Mercer County Community College Division of Math, Science & Health Professions

Nursing Program

NRS 110 College Lab Manual

Spring 2015

Welcome to College Lab - The college lab is an environment to learn the skills essential to nursing practice. It is a place to learn a nursing procedure and safely practice the skills in a controlled setting. The college lab will include demonstration, videos, interactive learning, and clinical simulation of critical skills essential to the fundamentals of nursing practice. Students are expected to actively participate in College Lab to practice each skill until a competency level is achieved. All students will be required to perform a return demonstration per the guidelines provided of the critical skills outlined in this manual. Math calculation practice has been integrated through the College Lab Manual.

Students must achieve a satisfactory grade on all required critical skills to pass the college lab portion of NRS 110. It is essential that students attend all college lab sessions to stay current with skills and topics. The college lab's goal is to prepare you for safe patient care in the health care facility.

Have a great semester!

The NRS 110 College Lab Team

Mercer County Community College
Division of Math, Science and Health Professions
Nursing Program
NRS 110 College Lab Manual

NRS 110 students are expected to:

1. Review related class notes, reading assignments and specific lab objectives prior to each college lab.
2. Attend all scheduled college lab sessions.
3. Arrive at the scheduled time for lab (repeated late arrivals will require intervention by NRS 110 Course Coordinator).
4. Bring college lab manual to each lab.
5. Bring required equipment to each lab.
6. Participate in discussion topics listed for each lab.
7. Properly perform return demonstration on selected skills.
8. Obtain instructor sign-off on all critical skills.

College Lab Weekly Content

Week 1: Introduction to College Lab, Hand Hygiene; Review of Health/Physical Assessment – Overview.

Week 2: Caring Interventions/Concept of Safety: Bed Bath, Bed Making, Oral Care, Skin Care. Review of Health/Physical Assessment – Safety.

Week 3: Concepts of Safety (cont'd)/Mobility: Body Mechanics, Safe Movement of Patients, Use of Restraints; Review of Health/Physical Assessment – Self/Family/Coping/Sexual Health.

Week 4: Concept of Comfort: Patient positioning; Application of Heat and Cold, Review of Health/Physical Assessment – Pain Assessment/documentation. Postmortem Care

Week 5: The Concepts of Infection, Inflammation and Stress Response: Standard Precautions, Isolation Procedures, Donning and Removing Clean Gloves; Review of Health/Physical Assessment – findings in client with local versus systemic infection.

Week 6: Medication Administration Lab Part 1(Oral & Topical); Medication administration documentation; Review of Health/Physical Assessment – Medication History.

Week 7: Medication Administration Lab Part 2 (IM & SC); Medication administration documentation. Medication Reconciliation.

Week 8: Acid-Base Balance / Concept of Fluid & Electrolytes: Infusing Large Volume IV Fluids, Discontinuing IV Fluids; Measuring oral and IV intake – documentation; Review of health/Physical Assessment – fluid and electrolytes balance.

Week 9: Oxygenation Lab: Oxygen delivery systems, collecting a sputum specimen, breathing exercises, incentive spirometer; Review of Health/Physical Assessment – Focused respiratory assessment/Adventitious breath sounds – documentation; Respiratory acid-base imbalances.

Week 10: Perfusion Lab: Review of Health/Physical Assessment – Focused cardiovascular assessment. Blood pressure, heart rate, heart sounds, peripheral pulses, apical-radial; documentation.

Week 11: Concept of Mobility: ROM exercises, Assisting with Ambulation, Mobility devices (use of walker and cane). Review of Health/Physical Assessment – Fall Risk Assessment

Week 12: Concept of Tissue Integrity: Nursing Interventions to promote intact skin. Review of Health/Physical Assessment – Skin Assessment Braden Scale.

Week 13: Concepts of Cellular Regular & Metabolism: Feeding patients, Use and care of feeding tubes (PEG/NG tubes); Review of Health/Physical Assessment – Focused GI Assessment/Swallowing assessment; Metabolism Acid-Base Imbalances

Week 14: Concept of Elimination: Assisting with a Bedpan/Urinal, Urine and Stool Collection, Administering an Enema, Urinary Catheter Care, Emptying foley catheter, measuring output (urinary/NG tube/BM).

Week 15: The Concepts of Thermoregulation/ Intracranial Regulation / Sensory Perception: Review of Health/Physical Assessment – Neuro Assessment. Final review of Skill Sign-off.

Procedure for College Lab Critical Skill Sign-off

Students will be required to complete the assigned college lab reading assignment prior to class, view the skill demonstration, review the skill procedure checklist (which can be accessed from the www.mynursingkit.com student resources under "Skills Checklists"), practice the skill to achieve competency, and perform a return demonstration of the skill observed by the lab instructor. The student will have two (2) attempts to successfully complete the skill. If unsuccessful after the first attempt, the student will need to practice and perform a second return demonstration of the skill observed by the lab instructor. If after the second attempt, the student remains unsuccessful, timely remediation with the NRS 110 lab instructor is required. The student will have an opportunity for a third attempt. If after the third attempt, the student remains unsuccessful, the student will need to meet with the NRS 110 course coordinator for determination of further progress in the course. Students must obtain instructor sign-off on all NRS 110 critical skills by the end of the semester to successfully pass the college lab component of the course. Skill specific checklists will be utilized for all critical skills. Please review the appropriate skills checklist before performing the skill as evaluation of skill competency will be based on these checklists.

Required Textbooks/Resources:

1. North Carolina Custom Edition, (2011). *Nursing Skills for a Concept-Based Approach to Learning*. New York: Pearson Learning Solutions. (ISBN 13:978-0-558-35687-3)

2. Pickar, G.D., Abernethy, A.P. (2008) *Dosage Calculations*. (9th ed.) Clifton Park: Thompson Delmar Learning

3. NRS 110 College Lab Manual. Download from nursing website at www.mccc.edu/nursing

4. Skills Checklists found at www.mynursingkit.com

5. Sim Chart access to be purchased from MCCC Bookstore (ISBN 9781455710850)

NRS 110 Lab Skills Evaluation **Student:_____**

	DATE/INSTRUCTOR SIGNATURE	
CRITICAL SKILLS	**1ST ATTEMPT**	**2ND ATTEMPT**
Hand washing		
Bed Bath		
Body mechanics, Lifting, Moving, Transfer of patients		
Use of Restraints		
Postmortem Care		
ROM exercises		
Medication Administration (Oral/Topical)		
Medication Administration (IM/SC)		
Dosage Calculation exam (Score of 90% or better)		
Specimen collection (stool & urine)		
Enema Administration		
Enteral feedings (NG or PEG)		
Care of nasogastric tube		
Intake & Output Calculation		
Application of oxygen devices (oxygen cannula, oxygen mask, pulse oximeter, lung expansion techniques		

NRS 110 Dosage Calculation

The purpose of this portion of the lab is to prepare students to be competent in dosage calculation. Students need to prepare for lab by reading the assigned chapters from the textbook, *Dosage Calculations* 9th Edition by Pickar. The students are to review the content in the assigned chapters and solve assigned practice problems as the college lab progresses. The answer key for all practice problems is located in the back of the Pickar book. There is also a User Tutorial CD-ROM that is included with the textbook. It is beneficial to first review the chapter content then solve a few of the assigned problems. Check your answers for accuracy then move on to the next chapter. Math dosage calculation will be practiced in college lab weekly through the entire semester for the first 20-30 minutes. Students will volunteer to write problems on the blackboard as they complete them. Problem-solving discussion will be encouraged with active participation by all in the classroom. Questions are encouraged as are different ways to solve problems. If the student has difficulty with solving problems, please review chapter content and seek out an instructor for additional assistance.

The dosage calculation exam will be given during the college labs the week of Oct 6, 2014. Simple calculators will be distributed. **The use of a cell phone as a calculator is NOT allowed.** The exam will be timed. The expectation for this exam is 90% or better. If the student does not achieve the 90 % on the first attempt, a remediation session must be attended by the student and a new test will be taken. The Dosage Calculation exam is graded as pass/fail with a grade of 90% or better designating the pass grade. **Please bring the Pickar book to college lab every week.**

Weekly math calculation objectives:

1. Perform math to accurately calculate medication dosages.
2. Accurately perform metric conversions.
3. Calculate one and two step oral and parenteral medication metric conversion problems.
4. Complete weekly math calculation readings and problems.

Review basic math concepts in Chapters 1 and 2 (mathematics review). Take the self-evaluation on page 54 to assess your math ability. Most of the math involved with dosage calculation centers on these basic math concepts. If you feel comfortable with these concepts and problems you should have no problem with dosage calculations. You will be able to practice through the progress of the college lab.
If you are having difficulty with solving the problems in Chapter 1 & 2 you may benefit from visiting the campus Learning Center and seek out some assistance with basic math.

The following Pickar chapters should be reviewed prior to beginning the college lab.

Chapter 3: Systems of Measurement
Chapter 4: Conversions: Metric, Apothecary and Household
Chapter 6: Equipment Used in Dosage Measurement

Solve problems in each of the above chapters to see if you have an understanding of the content. It is not necessary to solve all the problems. Again, if you are having difficulty understanding a particular content area, review the chapter and seek out additional assistance.

BODY WEIGHT CONVERSIONS

Change 150 lbs. to Kilograms. Divide 150 by 2.2 = 68 Kg.
Change 60 Kgs. to Pounds. Multiply 60 x 2.2 = 132 lbs.

USE OF RATIO AND PROPORTION

100 mg : 2 mL :: 50 mg : X mL

Mean

Extremes

2mL x 50mg :: 100mg x mL

100mg/mL :: 100 mg
xmL = 100/100 = **1mL**

USE OF DESIRE/HAVE X AMOUNT

D/H x A 50mg /100mg x 2mL = **1mL**

IV FLOW RATE gtts/min by gravity:

Calculate mL/hr then: $\frac{\text{mL}}{\text{Time in mins}}$ X drip factor (IV fluids 15 gtts/mL) = gtts/min

$\frac{1000\text{ mL}}{8\text{hr}}$ = 125mL/hr $\frac{125\text{mL}}{60\text{ mins}}$ X 15 gtts/ml = 31.25 or 31 gtts/min

CALCULATE ML/HR FOR VOLUMETRIC INFUSION PUMP

$$\frac{Amount of Solution}{Minutes to Give} = \frac{mL/hr}{60\,\text{min}}$$

$$\frac{50mL}{30\,\text{min}} = \frac{xmL}{60\,\text{min}}$$

$$30x = 3000$$

$$x = 100mL/h$$

Get Ready for Lab – Practice Problems to be done prior to first college lab:

Systems of Measurement:

Express in proper metric, apothecary, or household notation.

1. one and one half ounces
2. one half teaspoon
3. two and one half liters
4. three tenths of a gram
5. 25 milliequivalents
6. two quarts
7. 15 drops

Interpret the given notations.

8. 35 U
9. 3.5 mg
10. gr viiss
11. $\frac{1}{2}$ t
12. 12.5 mL
13. ℥ vi
14. 12 gtts

Answer Section

1. ANS: ℥ iss
2. ANS: $\frac{1}{2}$ t
3. ANS: 2.5 L
4. ANS: 0.3 g
5. ANS: 25 mEq
6. ANS: qt ii
7. ANS: 15 gtt

8. ANS: thirty-five units
9. ANS: three and one half milligrams
10. ANS: seven and one half grains
11. ANS: one half teaspoon
12. ANS: twelve and one half milliliters
13. ANS: six ounces
14. ANS: twelve drops

Conversion Problems:

Problem

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

1. Complete row 1 in the table above.
2. Complete row 2 in the table above.
3. Complete row 3 in the table above.
4. Complete row 4 in the table above.

Solve for X. Round answers to two decimal places.

5. $\frac{X}{5} = \frac{1}{8}$
6. $\frac{\frac{1}{6}}{\frac{1}{4}} \times 10 = X$

Compute the answers for the following word problems.

7. A class of students consists of 9 men and 51 women. Write a proper fraction to represent the part of the total class that is women. Reduce the fraction. Change the fraction to a percent.

   Reduced fraction: _____ Percent: _____

8. A student received a score of 48 points on a test that was worth 60 points. Write a fraction to represent the portion of the test the student had answered correctly. Reduce the fraction. Change the fraction to a percent.

   Reduced fraction: _____ Percent: _____

9. In order to pass a chapter test, a student must answer 80% or more of the questions correctly. If a chapter test has 25 questions, what is the smallest number of questions that the student must answer correctly in order to pass the test?

10. In order to pass a unit test, a student must answer 80% or more of the questions correctly. If a unit test has 75 questions, what is the largest number of questions that the student could answer incorrectly, but still pass the unit test?

Answer Section

1. ANS: $\frac{1}{20}$, 5%, 1:20

2. ANS: 0.125, 12.5%, 1:8

3. ANS: 0.45, $\frac{9}{20}$, 9:20

4. ANS: 0.3, $\frac{3}{10}$, 30%

5. 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

6. ANS:

$$\frac{\frac{1}{6}}{\frac{1}{4}} \times 10 = X$$

$$\left(\frac{1}{6} \div \frac{1}{4}\right) \times 10 = X$$

$$\left(\frac{1}{\cancel{6}_{3}} \times \frac{\overset{2}{\cancel{4}}}{1}\right) \times 10 = X$$

$$\frac{2}{3} \times \frac{10}{1} = X$$

$$\frac{20}{3} = X$$

$$X = 6\frac{2}{3}$$

Change $6\frac{2}{3}$ to a decimal:

$$6\frac{2}{3} = \frac{20}{3}$$

$$3\overline{)20.000}\quad 6.666$$

$$\underline{18}$$

$$20$$

$$\underline{18}$$

$$20$$

$$\underline{18}$$

$$20$$

Rounded to two decimal places, X = 6.67

7. ANS: There are 51 women in the class of 60 students.

$$\frac{51}{60} = \frac{17}{20}; \quad \frac{17}{20} = \frac{85}{100} = 85\%$$

8. ANS: $\frac{48}{60} = \frac{4}{5}; \quad \frac{4}{5} = \frac{80}{100} = 80\%$

9. ANS: At least 80% of 25 questions must be answered correctly.

$80\% \times 25 = 0.8 \times 25 = 20$

The student must answer at least 20 questions correctly.

10. ANS: At least 80% of 75 questions must be answered correctly.

$80\% \text{ of } 75 = 0.8 \times 75 = 60$

At least 60 questions must be answered correctly

$75 - 60 = 15$

The largest number of questions that the student could answer incorrectly, but still pass the test, is 15 questions.

Week 1 - LAB #1

TITLE: INTRODUCTION TO COLLEGE LAB

Review of Physical Assessment, Hand Hygiene

LAB OBJECTIVES:

At the completion of this lab, the student will be able to:

1. Demonstrate a head to toe basic physical assessment.
2. Demonstrate the ability to apply principles of medical asepsis to hand washing.
3. Perform proper procedure for hand washing.
4. Understand procedure for critical skill sign off.
5. ASSESSMENT: Practice head-to-toe assessment skills.
5. Document a health & physical assessment in electronic medical record (EMR).

REQUIRED READING:

North Carolina Custom Edition, (2011). *Nursing Skills for a Concept-Based Approach to Learning*. Chapter 4 Infection: Hand Hygiene (Medical Asepsis): pgs 157-160.

Review North Carolina Custom Edition, (2011). *Nursing Skills for a Concept-Based Approach to Learning* Chapter 11 Assessments: pgs 446-465, 471-489, 494-510, 516-544.

CRITICAL SKILLS:

1. Skill 4.1 Hand Hygiene (Medical Asepsis)

PLEASE BRING STETHOSCOPE AND BP CUFF TO EVERY LAB

MATH CALCULATION PRACTICE:

<u>Chapter 10 Oral Dosage of Drugs / Ratio & Proportion</u>
Please complete problems in review sets 23, 24 and practice problems – Chapter 10, pgs. 194-195

MATH – DOSAGE & CALCULATION

Week 1 Math – Ratio & Proportion

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 zero(s) 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 qd. 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 qd.
   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

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:
    $\frac{100\text{ mg}}{80\text{ mg}} \times 1\text{ mL} = 1.25 = 1.3\text{ mL}$

LAB # 2

TITLE: CARING INTERVENTIONS LAB

LAB OBJECTIVES:
At the completion of this lab, the student will be able to demonstrate correct and safe techniques for:

1. Assisting a client with hygiene needs related to bathing:
    a. Back care
    b. Perineal care
2. Assisting a client with hygiene needs related to:
    a. Oral care
    b. Shaving
    c. Hair Care
3. Changing an Unoccupied and Occupied Bed
4. Document personal care in EMR. Complete health & physical assessment documentation in EMR.

REQUIRED READING:

North Carolina Custom Edition, (2011). *Nursing Skills for a Concept-Based Approach to Learning*. Chapter 12 Caring Interventions: pages 562-598, 601-604

CRITICAL SKILLS:

1. Skill 12.4 Bathing an Adult or Pediatric Client

ADDITIONAL SKILLS:

1. Skill 12.1 Changing an Unoccupied Bed
2. Skill 12.2 Changing an Occupied Bed
3. Skill 12.3 Providing morning care
4. Skill 12.5 Providing Evening Care
5. Skill 12.6 Back Massage
6. Skill 12.7 Teeth Brushing and Flossing
7. Skill 12.8 Special Oral Care
8. Skill 12.9 Shaving
9. Skill 12.10 Hair Care
10. Skill 12.22 Perineal care

<u>MATH CALCULATION PRACTICE:</u>

<u>Chapter 11 Parenteral Dosage of Drugs</u>
Please complete problems in review set 25, 26 and practice problems – Chapter 10, pg. 231

MATH – DOSAGE & CALCULATION

Week 2 - Parenteral Dosage of Drugs

Compute the amount of medication that will be given to administer one dose of the following medication orders. Round all parenteral administration orders less than 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.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: Librium 30 mg IM q.6h p.r.n., anxiety
   Supply: Librium 100 mg/2 mL
   Give:

5. Order: Cleocin 0.3 g IM q.i.d.
   Supply: Cleocin 300 mg per 2 mL
   Give: _____

6. Order: atropine sulfate gr $\frac{1}{300}$ SC stat
   Supply: atropine sulfate 0.4 mg per 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: Rifampin 0.1 g IM q.d.
   Supply: Rifampin 100 mg/mL
   Give: _____ mL

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

Parenteral Dosage of Drugs - 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: $\frac{30\ \text{mg}}{100\ \text{mg}} \times 2\ \text{mL} = 0.6\ \text{mL}$

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

   $\frac{300\ \text{mg}}{300\ \text{mg}} \times 2\ \text{mL} = 2\ \text{mL}$

6. ANS: $\text{gr}\ \frac{1}{300} = \frac{1}{300} \times 60 = \frac{1}{300} \times \frac{60}{1} = \frac{1}{5} = 0.2\ \text{mg}$

   $\frac{0.2\ \text{mg}}{0.4\ \text{mg}} \times 1\ \text{mL} = 0.5\ \text{mL}$

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: $0.1\ \text{g} = 0.1 \times 1000 = 100\ \text{mg}$

    $\frac{100\ \text{mg}}{100\ \text{mg}} \times 2\ \text{mL} = 2\ \text{mL}$

LAB #3

TITLE: SAFETY - MOBILITY LAB

LAB OBJECTIVES:

At the completion of this lab, the student will be able to:

1. Demonstrate proper body mechanics.
2. Identify risks to client safety.
3. Demonstrate the ability to apply restraints.
4 Demonstrate the ability to position a client in bed.
5. Demonstrate techniques for transferring a client to a chair.
6. Complete Fall Risk Assessment in EMR.

REQUIRED READING:

North Carolina Custom Edition, (2011). *Nursing Skills for a Concept-Based Approach to Learning*. Chapter 13 Safety: pgs 675-684, 687-690. Chapter 6 Mobility: pgs 219-225, 226-239.

CRITICAL SKILLS:

1. Skill 6.1 Body Mechanics
2. Skill 13.5 Applying Restraints
3. Skill 6.10 Transferring between bed and chair
4. Assessment: Fall Risk Assessment

MATH CALCULATION PRACTICE

Calculating IV Rates

<u>Chapter 15 Intravenous Solutions, Equipment and Calculations</u>
Please complete problems in review set 34, 35, 37, and 38

Week 3 Math – Calculating IV Solution Rates

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

Guide for calculating IV rate in mL/hr and gtts/min:

IV Amount	Time	Rate per Hour	Amount/T x drip factor* = gtts/min

- **Drip factor for large volume IV = 15 gtts/mL; for Blood: 10 gtts/mL**

1000mL	**12 hrs**	**83 mL/hr**	**83/60 x 15 = 20.8 or 21 gtts/min**
1000mL	**10 hrs**	**100mL/hr**	**100/60 x 15 = 25 gtts/min**
1000mL	**8 hrs**	**125 mL/hr**	**125/60 x 15 = 31 gtts/min**
1000 mL	**7 hrs**	**143 mL/hr**	**143/60 x 15 = 36 gtts/min**

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

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:

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

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

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

LAB #4

TITLE: COMFORT LAB

LAB OBJECTIVES:

At the completion of this lab, the student will be able to:

1. Demonstrate application of dry heat measures (heating pad)
2. Demonstrate application of cold measures (ice pack)
3. Discuss use of a cooling blanket
4. Demonstrate postmortem care
5. ASSESSMENT: Pain Assessment using Number Scale/Faces/FLACC Scales
5. Document in EMR.

REQUIRED READING:

North Carolina Custom Edition, (2011). *Nursing Skills for a Concept-Based Approach to Learning*. Chapter 1 Comfort: pgs 2-7, 10-16, 20-31.

CRITICAL SKILLS:

1. Skill 1.13 Postmortem Care

ADDITIONAL SKILLS:

1. Skills 1.1 Teaching Controlled Breathing
2. Skill 1.2 Teaching Progressive Muscle Relaxation
3. Skill 1.3 Assisting with Guided Imagery
4. Skill 1.5 Applying Dry Heat Measures
5. Skill 1.6 Applying Compresses and Moist Packs
6. Skill 1.10 Applying Cold Measures
7. Skill 1.11 Using a Cooling Blanket

MATH CALCULATION PRACTICE

<u>Chapter 13 Pediatric and Adult Dosages Based on Body Weight</u>
Please complete problems in review set 32 and practice problems – Chapter 14, pgs. 328-339

Week 4 - MATH CALCULATION PRACTICE

Pediatric Weight-Based Problems

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 Rocephin that should be administered per dose. ___mL.

Pediatric & Adult Dosages Based on Body Weight

Answer Section

PROBLEM

1. ANS:
   44 lb = 44 ÷ 2.2 = 20 kg
2. ANS:
   per day, 20 kg × 50 mg/kg = 1000 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 mL = 1 t
8. ANS:
   5000 g = 5000 ÷ 1000 = 5 kg
   per day, minimum
   5 kg × 50 mg/kg = 250 mg
   per day, maximum
   5 kg × 100 mg/kg = 500 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.

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

LAB # 5 TITLE: CONCEPT OF INFECTION, INFLAMMATION, AND STRESS RESPONSE

LAB OBJECTIVES:

At the completion of this lab, the student will be able to:

1. Demonstrate correct method of gloving, gowning, and mask use for isolation.
2. Discuss the various types of isolation precautions utilized in health care
3 Demonstrate the ability to apply principles of medical asepsis by donning clean gloves.

REQUIRED READING:

North Carolina Custom Edition, (2011). *Nursing Skills for a Concept-Based Approach to Learning*. Chapter 4 Infection: pgs 161-170.

CRITICAL SKILLS:

1. Skill 4.4 Donning and Removing Isolation Attire

ADDITIONAL SKILLS:

1. Skill 4.3 Donning and Removing Clean Gloves
2. Skill 4.7 Removing Items from Isolation Room
3. Skill 4.8 Utilizing Double-Bagging for Isolation
4. Skill 4.9 Removing Specimen from Isolation Room
5. Skill 4.10 Transporting Isolation Patient Outside Room
6. Skill 4.11 Removing Soiled Large Equipment from Isolation Room

LAB #6 TITLE: MEDICATION ADMINISTRATION Part One
(Oral & Topical Medication Administration)

LAB OBJECTIVES:

At the completion of these labs, the student will be able to:

1. Demonstrate safe administration of oral and topical medications.
2. Document medication administration on the medication administration record (MAR)
3. Calculate oral and parenteral drug problems
4. Recognize and perform appropriate metric conversions
5. Demonstration correct method of the medication administration process (patient ID, medication check, MAR check with originating order).
6. Document medications given in EMR; Medication HELD in EMR.
7. Document Medication History in EMR.

CRITICAL SKILLS:

1. Skill 12.32 Administering Oral Medications
2. Skill 12.34 Administering Sublingual Medications
3. Skill 12.35 Administering Ophthalmic Medications
4. Skill 12. 36 Administering Otic Medication
5. Skill 12.37 Administering Nasal Medications

MATH CALCULATION PRACTICE

Interpreting Drug Orders – Chapter 8 (pp 142-148)

Week 6: MATH CALCULATION PROBLEMS:

Interpreting Drug Orders

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. p.o.
6. q.4h
7. before
8. nothing by mouth
9. three times per day
10. both ears
11. when necessary
12. immediately

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.

13. penicillin G procaine 1,000,000 U IM daily.
14. codeine gr $\frac{1}{4}$ p.o. q.4h p.r.n., pain
15. atropine sulfate gr $\frac{1}{300}$ SC stat
16. potassium chloride 40 mEq p.o. b.i.d. in $\overline{3}$ iv juice

ANSWERS:

1. ANS: four times per day
2. ANS: after meals
3. ANS: right eye
4. ANS: with
5. ANS: orally
6. ANS: every four hours
7. ANS: $\overline{a}$
8. ANS: NPO
9. ANS: t.i.d
10. ANS: A.U.
11. ANS: p.r.n.
12. ANS: stat
13. ANS: Give 1,000,000 units of penicillin G procaine intramuscularly every day.
14. ANS: Give $\frac{1}{4}$ grain of codeine orally every four hours as needed for pain.
15. ANS: Give $\frac{1}{300}$ grain atropine sulfate subcutaneously, immediately.
16. ANS: Give 40 milliequivalents of potassium chloride orally, twice per day, in four ounces of juice.

Week 7: TITLE: MEDICATION ADMINISTRATION LAB
(INTRAMUSCULAR & SUBCUTANEOUS)

LAB OBJECTIVES:
At the completion of these labs, the student will be able to:

1. Document medication administration on the medication administration record (MAR)
2. Calculate parenteral drug problems
3. Recognize and perform appropriate metric conversions
4. Select proper equipment for intramuscular and subcutaneous medication administration
5. Demonstrate correct land marking for parenteral injections
6. Demonstrate correct needle selection for parenteral injections.
7. Demonstrate safe administration of parenteral (IM, SC) medications.
8. Calculate large volume intravenous drip rates.
9. Identify parts of a syringe and indicate those that must remain sterile.
10. Demonstration correct method of the medication administration process (patient ID, medication check, MAR check with originating order).
11. Demonstrate correct procedure for preparing injections from a vial, pre-filled syringe, and ampule.
12. Document medications given in EMR.
13. Role Play: Documentation of Medication Reconciliation.

REQUIRED READING:

North Carolina Custom Edition, (2011). *Nursing Skills for a Concept-Based Approach to Learning*. Chapter 12 Caring Interventions: pgs 609-654.

CRITICAL SKILLS:

14. Skill 12.32 Administering Oral Medications
15. Skill 12.34 Administering Sublingual Medications
16. Skill 12.35 Administering Ophthalmic Medications
17. Skill 12. 36 Administering Otic Medication
18. Skill 12.37 Administering Nasal Medications
19. Skill 12.45 Administering Subcutaneous Medications
20. Skill 12.50 Administering Intramuscular Injections

MATH CALCULATION PRACTICE

Chapter 8: Understanding Drug Labels (pp 157-166).

Week 7: Understanding Drug Labels

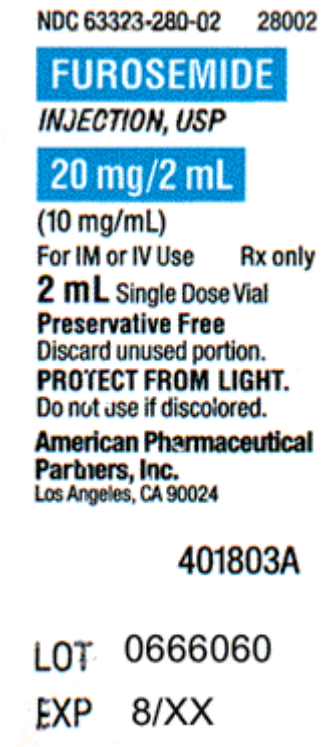
Identify the following, using the given label.

1. Manufacturer: _____
2. Brand name: _____
3. Generic name: _____
4. Dosage strength: _____
5. Form: _____
6. Administration route: _____
7. National Drug Code number: _____
8. UPC code bars: _____
9. Total number of capsules: _____

Identify the following, using the given label.

10. Supply dosage: _____
11. Total volume: _____

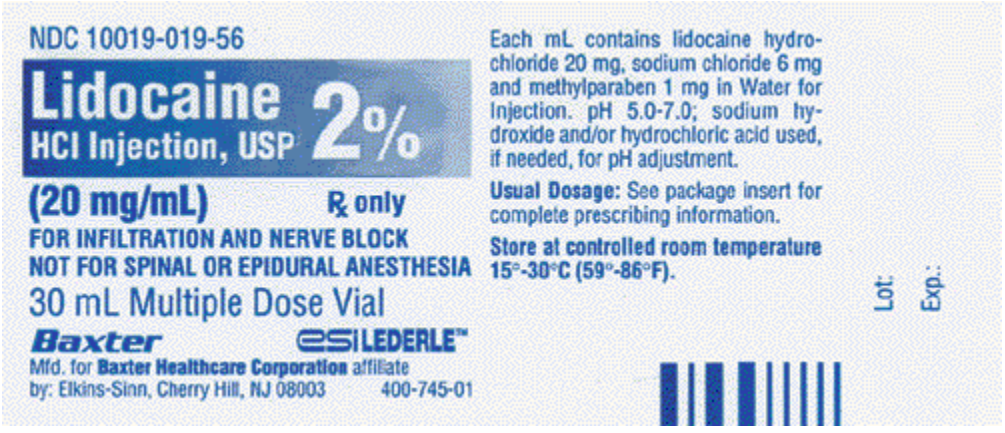
Identify the following, using the given label.



12. Lot number: _____

13. Expiration date: _____

Identify the following, using the given label.



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

15. The supply dosage is _____ mg per mL.

Understanding Drug Labels
Answer Section

SHORT ANSWER

1. ANS: Ethex
2. ANS: none, generic drug
3. ANS: nitroglycerin
4. ANS: 6.5 mg per capsule
5. ANS: capsules
6. ANS: oral administration
7. ANS: NDC 58177-005-04
8. ANS: 3-58177-005-04-6
9. ANS: 100 capsules
10. ANS: 50 mg/10 mL or 5 mg/mL
11. ANS: 10 mL
12. ANS: Lot 066060
13. ANS: 08/xx (Aug 20xx)
14. ANS: 2% = 2 g per 100 mL
15. ANS: $2\text{ g} = 2000\text{ mg}$

$$\frac{2000\text{ mg}}{100\text{ mL}} = \frac{X\text{ mg}}{1\text{ mL}}$$

$X = 20\text{ mg}$

20 mg per mL

Lab # 8

TITLE: FLUIDS & ELECTROLYTES / METABOLIC ACID-BASE IMBALANCES
LARGE VOLUME INTRAVENOUS FLUID LAB

LAB OBJECTIVES:

At the completion of this lab, the student will able to:

1. Discuss the needs of the client with fluid and electrolyte imbalances.
2. Discuss the needs of the client with acid-base imbalances.
3 Demonstrate intake and output monitoring
4 Demonstrate the ability to change a patient's gown who has an IV.
5 Demonstrate the ability to discontinue an IV.
6 Document flood, and oral /intravenous fluid intake in EMR.

REQUIRED READING:

North Carolina Custom Edition, (2011). *Nursing Skills for a Concept-Based Approach to Learning*. Chapter 3 Fluids and Electrolytes: pgs 116-125, 134-137, 144-152.

Evolve.elsevier.com – Hesi case study – Fluid Balance

CRITICAL COMPETENCY:

1. Group review and completion of Hesi case study – Fluid Balance.
2. Small group review and completion of acid-base imbalance case scenarios.

CRITICAL SKILLS:

1. Skill 3.1 Monitoring Intake and Output (I&O)

ADDITIONAL SKILLS:

1. Skill 3.10 Changing Gown for Patient with IV
2. Skill 3.11 Discontinuing Infusion Devices

MATH CALCULATION PRACTICE

Chapter 9: Preventing Medication Errors (pp 177-199).

Week 8: Prevention Medication Errors:

Complete the following based upon the directions. 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. Correct the medical notation of the following order.

   Heparin 1,400 u/h.

   ANS:
   Heparin 1,400 units/h.

   DIF: Knowledge REF: Transcription

2. Correct the medical notation of the following order.

   MS 4 mg IV.

   ANS:
   Morphine sulfate 4 mg IV.

   DIF: Comprehension REF: Transcription

3. Correct the medical notation of the following order.

   Lanoxin .125 mg q.o.d.

   ANS:
   Lanoxin 0.125 mg every other day.

   DIF: Comprehension REF: Transcription

4. Correct the medical notation of the following order.

   Regular insulin 7.0 u every AM.

   ANS:
   Regular insulin 7 units every AM.

   DIF: Comprehension REF: Transcription

5. Correct the medical notation of the following order.

Demerol 75.00 mg IM as needed for pain.

ANS:
Demerol 75 mg IM p.r.n., pain.

DIF: Comprehension REF: Transcription

6. When receiving verbal orders, the nurse should _____ and _____ the order to ensure its accuracy.

ANS:
When receiving verbal orders, the nurse should **repeat** and **verify** the order to ensure its accuracy.

DIF: Comprehension REF: Verbal Orders

7. Who is legally responsible for patient safety and any medications errors that may occur?

ANS:
The person administering the medication is legally responsible for patient safety and any medication errors that may occur.

DIF: Comprehension
REF: Safe Medication Administration

8. Identify the ten rights of medication administration.

ANS:
Right patient
Right assessment
Right drug
Right dose
Right time
Right route
Right documentation
Right Education
Right to refuse
Right evaluation

DIF: Knowledge REF: Safe Medication Administration

9. The nurse should check the medication label how many times before administering the drug?

   ANS: 3 three

   DIF: Knowledge REF: Right Drug

10. Identify the error in the following medical order.

    Dilacor XR 240 mg q.d. per nasogastric tube.

    ANS:
    This is an extended release medication and should not be crushed or dissolved.

    DIF: Comprehension REF: Right Route

LAB # 9 TITLE: OXYGENATION LAB

LAB OBJECTIVES:
At the completion of this lab, the student will be able to:

1. Discuss the importance of respiratory preventive and maintenance measures such as coughing and deep breathing and incentive spirometry.
2. Discuss selected oxygen delivery devices.
3. Demonstrate correct application of nasal cannula and face masks.
4. Discuss positioning and techniques for administering chest physiotherapy.
5. Demonstrate proper technique for oral and oropharyngeal suctioning.
6. Discuss the correct use of the pulse oximeter.
7. Interpret respiratory acid-base imbalances.
7. Assessment: focused respiratory assessment/adventitious breath sounds- document findings in EMR.

REQUIRED READING:

North Carolina Custom Edition, (2011). *Nursing Skills for a Concept-Based Approach to Learning*. Chapter 7 Oxygenation: pgs 275-290, 295-298.

CRITICAL SKILLS:
1. Skill 7.4 Oxygen Saturation
2. Skill 7.6 Administering Oxygen by Cannula, Face Mask, Face Tent
3. Skill 7.19 Oral and Oropharyngeal Suctioning

ADDITIONAL SKILLS:
1. Skill 7.1 Deep Breathing and Coughing
2. Skill 7.2 Collecting a Sputum Specimen
3. Skill 7.3 Obtaining Nose and Throat Specimens
4. Skill 7.5 Using an Incentive Spirometer
5. Skill 7.10 Preparing Patient for Chest Physiotherapy (CPT)
6. Skill 7.11 Performing Chest Percussion
7. Skill 7.12 Performing Chest Vibration
8. Skill 7. 20 Oropharyngeal, Nasopharyngeal and Nasotracheal Suctioning

MATH CALCULATION PRACTICE

Chapter 12 Reconstitution of Solutions
Please complete problems in review set 27 and practice problems – Chapter 12, pg. 277

Week 9: Medication Reconstitution

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

1. 500 mL of $\frac{1}{4}$ strength hydrogen peroxide solution for wound irrigation

   _____ mL hydrogen peroxide _____ mL sterile water

2. 250 mL of 50% hydrogen peroxide solution

   _____ mL hydrogen peroxide _____ mL sterile water

3. 200 mL of 50% betadine solution using stock betadine and NS

   _____ mL stock betadine solution _____ mL NS

4. One quart of $\frac{1}{4}$ strength stock acetic acid solution

   _____ ounces stock acetic acid solution _____ ounces sterile water

5. 16 ounces of $\frac{1}{4}$ strength Ensure. Supply: 4-, 8-, and 12-ounce cans of Ensure.
   Select _____ ounce can. Use _____ ounce of Ensure and _____ ounces of sterile water.

6. 12 ounces of $\frac{3}{4}$ strength Sustacal. Supply: 10-ounce cans of Sustacal.
Use _____ ounces of Sustacal and _____ ounces of sterile water.

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

7. Give 60 mL of $\frac{2}{3}$ strength Ensure via NG tube every hour for 6 hours.
Available supply is 8-ounce cans of Ensure.

8. 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.

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

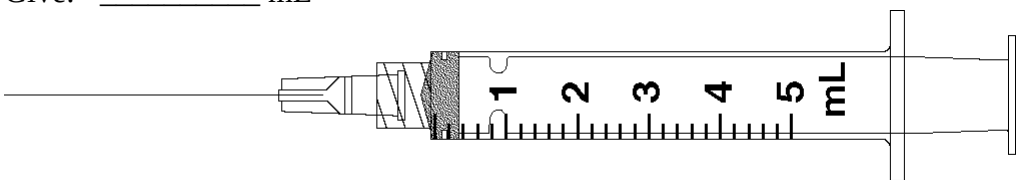
10. Several children should receive 4 ounces of the $\frac{1}{4}$ strength Enfamil solution. How many 4-ounce feedings are available from the supply made by diluting one can of Enfamil?

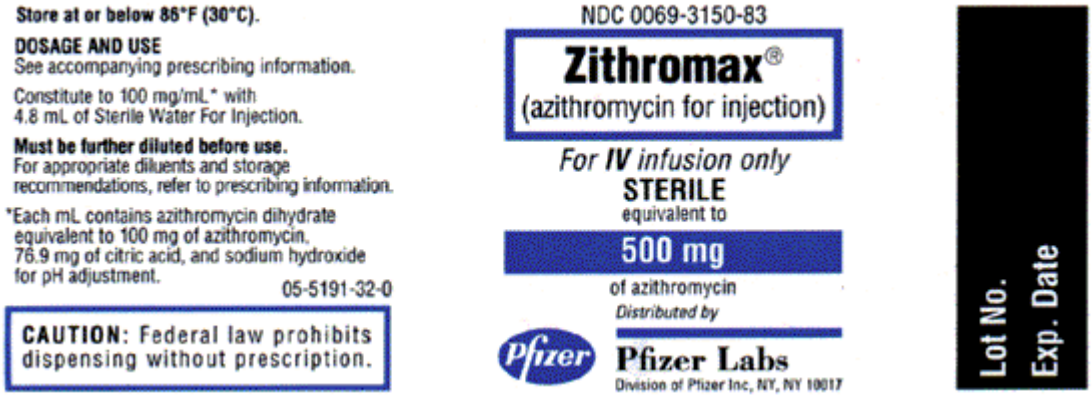
For questions 11 through 15, specify the amount of diluent to add and the resulting solution concentration. Calculate the amount to give and indicate the dose with an arrow on the accompanying syringe. Finally, make a reconstitution label, if required.

11.Order: *Zithromax 350 mg IV q.d.*

Reconstitute with _____ mL diluent for a total solution volume of _____ mL with a concentration of _____ mg/mL.

Give: _____ mL



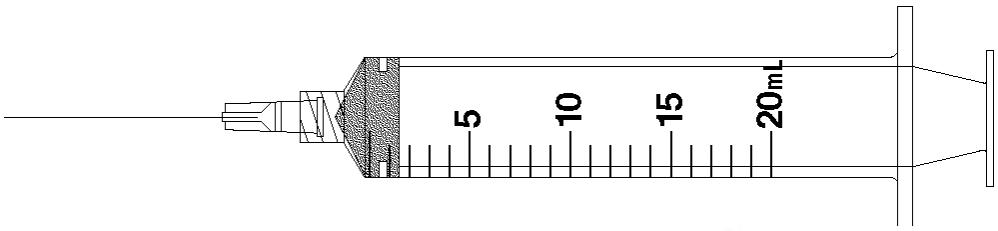


12.Order: *Vancomycin 750 mg IV q.6h*

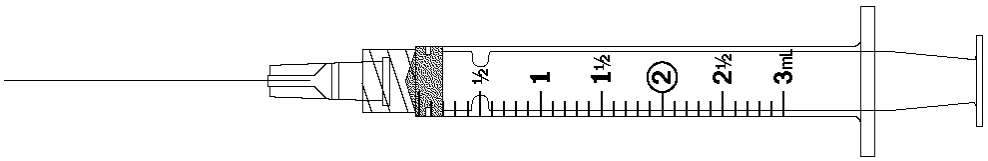
Package Insert Instructions: For IV use, dilute each 500 mg with 10 mL sterile water. Prior to administration, dilute further with 200 mL of dextrose or saline solution and infuse over 60 minutes. Aqueous solution is stable for two weeks.

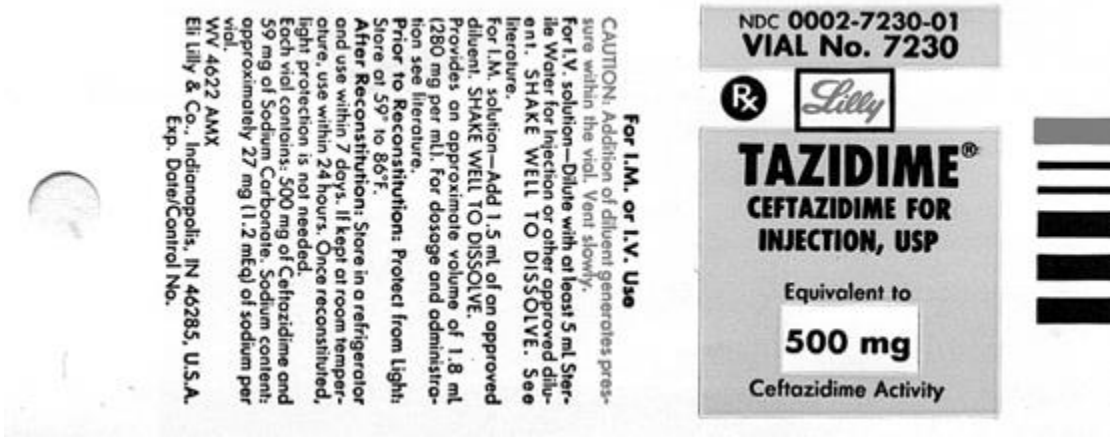
Reconstitute with _____ mL diluent for a total solution volume of _____ mL with a concentration of _____ g/_____ mL.

Give: _____ mL



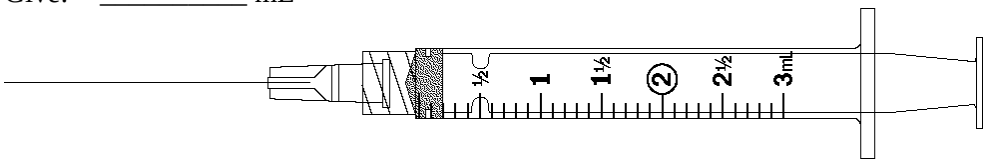
13. Order: *Tazidime 300 mg IM q.6h*
Reconstitute with _____ mL diluent for a total solution volume of _____ mL with a concentration of _____ mg/mL.
Give: _____ mL

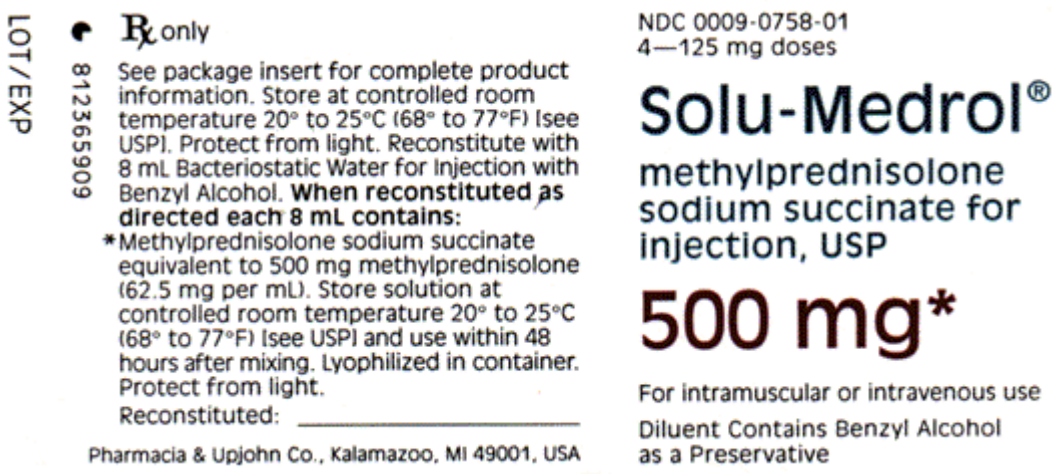




14. Order: *Kefzol 150 mg IM q.8h*
Reconstitute with _____ mL diluent for a total solution volume of _____ mL with a concentration of _____ mg/mL.
Give: _____ mL

15. Order: *SoluMedrol 125 mg IV q. 6h*
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 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.

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

17. 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

18. Select an amount of diluent to be added, and compute the amount of medication to be given.

Order: *penicillin G potassium 400,000 U IM q.i.d.*

The supply is a vial containing 1,000,000 units of powdered penicillin G potassium with the following instructions:

Amount of diluent to be added	Approximate concentration
9.6 mL	100,000 U/mL
4.6 mL	200,000 U/mL
1.6 mL	500,000 U/mL

Add _____ mL diluent, give _____ mL

LAB # 10 TITLE: PERFUSION /INTRAVENOUS FLUIDS LAB

LAB OBJECTIVES:

1. Discuss the importance of identifying cardiovascular risk factors.
2. Identify nonpharmacological methods to assist in controlling hypertension.
3. Identify nonpharmacological methods to assist in lower high cholesterol.
4. Demonstrate the priming of large volume intravenous solution.
5. Demonstrate the changing of the hospital gown of the patient with an large volume intravenous infusion.
6. ASSESSMENT: Focused cardiovascular assessment
7. Document abnormal cardiovascular assessment findings in EMR.

CRITICAL SKILLS:

Skill 8.3 Applying Antiembolic Stockings
Skill 8.5 Applying Sequential Compression Devices

Skill 11.23 Assessing an Apical-Radial Pulse
Skill 11.14 Assessing an Apical Pulse
Skills 11.25 Assessing Peripheral Pulses
Skill 11.27 Assessing Blood Pressure
Skill 11.38 Assessing Blood Pressure in the Child
Skill 11.41 Neurovascular Assessment

Week 10 MATH – CALCULATION - Review - Pediatric Weight Based

Lab #11: TITLE: MOBILITY LAB

LAB OBJECTIVES:

At the completion of this lab, the student will be able to:

1. Demonstrate passive range of motion (ROM) exercises.
2. Demonstrate assisting the client with ambulation.
3. Assisting the client with mobility devices (cane, walker).
4. Demonstrate use of a hydraulic lift device.
5. Demonstrate proper application of anti-embolic devices.
6. Assessment: Document Fall Risk Assessment (See Scenario) in EMR.

REQUIRED READING:

North Carolina Custom Edition, (2011). *Nursing Skills for a Concept-Based Approach to Learning*. Chapter 6 Mobility: pgs 240-247, 249-252, 257-258. Chapter 8 Perfusion: pgs 337-342.

CRITICAL SKILLS:

1. Skill 6.13 Passive ROM Exercises

ADDITIONAL SKILLS:

1. Skill 6.15 Assisting the Patient to Ambulate
2. Skill 6.16 Assisting the Patient to Use a Cane
3. Skill 6.18 Assisting the Patient to Use a Walker

ASSESSMENT: Focused Assessment of the Musculoskeletal System; document findings on EMR.

Week 11: MATH CALCULATION PRACTICE

http://www.unc.edu/~bangel/quiz/quiz5.htm (Adapted from test and calc). Using the college lab computers, answers 10 questions each from the following areas: Metric Conversions, Tablet Dosage Calculations, Fluid Dosage Calculations, IV Drop Rate Calculations.

Week 12: TITLE: CONCEPT OF TISSUE INTEGRITY

LAB OBJECTIVES:

At the completion of this lab, the student will able to:

REQUIRED READING:

North Carolina Custom Edition, (2011). *Nursing Skills for a Concept-Based Approach to Learning*. Chapter 10 Tissue Integrity, pages 426-433; Chapter 11, pages 451-458.

Evolve.elsevier.com – Hesi case study –

CRITICAL COMPETENCY:

Skill 10.12 Preventing Pressure Ulcers
Skill 10.13 Providing Care for Clients with Pressure Ulcers
Skill 10.14 Applying Transparent Film Dressing
Skill 10.15 Using Hydrocolloid Dressing

CRITICAL SKILLS:

Skill 11.2 Assessing the Skin
Skill 11.3 Assessing the Hair
Skill 11.4 Assessing the Nails

MATH CALCULATION PRACTICE

http://www.testandcalc.com/quiz/index.asp Using the college lab computers, answers 10 questions each from the following areas: Metric Conversions, Tablet Dosage Calculations, Fluid Dosage Calculations, IV Drop Rate Calculations.

LAB # 13

TITLE: CONCEPTS OF CELLULAR REGULATION & METABOLISM: NUTRITION LAB

LAB OBJECTIVES:

At the completion of this lab, the student will able to:

1. Identify various types of tubes used for enteral feedings.
2. Describe the safe care of a patient requiring an enteral tube feeding.
3. Identify the type of patient that would require tube feedings.
4. Demonstrate irrigation and checking residual of a feeding tube.
5. Demonstrate checking placement of a feeding tube.
6. Demonstrate safely feeding a patient.
7. Document in EMR.

REQUIRED READING:

North Carolina Custom Edition, (2011). *Nursing Skills for a Concept-Based Approach to Learning*. Chapter 5 Metabolism: pgs 190-191, 195-196, 198-212. Chapter 12 Caring Interventions: pgs 607-609.

CRITICAL SKILLS:

1. Skill 5.4 Flushing/Maintaining Nasogastric (NG) Tubes
2. Skill 5.8 Administering a Tube Feeding
3. Skill 5.0 Administering a Gastroscopy or Jejunostomy feeding

ADDITIONAL SKILLS:

1. Skill 5.1 Serving a Food Tray
2. Skill 5.2 Assisting an Adult to Eat
3. Skill 5.13 Obtaining a Capillary Blood Specimen and Measuring Blood Glucose
4. Skill 12.25 Assisting the Patient with Dysphagia to Eat

MATH CALCULATION PRACTICE

http://www.testandcalc.com/quiz/index.asp Using the college lab computers, answers 10 questions each from the following areas: Metric Conversions, Tablet Dosage Calculations, Fluid Dosage Calculations, IV Drop Rate Calculations.

Lab # 14

TITLE: ELIMINATION LAB

LAB OBJECTIVES:

At the completion of this lab, the student will be able to:

1. Discuss the importance of urinary and bowel elimination as a basic human need.
2. Demonstrate application of an external urinary device.
3. Demonstrate specimen collection methods for urine and stool.
4. Discuss enema administration..
5. Demonstrate incontinence care.
6. Demonstrate care of urinary and suprapubic catheters
7. Document in EMR.

REQUIRED READING:

North Carolina Custom Edition, (2011). *Nursing Skills for a Concept-Based Approach to Learning*. Chapter 2 Elimination: pgs 33-45, 53-55, 58-59, 69-73, 78-94.

CRITICAL SKILLS :

1. Skill 2.5 Urine Specimen Collection
2. Skill 2.21. Stool Specimen Collection
3. Skill 2.27 Administering an Enema

ADDITIONAL SKILLS:

1. Skill 2.1 Assisting with a Bedpan
2. Skill 2.2 Assisting with a Urinal
3. Skill 2.3 Assisting Patient to the Commode
4. Skill 2.4 Applying an External Urinary Device
5. Skill 2.11 Performing Catheter Care and Removal
6. Skill 2.14 Performing Suprapubic Catheter Care

MATH CALCULATION PRACTICE
Practice Math Questions

Week 14 – Practice Math Questions

1. A client is ordered 50 milligrams of Amitriptyline. 25 milligram tablets are available. How many tablets will you give?

2. A client is ordered 30 milligrams of Codeine phosphate. 60 milligram tablets are available. How many tablets will you give?

3. A client is ordered 50 milligrams of Amoxicillin trihydrate orally. 125 milligrams in 5 milliliters of Syrup is available. How many milliliters will you administer?

4. A client is ordered 30 milligrams of Furosemide intravenously. 10 milligrams in 1 milliliters of liquid for IV Injection is available. How many milliliters will you administer?

5. A client is ordered 50 milligrams of Aminophylline intravenously. 250 milligrams in 10 milliliters of liquid for IV Injection is available. How many milliliters will you administer?

6. A client is ordered 200 milligrams of Augmentin 600 intravenously. 600 milligrams in 6 milliliters of liquid for IV Injection is available. How many milliliters will you administer?

7. Calculate the drip rate for 100 mls of IV Fluids to be given over a half hour via a giving set which delivers 10 drops/ml.

8. You are required to administer 100 mls of IV Fluids over 1 hour. The drop factor is 15. How many drops per minute are required to start the flow off at the correct rate?

9. You are required to administer 1 liter of Normal Saline over 7 hours. The drop factor is 10. How many drops per minute are required to start the flow off at the correct rate?

10. A physician's assistant orders 60 milligrams of Phenobarbital. The label on the bottle appears as: Phenobarbital 15 mg tablets. How many tablets must be administered? _____

Practice Math - answers:

1. A client is ordered 50 milligrams of Amitriptyline. 25 milligram tablets are available. How many tablets will you give?

$$\frac{\text{50 milligrams}}{\text{25 milligrams}} = 2 \text{ tablets}$$

2. A client is ordered 30 milligrams of Codeine phosphate. 60 milligram tablets are available. How many tablets will you give?

$$\frac{\text{50 milligrams}}{\text{25 milligrams}} = 2 \text{ tablets}$$

3. A client is ordered 50 milligrams of Amoxicillin trihydrate orally. 125 milligrams in 5 millilitres of Syrup is available. How many millilitres will you administer?

$$\frac{50}{125} \times \frac{5}{1} = \frac{250}{125} = 2 \text{ ml}$$

4. A client is ordered 30 milligrams of Furosemide intravenously. 10 milligrams in 1 milliliters of liquid for IV Injection is available. How many milliliters will you administer?

$$\frac{30}{10} \times \frac{1}{1} = \frac{30}{10} = 3 \text{ ml}$$

5. A client is ordered 50 milligrams of Aminophylline intravenously. 250 milligrams in 10 milliliters of liquid for IV Injection is available. How many milliliters will you administer?

$$\frac{50}{250} \times \frac{10}{1} = \frac{500}{250} = 2 \text{ ml}$$

6. A client is ordered 200 milligrams of Augmentin 600 intravenously. 600 milligrams in 6 milliliters of liquid for IV Injection is available. How many milliliters will you administer?

$$\frac{200}{600} \times \frac{6}{1} = \frac{1200}{600} = 2 \text{ ml}$$

7. Calculate the drip rate for 100 mls of IV Fluids to be given over a half hour via a giving set which delivers 10 drops/ml.

$$\frac{100 \text{ mls} \times 10 \text{ drops/ml}}{30 \text{ min}} = 33 \text{ drops / min}$$

8. You are required to administer 100 mls of IV Fluids over 1 hour. The drop factor is 15. How many drops per minute are required to start the flow off at the correct rate?

$$\frac{100 \text{ mls} \times 15 \text{ drops/ml}}{60 \text{ min}} = 25 \text{ drops / min}$$

9. You are required to administer 1 liter of Normal Saline over 7 hours. The drop factor is 10. How many drops per minute are required to start the flow off at the correct rate?

$$\frac{1000 \text{ mls}}{7 \text{ hrs}} = 142.85 = 143 \text{ mL/hr} =$$

143ml / 60 mins x 10 gtts/ 1mL = 24 drops / min

10. A physician's assistant orders 60 milligrams of Phenobarbital. The label on the bottle appears as: Phenobarbital 15 mg tablets. How many tablets must be administered? _____

60mg / 15 mg x 1 tablet = 4 tablets

Lab 14:

PRACTICE PARENTERAL MEDICATION ADMINISTRATION

Practice filling and administering subcutaneous and intramuscular injections.

LAB #15

TITLE: CONCEPTS OF THERMOREGULATION / INTRACRANIAL REGULATION / SENSORY PERCEPTION

LAB OBJECTIVES:

At the completion of this lab, the student will be able to:

1. Demonstrate correct method of gloving, gowning, and mask use for isolation.
2. Discuss the various types of isolation precautions utilized in health care
3 Demonstrate the ability to apply principles of medical asepsis by donning clean gloves.

REQUIRED READING:

North Carolina Custom Edition, (2011). *Nursing Skills for a Concept-Based Approach to Learning*. Chapter 11 pages 460, 466, 501-510, 547, 522, 551, 553, .

CRITICAL SKILLS:

Skill 11.1 Assessing Appearance and Mental Status
Skill 11.17 Assessing the Neurologic System
Skill 11.43 Assessing Visual Acuity
Skill 11.44 Assessing hearing Acuity
Skill 12.16 – Providing Routine Eye Care
ASSESSMENT: Focused Neurological Assessment
Document neurological assessment findings on EMR.

ADDITIONAL SKILLS:

Skill 11.22 Assessing Body Temperature
Measuring an Infant or Child's Temperature
Skill 11.39 Assessing a Child's Body Temperature

PRACTICE LARGE VOLUME INTRAVENOUS PRIME AND SETUP.

Final skill sign-offs as needed.

Developed: 8/09
*Revised: 1/10, 6/10, 8/11, 7/12, 12/12, 8/13*eek 9: Pediatric Weight-Based Problems