of decimal numbers.

The problems and drug orders are presented for practice only, and actual prescribed dosages will vary according to a patient's age condition, reaction, additional medications, and other factors.

Use the following information about a child and his order to compute answers.

A pediatrician has ordered ampicillin 50 mg/kg/day p.o. divided q.6h for a child who weighs 44 lb.

1. How many kilograms does the child weigh? _____ kg
2. How many milligrams should the child receive per dose? _____ mg
3. How many milligrams should the child receive per day? _____ mg
4. The pharmacy has supplied reconstituted ampicillin, with a supply dosage of 500 mg/5 mL. How many milliliters should be given per q.6h dose? _____ mL

Use the following information about a child and her order to compute answers.

Mandy, a child who weighs 15 kilograms, is to be given amoxicillin. The recommended dosage of amoxicillin for children is 20 to 40 mg/kg/day p.o. in equally divided doses administered q.8h.

5. What is the recommended range of milligrams of medication for this child per q.8h dose?

   minimum: _____ mg maximum: _____ mg

6. The pediatrician has ordered *amoxicillin 125 mg p.o. q.8h* for Mandy.
   The available supply of amoxicillin is 125 mg/5 mL.
   Is her order within the recommended range for this medication? (yes/no) _____
   If so, how many mL of amoxicillin should be given per q.8h administration? _____ mL

7. How many teaspoonfuls of amoxicillin should be given per q.8h administration? _____ t
   Use the following information about a child and his order to compute answers.

   The recommended dosage of Rocephin is 50 to 100 mg/kg/day divided into two equal doses. The physician has ordered Rocephin 200 mg IM b.i.d. for a child who weighs 5000 g. The Rocephin vial contains 1 g of medication that must be reconstituted with 3.6 mL of diluent to yield 1 g/4 mL.

8. Compute the recommended minimum and maximum amount of milligrams that the child should receive per day.

   minimum: _____ mg maximum: _____ mg

9. Compute the recommended minimum and maximum amount of milligrams that the child should receive per dose.

   minimum: _____ mg maximum: _____ mg

10. Is the order within the recommended range? (yes/no) _____
    If so, compute the number of milliliters of Rochephin that should be administered per dose.
    _____ mL.

Chap 13 Pediatric & Adult Dosages Based on Body Weight
Answer Section

PROBLEM

1. ANS:
   $44\ \text{lb} = 44 \div 2.2 = 20\ \text{kg}$
2. ANS:
   per day, $20\ \text{kg} \times 50\ \text{mg/kg} = 1000\ \text{mg}$
3. ANS:
   q.6h = every 6 hours, which is given 4 times per day.

   $$\frac{1000\ \text{mg}}{4\ \text{doses}} = 250\ \text{mg per dose}$$
4. ANS:
   $$\frac{250\ \text{mg}}{500\ \text{mg}} \times 5\ \text{mL} = 2.5\ \text{mL}$$
5. ANS:
   q.8h = every 8 hours, which is given 3 times per day.

   per day minimum

   $$\frac{300\ \text{mg}}{3\ \text{doses}} = 100\ \text{mg per dose}$$

   per day maximum

   $$\frac{600\ \text{mg}}{3\ \text{doses}} = 200\ \text{mg per dose}$$
6. ANS:
   Yes, 125 mg per dose is within 100 mg to 200 mg per dose.
   $$\frac{125\ \text{mg}}{125\ \text{mg}} \times 5\ \text{mL} = 5\ \text{mL}$$
7. ANS:
   $5\ \text{mL} = 1\ \text{t}$
8. ANS:
   $5000\ \text{g} = 5000 \div 1000 = 5\ \text{kg}$

   per day, minimum

   $5\ \text{kg} \times 50\ \text{mg/kg} = 250\ \text{mg}$

   per day, maximum

   $5\ \text{kg} \times 100\ \text{mg/kg} = 500\ \text{mg}$

9. ANS:
per dose, minimum

$$\frac{250\text{ mg}}{2\text{ doses}} = 125\text{ mg per dose}$$

per dose, maximum

$$\frac{500\text{ mg}}{2\text{ doses}} = 250\text{ mg per dose}$$

10. ANS:
Yes, the ordered amount of 200 mg per dose, b.i.d. is within the recommended range of 125 mg to 250 mg per dose, given twice per day.

$$\frac{200\text{ mg}}{1000\text{ mg}} \times 4\text{ mL} = 0.8\text{ mL}$$

College Lab – Week 7 – Week of 2/26/07

Objectives

- Describe the nursing management for clients receiving medical/surgical treatment for related disease/illness
- Describe the purpose and types of related treatments and procedures
- Describe the rationale for related nursing procedures
- Compare and contrast the efficacy of medical management and related nursing care via literature review as outlined
- Demonstrate specific procedures and techniques as outlined

Topics covered in readings and theory class:

- Red Blood cell disorders
- Anemias
  - Iron deficiency
  - Decreased Erthrocyte Production; o Iron Deficiency Anemia; Thalassemia;
  - Megaloblastic Anemias: Cobalamin deficiency, Folic Acid Deficiency; Aplastic Anemia
  - Anemia Caused by Blood Loss
  - Anemia Caused by Erythrocyte Destruction
  - Sickle Cell Disease o Acquired Hemolytic Anemia
  - Hemochromatosis o Polycythemia
- Problems of Hemostasis: Thrombocytopenia
- Hemophilia and Von Willebrand's Disease
- Leukemias – o Acute myelogenous leukemia; o Acute lymphocytic leukemia
  - Chronic myelogenous leukemia; o Chronic lymphocytic leukemia
  - Lymphomas; o Hodgkin's Disease / non-Hodgkin's lymphomas
  - Multiple Myeloma o Blood transfusion administration

Skills/Demonstration

- IV flush; primary IV tubing set up and function; secondary IV tubing setup and function
- Blood Product Administration

Assessment: Lab Values relating to Anemia

Computer-Assisted Learning - Evolve Learning Web sit at http://evolve/elsevier.com/Iggy/.

Videotape

"Castles in the Sand"

Critical Thinking – Medication Administration

Pickar, Gloria D. (2004) **Dosage Calculations.** (7th ed.) Clifton Park, NY: Delmar Learning
Chap 14: Intravenous Solution – large & small volume calculation rate

Med-Surg Nursing:

Ignatavicius, Donna & Workman, M. Linda (2006) Critical Thinking Study Guide to accompany Medical-Surgical Nursing Critical Thinking for Collaborative Care
Hematologic Problems – Chap 43 – quest 1-106 (pp 394-403)

Journal Review/NCLEX Questions + Discussion Group

- Rosenthal, K. Avoiding bad blood. *Nursing made incredibly easy!* Sep/Oct 2004, 10-29. Hadaway, L
- Review protocols: IV flush; IV-large volume infusion; IV secondary infusion
- Blood transfusion protocol

Week 7 Math – Calculating IV Solution Rates

Chap 14 IV Solutions & IV Flow Rate Calculations

Multiple Choice
Identify the letter of the choice that best completes the statement or answers the question.

____ 1. A patient's order for IV fluid states that NS is to be infused. Which of the following IV fluids should be given?
a. 0.9% Sodium Chloride
b. 0.45% Sodium Chloride
c. 0.225% Sodium Chloride
d. 5% Dextrose

____ 2. A patient's order for IV fluid states the D_5W is to be infused. Which of the following IV fluids should be given?
a. 5% Dextrose with Normal Saline
b. 5% Dextrose with Lactated Ringer's Solution
c. 5% Dextrose with 0.45% Sodium Chloride
d. 5% Dextrose

____ 3. A patient's order for IV fluid states that D_5NS is to be infused. Which of the following IV fluids should be given?
a. 5% Dextrose
b. 0.9% Sodium Chloride
c. 5% Dextrose with 0.9% Sodium Chloride
d. Lactated Ringer's Solution

____ 4. A patient's order for IV fluid states that D_5LR is to be infused. Which of the following IV fluids should be given?
a. 5% Dextrose with Lactated Ringer's Solution
b. 5% Dextrose and 0.45% Sodium Chloride with 20 mEq KCl/L
c. 5% Dextrose with 0.225% Sodium Chloride
d. 0.45% Sodium Chloride

____ 5. What is the ratio of the weight of dextrose to the volume of IV fluid in D_5W?
a. 5 grams of dextrose to 1 liter of IV fluid
b. 5 milligrams of dextrose to 1 milliliter of IV fluid
c. 5 milligrams of dextrose to 1 liter of IV fluid
d. 5 grams of dextrose to 100 mL of IV fluid

____ 6. What is the ratio of the weight of sodium chloride to the volume of IV fluid in NS?
a. 0.9 grams of sodium chloride to 100 mL of IV fluid
b. 0.009 grams of sodium chloride to 1 milliliter of IV fluid
c. 0.9 grams of sodium chloride to 1 liter of IV fluid
d. 0.9 milligrams of sodium chloride to 100 mL of IV fluid

Problem

The following IV orders will be regulated by electronic infusion devices. Calculate the flow rates of the IV fluids in mL/h. The problems and drug orders are presented for practice only, and actual prescribed dosages will vary according to a patient's age, condition, reaction, additional medications, and other factors.

7. 1200 mL $D_{10}W$ IV to infuse in 10 hours by infusion pump Flow rate: _____ mL/h

8. 1.5 L $D_5 \frac{1}{2}NS$ IV to infusion 20 hours by controller Flow rate: _____ mL/h

The following IV orders will be regulated manually. Calculate the flow rate of the IV fluid in gtt/min.

9. 1 L NS IV to infuse in 10 hours
   The drop factor is 10 gtt/mL. Flow rate: _____ gtt/min

10. 1000 mL D_5W IV to infuse in 8 hours
    The drop factor is 20 gtt/mL. Flow rate: _____ gtt/min

Chap 14 IV Solutions & IV Flow Rate Calculations
Answer Section

MULTIPLE CHOICE

1. ANS: A
2. ANS: D
3. ANS: C
4. ANS: A
5. ANS: D
6. ANS: A

PROBLEM

7. ANS:

$$\frac{\text{mL}}{\text{h}} = \frac{1200\ \text{mL}}{10\ \text{h}} = 120\ \text{mL/h}$$

8. ANS:

$$1.5\ \text{mL} = 1.5 \times 1000 = 1500\ \text{mL}$$

$$\frac{\text{mL}}{\text{h}} = \frac{1500\ \text{mL}}{20\ \text{h}} = 75\ \text{mL/h}$$

9. ANS:

$$\frac{1000\ \text{mL}}{10\ \text{h}} = 100\ \text{mL/h}$$

$$\frac{\text{mL/h}}{\text{drop factor constant}} = \text{gtt/min}$$

$$\frac{100\ \text{mL}}{6\ \text{h}} = 16.6 = 17\ \text{gtt/min}$$

10. ANS:

$$\frac{1000\ \text{mL}}{8\ \text{h}} = 125\ \text{mL/h}$$

$$\frac{\text{mL/h}}{\text{drop factor constant}} = \text{gtt/min}$$

$$\frac{125\ \text{mL/h}}{3} = 41.6 = 42\ \text{gtt/min}$$

College Lab – Week 8 – Week of 3/5/07
ATI ASSESSMENT – COMMUNITY Tues 3/6/07 & Thurs 3/8/07

Objectives

- Describe the nursing management for clients receiving medical/surgical treatment for related disease/illness
- Describe the purpose and types of related treatments and procedures
- Describe the rationale for related nursing procedures
- Compare and contrast the efficacy of medical management and related nursing care via literature review as outlined
- Demonstrate specific procedures and techniques as outlined

Topics covered in readings and theory class:

- Coronary artery disease
  - Risk factor overview
    - Unmodifiable
    - Modifiable major
      - Elevated serum lipids
    - Modifiable contributing
- Angina pectoris
- Myocardial infarction
- Cardiac catheterization
- Invasive cardiac revascularization
- Cardiac rehabilitation
- Review of the Cardiac Conduction System / Electrocardiography
- Complications
  - Dysrhythmias
    - Pacemakers
    - Cardioversion/Defibrillation

  Cardiopulmonary resuscitation

Skills/Demonstration

- IV flush; primary IV tubing set up and function; secondary IV tubing setup and function (cont'd)
- Blood Product Administration (cont'd)

Assessment: Cardiac

Computer-Assisted Learning - Evolve Learning Web sit at http://evolve/elsevier.com/Iggy/.

Videotape

Performing Cardiac Assessment – (Springhouse, 2003) (35mins)

Critical Thinking – Medication Administration

Pickar, Gloria D. (2004) **Dosage Calculations.** (7th ed.) Clifton Park, NY: Delmar Learning

Ratio & Proportion – Adult and Pediatric Oral and Parenteral Medications – Review

Med-Surg Nursing:

Ignatavicius, Donna & Workman, M. Linda (2006) Critical Thinking Study Guide to accompany Medical-Surgical Nursing Critical Thinking for Collaborative Care

Cardiac Problems – Chap 36 quest26, 27, 28, 29, 30)(pp 308-309)
Cardiac Case Study – qust1-6 (p 314)

Journal Review/NCLEX Questions + Discussion Group

Oliver, B., et al. How drug-eluting stents keep coronary blood flowing. *Nursing 2005, 35, 42.*

Week 8 Math – Ratio & Proportion –
Adult and Pediatric Oral and Parenteral Medications – Review

Compute the amount of medication that will be given to administer one dose of the following medication orders. Round all parenteral administration orders that are over 1 mL to one decimal place. Round all parenteral administration orders under 1 mL to two decimal places. Do not include zeros at the end of decimal numbers. The problems and drug orders are presented for practice only, and actual prescribed dosages will vary according to a patient's age, condition, reaction, additional medications, and other factors.

1. Order: penicillin G procaine 1,200,000 U IM q.o.d.
   Supply: penicillin G procaine 600,000 U per mL

   Give: _____ Ml

2. Order: Demerol 75 mg IM q.4h p.r.n., pain
   Supply: Demerol 50 mg/mL

   Give: _____ mL

3. Order: diazepam 5 mg IM q.4h p.r.n., anxiety
   Supply: Valium (diazepam) 10 mg per 2 mL

   Give: _____ mL

4. Order: diphenhydramide 15 mg IM stat
   Supply: Benedryl (diphenhydramide) 10 mg/mL

   Give: _____ mL

5. Order: Valium 3 mg IM q.6h p.r.n., pain
   Supply: Valium 10 mg/2 mL

   Give: _____ mL

6. Order: heparin 3000 U SC b.i.d.
   Supply: heparin 20,000 U/mL

   Give: _____ mL

7. Order: morphine sulfate gr $\frac{1}{10}$ IM q.4h p.r.n., pain
   Supply: morphine sulfate 10 mg/mL

   Give: _____ mL

8. Order: Terramycin 0.1 g IM q.d.
   Supply: Terramycin 100 mg/mL

   Give: _____ mL

9. Order: meperidine hydrochloride 25 mg IM q.4h p.r.n., pain
   Supply: Demerol (meperidine HCl) 50 mg/mL

   Give: _____ mL

10. Order: Tigan 0.1 g IM q.6h p.r.n., nausea
    Supply: Tigan 100 mg/2 mL

    Give: _____ mL

Ratio & Proportion Review
Answer Section

1. ANS:
$$\frac{1,200,000\ \text{U}}{600,000\ \text{U}} \times 1\ \text{mL} = 2\ \text{mL}$$
2. ANS:
$$\frac{75\ \text{mg}}{50\ \text{mg}} \times 1\ \text{mL} = 1.5\ \text{mL}$$
3. ANS:
$$\frac{5\ \text{mg}}{10\ \text{mg}} \times 2\ \text{mL} = 1\ \text{mL}$$
4. ANS:
$$\frac{15\ \text{mg}}{10\ \text{mg}} \times 1\ \text{mL} = 1.5\ \text{mL}$$
5. ANS:
$$\frac{3\ \text{mg}}{10\ \text{mg}} \times 2\ \text{mL} = 0.6\ \text{mL}$$
6. ANS:
$$\frac{3,000\ \text{U}}{20,000\ \text{U}} \times 1\ \text{mL} = 0.15\ \text{mL}$$
7. ANS:
$$\text{gr}\ \frac{1}{10} = \frac{1}{10} \times 60 = 6\ \text{mg}$$
$$\frac{6\ \text{mg}}{10\ \text{mg}} \times 1\ \text{mL} = 0.6\ \text{mL}$$
8. ANS:
$$0.1\ \text{g} = 0.1 \times 1000 = 100\ \text{mg}$$
$$\frac{100\ \text{mg}}{100\ \text{mg}} \times 1\ \text{mL} = 1\ \text{mL}$$
9. ANS:
$$\frac{25\ \text{mg}}{50\ \text{mg}} \times 1\ \text{mL} = 0.5\ \text{mL}$$
10. ANS:
$$0.1\ \text{g} = 0.1 \times 1000 = 100\ \text{mg}$$
$$\frac{100\ \text{mg}}{100\ \text{mg}} \times 2\ \text{mL} = 2\ \text{mL}$$

SPRING BREAK: MON, MAR 12, 2007 – SUN, MAR 18, 2007

College Lab – Week 9 – Week of 3/19/07

Objectives

- Describe the nursing management for clients receiving medical/surgical treatment for related disease/illness
- Describe the purpose and types of related treatments and procedures
- Describe the rationale for related nursing procedures
- Compare and contrast the efficacy of medical management and related nursing care via literature review as outlined
- Demonstrate specific procedures and techniques as outlined

Topics covered in readings and theory class:

- Hypertension (HTN) (Modifiable major risk factor)
- Congestive heart failure (CHF)
  - Pulmonary edema
- Principles of hemodynamic monitoring
  - Central venous pressure
  - Pulmonary artery pressure
  - Pulmonary artery wedge pressure
- Thrombophlebitis
- Pulmonary embolism
- Peripheral vascular disease (PVD
  - Atherosclerosis obliterans
  - Buerger's disease

  Raynaud's Syndrome

Skills/Demonstration:

- IV flush; primary IV tubing set up and function; secondary IV tubing setup and function (cont'd)
- Blood Product Administration (cont'd)

Assessment: Cardiac / Peripheral vascular/peripheral pulses

Role Play case studies: CHF; pulmonary edema; deep vein thrombosis; pulmonary embolus

Computer-Assisted Learning - Evolve Learning Web sit at http://evolve/elsevier.com/Iggy/.

Videotape

Critical Thinking – Medication Administration

Pickar, Gloria D. (2004) **Dosage Calculations.** (7th ed.) Clifton Park, NY: Delmar Learning

Intravenous Solution – Intravenous Heparin Therapy dosage protocol and calculation—Pickar, Chap 16, pp 401-408.

Med-Surg Nursing:

Ignatavicius, Donna & Workman, M. Linda (2006) Critical Thinking Study Guide to accompany Medical-Surgical Nursing Critical Thinking for Collaborative Care

Pulmonary Embolism – Chap 35 – ques 1-21 (pp 293-295)

Congestive Heart Failure – Chap 38 – ques 50-55, (p 344)

Congestive Heart Failure Case Study – ques 104 (p 346)

Journal Review/NCLEX Questions + Discussion Group

- Woods, A. Loosening the grip of hypertension. *Nursing 2004*, 34 (12), 36-44.

Zajac, P.

Week 9 - Intravenous Heparin Therapy dosage protocol and calculation—Pickar, Chap 16, pp 401-408.

Problem

Complete the following advanced IV calculations. The problems and drug orders are presented for practice only, and actual prescribed dosages will vary according to a patient's age, condition, reaction, additional medications, and other factors.

Compute the "watch count" flow rate for the following questions.

1. 1 L D_5W with 10,000 U heparin to infuse at 1000 U/h
   The drop factor is 20 gtt/mL. Flow rate: _____ gtt/min

2. 1000 mL $\frac{1}{2}$NS with 10,000 U heparin to infuse at 750 U/h
   The drop factor is 12 gtt/mL. Flow rate: _____ gtt/min

3. One of your patients has an IV that is flowing at a rate of 10 gtt/min. The IV bag contains a solution of 500 mL NS with 20,000 U of heparin. The drop factor is 15 gtt/mL.

   How many units is the patient receiving per 24 hours? _____ U/24h

The following questions refer to your patient who is on IV heparin therapy according to the "Standard Weight Based Heparin Protocol" noted below. The patient weighs 144 pounds. On admission the patient's APTT is 30 seconds. You initiate IV heparin therapy at 1130 on 06/06/XX. Record your answers in the spaces below unless provided with the "Standard Weight Based Heparin Protocal Worksheet" by your instructor.

Standard Weight Based Heparin Protocol	
For all patients on heparin drips:	
1. Weight in KILOGRAMS. Required for order to be processed: _____ kg	
2. Heparin 25,000 U in 250 mL of 1/2 NS. Boluses to be given as 1000 U/mL.	
3. APTT q.6h or 6 hours after rate change; q.d. after two consecutive therapeutic APTTs.	
4. CBC initially and repeat every _____ day(s).	
5. Obtain APTT and PT/INR on day one prior to initiation of therapy.	
6. Guaiac stool initially then every _____ day(s) until heparin discontinued. Notify if positive.	
7. Neuro checks every _____ hours while on heparin. Notify physician of any changes.	
8. D/C APTT and CBC once heparin drip is discontinued unless otherwise ordered.	
9. Notify physician of any bleeding problems.	
10. Bolus with 80 U/kg. Start drip at 18 U/kg/h.	
11. If APTT is < 35 secs:	Rebolus with 80 U/kg and increase rate by 4 U/kg/h
12. If APTT is 36–44 secs:	Rebolus with 40 U/kg and increase rate by 2 U/kg/h
13. If APTT is 45–75 secs:	Continue current rate
14. If APTT is 76–90 secs:	Decrease rate by 2 U/kg/h
15. If APTT is > 90 secs:	Hold heparin for 1 hour and decrease rate by 3 U/kg/h

4. What is the patient's weight as measured in kilograms? (Round to the nearest 10 kg.)

   _____ kg

   What does the protocol/sample orders indicate for the standard bolus dosage of heparin for this patient?

   _____ U/kg

5. Calculate the dosage of heparin that should be administered for the bolus for this patient.

   _____ U

   What does the protocol indicate as the required solution concentration (supply dosage) of heparin to use for the bolus?

   _____ U/mL

   Calculate the dose volume of heparin that should be administered for the bolus for this patient.

   _____ mL

6. What does the protocol/sample orders indicate for the initial infusion rate for this patient?

   _____ U/kg/h

   Calculate the dosage of heparin this patient should receive each hour.

   _____ U/h

   What does the protocol/sample orders indicate as the required solution concentration (supply dosage) of heparin to use for the initial infusion?

   _____ U/mL

Calculate the heparin solution volume this patient should receive each hour to provide correct infusion for the patient's weight.

_____ mL/h

7. According to the protocol/sample orders, how often should the patient's APPT be checked?

   q._____h

   At 1730, the patient's APPT id 38 seconds, Rebolus with heparin

   _____ U (_____ mL)

   How much should you change the infusion rate?

   _____ increase or _____ decrease heparin _____ U/h and _____ ml/h

   The new infusion rate will be heparin _____ mL/h.

8. At 2345, the patient's APPT is 46 seconds. What should you do now?

9. At 0600 0n 06/07/XX, the patient's APPT is 50 seconds, what should you do now?

   When should the APPT be checked again? _____ (hours) on _____ (date)

Chap 16 IV Heparin
Answer Section

PROBLEM

1. ANS:

$$\frac{10,000\ \text{U}}{1000\ \text{mL}} = \frac{1000\ \text{U/h}}{\text{X mL/h}}$$

$$10,000\,\text{X} = 1,000,000$$

$$\frac{10,000\,\text{X}}{10,000} = \frac{1,000,000}{10,000}$$

$$\text{X} = 100\ \text{mL/h}$$

$$\frac{\text{mL/h}}{\text{drop factor constant}} = \text{gtt/min}$$

$$\frac{100\ \text{mL/h}}{3} = 33.3 = 33\text{gtt/min}$$

2. ANS:

$$\frac{10,000\ \text{U}}{1000\ \text{mL}} = \frac{750\ \text{U/h}}{\text{X mL/h}}$$

$$10,000\text{X} = 750,000$$

$$\frac{10,000\text{X}}{10,000} = \frac{750,000}{10,000}$$

$$\text{X} = 75\ \text{mL}$$

$$\frac{75\ \text{mL/h}}{5} = 15\ \text{gtt/min}$$

3. ANS:

$$\frac{\text{V}}{\text{T}} \times \text{C} = \text{R}$$

$$\frac{\text{V}}{60\ \text{min}} \times \frac{15\ \text{gtt}}{1\ \text{mL}} = \frac{10\ \text{gtt}}{\text{min}}$$

$$\frac{\text{V}}{60} \times \frac{15}{1} = \frac{10}{1}$$

$$\frac{\text{V}}{4} = \frac{10}{1}$$

$$\text{V} = 40\ (40\ \text{mL}/60\ \text{min} = 40\ \text{mL/h})$$

Patient is receiving 40 mL/hour.

$$\frac{20,000\ \text{U}}{500\ \text{mL}} = \frac{\text{X U/h}}{40\ \text{mL/h}}$$

$$500\text{X} = 800,000$$

$$\frac{500\text{X}}{500} = \frac{800,000}{500}$$

$$\text{X} = 1600\ \text{U/h}$$

$$\frac{1600\ \text{U/h}}{1\ \text{h}} = \frac{\text{X U}}{24\ \text{h}}$$

$$\text{X} = 38,400$$

The patient is receiving 38,400 U/24 h.

4. ANS:
   $144\ \text{lb} \div 2.2 = 65.5\ \text{kg} = 70\ \text{kg}$

   80 U/kg
5. ANS:
   $80\ \text{U/kg} \times 70\ \text{kg} = 5600\ \text{U}$

   1000 U/mL

   $\frac{5600\ \text{U}}{1000\text{U}} \times 1\ \text{mL} = 5.6\ \text{mL}$
6. ANS:
   18 U/kg/h

   $18\ \text{U/kg/h} \times 70\ \text{kg} = 1260\ \text{U/h}$

   $\frac{25,000\ \text{U}}{250\ \text{mL}} = 100\ \text{U/mL}$

   $\frac{1260\ \text{U/h}}{100\ \text{U}} \times 1\ \text{mL} = 12.6\ \text{mL/h} = 13\ \text{mL/h}$
7. ANS:
   6 h

   $40\ \text{U/kg} \times 70\ \text{kg} = 2800\ \text{U or } 2.8\ \text{mL}$

   Increase rate by 2 U/kg/h

   $2\ \text{U/kg/h} \times 70\ \text{kg} = 140\ \text{U/h}$

   Increase $\frac{140\ \text{U/h}}{100\ \text{U}} \times 1\ \text{mL} = 1.4\ \text{mL/h}$

   $12.6\ \text{mL/h} + 1.4\ \text{mL/h} = 14\ \text{mL/h}$
8. ANS:
   Maintain rate at 14 mL/h
9. ANS:
   Maintain rate at 14 mL/h. Recheck APPT at 0600 on 06/08/XX

College Lab – Week 10 – Week of 3/26/07

Objectives

- Describe the nursing management for clients receiving medical/surgical treatment for related disease/illness
- Describe the purpose and types of related treatments and procedures
- Describe the rationale for related nursing procedures
- Compare and contrast the efficacy of medical management and related nursing care via literature review as outlined
- Demonstrate specific procedures and techniques as outlined

Topics covered in readings and theory class:

- Musculo skeletal injuries – Sprains / Strains / Tendon rupture / Fractures
  - Emergency care
  - Acute care
  - Rehabilitation
- Congenital / developmental interferences to activity
  - Hip dysplasia
  - Legg-Perthes disease
  - Scoliosis
  - Club foot
- Immobility to promote bone healing
  - Traction / casting
  - Surgery

Skills/Demonstration

Crutch walking
Cast care
Traction
Transfer techniques - review
Assessment: Neurovascular (mobility, sensation, circulation)

Computer-Assisted Learning - Evolve Learning Web sit at http://evolve/elsevier.com/Iggy/.

Videotape

"Broken Bones and How They Mend" (Discovery) (25 mins)

Critical Thinking – Medication Administration

Pickar, Gloria D. (2004) **Dosage Calculations.** (7th ed.) Clifton Park, NY: Delmar Learning
Chap 16: IV Solution – Intravenous Heparin Therapy dosage protocol & calculation

Med-Surg Nursing:
Ignatavicius, Donna & Workman, M. Linda (2006) Critical Thinking Study Guide to accompany Medical-Surgical Nursing Critical Thinking for Collaborative Care
Orthopedic Care – Chap 53 – ques 36 (p469)
Client with Fracture Case Study – ques 1-6 (p 489)

Journal Review/NCLEX Questions

- Bailey, J. Getting a fix on orthopedic care. *Nursing 2003*, 33 (6), 58-64.

Week 10 – Intravenous Heparin Therapy

IV Heparin Therapy

<u>Heparin Medication Dosage Administration Questions - - for practice</u>:

Bolus by Body weight:

5. A patient with deep vein thrombosis who weighs 163 pounds is ordered to have a heparin bolus of 80 units per kg followed by an infusion. Calculate the dosage of the heparin bolus to be administered.

6. A patient with a pulmonary embolism who weights 209 pounds is ordered to have a heparin bolus of 90 units per kg followed by an infusion. Calculate the dosage of the heparin bolus to be administered.

Flow Rate:

1. The physician orders a continuous infusion of 25,000 units of heparin in 250 mL of D_5W at 600 units per hour. Please calculate the flow rate?

Ratio and proportion (extremes by the means):

2. An order read heparin 40,000 units in 1 L of D5W to infuse at 1,000 units/her. Calculate the flow rate.

Units Per Hour:

3. A patient is receiving 20,000 units of heparin in 1,000 mL of D5W by continuous infusion at 30mL/hr. What heparin dose is he receiving?

4. A patient is receiving 25,000 units of heparin in 500 mL NS by continuous infusion at 18 mL/hr. What heparin dose is he receiving?

ANSWER KEY: <u>Try working the problem before checking the key</u>

Bolus by Body weight:

5. A patient with deep vein thrombosis who weighs 163 pounds is ordered to have a heparin bolus of 80 units per kg followed by an infusion. Calculate the dosage of the heparin bolus to be administered.

Step 1 – convert pounds to kilograms:

163 / 2.2 = 74 kgs.

Step 2 – calculate dose in units: 74 x 80 = 5920units

Step 3 – calculate mL dosage 1000U : 1ml :: 5920 u : X mL
1000U x XmL = 5920U
X mL = 5920 / 1000 = 5.9 mL bolus

6. A patient with a pulmonary embolism who weights 209 pounds is ordered to have a heparin bolus of 90 units per kg followed by an infusion. Calculate the dosage of the heparin bolus to be administered.

Step 1 – Convert pounds to kgs 209 / 2.2 = 95 kg

Step 2 – Calculate dose in units: 95 x 90 = 8,550 units

Step 3 – Calculate mL dosage 1000U : 1 mL :: 8,550u : X mL
1000U x XmL = 8,550U
XmL = 8.55mL

Flow Rate:

1. The physician orders a continuous infusion of 25,000 units of heparin in 250 mL of D_5W at 600 units per hour. Please calculate the flow rate?

Ratio and proportion:

25,000 units : 250 mL :: 600 units : x mL (answer should be in mL/hr – using infusion pump)

25,000 u x X = 600 units/hr x 250 mL

25,000 uX = 150,000

X = 150,000 / 25,000 = **6 mL/hr**

2. An order read heparin 40,000 units in 1 L of D5W to infuse at 1,000 units/her. Calculate the flow rate.

40,000 U : 1000 mL :: 1,000U x X mL

40,000U x X = 1000mL x 1,000u

40,000 U = 1,000,000

XmL = 1,000,000 / 40,000 = **25mL/hr**

Units Per Hour:

3. A patient is receiving 20,000 units of heparin in 1,000 mL of D5W by continuous infusion at 30mL/hr. What heparin dose is he receiving?

20,000 u : 1,000 :: XU : 30mL
1,000mL x XU = 20,000U x 30mL
1,000 x XU = 600,000
XU = 600,000 / 1,000 = **600units/hr**

4. A patient is receiving 25,000 units of heparin in 500 mL NS by continuous infusion at 18 mL/hr. What heparin dose is he receiving?

25,000u : 500 mL :: XU : 18 mL/hr
500mL X = 25,000U x 18 mL/hr
500mL X = 450,000U
xU = 450,000 / 500 = **900units per hour**

College Lab – Week 11 – 4/2/07

Objectives

- Describe the nursing management for clients receiving medical/surgical treatment for related disease/illness
- Describe the purpose and types of related treatments and procedures
- Describe the rationale for related nursing procedures
- Compare and contrast the efficacy of medical management and related nursing care via literature review as outlined
- Demonstrate specific procedures and techniques as outlined

Topics covered in readings and theory class:

- Transient ischemic attack
- Review of cerebral circulatory system
  - Cerebral vascular accident
    - Acute phase
    - Rehabilitation
      - Mobility
      - Aphasia
- Osteoporosis
- Osteomalacia
- Arthritis
  - Acute Care / Rehabilitation
    - Osteoarthritis
    - Rheumatoid arthritis

Adult and Juvenile

Skills/Demonstration

Role Play: Care of the comatose patient – positioning, turning

Assessment: Neurologic / Glascow Coma Scale

Computer-Assisted Learning - Evolve Learning Web sit at http://evolve/elsevier.com/Iggy/.

Videotape/DVD:
Brain Attack (Discovery) (60 mins)

Critical Thinking – Medication Administration

Pickar, Gloria D. (2004) **Dosage Calculations.** (7th ed.) Clifton Park, NY: Delmar Learning

Ratio & Proportion – Review

Med-Surg Nursing:

Ignatavicius, Donna & Workman, M. Linda (2006) Critical Thinking Study Guide to accompany Medical-Surgical Nursing Critical Thinking for Collaborative Care

CVA – Chap 48 – ques 1-13 (p 429).
Osteoporosis Case Study – Chap 54 – ques 1-7 (p478)

Journal Review/NCLEX Questions + Discussion Group

- Don't get out of joint. *Nursing made incredibly easy!* Mar/Apr 2004, 26-34.

Week 11 – Ratio & Proportion Review

Practice Medication Dosage Calculations:

1. Order reads: Kefzol 350 mg in 100 mL D5W to run in 60 mins.
Drop factor: 15gtts/mL. Calculate the flow rate. Show all math.

2. Order: Heparin 20,000U in 1,000mL Sodium Chloride 0.9% to infuse at 1,000U per hr via IV pump. Calculate the flow rate. Show all math.

3. Order: Heparin 2,500 U per hr via IV pump from Heparin 50,000U in 1,000mL D5W.
Calculate the flow rate. Show all math.

4. Cleocin Pediatric 8 mg per kg per day in four divided doses orally.
Label reads: Clindamycin (Cleocin) Pediatric 75 mg per 5 mL.
Child's weight = 84 lbs.
Calculate the dose. Show all math.

5. Biaxin oral suspension 15 mg/kg/day in two divided doses orally.
Label reads: Clarithromycin (Biaxin) oral suspension 125 mg/5 mL
Child's weight 38 lb.
Calculate dose. Show all math.

6. On hand: chlorpromazine (Thorazine) 25 mg/mL
Order reads: Thorazine 15 mg IM.

7. Diazepam (Valium) 2 mg IV push. Label: Diazepam 10 mg/2mL

8. Order: Vitamin K 20 mg IM
Label: Vitamin K 25 mg per 2.5mL

9. Order: Isoniazid Injection 5mg/kg/day IM to an adult weighing 128 lbs.
Label: Isoniazid Injection 100 mg per mL.
Calculate dose. Show all math.

10. Epogen 75 Units per kg subcutaneously to an adult weighing 140 lb.
Label reads: Epogen 2,000U/mL. Calculate dose. Show all math.

KEY to Practice Medication Dosage Calculations:

1. Order reads: Kefzol 350 mg in 100 mL D5W to run in 60 mins.
Drop factor: 15gtts/mL. Calculate the flow rate. Show all math.

100/60 x 15 = 25 gtts/min

2. Order: Heparin 20,000U in 1,000mL Sodium Chloride 0.9% to infuse at 1,000U per hr via IV pump. Calculate the flow rate. Show all math.

20,000 / 1, 000 = 20U/mL

20U : 1 mL :: 1,000U : X mL

20X = 1,000
X = 50 mL/hr

3. Order: Heparin 2,500 U per hr via IV pump from Heparin 50,000U in 1,000mL D5W.
Calculate the flow rate. Show all math.

50,000 / 1,000 = 50 U/mL

50U : 1 mL :: 2,500U : XmL

50x = 2,000
X = 2,500 / 50
X = 50mL/hr

4. Cleocin Pediatric 8 mg per kg per day in four divided doses orally.
Label reads: Clindamycin (Cleocin) Pediatric 75 mg per 5 mL.
Child's weight = 84 lbs.
Calculate the dose. Show all math.

84 / 2.2 = 38.18 kg

8 x 38.18 = 305.44 mg / 4 = 76.36 mg

75 mg : 5 mL :: 76 mg : X mL

75 X = 5 x 76 mg
75X= 380
X = 5.06 or 5.2 mL

5. Biaxin oral suspension 15 mg/kg/day in two divided doses orally.
Label reads: Clarithromycin (Biaxin) oral suspension 125 mg/5 mL
Child's weight 38 lb.
Calculate dose. Show all math.

38 / 2.2 = 17.27 kg

15 mg/kg/day = 15 x 17 = 255 kg/day / 2 = 127.5 (128) mg per dose

125 mg : 5 mL :: 128 : X mL
125 X = 5 x 128
125 X= 640
X= 640 / 125 = 5.12 mL

6. On hand: chlorpromazine (Thorazine) 25 mg/mL
Order reads: Thorazine 15 mg IM.

25mg : 1 mL :: 15mg : X mL

25X = 15
X= 15 /25 = 0.6 mL

7. Diazepam (Valium) 2 mg IV push. Label: Diazepam 10 mg/2mL

10 mg : 2 mL :: 2 mg :: X mL

10 X = 2 x 2
10X = 4
X = <u>0.4mL</u>

8. Order: Vitamin K 20 mg IM
Label: Vitamin K 25 mg per 2.5mL

25mg : 2.5mL :: 20mg : XmL

25 X = 2.5 x 20
25 X = 50
X = 50/25 = <u>2mL</u>

9. Order: Isoniazid Injection 5mg/kg/day IM to an adult weighing 128 lbs.
Label: Isoniazid Injection 100 mg per mL.
Calculate dose. Show all math.

128 / 2.2 = 58.18 or 58 kg

5mg/kg/day x 58 kg = 290 mg.

100 mg : 1 mL :: 290 mg :: X mL
100X = 290
100X = 290/100 = 2.9 mL

10. Epogen 75 Units per kg subcutaneously to an adult weighing 140 lb.
Label reads: Epogen 2,000U/mL. Calculate dose. Show all math.

140 / 2.2 = 63.6 or 64 kgs

64 kg x 75 U/kg = 4,800U

2,000U : 1 mL :: 4,800 U : X mL

2,000 X = 4,800
X= 4,800 / 2,000 = 2,4 mL

College Lab – Week 12 – Week of 4/9/07

Objectives

- Describe the nursing management for clients receiving medical/surgical treatment for related disease/illness
- Describe the purpose and types of related treatments and procedures
- Describe the rationale for related nursing procedures
- Compare and contrast the efficacy of medical management and related nursing care via literature review as outlined
- Demonstrate specific procedures and techniques as outlined

Topics covered in readings and theory class:

- Alterations in Nutrition
  - Malnutrition
  - Fluid & Electrolyte Imbalances
  - Morbid obesity
- Gastrointestinal disturbances
  - Congenital
    - Cleft lip / palate
    - Esophageal atresia
    - Pyloric stenosis
    - Diaphragmatic hernia
  - Inflammatory
    - Thrush
    - Periodontal disease
    - Gastritis
  - Traumatic interferences
    - Facial fractures / fractured jaw
    - Ingestion of poisonous substances
    - Esophageal obstruction
- Nutrition
  - Special diets
  - Total parenteral nutrition (TPN) / hyperalimentation
  - Tube feedings

Skills/Demonstration

NG tube maintenance; Feedings: NG tube, PEG tube, Jejunostomy tube
TPN—central venous lines.
Assessment: Gastrointestinal

Computer-Assisted Learning - Evolve Learning Web sit at http://evolve/elsevier.com/Iggy/.

Videotape

"Gastrointestinal Assessment "

Critical Thinking – Medication Administration

Pickar, Gloria D. (2004) **Dosage Calculations.** (7th ed.) Clifton Park, NY: Delmar Learning

Oral, parenteral adult and pediatric practice problems

Med-Surg Nursing:

Ignatavicius, Donna & Workman, M. Linda (2006) Critical Thinking Study Guide to accompany Medical-Surgical Nursing Critical Thinking for Collaborative Care

Irritable bowel syndrome – Chap 60 - ques 1-144 (pp 520-521)
Intestinal obstruction ques 41-72 (pp 524-0527)

Journal Review/NCLEX Questions + Discussion Group

- Padula, C. et al. Enteral feedings: what the evidence says. *AJN.* July 2004, 104 (7). 62-70.

Week 12 – Adult & Pediatric Dosage Calculation by body weight

Practice Problems for Lab:

Oral Medication Administration:

1. The patient is ordered to have Synthroid 0.05mg orally qd at 7a.
On hand: Synthroid 0.025mg tablets. How many tables should you give this patient.?

Ratio and Proportion:

Or -- Desire / Have x Quotient:

2. The physician orders erythromycin 400 mg orally for an adult patient with pneumonia. The medication label reads: erythromycin 200mg/5mL. Calculate the dose to be given to the patient?

Think: how should the answer be labeled: you need 400 mg; you have 200 mg per 5 mL. You already have the required dose in mg. You are looking for mL.

Ratio & Proportion:

Or - Desire over Have x Quotient:

3. A patient is ordered to receive Benadryl 50 mg orally1 dose. The multi-dose vial is labeled: Benadryl 12.5 mg/5mL. Calculate the dose to be given.

Ratio & Proportion:

4. The physician orders the patient with deep vein thrombosis to receive heparin 7,000 units subQ q12hr. The heparin available to you consists of 5,000U/mL. Calculate the dose to be given to the patient.

5. Calculate the rate of infusion for a 1000 mL D5 ½ NS over 8 hours.

6. Calculate the rate of infusion of Decadron 12 mg in 50 mL NS over a half an hour. (Drip factor = 15). Calculate the dose to be administered

7. A 46 lb 4-year old patient is ordered to have acetaminophen 10 mg/kg/dose oral suspension. Medication bottle is labeled: 300 mg / 2 mL. Calculate the dose to be administered.

8. The order is to infuse a solution of heparin 20,000U to 1 L of D5W at 80 mL/hr. Calculate the dose of infusion.

9. The order reads to infuse heparin 20,000U per 500 mL NS at 30mL/hr. Calculate the rate of infusion.

10. A patient who weighs 154 lbs. is ordered to have a 50U/kg bolus of heparin followed by a heparin infusion of 25,000U of heparin in 500mL/NS at 4 U/kg/hr. Calculate the bolus dose and the rate of heparin infusion.

KEY:

Practice Problems for Lab

Oral Medication Administration:

1. The patient is ordered to have Synthroid 0.05mg orally qd at 7a.
On hand: Synthroid 0.025mg tablets. How many tables should you give this patient.?

Ratio and Proportion:

0.025mg : 1 tab :: 0.05mg : X tabs
0.025mg x X tabs = 0.05 mg x 1tab
0.025mg X = 0.05
x = 0.05 / 0.025 = **2 tablets**

Desire / Have x Quotient:

0.05mg / 0.025mg x 1 = 2 tablets

2. The physician orders erythromycin 400 mg orally for an adult patient with pneumonia. The medication label reads: erythromycin 200mg/5mL. Calculate the dose to be given to the patient?

Think: how should the answer be labeled: you need 400 mg; you have 200 mg per 5 mL. You already have the required dose in mg. You are looking for mL.

Ratio & Proportion:

200 mg : 5 mL :: 400 mg :: X mL
200mg X = 5 mL x 400 mg
200 X = 2000mL
X = 2000 / 200 **= 10 mL**

Desire over Have x Quotient:

400 mg / 200 mg x 5mL

400 / 40 = **10mL**

3. A patient is ordered to receive Benadryl 50 mg orally1 dose. The multi-dose vial is labeled: Benadryl 12.5 mg/5mL. Calculate the dose to be given.

Ratio & Proportion:

12.5mg : 5 mL :: 50 mg : X mL
12.5mg X = 5 mL x 50 mg
12.5 X = 250 mL
X = 250/12.5 **= 20 mL**

4. The physician orders the patient with deep vein thrombosis to receive heparin 7,000 units subQ q12hr. The heparin available to you consists of 5,000U/mL. Calculate the dose to be given to the patient.

5,000U : 1 mL :: 7,000U : X mL
5,000U X = 1mL x 7,000 U
5,000 X= 7,000
X = 7,000 / 5,000 = **1.4 mL**

5. Calculate the rate of infusion for a 1000 mL D5 ½ NS over 8 hours.

1000 / 8 = 125 mL/hr
125/60 mins x 15 = **31 gtts/min**

6. Calculate the rate of infusion of Decadron 12 mg in 50 mL NS over a half an hour. (Drip factor = 15). Calculate the dose to be administered

50 mL/ 30 mins x 15 = **25 gtts/min**

7. A 46 lb 4-year old patient is ordered to have acetaminophen 10 mg/kg/dose oral suspension. Medication bottle is labeled: 300 mg / 2 mL. Calculate the dose to be administered.

Step 1 – convert from lbs to kgs 46 / 2.2 = 20.9 or 21 kgs

Step 2 – calculate the dose in mg/kg 10 x 21 = **210 mg**

Step 3 – calculate the dose in mL: 300mg : 2 mL :: 210 mg : X mL
300mg x X = 2mL x 210 mg
300 X = 420
X = 1.4 mL

8**.** The order is to infuse a solution of heparin 20,000U to 1 L of D5W at 80 mL/hr. Calculate the dose of infusion.

1 L = 1,000mL

20,000U / 1,000mL = 20U/mL

20U : 1 mL :: XU : 80 mL

1 X = 20U x 80

X = 1,600 U/ hr

9. The order reads to infuse heparin 20,000U per 500 mL NS at 30mL/hr. Calculate the rate of infusion.

20,000 / 500 = 40U/mL

40U : 1 mL :: XU : 30 mL

1X = 40 U x 30

X = 1200 U/ hr

10. A patient who weighs 154 lbs. is ordered to have a 50U/kg bolus of heparin followed by a heparin infusion of 25,000U of heparin in 500mL/NS at 4 U/kg/hr. Calculate the bolus dose and the rate of heparin infusion.

Step 1 – **convert lbs to kgs**: 154 / 2.2 = 70 kgs

Step 2 – **calculate bolus dose**: 50U/kg = 50U x 70kg = **3500 U**

**** Always use 1,000U/mL for heparin IV bolus:**

Calculate the bolus dose in mL: 1000U : 1 mL :: 3500U : X mL
1000U XmL = 3500U
XmL = 3500 / 1000 = **3.5 mL**

Step 3 – **Calculate the U/kg/hr for the infusion:**

4U/kg/hr = 4 x 70 = 280U/hr

Step 4: **calculate infusion rate:** 25,000 / 500 = 50U/mL

50U : mL :: 280U : X mL
50X mL = 280U
X = 280 / 50 = **5.6mL/hr**

Or: (if you want to work with the original numbers):
Step 4: **calculate infusion rate:**

25,000U : 500mL :: 280U : X mL

25,000U x X mL = 500 mL x 280U

25,000X = 140,000
X = 140,000 / 25,000 = **5.6 mL**

College Lab – Week 13 – Week of 4/16/07

Objectives

- Describe the nursing management for clients receiving medical/surgical treatment for related disease/illness
- Describe the purpose and types of related treatments and procedures
- Describe the rationale for related nursing procedures
- Compare and contrast the efficacy of medical management and related nursing care via literature review as outlined
- Demonstrate specific procedures and techniques as outlined

Topics covered in readings and theory class:

- Congenital interferences to elimination arising from intestinal obstruction
  - Imperforate anus, megacolon, intussusception, Volvulus, Hirschprung's, Discuss
- Other obstructive problems
  - Parasitic infestations, hemorrhoids, neoplasms, paralytic ileus, Volvulus, intussusception, intestinal polyps
- Inflammatory / infectious interferences

Ileitis, ulcerative colitis, gastroenteritis, appendicitis, diverticulitis, irritable bowel syndrome

Skills/Demonstration

Peripherally inserted central lines & central line care – role play dressing change

Role Play: patient with diverticulitis, acute bowel obstruction

Assessment: Gastrointestinal

Computer-Assisted Learning - Evolve Learning Web sit at http://evolve/elsevier.com/Iggy/.

Videotape

Gastrointestinal assessment

Critical Thinking – ATI Assessment

Journal Review/NCLEX Questions + Discussion Group

- Rayhorn, N. Understanding gastroesophageal reflux disease. *Nursing 2003*. Oct, 33(10), 36-41.

College Lab – Week 14 – 4/23/07
ATI ASSESSMENT – PHARMACOLOGY – Tues 4/24/07 & Thurs 4/ 26/07

Objectives

- Describe the nursing management for clients receiving medical/surgical treatment for related disease/illness
- Describe the purpose and types of related treatments and procedures
- Describe the rationale for related nursing procedures
- Compare and contrast the efficacy of medical management and related nursing care via literature review as outlined
- Demonstrate specific procedures and techniques as outlined

Topics covered in readings and theory class:

- Upper & Lower urinary tract infections
  - Acute Pyelonephritis
  - Chronic Pyelonephritis
  - Acute Glomerulonephritis
  - Acute Poststreptococcal Glomerulonephritis
  - Chronic Glomerulonephritis
  - Cystitis
  - Urethritis
- Renal Conditions
  - Polycystic Kidney
  - Renal Artery Stenosis
  - Renal Tuberculosis
  - HIV—associated Nephropathy
  - Nephrotic Syndrome – Renal Failure
- Obstructive upper urinary tract conditions
  - Ureteral stricture
  - Renal and ureteral calculi
- Upper renal procedures
  - Nephrostomy; nephrectomy; nephrolithotomy, pyelolithotomy, ureterolithotomy, extracorporeal lithotripsy.

Skills/Demonstration

Assessment: Review genitourinary assessment (physical assessment/urine analysis /lab values)

Computer-Assisted Learning - Evolve Learning Web sit at http://evolve/elsevier.com/Iggy/.

Videotape

Medication Administration

Pickar, Gloria D. (2004) **Dosage Calculations.** (7th ed.) Clifton Park, NY: Delmar Learning

General Review of all dosage calculation problems

Med-Surg Nursing:

Ignatavicius, Donna & Workman, M. Linda (2006) Critical Thinking Study Guide to accompany Medical-Surgical Nursing Critical Thinking for Collaborative Care

Renal Assessment Chap 72 – ques 15, 16, 17; Case Study ques 1-5 (pp 639-640)
Renal calculi – Chap 73 – ques 35, 36, 37, 38 (p 646)
Renal Impairment – Chap 74 – quest 30, 31, 35, 36, 41, 51, 52, 53, 54 (pp 653—654)

Journal Review/NCLEX Questions

Holcomb, s. Keeping kidney function flowing. *Nursing made incredibly easy!* Sep/Oct 2004, 30-38.

Week 14 – General Math Review

General Review

Multiple Choice
Identify the letter of the choice that best completes the statement or answers the question.

____ 1. A patient's order for IV fluid states the D_5W is to be infused. Which of the following IV fluids should be given?
   a. 5% Dextrose with Normal Saline
   b. 5% Dextrose with Lactated Ringer's Solution
   c. 5% Dextrose with 0.45% Sodium Chloride
   d. 5% Dextrose

____ 2. A patient's order for IV fluid states that D_5NS is to be infused. Which of the following IV fluids should be given?
   a. 5% Dextrose
   b. 0.9% Sodium Chloride
   c. 5% Dextrose with 0.9% Sodium Chloride
   d. Lactated Ringer's Solution

____ 3. What is the ratio of the weight of dextrose to the volume of IV fluid in D_5W?
   a. 5 grams of dextrose to 1 liter of IV fluid
   b. 5 milligrams of dextrose to 1 milliliter of IV fluid
   c. 5 milligrams of dextrose to 1 liter of IV fluid
   d. 5 grams of dextrose to 100 mL of IV fluid

Completion
Complete each sentence or statement.

Convert each of the given quantities to the equivalent unit indicated. Your answers must be in the proper form for the metric, household, or apothecary system measurement requested in the question.

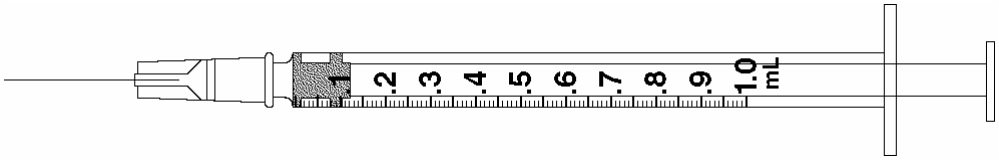
Convert each of the given quantities to the equivalent unit indicated.

4. 3500 g = _____ kg
5. 125 mg = _____ g
6. 250 mcg = _____ mg
7. gr $\frac{1}{4}$ = _____ mg
8. 15 t = _____ mL

Short Answer

Draw an arrow to point to the volume that corresponds to the dose to be administered with the given equipment.

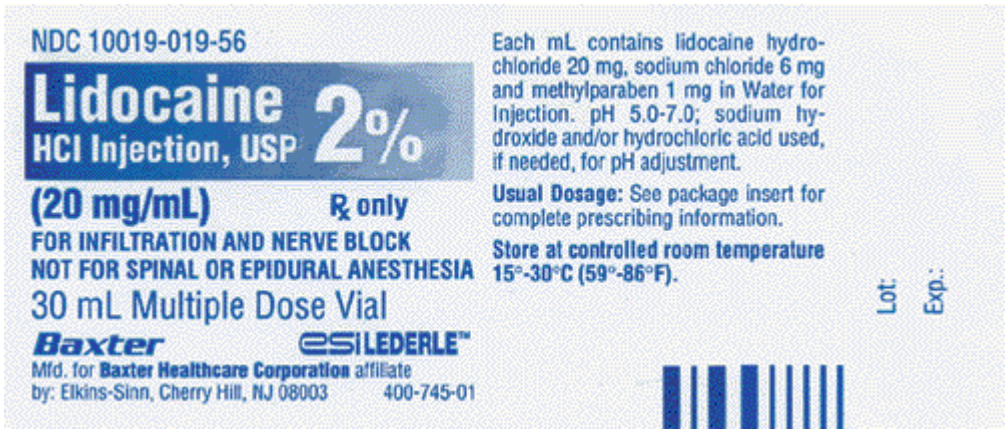
9. Administer 0.75 mL



Identify the following, using the given label.

10. Dosage strength: _____

Identify the following, using the given label.



11. The supply dosage is _____ g per _____ mL.

Compute the amount of medication you will give to administer one dose of the following medication orders. Assume all tablets are scored, when necessary. The problems and drug orders are presented for practice only, and actual prescribed dosages will vary according to a patient's age, condition, reaction, additional medications, and other factors.

12. Order: Axid 0.15 g p.o. b.i.d.
    Supply: Bottle containing 60 capsules of Axid, 150 mg per capsule
    Give: _____ capsule(s)

Compute the amount of medication that will be given to administer one dose of the following medication orders. Round all parenteral administration orders that are over 1 mL to one decimal place. Round all parenteral administration orders under 1 mL to two decimal places. Do not include zeros at the end of decimal numbers. The problems and drug orders are presented for practice only, and actual prescribed dosages will vary according to a patient's age, condition, reaction, additional medications, and other factors.

13. Order: Librium 30 mg IM q.6h p.r.n., anxiety
    Supply: Librium 100 mg/2 mL
    Give: _____ mL

Problem

Complete the following.

14. Arrange the following fractions from *smallest* to *largest:* $\frac{7}{16}, \frac{3}{16}, \frac{5}{16}$

Perform the indicated operations. Reduce fractions in answers to lowest terms.

15. $2\frac{1}{2} \div \frac{3}{4}$

	Decimal	Fraction	Percent	Ratio
1.	0.05			
2.		$\frac{1}{8}$		
3.			45%	
4.				3:10

16. Complete row 3 in the table above.

Solve for X. Round answers to two decimal places.

17. $\frac{X}{5} = \frac{1}{8}$

Compute the amounts of solutes and solvents for the following solutions.

18. 200 mL of 50% betadine solution using stock betadine and NS

_____ mL stock betadine solution _____ mL NS

Explain how you would prepare the following formulas for the indicated time periods using the given supplies.

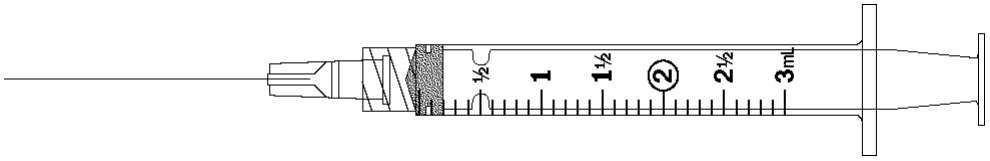
19. Give 90 mL of $\frac{1}{2}$ strength Enfamil orally every 4 hours for one day.
Available supply is 6-ounce cans of Enfamil.

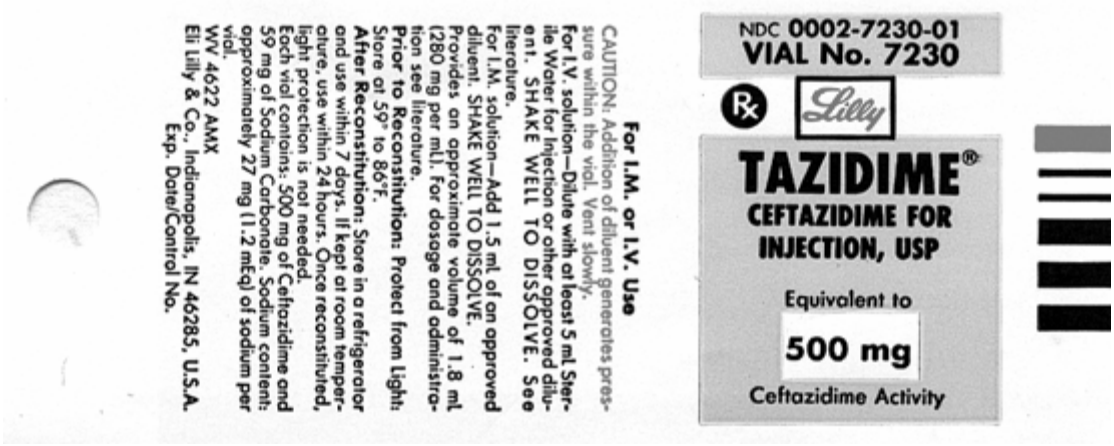
Use the following information:
A nurse needs to prepare $\frac{1}{4}$ strength Enfamil for several infants in the nursery. The supply is 8-ounce cans of Enfamil.

20. How much sterile water should be mixed with each 8-ounce can of Enfamil in order to prepare the $\frac{1}{4}$ strength solution?

For questions 11 through 15, specify the amount of diluent to add and the resulting solution concentration. Calculate the amount to give and indicate the dose with an arrow on the accompanying syringe. Finally, make a reconstitution label, if required.

21. Order: *Tazidime 300 mg IM q.6h*
Reconstitute with _____ mL diluent for a total solution volume of _____ mL with a concentration of _____ mg/mL.
Give: _____ mL





22. Order: *Kefzol 150 mg IM q.8h*
Reconstitute with _____ mL diluent for a total solution volume of _____ mL with a concentration of _____ mg/mL.
Give: _____ mL

Compute the amount of medication that will be given to administer one dose of the following medication orders. Round all parenteral administration orders that are over 1 mL to one decimal place. Round all parenteral administration orders under 1 mL to two decimal places. Do not include zeros at the end of decimal numbers. The problems and drug orders are presented for practice only, and actual prescribed dosages will vary according to a patient's age, condition, reaction, additional medications, and other factors.

23. Order: *Claforan 1 g IM q.12h*
Supply: Vial containing 6 mL of reconstituted Claforan, 330 mg/mL
Give: _____ mL

24. Order: *cefazolin sodium 750 mg IM q.8h*
    Supply: 1 g vial of cefazolin sodium with instructions to add 2.5 mL of diluent to produce 3 mL of medication supplying 330 mg/mL
    Give: _____ mL

Compute the amount of medication that will be given to administer one dose of the following medication orders by using a proportion to obtain your answers.

Assume all tablets are scored, when necessary. Round all parenteral administration orders that are over 1 mL to one decimal place. Round all parenteral administration orders under 1 mL to two decimal places. Do not include zeros at the end of decimal numbers.

The problems and drug orders are presented for practice only, and actual prescribed dosages will vary according to a patient's age, condition, reaction, additional medications, and other factors.

25. Order: Amoxil 125 mg p.o. q.8h
    Supply: Bottle of Amoxil (powdered medication) with the instructions to add 12 mL of water to obtain a pediatric oral suspension of 50 mg/mL
    Give: _____ mL

26. Order: Augmentin 375 mg p.o. q.8h
    Supply: 75 mL bottle of reconstituted Augmentin, 250 mg/5 mL
    Give: _____ mL

27. Order: thiamine HCl 20 mg IM t.i.d.
    Supply: 10 mL multiple dose vial of vitamin B_1 (thiamine HCl) 100 mg/mL
    Give: _____ mL

28. Order: heparin 7500 U SC q.8h
    Supply: heparin 10,000 U/mL
    Give: _____ mL

Compute the requested information. Round all parenteral administration orders that are over 1 mL to one decimal place. Round all parenteral administration orders under 1 mL to two decimal places. Do not include zeros at the end of decimal numbers.

The problems and drug orders are presented for practice only, and actual prescribed dosages will vary according to a patient's age condition, reaction, additional medications, and other factors.

Use the following information about a child and his order to compute answers.

A pediatrician has ordered ampicillin 50 mg/kg/day p.o. divided q.6h for a child who weighs 44 lb.

29. How many teaspoons should the child's parent administer per dose? _____ t

Use the following information about a child and his order to compute answers.

The recommended dosage of Rocephin is 50 to 100 mg/kg/day divided into two equal doses. The physician has ordered Rocephin 200 mg IM b.i.d. for a child who weighs 5000 g. The Rocephin vial contains 1 g of medication that must be reconstituted with 3.6 mL of diluent to yield 1 g/4 mL.

30. Compute the recommended minimum and maximum amount of milligrams that the child should receive per day.

minimum: _____ mg maximum: _____ mg

Calculate the weight of solutes in the following IV solutions, and identify the solutes.

31. 1 liter of NS contains _____ of _____
(weight) (solute)

The following IV orders will be regulated by electronic infusion devices. Calculate the flow rates of the IV fluids in mL/h. The problems and drug orders are presented for practice only, and actual prescribed dosages will vary according to a patient's age, condition, reaction, additional medications, and other factors.

32. 2 L D_5W IV to infuse in 24 hours by infusion pump Flow rate: _____ mL/h

The following IV orders will be regulated manually. Calculate the flow rate of the IV fluid in gtt/min.

33. 50 mL NS with antibiotic IV to infuse in 20 minutes
The drop factor is 20 gtt/mL. Flow rate: _____ gtt/min

A patient's IV flow needs to be checked frequently so that any adjustments in rate will be small. The allowable percent of change varies according to the institution's policy, patient's condition, and other factors. *For this problem set only,* assume that the patient's flow rate may be reset if the maximum variation from the physician's order is not more than 25%. Compute the percent of variation before resetting IV flow rates, and indicate either the new flow rate you will set or the appropriate action you will take.

The following IV order will be regulated manually.

1000 mL D_5W IV to infuse in 8 hours

The drop factor is 15 gtt/mL.

34. After 6 hours, 200 mL of IV fluid remains. If necessary and if allowable, reset the IV so that it is completed on time.

    What would the adjusted rate have to be? Adjusted rate, is allowable: _____ gtt/min

Determine the BSA for each of the following children using the BSA computation formulas given in the textbook. Include two decimal places with your answers.

35. Tommy, who is 35 inches tall and weighs 40 lbs

Compute the daily rate of pediatric maintenance fluids for the following children, using the following guidelines:

100 mL/kg/day for the first 10 kg of body weight
50 mL/kg/day for the next 10 kg of body weight
20 mL/kg/day for each kg above 20 kg of body weight

36. Reggie, who weighs 24 kg _____ mL/day

37. A patient's order for Pepcid states that she should receive an IV bolus of 20 mg Pepcid diluted in NS to a total volume of 10 mL which is to be injected over 2 minutes. The supply is Pepcid 10 mg/mL.

    Compute the volume of Pepcid and the volume of NS.

    Pepcid: _____ mL NS: _____ mL

The following questions refer to your patient who is on IV heparin therapy according to the "Standard Weight Based Heparin Protocol" noted below. The patient weighs 144 pounds. On admission the patient's APTT is 30 seconds. You initiate IV heparin therapy at 1130 on 06/06/XX. Record your answers in the spaces below unless provided with the "Standard Weight Based Heparin Protocal Worksheet" by your instructor.

Standard Weight Based Heparin Protocol	
For all patients on heparin drips:	
1. Weight in KILOGRAMS. Required for order to be processed: _____ kg	
2. Heparin 25,000 U in 250 mL of 1/2 NS. Boluses to be given as 1000 U/mL.	
3. APTT q.6h or 6 hours after rate change; q.d. after two consecutive therapeutic APTTs.	
4. CBC initially and repeat every _____ day(s).	
5. Obtain APTT and PT/INR on day one prior to initiation of therapy.	
6. Guaiac stool initially then every _____ day(s) until heparin discontinued. Notify if positive.	
7. Neuro checks every _____ hours while on heparin. Notify physician of any changes.	
8. D/C APTT and CBC once heparin drip is discontinued unless otherwise ordered.	
9. Notify physician of any bleeding problems.	
10. Bolus with 80 U/kg. Start drip at 18 U/kg/h.	
11. If APTT is < 35 secs:	Rebolus with 80 U/kg and increase rate by 4 U/kg/h
12. If APTT is 36–44 secs:	Rebolus with 40 U/kg and increase rate by 2 U/kg/h
13. If APTT is 45–75 secs:	Continue current rate
14. If APTT is 76–90 secs:	Decrease rate by 2 U/kg/h
15. If APTT is > 90 secs:	Hold heparin for 1 hour and decrease rate by 3 U/kg/h

38. According to the protocol/sample orders, how often should the patient's APPT be checked?

    q._____h

    At 1730, the patient's APPT id 38 seconds, Rebolus with heparin

    _____ U (_____ mL)

    How much should you change the infusion rate?

    _____ increase or _____ decrease heparin _____ U/h and _____ ml/h

    The new infusion rate will be heparin _____ mL/h.

General Review
Answer Section

MULTIPLE CHOICE

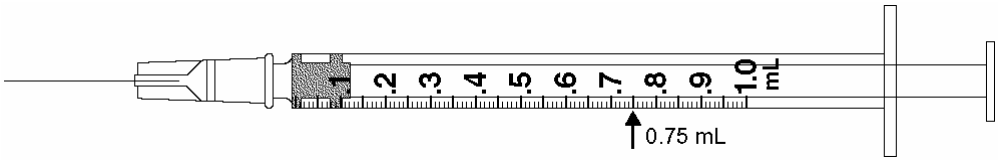
1. ANS: D
2. ANS: C
3. ANS: D

COMPLETION

4. ANS: 3500 g = 3500 ÷ 1000 = 3.5 kg
5. ANS: 125 mg = 125 ÷ 1000 = 0.125 mg
6. ANS: 250 mcg = 250 ÷ 1000 = 0.25 mg
7. ANS: $\text{gr}\ \frac{1}{4} = \frac{1}{4} \times 60 = 15\ \text{mg}$
8. ANS: 15 t = 15 × 5 = 75 mL

SHORT ANSWER

9. ANS:



10. ANS:
    6.5 mg per capsule
11. ANS:
    2% = 2 g per 100 mL
12. ANS:
    $0.15\ \text{g} = 0.15 \times 1000 = 150\ \text{mg}$

    $\frac{150\ \text{mg}}{150\ \text{mg}} \times 1\ \text{capsule} = 1\ \text{capsule}$
13. ANS:
    $\frac{30\ \text{mg}}{100\ \text{mg}} \times 2\ \text{mL} = 0.6\ \text{mL}$

PROBLEM

14. ANS:
    $\frac{3}{16}, \frac{5}{16}, \frac{7}{16}$
15. ANS:

$$2\frac{1}{2} \div \frac{3}{4} = \frac{5}{2} \div \frac{3}{4} = \frac{5}{\cancel{2}_{1}} \times \frac{\overset{2}{\cancel{4}}}{3} = \frac{10}{3} = 3\frac{1}{3}$$

16. ANS:

    0.45, $\frac{9}{20}$, 9:20

17. ANS:

$$\frac{X}{5} = \frac{1}{8}$$

$$8X = 5$$

$$\frac{8X}{8} = \frac{5}{8}$$

$$X = \frac{5}{8}$$

Change $\frac{5}{8}$ to a decimal:

$$8\overline{)5.000}\quad 0.625$$

$$\underline{48}$$

$$20$$

$$\underline{16}$$

$$40$$

    Rounded to two decimal places, X = 0.63

18. ANS:

    $D \times Q = 50\% \times 200\ mL = 100\ mL$ stock betadine solution

    $200\ mL - 100\ mL = 100\ mL$ NS

19. ANS:

    $90\ mL = \frac{90}{30} = 3$ ounces per administration every 4 hours = 6 administrations for one day

    $3 \times 6 = 18$ ounces total for the six administrations

    $D \times Q = \frac{1}{2} \times 18 = 9$ ounces $(1\frac{1}{2}$ cans) of Enfamil

    18 ounces − 9 ounces = 9 ounces sterile water

    Give 3 ounces of the solution per administration.

20. ANS:

    $\frac{1}{4}$ strength = 1 part Enfamil to 4 parts of solution

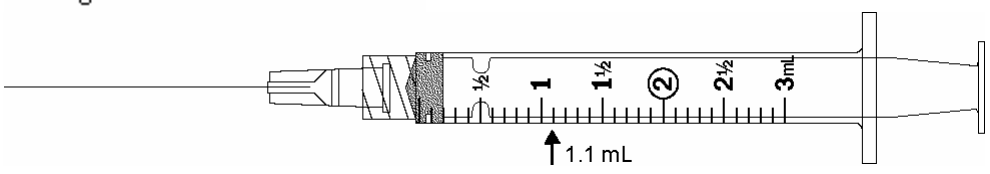
    4 parts solution − 1 part Enfamil = 3 parts sterile water

    3 parts sterile water = 3 × 8 = 24 ounces of sterile water.

21. ANS:

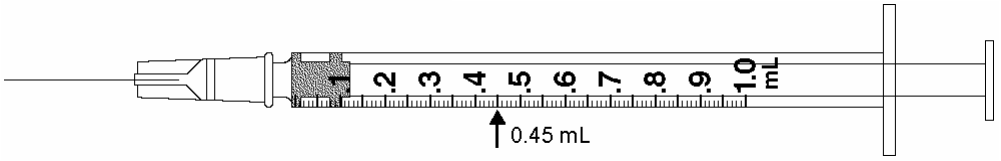
    Reconstitute with 1.5 mL diluent for a total solution volume of 1.8 mL with a concentration of 280 mg/mL.

$$\frac{300\ mg}{280\ mg} \times 1\ mL = 1.07\ mL = 1.1\ mL$$



22. ANS:
Reconstitute with 2.5 mL diluent (sterile water for injection) for a total solution volume of 3 mL with a concentration of 330 mg/mL.

$$\frac{150\text{ mg}}{300\text{ mg}} \times 1\text{ mL} = 0.454\text{ mL} = 0.45\text{ mL}$$



23. ANS:

$$1\text{ g} = 1000\text{ mg}$$

$$\frac{1000\text{ mg}}{330\text{ mg}} \times 1\text{ mL} = 3.03 = 3\text{ mL}$$

24. ANS:

$$\frac{750\text{ mg}}{330\text{ mg}} \times 1\text{ mL} = 2.27 = 2.3\text{ mL}$$

25. ANS:

$$\frac{125\text{ mg}}{50\text{ mg}} \times 1\text{ mL} = 2.5\text{ mL}$$

26. ANS:

$$\frac{375\text{ mg}}{250\text{ mg}} \times 5\text{ mL} = 7.5\text{ mL}$$

27. ANS:

$$\frac{20\text{ mg}}{100\text{ mg}} \times 1\text{ mL} = 0.2\text{ mL}$$

28. ANS:

$$\frac{7500\text{ U}}{10,000\text{ U}} \times 1\text{ mL} = 0.75\text{ mL}$$

29. ANS:

$$2.5\text{ mL} = 2.5 \div 5 = \frac{1}{2}\text{ t}$$

30. ANS:

$$5000\text{ g} = 5000 \div 1000 = 5\text{ kg}$$

per day, minimum

$$5\text{ kg} \times 50\text{ mg/kg} = 250\text{ mg}$$

per day, maximum

$$5\text{ kg} \times 100\text{ mg/kg} = 500\text{ mg}$$

31. ANS:
NS = 0.9% sodium chloride
= 0.9 g sodium chloride per 100 mL of solution

$$\frac{0.9\,\text{g}}{100\,\text{mL}} = \frac{X\,\text{g}}{1000\,\text{mL}}$$

$$100X = 900$$

$$\frac{100X}{100} = \frac{900}{100}$$

$$X = 9\,\text{g}$$

1 liter of NS contains 9 g of sodium chloride

32. ANS:
2 L = 2000 mL

$$\frac{\text{mL}}{\text{h}} = \frac{2000\,\text{mL}}{24\,\text{h}} = 83.3 = 83\,\text{mL/h}$$

33. ANS:

$$\frac{V}{T} \times C = R$$

$$\frac{50\,\text{mL}}{20\,\text{min}} \times \frac{20\,\text{gtt}}{\text{mL}} = 50\,\text{gtt/min}$$

34. ANS:

$$\frac{\text{mL}}{\text{h}} = \frac{200\,\text{mL}}{2\,\text{h}} = 100\,\text{mL/h}$$

$$\frac{\text{mL/h}}{\text{drop factor constant}} = \frac{100\,\text{mL/h}}{4} = 25\,\text{gtt/min}$$

or,

$$\frac{V}{T} \times C = R$$

$$\frac{200\,\text{mL}}{120\,\text{min}} \times \frac{15\,\text{gtt}}{\text{mL}} = 25\,\text{gtt/min}$$

35. ANS:

$$\text{BSA} = \sqrt{\frac{35 \times 40}{3131}}$$

$$= \sqrt{0.447}$$

$$= 0.668 = 0.67\,\text{m}^2$$

36. ANS:

$$10\text{ kg} \times 100\text{ mL/kg} = 1000\text{ mL per day for the first 10 kg}$$

$$10\text{ kg} \times 50\text{ mL/kg} = 500\text{ mL per day for the next 10 kg}$$

$$4\text{ kg} \times 20\text{ mL/kg} = 80\text{ mL per day for the remaining 4 kg}$$

$$= 1580\text{ mL per day}$$

37. ANS:

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

$$\frac{20\text{ mg}}{10\text{ mg}} \times 1\text{ mL} = 2\text{ mL of the supplied Pepcid solution}$$

10 mL total IV solution − 2 mL Pepcid solution − 8 mL NS.

38. ANS:

6 h

$$40\text{ U/kg} \times 70\text{ kg} = 2800\text{ U or }2.8\text{ mL}$$

Increase rate by 2 U/kg/h

$$2\text{ U/kg/h} \times 70\text{ kg} = 140\text{ U/h}$$

$$\text{Increase } \frac{140\text{ U/h}}{100\text{ U}} \times 1\text{ mL} = 1.4\text{ mL/h}$$

$$12.6\text{ mL/h} + 1.4\text{ mL/h} = 14\text{ mL/h}$$

College Lab – Week 15 – 5/1/07

ATI ASSESSMENT – Med Surg – Tues 5/1/07 & Thurs 5/3/97

Objectives

- Describe the nursing management for clients receiving medical/surgical treatment for related disease/illness
- Describe the purpose and types of related treatments and procedures
- Describe the rationale for related nursing procedures
- Compare and contrast the efficacy of medical management and related nursing care via literature review as outlined
- Demonstrate specific procedures and techniques as outlined

Topics covered in readings and theory class (upper and lower renal cont'd)

- Upper & Lower urinary tract infections
  - Acute Pyelonephritis
  - Chronic Pyelonephritis
  - Acute Glomerulonephritis
  - Acute Poststreptococcal Glomerulonephritis
  - Chronic Glomerulonephritis
  - Cystitis
  - Urethritis
- Renal Conditions
  - Polycystic Kidney
  - Renal Artery Stenosis
  - Renal Tuberculosis
  - HIV—associated Nephropathy
  - Nephrotic Syndrome – Renal Failure
- Obstructive upper urinary tract conditions
  - Ureteral stricture
  - Renal and ureteral calculi
- Upper renal procedures
  - Nephrostomy; nephrectomy; nephrolithotomy, pyelolithotomy, ureterolithotomy, extracorporeal lithotripsy.

Skills/Demonstration

Assessment: Review genitourinary assessment (physical assessment/urine analysis /lab values)

Computer-Assisted Learning - Evolve Learning Web sit at http://evolve/elsevier.com/Iggy/.

Videotape

Medication Administration

Pickar, Gloria D. (2004) **Dosage Calculations.** (7th ed.) Clifton Park, NY: Delmar Learning

General Review of all dosage calculation problems

Med-Surg Nursing:

Ignatavicius, Donna & Workman, M. Linda (2006) Critical Thinking Study Guide to accompany Medical-Surgical Nursing Critical Thinking for Collaborative Care

Renal Assessment Chap 72 – ques 15, 16, 17; Case Study ques 1-5 (pp 639-640)

Renal calculi – Chap 73 – ques 35, 36, 37, 38 (p 646)

Renal Impairment – Chap 74 – quest 30, 31, 35, 36, 41, 51, 52, 53, 54 (pp 653—654)

Journal Review/NCLEX Questions

Holcomb, s. Keeping kidney function flowing. *Nursing made incredibly easy!* Sep/Oct 2004, 30-38.