VNSG1227 Essentials of Medication Administration – 501CL
Spring 2021 (January 19 2021 – May 14 2021).
Tuesday 9:00 AM – 12:00 PM
Synchronous/Asynchronous Via Teams Meeting

Course Facilitator Name: Roselyn Ogunkunle MSN
Course Facilitator Contact: rogunkunle@com.edu

Communicating with your instructor: ALL electronic communication with the instructor must be through your COM email. Due to FERPA restrictions, faculty cannot share any information about performance in the class through other electronic means.

Alternative Online Classroom requirements:

- A desktop or laptop computer with the following specifications (PC or Mac):
- 2 GB Free HDD space
- 4 GB RAM Required, 8 GB recommended
- CPU equivalent to Intel i3 2+GHz
- Operating System:
  MAC OS 10.13, 10.14, or 10.15 ONLY, or
  Windows 10 (version 1809 or 1903) ONLY

Technology Outage Policy
Students are responsible for completing all course work by the due dates stated in the syllabus. Occasionally the College may experience emergency campus-wide technology outages, should this occur during a Quiz or submission of an Assignment, you will need to notify the instructor. You will need the Quiz to be reset or for the instructor to extend the assignment due date. The assignment due date will be extended, or the quiz will be reset after the campus-wide outage is confirmed by Informational Technology. An announcement will be sent to all students relaying the information about the new due date for the assignment or quiz.
In case of a personal technology issue or if you have questions about an assignment or need clarification of requirements, you are expected to contact the instructor using Course Email.

Academic Integrity
Students must comply with Testing policies in the 2020-2021 Vocational Nursing Student Handbook. Students who violate policies will be disciplined according to the 2020-2021 Vocational Nursing Student Handbook. In an effort to ensure that students are not perceived of committing academic dishonesty, paper and writing tools are no longer allowed during any further unit examinations during the fall 2020 semester. Therefore, math questions will no longer appear on unit exams. Also, to decrease perceived academic dishonesty, test reviews will not be available at the end of the exam. Test reviews will be held during lecture and will consist of a review of frequently missed content and/or concepts.

The following are unacceptable behaviors that were noted during the review of exam recordings. This list is not all inclusive. Students must follow testing policies.

- Eating/drinking during the exam
- Having conversations with others during the exam
- Utilizing paper and pen and/or pencil
- Face not being in view on the camera. The student's face must appear on the video for the entire length of the exam
- Talking out loud to self during the exam
- Wearing a head covering of any kind unless approved prior to the exam for religious purposes
- Having the ears covered with headphones or any other device inside of the ears
- Wearing a cap/hat
- Having a phone or electronic device in the room where the test is taken at any point during the exam
- Leaving the testing area after the exam has started
- Taking pictures or screenshots of the computer monitor screen during any point of live testing or test review, from the point of logging into the test to the upload of the finished test.
- Writing down questions and/or answers during the test review

Any violation of the above will result in one of two results:

- If the violation is reasonably perceived to be that of a cheating nature, the score for the test will be zero and the student will be removed from the nursing program of College of the Mainland.
- If the violation is reasonably perceived to be accidental, the scoring of the test will end at the violation, and the student will receive a score that reflects the number of correct questions answered up to, but not including, the violation (numerator), divided by the number of whole questions for the official exam (denominator).

Required textbooks:

Mulholland, J. & Turner, S. (2019). The Nurse, the Math, the Meds (4th ed). St. Louis, MO: Elsevier

Elsevier Adaptive Quizzing - Elsevier Adaptive Quizzing for Calculation of Drug Dosages - Classic Version, 11th Edition

Elsevier. F18_COM_LVN_DEWIT/NCLEX-EAQ. ISBN 9780323664714.

Silvestri, L.A. (2016). *Saunder's Comprehensive Review for NCLEX-PN*. (6thed.). St. Louis, Missouri: Saunders Elsevier.

Textbook Purchasing Statement: ***A student attending College of the Mainland is not under any obligation to purchase a textbook from the college-affiliated bookstore. The same textbook***

***may also be available from an independent retailer, including an online retailer*.**

Additional Resource: *Bring You're a Game*
Other Helpful Course Resources:

1. https://www.youtube.com/watch?v=kdQeJ-hYixY
2. Khan Academy
3. Find help at: http://www.coolmath.com/prealgebra/01-p2-fractions
   Select: Adding fractions with the same denominator and
   Adding fractions with different denominators

Course Description:
This course covers the general principles of medication administration including determination of dosage, preparation, safe administration and documentation of multiple forms of drugs. Instruction includes various systems of measurement. Prerequisites: BIOL 2401 with a grade of "C" or better. (Credit hours: Lecture 1, Lab 2) (16-Week course, 48 contact hours)

Course Objectives/Student Learning Outcomes:
As outlined in the Texas Board of Nurse Examiners Differentiated Essential Competencies (DECs) for the vocational nurse upon completion of this course, the student is expected to utilize beginning clinical reasoning skills in implementing the nurse roles of Provider of Member of a Profession, Provider of Patient-Centered Care, Patient Safety Advocate, and Member of the Health Care Team:

1. List the common units of measurement in the metric system using correct notation.
2. Demonstrate abbreviating times & routes of administration.
3. Convert metric weights and volumes within the system.
4. List the common units of measure in the apothecary and household systems plus their symbols and abbreviations.
5. Make conversions between metric, apothecary, and household measurements.
6. Safely read drug labels to identify trade and generic names, dosages, and mixing instructions.
7. Use dimensional analysis to calculate dosages.
8. Describe the correct technique for administering the medications via the following routes using established protocols & calculations across the lifespan:
   a. Oral medication
   b. Eye and ear drops
   c. Medicated inhalers
   d. Parenteral solutions using tuberculin, insulin, 3 cc, 5 cc, and 10 cc syringes
      i. Subcutaneous injections
      ii. Intradermal injections
      iii. IM injections
   e. IV fluids
   f. Piggyback medications
9. Describe the problem-solving approach to make decisions regarding medication administration.

10. Demonstrate calculation of safe and proper dosage & administration of heparin and insulin across the lifespan.
11. Demonstrate calculation of accurate & safe dosages for pediatric patient administration; oral, IM, SQ, IV and educate parents of the pediatric patient for home maintenance.
12. Identify specific safety precautions that are necessary when administering medication to older adults.
13. Discuss the practice of nursing according to the Texas Nursing Standards of Practice, Differentiated Essential Competencies (DECs) and within the parameters of the law.

WECM End-of-Course Outcomes:
Identify safety principles related to childcare; discuss primary nursing care of the pediatric patient and family during health and disease; and apply concepts of growth and development to the care of pediatric patients utilizing the nursing process.

Attendance:
See the Attendance policy in the Nursing Student Handbook.

Tardiness:
See Attendance policy in the Nursing Student Handbook.
Withdrawal:
See Admission, Progression, Dismissal, & Readmission policy in the Nursing Student Handbook.

FN Grading: The FN grade is issued in cases of *failure due to a lack of attendance*, as determined by the instructor. The FN grade may be issued for cases in which the student ceases or fails to attend class, submit assignments, or participate in required capacities, and for which the student has failed to withdraw. The issuing of the FN grade is at the discretion of the instructor.

Early Academic Alert Program:
The Counseling Center at College of the Mainland has implemented an Early Academic Alert Program. Students will be referred to the program throughout the semester if they are having difficulty completing assignments or have poor attendance. If referred to the Academic Alert Program, students will be contacted by someone in the Counseling Department. As student success and retention is very important to us, someone from the Counseling Department will schedule a meeting with you to see what assistance they can offer in order for you to meet your academic goals.

Academic Dishonesty
Any incidence of academic dishonesty will be dealt with in accordance with college policy and the Student Handbook. Academic dishonesty, such as cheating on exams, is an extremely serious offense. See Behavior/Conduct policy in the Nursing Student Handbook.

ADA Statement:
Any student with a documented disability needing academic accommodations is requested to

contact Holly Bankston at 409-933-8520 or hbankston@com.edu. The Office of Services for Students with Disabilities is located in the Student Success Center.

Counseling Statement: Any student that is needing counseling services is requested to please contact Holly Bankston in the student success center at 409-933-8520 or hbankston@com.edu. Counseling services are available on campus in the student center for free and students can also email counseling@com.edu to setup their appointment. Appointments are strongly encouraged; however, some concerns may be addressed on a walk-in basis.

COVID-19 Statement: All students, faculty and staff are expected to familiarize themselves with materials and information contained on the College of the Mainland's Coronavirus Information site at www.com.edu/coronavirus.. Students are required to watch a training video, complete the self-screening, and acknowledge the safety guidance at: www.com.edu/selfscreen. In addition, students, faculty, and staff must perform a self-screening prior to each campus visit. Finally, students, faculty, or staff which have had symptoms of COVID-19, received a positive test for COVID-19, or have had close contact with an individual infected with COVID-19 must complete the self-report tool.

Classroom Conduct Policy/Student Conduct:
Classroom Conduct Policy: College of the Mainland requires that students enrolled at COM be familiar with the Standards of Student Conduct, which can be found in the on-line Student Handbook. http://www.com.edu/student-services/studenthandbook.php . Students should act in a professional manner at all times. Disruptive students will be held accountable according to college policy. Any violations of the Code of Conduct will result in a referral to the Office for student Conduct and may result in dismissal from this class.

In addition to the Standards of Student Conduct found in the online COM Student Handbook (http://www.com.edu/student-services/student-handbook.php), nursing students are expected to demonstrate good professional character as defined in in BON Rule 213.27 (http://bon.texas.gov/rr_current/213-27.asp). See Behavior/Conduct in the Nursing Student Handbook.

Plagiarism
Plagiarism is using someone else's words or ideas and claiming them as your own. Plagiarism is a very serious offense. Plagiarism includes paraphrasing someone else's words without giving proper citation, copying directly from a website and pasting it into your paper, using someone else's words without quotation marks. Any assignment containing plagiarized material will receive a **grade of zero** and the student will be referred to the Office of Student Conduct for the appropriate disciplinary action. Also see the Behavior/Conduct policy in the Nursing Student Handbook.
Avoiding Plagiarism: http://www.plagiarism.org/

Course Requirements
1. **Unit exams** (4): Assess knowledge and understanding of incremental course content. Exams will use multiple choice, multiple answer, alternative style test questions, and others to follow NCLEX-RN testing format. If a student receives a grade below 75% on

any exam, he/she should schedule a counseling appointment with the instructor.

2. **Comprehensive final exam** (1): Assesses overall knowledge and understanding of complete course content. Exams will use multiple choice, multiple answer, alternative style test questions, and others to follow NCLEX-RN testing format.
3. **Homework/assignments/quizzes**: Assess knowledge and understanding of weekly course content. Quizzes may be done through blackboard, on paper, or via EAQ.

Methods of Instruction may consist of the following:

- Lecture and discussion
- Small group discussion
- Audiovisual instructional aids
- Critical thinking exercises
- Computer-assisted instruction
- Simulations and Case Scenarios
- Medication Administration skills relating to unit content
- Educational games

Make-Up Policy/Late Assignments

All course assignments are expected to be completed and submitted on the specified due date. See Late Assignments policy in the Nursing Student Handbook.

Grading Scale

A = 90 - 100.00
B = 80 - 89.99
C = 75 - 79.99*
D = 60 - 74.99
F = < 60

*A minimum final grade of "C" is required to pass this course.

Grade Calculation
All homework/assignments/quizzes, including pass/fail, must be submitted to pass the course. The exam average must be at least 75% before non-examination grades are calculated into the final course grade. See Grade Determination & Calculation in the Nursing Student Handbook.

Computation of Grades		%
Homework/Assignments/Quizzes**		**15**
Exam 1*	Chapters 1-3	**15**
Exam 2*	Chapters 4-6	**15**
Exam 3*	Chapters 7-10	**15**
Exam 4*	Chapters 11-13	**20**
Final Exam*	Chapters 1-13	**20**
Total		**100**
* ≥ 75% exam average required to pass the course **Weighted assignments calculated only after 75% exam average met		

Concerns/Questions Statement:
If you have any questions or concerns about any aspect of this course, please contact me using the contact information previously provided. If, after discussing your concern with me, you continue to have questions, please contact the Course Facilitator. If, after discussing your concern with the Course Facilitator, you still have questions, please email nursing@com.edu to request an appointment with the Director of Nursing. Please see the Student Concerns Policy in the Nursing Student Handbook for further instructions.

See the Student Concerns Policy in the Nursing Student Handbook.

Successful Tips for Students
1. Schedule time to study based on the difficulty of the content. Use this table as a guide:

Course Difficulty	Study Hours Per Week Per Hour in Class
High Difficulty Course	3 hours
Medium Difficulty Course	2 hours
Low Difficulty Course	1 hour

http://www.usu.edu/arc/StudySmart/pdf/estimating_study_hours.pdf

2. Read assignments before class or clinical. Here are some strategies for getting the most out of your college textbooks:

- 4 Steps to Reading a Textbook: http://www.studyright.net/blog/4-steps-to-reading-a-textbook-quickly-and-effectively/
- Active Reading Strategies: http://www.princeton.edu/mcgraw/library/for-students/remember-reading/
- The Reading Cycle: Plan-Do-Review http://www2.swccd.edu/~asc/lrnglinks/txtrdg.html

- How to Read Your Textbooks More Efficiently College Info Geek (video) https://www.youtube.com/watch?v=tgVjmFSx7rg
- 5 Active Reading Strategies for Textbook Assignments College Info Geek (video) 5 Active Reading Strategies for Textbook Assignments - College Info Geek

ANA Scope and Standards of Practice
Students are expected to adhere to established ANA Scope and Standards of Practice (2015). (See Student Handbook and Clinical Evaluation Tool for detailed explanation of standards.)

Student Handbooks
Students are expected to adhere to all policies outlined in the College and Nursing Program student handbooks.

Syllabus Revisions
Faculty reserves the right to make changes to the syllabus as deemed necessary.

The Speaking, Reading, and Writing Center
The Speaking, Reading and Writing Center provides free tutoring services to students, staff and faculty seeking assistance for writing, reading and oral presentations for academic and non-academic assignments/projects. Located in the Technical Vocational Building, Room 1306, the center provides face-to-face and online tutoring sessions in a welcoming environment. Appointments can be made in person, or on the center scheduler at com.mywconline.com, or by clicking the SRWC icon on the COM website.

Surviving Active Shooter Event Reference and Training Videos

Run, Hide, Fight * **(Mandatory)**
https://www.youtube.com/watch?v=5VcSwejU2D0

Last Resort ACTIVE SHOOTER SURVIVAL Measures by Alon Stivi
https://www.youtube.com/watch?v=r2tIeRUbRHw

Surviving an Active Shooter Event - Civilian Response to Active Shooter
https://www.youtube.com/watch?v=j0It68YxLQQ
Make the Call * **(Mandatory)** https://www.youtube.com/watch?v=AWaPp-8k2p0

Discussion Questions:
1. What is your plan while in class to consider running, hiding, or fighting to survive?
2. How would you lock your classroom and/or barricade entry into the classroom?
3. What would you use to improvise weapons to take down the shooter / aggressor?
4. If you have to fight, would you COMMIT to the fight to save your life and others?
5. If you have a License to Carry and are concealed carrying, what guidelines would you follow?
6. Do you have the campus police emergency number and non-emergency number programmed into your phone?
    a. COM Police Emergency number (409-933-8599)
    b. COM Police Non-Emergency number (409-933-8403).

7. When the police arrive why would you have your hands up and follow all commands?
8. Why is it important to make the call to report any suspicious person or activity to campus police?

***Licensure Notice to Students* / Statement of Eligibility for and Occupational:**
Effective September 1, 2017, HB 1508 amends the Texas Occupations Code Section 53 that requires education providers to notify potential or enrolled students that a criminal history may make them ineligible for an occupational license upon program completion. The following website provides links to information about the licensing process and requirements: https://www.bon.texas.gov/licensure_eligibility.asp.

Should you wish to request a review of the impact of criminal history on your potential Vocational Nurse License prior to or during your quest for a degree, you can visit this link and request a "Criminal History Evaluation": https://www.bon.texas.gov/licensure_endorsement.asp.

This information is being provided to all persons who apply or enroll in the program, with notice of the requirements as described above, regardless of whether or not the person has been convicted of a criminal offense. Additionally, HB 1508 authorizes licensing agencies to require reimbursements when a student fails to receive the required notice.

Part 1 Math Review
Chapter 1: Self-Assessment

Student Learning Outcomes

Upon completion of this unit, the student will be expected to utilize beginning clinical reasoning/clinical reasoning skills in implementing the nursing roles of Provider of Patient Centered Care, Member of the Healthcare Team, Patient Safety Advocate, and Member of the Profession and will successfully achieve the following learning objectives:

1. Define and interpret the symbols and vocabulary of basic mathematics.
2. Insert leading zeroes and eliminate trailing zeroes.
3. Calculate sums, products, and multiples of numbers.
4. Identify factors and multipliers.
5. Calculate squares and square roots.
6. Calculate powers of base 10.
7. Read, write, multiply, divide, and round decimal numbers.
8. Add, subtract, multiply, cancel, divide, and reduce simple, mixed, and improper fractions.
9. Compare fraction size by creating equivalent fractions.
10. Convert fractions, decimal numbers, and percent.
11. Solve basic equations.
12. Estimate and evaluate answers.
13. Calculate unit values.

Learning Content

I. Essential math vocabulary and concepts
   - A. Interpreting symbols
   - B. Writing math symbols

II. Whole numbers
   - A. Multiplying and dividing by the number 1

III. Implied decimal points and trailing zeroes
   - A. Dividing a number or fraction by itself

IV. Product

V. Factor

VI. Common factors

VII. Divisor, dividend, quotient, and remainder

VIII. Square

IX. Square root

X. Bases and exponents

XI. Powers of 10 calculations

XII. Multiplying and dividing by 10, 100, 1000

XIII. Decimals

A. Decimal fractions
B. Reading numbers and decimals
C. Decimal point spatial placement
D. Writing decimals as fractions
E. Decimals: which is larger?
F. Rounding decimals
G. Adding, subtracting, and dividing decimals

XIV. Fractions
A. Alternative fractions
B. Mixed fractions
C. Improper fractions
D. Converting mixed and improper fractions
E. Converting an improper fraction to a mixed fraction
F. Reducing fractions
G. Common denominator
H. Lowest common denominator
I. Equivalent fractions
J. Adding and subtracting fractions
K. Cancellation and multiplication of fractions
L. Division of fractions

XV. Percentages
A. Changing a fraction to a percentage
B. Changing a percentage to a fraction
C. Changing a decimal to a percentage
D. Changing a percentage to a decimal
E. Calculating the percentage of a whole number

XVI. Constants
XVII. Finding unit values and totals
XVIII. Finding the total value

Learning Activities

Readings from required and recommended texts.
Critical thinking activities.
Lecture/Discussion
Clinical Reasoning Questions and self-tests
Medication Administration laboratory

Part 1 Math Review
Chapter 2: Dimensional Analysis

Student Learning Outcomes
Upon completion of this unit, the student will be expected to utilize beginning clinical reasoning/clinical reasoning skills in implementing the nursing roles of Provider of Patient Centered Care, Member of the Healthcare Team, Patient Safety Advocate, and Member of the Profession and will successfully achieve the following learning objectives:

1. Identify the three required elements needed to solve dimensional analysis equations.
2. Set up dimensional analysis equations with the required elements.
3. Analyze equation setups to determine if they will yield the desired answer.
4. Estimate an approximate answer.
5. Solve the equations.
6. Evaluate the answers for accuracy.

Learning Content
I. Three required elements of all dimensional analysis equations
   A. Set-up of a basic equation using dimensional analysis method
II. Conversion factor review
   A. Starting factor orientation
   B. Basic equation
III. Conversions for dimensional analysis calculations
   A. Identifying correct equation set-up
   B. Basic equations practice
IV. Problems that call for more than one conversion factor
   A. Equations with two conversion factors
   B. Equations with one or two conversion factors

Learning Activities
Readings from required and recommended texts.
Related topics and open skills labs to review medication administration.
Critical thinking activities.
Lecture/Discussion
Clinical Reasoning Questions
Practice self-study and self-tests

Part 2 Metric System and Medication Calculations
Chapter 3: Metric Units and Conversions

Student Learning Outcomes

Upon completion of this unit, the student will be expected to utilize beginning clinical reasoning/clinical reasoning skills in implementing the nursing roles of Provider of Patient Centered Care, Member of the Healthcare Team, Patient Safety Advocate, and Member of the Profession and will successfully achieve the following learning objectives:

1. Identify the three base unit of metric measurement for weight (mass), volume, and length.
2. Calculate equivalent values of weight (mass) and volume used in metric dose calculations: micrograms, milligrams, grams, kilograms, milliliters, and liters.
3. Differentiate milligram, milliliter, and milliequivalent.
4. Verify metric conversions using dimensional analysis.
5. Differentiate metric and household measurements.
6. Use approved abbreviations for metric units.

Learning Content

I. Metric measurements: Base units
II. Metric units number line
    A. Metric measurements, prefixes, values, and meaning
    B. Metric units and abbreviations
III. Writing metric units correctly and clinical relevance
IV. Equivalent metric measurements of weight (mass) and clinical relevance
V. Equivalent metric measurements of volume and clinical relevance
VI. Equivalent metric measurements of length and clinical relevance
VII. Metric equivalents of weight (mass), volume, and length and clinical relevance
VIII. Converting milligrams to grams and grams to milligrams and clinical relevance
IX. Examining micrograms and clinical relevance
X. Milliequivalents (mEq) and clinical relevance
XI. Other medication measurement systems
    A. Household measurements
    B. Apothecary system
    C. Household and metric liquid measuring containers

Learning Activities

Readings from required and recommended texts.
Related topics and open skills labs to review medication administration.
Critical thinking activities.
Lecture/Discussion
Clinical Reasoning Questions
Practice self-study and self-tests

Part 2 Metric System and Medication Calculations
Chapter 4: Patient Records, Medication Orders, and Medication Labels

Student Learning Outcomes

Upon completion of this unit, the student will be expected to utilize beginning clinical reasoning/clinical reasoning skills in implementing the nursing roles of Provider of Patient Centered Care, Member of the Healthcare Team, Patient Safety Advocate, and Member of the Profession and will successfully achieve the following learning objectives:

1. Interpret medication orders and labels correctly.
2. Identify abbreviations that cannot be used for handwritten medical records.
3. Identify abbreviations that can lead to medication errors.
4. Utilize The Joint Commission (TJC) and the Institute for Safe Medication Practices (ISMP) medication-related recommendations.
5. Interpret time using the 24-hour clock.
6. Interpret Medication Administration Records (MARS and eMARS).
7. Describe medication-related nurse actions that can lead to medication errors.
8. Identify patients' rights.

Learning Content

I. Medication storage and security
II. Medication forms and packaging
III. Solid medication forms
IV. Liquid medication forms
V. Medication routes
    A. Non-parenteral
    B. Parenteral
VI. Frequency and times of medication administration
    A. Abbreviations and terminology and times and frequency
    B. Joint Commission “do not use” list
    C. List of error-prone abbreviations, symbols, and dose designations
VII. The 24-hour clock
VIII. Medication orders
IX. Interpreting medication orders and medication labels
X. Calculating dose based on label and order information and clinical relevance
XI. Orders for two or more medications to be combined
XII. Telephone, verbal, and orders that must be clarified
XIII. Medication administration records
XIV. Seven rights of medication administration

Learning Activities

Readings from required and recommended texts.
Related topics and open skills labs to review medication administration.
Critical thinking activities.

Lecture/Discussion
Clinical Reasoning Questions
Practice self-study and self-tests

Part 3 Reconstituted Medications
Chapter 5 Oral Medications

Student Learning Outcomes

Upon completion of this unit, the student will be expected to utilize beginning clinical reasoning/clinical reasoning skills in implementing the nursing roles of Provider of Patient Centered Care, Member of the Healthcare Team, Patient Safety Advocate, and Member of the Profession and will successfully achieve the following learning objectives:

1. Estimate, calculate, and evaluate a variety of solid and liquid medication doses.
2. Calculate dosages for liquid medications to the nearest tenth of a milliliter.
3. Measure oral liquids in a calibrated measuring cup.
4. Measure syringe volumes in 3- and 5-mL syringes.
5. Calculate and evaluate safe dose ranges (SDRs) for medication doses.

Learning Content

I. Oral solid dose calculations using estimation and dimensional analysis
II. Metric conversions by moving decimal places
III. Estimating liquid dose medication orders
IV. Setting up dimensional analysis-style equations
    A. When ordered dose and available unit
    B. When the ordered units do not match the available units
V. Equipment for administering oral liquid doses
VI. Measuring liquids
VII. Oral syringes
VIII. Oral syringes versus injectable syringes and clinical relevance
IX. Safe dose ranges (SDRs) and clinical relevance

Learning Activities

Readings from required and recommended texts.
Related topics and open skills labs to review medication administration.
Critical thinking activities.
Lecture/Discussion
Clinical Reasoning Questions

Part 3 Reconstituted Medications

Chapter 6: Syringes for Injection

Student Learning Outcomes

Upon completion of this unit, the student will be expected to utilize beginning clinical reasoning/clinical reasoning skills in implementing the nursing roles of Provider of Patient Centered Care, Member of the Healthcare Team, Patient Safety Advocate, and Member of the Profession and will successfully achieve the following learning objectives:

1. State the total volume capacity for various syringes.
2. Differentiate the calibrations (quantity values) for various syringe sizes per milliliter.
3. State the lowest and nearest measureable dose for syringes.
4. Select the appropriate syringe size for stated volumes.
5. Draw a vertical line through an accurate dose on a syringe.
6. Select the appropriate syringe for selected purposes.
7. Identify safety principles related to syringes and needles.
8. Define needle gauge and three criteria for needle selection

Learning Content

I. Syringe sizes
II. Parts of the syringes
III. Total capacity and lowest measurable dose
IV. Where to measure a dose on a syringes
V. Examining the calculated doses for correct syringe selection
VI. Prefilled injectable syringes
VII. Prefilled medication cartridges for injections
VIII. Needle sizes
IV. Safety Syringes and clinical relevance
V. Safety issues and disposal of sharps
VI. Recommended fluid volume for selected sites

Learning Activities

Readings from required and recommended texts.
Related topics and open skills labs to review medication administration.
Critical thinking activities.
Lecture/Discussion
Clinical Reasoning Questions

Part 3 Reconstituted Medications
Chapter 7: Reconstitution of Medications

Student Learning Outcomes

Upon completion of this unit, the student will be expected to utilize beginning clinical reasoning/clinical reasoning skills in implementing the nursing roles of Provider of Patient Centered Care, Member of the Healthcare Team, Patient Safety Advocate, and Member of the Profession and will successfully achieve the following learning objectives:

1. Distinguish routes of drugs for reconstitution.
2. Interpret directions for dilution of reconstituted medications.
3. Select the appropriate concentration to prepare for the ordered dose.
4. Calculate doses for reconstituted medications using DA equations.
5. Measure the appropriate dose using a medicine cap and a syringe.
6. Identify appropriate notation on reconstituted multi-dose medication labels.
7. Interpret directions for safe storage of reconstituted medications.
8. Calculate ratio dilutions for partial-strength solutions.

Learning Content

I. Reconstituted medications
II. Expired reconstituted drugs and clinical relevance
III. Reconstituting, calculating, measuring and selecting diluents to calculated oral doses
IV. Reconstituted parenteral drugs
V. Reconstituted drug prefilled containers
VI. Liquid concentrates: Diluting liquids
VII. Inactive ingredients used for dilutions
VIII. Converting dilution ratios to fractions and percentages
IX. Using a dimensional analysis equation to calculate the amount of concentrate

Learning Activities

Readings from required and recommended texts.
Related topics and open skills labs to review medication administration.
Critical thinking activities.
Lecture/Discussion
Clinical Reasoning Questions

Part 4 Parenteral Medications
Chapter 8: Injectable Medications

Student Learner Outcomes

Upon completion of this unit, the student will be expected to utilize beginning clinical reasoning/clinical reasoning skills in implementing the nursing roles of Provider of Patient Centered Care, Member of the Healthcare Team, Patient Safety Advocate, and Member of the Profession and will successfully achieve the following learning objectives:

1. Calculate and prepare intradermal, subcutaneous, and intramuscular doses.
2. Calculate and combine doses for two medications to be mixed in one syringe.
3. Identify safety hazards of injectable medications.

Learning Content

I. Intradermal injections
II. Subcutaneous injections
III. Intramuscular injections
IV. Administering injections and clinical relevance
V. Parenteral mixes and clinical relevance
    A. Mixing two medications in one syringes
    B. Calculating the dose for a parenteral mix
VI. Medications supplied in units

Learning Activities

Readings from required and recommended texts.
Related topics and open skills labs to review medication administration.
Critical thinking activities.
Lecture/Discussion
Clinical Reasoning Questions

Part 4 Parenteral Medications
Chapter 9: Basic Intravenous Calculations

Student Learner Outcomes

Upon completion of this unit, the student will be expected to utilize beginning clinical reasoning/clinical reasoning skills in implementing the nursing roles of Provider of Patient Centered Care, Member of the Healthcare Team, Patient Safety Advocate, and Member of the Profession and will successfully achieve the following learning objectives:

1. Interpret basic intravenous (IV) solution orders for peripheral infusion.
2. Identify contents of commonly ordered IV fluids.
3. Identify average flow rates for adults who are NPO and the general rationale for variations.
4. Estimate, calculate, and verify flow rates for intermittent and continuous IV solutions with gravity and electronic devices.
5. Calculate grams of dextrose and sodium chloride in IV fluids.
6. Estimate and calculate the duration of flow for IV solutions in hours and minutes.

Learning Content

I. Overview of intravenous therapy
   - A. Purpose of intravenous solutions
   - B. Maintenance intravenous flow rates

II. Basic intravenous equipment and clinical relevance

III. Types of intravenous solutions

IV. Tonicity of intravenous solutions

V. Intravenous solution volume

VI. Intravenous solution orders for milliliters per hour

VII. Determining infusion durations

VIII. Types of infusion delivery systems
   - A. Electronic infusion pumps and clinical relevance
   - B. Gravity infusions

IX. Intravenous administration sets
   - A. Infusion sets for gravity infusions
   - B. Calculating flow rates for gravity infusions
     1. Estimating drops per min for a drop factor of 60
     2. Counting drops per minute
   - C. Intravenous piggy back solutions
     1. Flow rates for IVPB infusions
     2. Simplified piggyback calculations for milliliter-per-hour settings
     3. IVPB flow rates (drops per minute)

X. Regulating and positioning gravity infusion devices

XI. Flow rate errors

XII. Monitoring the flow rate on infusion devices and clinical relevance
   - A. Drops per minute to milliliters per hour

XIII. Monitoring pump alarms

A. Electronic infusion pump alarms
B. Volume to be infused alarm

XIV. Keep open flow rates
XV. Calculating grams of solute
XVI. A word about potassium chloride
XVII. Intravenous intermittent solution delivery systems
A. Volume-control device (calibrated burette chamber)
B. Intravenous push medications and VN scope of practice
C. Syringe pump
XIX. Blood administration

Learning Activities

Readings from required and recommended texts.
Related topics and open skills labs to review medication administration.
Critical thinking activities.
Lecture/Discussion
Clinical Reasoning Questions

Part 4 Parenteral Medications
Chapter 10: Advanced Intravenous Calculations

Student Learner Outcomes

Upon completion of this unit, the student will be expected to utilize beginning clinical reasoning/clinical reasoning skills in implementing the nursing roles of Provider of Patient Centered Care, Member of the Healthcare Team, Patient Safety Advocate, and Member of the Profession and will successfully achieve the following learning objectives:

1. Calculate infusion flow rates for the following units of measurement: mg per mL, mg per hr., mg per min, mcg per mL, mcg per hr., mcg per min, mcg per kg, mcg per kg per hr., mcg per kg per min, mg per kg, mg per kg per hr., mg per kg per min, and mEq per hr.
2. Confirm IV medication orders with safe dose range (SDR) criteria.
3. Calculate schedules for direct IV push medications.
4. Calculate the parameters of flow rates for titrated IV infusions.
5. State the difference between central venous lines and peripheral venous lines.
6. Calculate the calories in selected IV solutions.
7. State the general purpose, contents, and types of hyper alimentation (PN) infusions.
8. Identify patient safety issues for the administration of IV medications and PN infusions.

Learning Content

I. Intravenous calculations
II. Using conversion factors
III. Calculating flow rates
IV. Flow rates requiring two conversion factors
V. Flow rates for weight-based doses
VI. Equipment for intravenous solutions containing medications
VII. Calculating milligrams per milliliter (mg to ml)
VIII. Calculating the dose of an infusing g solution
IX. Intravenous solution and medications
X Hyper alimentation: Parenteral nutrition

Learning Activities

Readings from required and recommended texts.
Related topics and open skills labs to review medication administration.
Critical thinking activities.
Lecture/Discussion
Clinical Reasoning Questions

Part 5 Common High – Alert Medications
Chapter 11: Antidiabetic Medications

Student Learner Outcomes

Upon completion of this unit, the student will be expected to utilize beginning clinical reasoning/clinical reasoning skills in implementing the nursing roles of Provider of Patient Centered Care, Member of the Healthcare Team, Patient Safety Advocate, and Member of the Profession and will successfully achieve the following learning objectives:

1. List tests and treatment options for patients receiving medications for type 1 and type 2 diabetes.
2. Identify risks of look-alike generic oral anti-diabetic medications.
3. Contrast the various insulin products by onset of action.
4. Calculate and titrate subcutaneous and IV insulin dosages based on blood glucose levels.
5. Evaluate blood glucose levels for prescribed insulin administration.
6. Select the appropriate syringe and measure syringe doses for subcutaneous insulin administration.
7. Identify the most common adverse effects of insulin therapy.
8. Define *hypoglycemia* and *hyperglycemia.*
9. Identify causes of, risks of, and nutrients needed for hypoglycemia.
10. Identify critical patient safety issues related to anti-diabetic medications and blood glucose levels.

Learning Content

I. Vocabulary
II. Oral and injectable non-insulin anti-diabetic medications
III. Parenteral anti-diabetic medications: Insulin products
III. Short and rapid-acting insulins
IV. Intermediate-acting insulins
V. Short and intermediate-acting insulins: Insulin fixed-combination mixes
VI. Steps to prepare does for insulin syringes
VII. Matching insulin concentration and syringes
VIII. Reading units on insulin syringes
IX. Even and odd numbered scales on insulin syringe
X. Lo-dose syringes
XI. Sliding-scale insulin
XII. Mixing insulins: Short fast-acting and slower-acting intermediate mixes'
XIII. When the mix must be prepared by the nurse
XIV. Technique for preparing insulin mixes
XV. Intravenous insulin infusions
XVI. Insulin administration devices

Learning Activities
Readings from required and recommended texts.
Related topics and open skills labs to review medication administration.
Critical thinking activities.
Lecture/Discussion
Clinical Reasoning Questions

Part 5 Common High – Alert Medications
Chapter 12: Anticoagulant Medications

Student Learner Outcomes

Upon completion of this unit, the student will be expected to utilize beginning clinical reasoning/clinical reasoning skills in implementing the nursing roles of Provider of Patient Centered Care, Member of the Healthcare Team, Patient Safety Advocate, and Member of the Profession and will successfully achieve the following learning objectives:

1. Differentiate oral and parenteral anticoagulants and related tests.
2. Calculate doses for oral and parenteral anticoagulants.
3. Evaluate and titrate anticoagulant doses based upon relevant laboratory tests.
4. Identify antidotes for anticoagulant therapy.
5. Identify critical patient safety issues related to anticoagulant therapy.

Learning Content

I. Anticoagulant vocabulary
II. Anticoagulation medicines
III. Anticoagulants and antidotes
IV. Interpreting PT and INR results and clinical relevance
V. Injectable anticoagulants
VI. Heparin flushes (low-dose concentrations)
VII. Heparin for subcutaneous and intravenous administration
VIII. Heparin concentrations used for intravenous infusions
IX. Heparin preparations and preventing errors and clinical relevance
XI. Calculating heparin flow rates and determining mL per hour
XII. Titrating heparin does to aPTT values

Learning Activities

Readings from required and recommended texts.
Related topics and open skills labs to review medication administration.
Critical thinking activities.
Lecture/Discussion
Clinical Reasoning Questions

Part 6 Medications for Infants and Children
Chapter 13: Pediatric Medications

Student Learner Outcomes

Upon completion of this unit, the student will be expected to utilize beginning clinical reasoning/clinical reasoning skills in implementing the nursing roles of Provider of Patient Centered Care, Member of the Healthcare Team, Patient Safety Advocate, and Member of the Profession and will successfully achieve the following learning objectives:

1. Distinguish the milligram (mg), microgram (mcg), gram (g), and square meter (m^2) units of measurement.
2. Evaluate orders for minimum and maximum pediatric SDR doses.
3. Calculate pediatric weight-based doses for oral and parenteral routes.
4. Define body surface area (BSA) and distinguish m^2 from mg and mcg metric measurements.
5. Calculate flow rates for IV volume-control devices.
6. State measures to prevent medication errors for pediatric patients.

Learning Content

I. Comparing adult and pediatric medication doses and schedules
II. Calculating kilogram from pounds or ounces
III. Calculating safe dose range (SDR)
IV. Body surface area (BSA)
V. Medication administration equipment
VI. Injection sites
VII. Safe injection volumes
VII. Intravenous injections
    A. Using a volume-control device
    B. Flushing a volume-control device
    C. Calculating for a volume-control device
    D. Syringe pump infusers

Learning Activities

Readings from required and recommended texts.
Related topics and open skills labs to review medication administration.
Critical thinking activities.
Lecture/Discussion
Clinical Reasoning Questions