Unit 1

Fundamental Concepts

and Principles of Pharmacology

Chapter 1: Introduction to Pharmacology and Drug Regulations in Canada p. 2

Chapter 2: Drug Classes and Schedules in Canada p. 16

Chapter 3: Pharmacokinetics p. 28

Chapter 4: Pharmacodynamics p. 46

Chapter 1

Introduction to Pharmacology and Drug Regulations in Canada

Question 1

Type: MCMA

What key elements are included in the definition of pharmacology?

Note: Credit will be given only if all correct choices and no incorrect choices are selected.

Standard Text: Select all that apply.

1. Physiological effects of drugs

2. Chemical makeup of drugs

3. Formularies of drugs

4. Approval processes for new drugs

5. Mechanism of action

Correct Answer: 1,2,5

Rationale 1: The definition of pharmacology includes the actual responses produced by the drug.

Rationale 2: The study of medicines include how they are made, including their chemical properties.

Rationale 3: Formularies are a list of drugs and are not an element that defines pharmacology.

Rationale 4: Approval processes for new drugs is important understanding but not an element of the definition of pharmacology.

Rationale 5: How a drug exerts its effect is an element of the defined term pharmacology.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 1-1 Define pharmacology

Question 2

Type: MCSA

While many substances can be considered drugs, which of the following drug definitions is the most accurate?

1. Any substance that is found in nature or that normally occurs in the body

2. Any substance that is naturally produced in animal cells

3. Substances that have the capacity to produce biological responses

4. Substances that can be isolated from natural substances in nature

Correct Answer: 3

Rationale 1: A drug is not a substance that is found in nature or that normally occurs in the human body.

Rationale 2: This statement is true of a biologic not a drug.

Rationale 3: A drug is an agent capable of producing biological responses that are either therapeutic or adverse.

Rationale 4: A drug is not only a substance isolated from natural substances.

Cognitive Level: Understanding

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 1-4 Compare and contrast conventional drugs, biologics, and complementary and alternative health products*.*

Question 3

Type: MCSA

Which statement best describes pharmacotherapy?

1. The study of medicine and drug therapy

2. The application of natural substances to cure diseases

3. The application of drugs for the prevention and treatment of disease and human suffering

4. The understanding of the difference between trade and generic medications

Correct Answer: 3

Rationale 1: Pharmacotherapy is not just the study of medicine and drug therapy.

Rationale 2: Pharmacotherapy is not the application of natural substances to cure diseases.

Rationale 3: Pharmacotherapy is the application of drugs for the prevention and treatment of diseases and human suffering.

Rationale 4: Pharmacotherapy comprises more than understanding the difference between trade and generic drugs.

Cognitive Level: Understanding

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 1-3 Compare and contrast therapeutics and pharmacology.

Question 4

Type: MCMA

Note: Credit will be given only if all correct choices and no incorrect choices are selected.

Standard Text: Select all that apply.

Which statement(s) is(are) considered true when dispensing prescription drugs compared to dispensing over-the-counter (OTC) drugs?

1. May only be obtained by a physician

2. Are easily obtainable

3. Choice of drug is usually more specific

4. Frequency of the drug can be controlled

Correct Answer: 3,4

Rationale 1: Prescription drugs are not *only* available by physicians; other healthcare providers can write prescriptions.

Rationale 2: Prescription drugs are *less* easily obtainable than OTC; they require an appointment with a healthcare provider.

Rationale 3: The choice of drug is considered more specific because the healthcare provider has the opportunity to examine the client and come up with a diagnosis.

Rationale 4: The dose and frequency of the drug is controlled through prescription dispensing.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Teaching/Learning

Learning Outcome: 1-5 Identify the advantages and disadvantages of prescription and over-the-counter (OTC) drugs.

Question 5

Type: MCMA

Which criteria are assessed before marketing a pharmaceutical drug?

Note: Credit will be given only if all correct choices and no incorrect choices are selected.

Standard Text: Select all that apply.

1. Efficacy

2. Need

3. Cost

4. Safety

5. Quality

Correct Answer: 1,4,5

Rationale 1: The Pharmaceutical Drugs Directorate, a branch of Health Canada, authorizes marketing of a pharmaceutical drug or medical device once a manufacturer presents sufficient scientific evidence of the product’s safety, efficacy, and quality.

Rationale 2: The need for a particular drug does not influence the marketing of drugs in Canada. Despite need, all drugs must go through the same degree of rigour to promote safety, efficacy, and quality.

Rationale 3: Cost is not a considered criteria for marketing drugs.

Rationale 4: The Pharmaceutical Drugs Directorate, a branch of Health Canada, authorizes marketing of a pharmaceutical drug or medical device once a manufacturer presents sufficient scientific evidence of the product’s safety, efficacy, and quality.

Rationale 5: The Pharmaceutical Drugs Directorate, a branch of Health Canada, authorizes marketing of a pharmaceutical drug or medical device once a manufacturer presents sufficient scientific evidence of the product’s safety, efficacy, and quality.

Cognitive Level: Understanding

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Assessment

Learning Outcomes: 1-7 Discuss the role of Health Canada and the Health Products and Food Branch (HPFB) and its Pharmaceutical Drugs Directorate in the drug approval process.

Question 6

Type: MCMA  
Mrs. Morton expresses concern to the nurse about a new drug on the market that has been prescribed for her health condition; she worries about the safety of the medication. What can the nurse tell Mrs. Morton about drug regulatory standards in Canada that are intended to protect clients?

Note: Credit will be given only if all correct choices and no incorrect choices are selected.

Standard Text: Select all that apply.

1. All drugs go through a three-step approval process before marketed for human use.

2. The first phase of clinical trials involves testing on 1000–3000 individuals with the target disorder.

3. Once a drug is considered safe on animals, the manufacturer applies for clinical trials.

4. Health Canada continues to monitor the safety of drugs even after initial marketing.

Correct Answer: 3,4

Rationale 1: Drugs go through a seven-step approval process from preclinical trials to the monitoring of drugs after marketing.

Rationale 2: The first phase of clinical trials involves a small group of healthy individuals.

Rationale 3: After the preclinical trials, an application for clinical trials is submitted to Health Canada.

Rationale 4: Health Canada monitors the efficacy of the drug and any safety concerns after it has been marketed. This is done by regular inspection, notices, newsletters, and feedback from consumers and healthcare professionals.

Cognitive Level: Remembering

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 1-6 Identify key Canadian drug regulations that help to ensure the safety and efficacy of medications.

Question 7

Type: MCSA

In clinical trials, a new drug is tested on healthy individuals. What is the reason for this step in the process?

1. To determine adverse effects

2. To identify how a drug is metabolized

3. To determine drug incompatibilities

4. To maximize a drug’s effectiveness at different doses

Correct Answer: 2

Rationale 1: Adverse effects would be determined during preclinical trials.

Rationale 2: Clinical investigators perform tests on 20 to 100 healthy volunteers to determine dosage and to assess how the drug is absorbed, metabolized, and excreted by the body.

Rationale 3: This occurs during the last phase of clinical trials.

Rationale 4: This occurs during preclinical trials.

Cognitive Level: Remembering

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Assessment

Learning Outcome: 1-8 Describe the stages of approval for therapeutic and biologic drugs in Canada.

Question 8

Type: MCSA

What characteristics are true of a biologic?

1. A biologic is an ingredient extracted from plants.

2. Biologics are naturally produced in animal cells.

3. Biologics have no adverse effects.

4. Biologics do not require a prescription.

Correct Answer: 2

Rationale 1: Natural health products (not biologics) may include natural plant extracts.

Rationale 2: Biologics are agents naturally produced in animal cells. Examples of biologics include hormones such as insulin, monoclonal antibodies, natural blood products and components, interferon, and vaccines.

Rationale 3: Biologics are therapeutics that can produce adverse effects if not given according to proven treatment regimes.

Rationale 4: Biologics are not available over-the-counter.

Cognitive Level: Understanding

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Assessment

Learning Outcome: 1-4 Compare and contrast conventional drugs, biologics, and complementary and alternative health products.

Question 9

Type: MCSA

Mr. Brisbois is in the preoperative assessment clinic for consults before his knee replacement. The pharmacist asks him about prescription, OTC, and herbals remedies he is currently taking. Mr. Brisbois asks him why information on herbals is important. What is the best response?

1. Herbal remedies may be ordered to enhance recovery.

2. Herbals can be substituted for prescribed drugs because of their decreased adverse effects.

3. Herbals may contain the same ingredients as prescription drugs in different forms.

4. Herbals may be ordered instead of prescription drugs to control costs.

Correct Answer: 3

Rationale 1: While herbals may be used to enhance recovery, they are not normally ordered by a physician. It is most important that the healthcare providers know about all medications to decrease the incidence of receiving multiple forms of the same drug, and herbals that may counteract ordered medications necessary for recovery.

Rationale 2: Herbal medications can have adverse effects and can interact with prescribed drugs.

Rationale 3: Asking about herbals ensures the client does not receive two different forms of the same drug or drugs that may counteract the home remedy.

Rationale 4: There is no evidence to support that herbals would be substituted for thoroughly studied medications that are ordered for a specific effect.

Cognitive Level: Remembering

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process-Implementation

Learning Outcome: 1-4 Compare and contrast conventional drugs, biologics, and complementary and alternative health products.

Question 10

Type: MCSA

A new drug has been approved by Health Canada for the treatment of psoriasis. What determines when healthcare providers will be able to order it for their clients?

1. No further steps are indicated after Health Canada approval

2. Following Level IV provincial testing

3. Following direct to consumer advertising

4. Following a Common Drug Review

Correct Answer: 4

Rationale 1: A Common Drug Review is completed so provinces and territories can determine whether to include newly approved drugs in their formularies.

Rationale 2: There is no specific testing completed at the provincial level.

Rationale 3: Direct to consumer marketing of prescription medications is not allowed in Canada.

Rationale 4: A Common Drug Review is completed after Health Canada’s approval process to expedite jurisdictional review for provinces and territories.

Cognitive Level: Understanding

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 1-8 Describe the stages of approval for therapeutic and biologic drugs in Canada.

Question 11

Type: MCSA

After a new drug is marketed, how is information collected regarding adverse drug reactions?

1. Voluntary reporting to the local health authority

2. Mandated reporting to the Canadian Institute for Safe Medication Practices

3. Direct reporting to the Health Products and Food Branch of Health Canada

4. Voluntary reporting to the Canadian Adverse Drug Reaction Monitoring Program

Correct Answer: 4

Rationale 1: Reporting to only the health authority would be insufficient in identifying adverse reaction trends nationwide.

Rationale 2: Reporting adverse reactions is voluntary. While the ISMP mandates safe medication practices, they are more concerned with medication errors.

Rationale 3: Reporting is to the Canadian Adverse Drug Reaction Monitoring Program, not directly to Health Products and Food Branch.

Rationale 4: The Canadian Adverse Drug Reaction Monitoring Program collects data from healthcare professionals and consumers regarding adverse drug reactions. These are then listed in the Canadian Adverse Drug Monitoring Information System (CADMIS), a database used to compile data on reported reactions from drugs.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

NLN Competencies: Knowledge and Science: Relationships between knowledge/science and quality and safe client care

Nursing/Integrated Concepts: Nursing Process: Assessment

Learning Outcome: 1-6 Identify key Canadian drug regulations that help to ensure the safety and efficacy of medications.

Question 12

Type: MCSA

The nurse is teaching a class about over-the-counter (OTC) medications at a senior citizen centre. What statement by a participant indicates the teaching was effective?

1. “Over-the-counter medications are safe, as long as we don‘t take them at the same time as our prescription medications.”

2. “Over-the-counter medications are safe; otherwise, they would require a prescription.”

3. “We should inform our primary healthcare provider of any OTC drugs used because of the potential interactions with our prescription medications.”

4. “We must read all the label directions before taking any over-the-counter medications.”

Correct Answer: 3

Rationale 1: Some OTC medications can be taken with prescription medications; others cannot.

Rationale 2: Although they have a high margin of safety, OTC medications are not without risks.

Rationale 3: Elderly clients often take multiple medications and should consult with their healthcare provider before taking any OTC medication or supplement to ensure there are no risks for drug interactions.

Rationale 4: It is important for clients to read all directions on the label, but this will not protect them if there is a contraindication with another medication they are taking; therefore, they must consult their primary healthcare provider before taking any OTC medications.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Evaluation

Learning Outcome: 1-5 Identify the advantages and disadvantages of prescription and over-the-counter (OTC) drugs.

Question 13

Type: MCSA

Which products are regulated through the Pharmaceutical Drugs Directorate?

1. Biologics

2. Food supplements

3. Medications

4. Herbal Supplements

Correct Answer: 3

Rationale 1: Biologics are approved through the Biologic and Radiopharmaceutical Drugs Directorate.

Rationale 2: Approval for food supplements is not covered by the Pharmaceutical Drugs Directorate.

Rationale 3: The Pharmaceutical Drugs Directorate authorizes marketing of a pharmaceutical drug or medical device once a manufacturer presents sufficient scientific evidence of the product’s safety, efficacy, and quality as required by the Food and Drugs Act and Regulations.

Rationale 4: Herbal supplements are approved through the Natural & Non-prescription Health Products Directorate.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 1–7 Discuss the role of Health Canada and the Health Products and Food Branch (HPFB) and its Pharmaceutical Drugs Directorate in the drug approval process.

Question 14

Type: MCMA

Which statements regarding the four phases of clinical research of drug development are true?

Note: Credit will be given only if all correct choices and no incorrect choices are selected.

Standard Text: Select all that apply.

1. Ninety percent of drugs do not proceed past the second phase because they are found to be ineffective.

2. In phase II, clients with the disease or condition that the drug will treat are given the drug to determine doses and side effects.

3. The clinical stage of research involves extensive testing on animals in the laboratory to determine if the drug will cause harm to humans.

4. Absorption, metabolism and excretion of a drug is determined in the first phase of clinical trials.

5. A clinical trial will not be suspended until 2000–3000 people with the affected disease or condition have trialled the drug.

Correct Answer: 1,2,4

Rationale 1: Most drugs do not reach the third phase of clinical trials if there is concern that the drug is ineffective, worsens the condition it is intended to treat, or affects one type of client more than others.

Rationale 2: The second phase of clinical trials involves testing the drug on individuals who have the disease or condition that the drug will treat. At this phase, dosage is determined and side effects are monitored.

Rationale 3: Preclinical, *not* clinical trials, involve extensive testing on human, microbial cells, and animals to determine drug action and to predict whether the drug will cause harm to humans.

Rationale 4: A small population of healthy individuals (20–100) is given the drug to determine the drug’s absorption, metabolism, and excretion.

Rationalee 5: A clinical trial can be abandoned at any time there is sufficient evidence that a drug is causing harm.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 1-6 Identify key Canadian drug regulations that help to ensure the safety and efficacy of medications.

Question 15

Type: MCSA

A student nurse asks a nursing instructor why anatomy and physiology as well as microbiology are required courses when the student only wants to learn about pharmacology. What is the best response by the instructor?

1. “Because pharmacology is an outgrowth of those subjects.”

2. “You must learn all, since all of those subjects are part of the curriculum.”

3. “Knowledge of all those subjects will prepare you to administer medications.”

4. “An understanding of those subjects is essential to understanding pharmacology.”

Correct answer: 4

Rationale 1: Pharmacology is an outgrowth of anatomy, physiology, and microbiology, but this is not the most essential reason for the nurse to learn them.

Rationale 2: The nurse must learn anatomy, physiology, and microbiology to understand pharmacology, not because they are part of the curriculum.

Rationale 3: Knowledge of anatomy, physiology, and microbiology prepares the nurse to understand pharmacology, not to provide care such as administration of medications.

Rationale 4: It is essential for the nurse to have a broad knowledge base of many sciences in order to learn pharmacology.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Standards: QSEN Competencies: I.A.1 Integrate understanding of multiple dimensions of Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 1-2 Discuss the interdisciplinary nature of pharmacology, giving examples of how knowledge from different sciences impacts the nurses’ role in drug administration.

Question 16

Type: MCMA

A nurse is teaching a group of nurses about the differences between pharmacology and therapeutics. The nurse determines that learning has occurred when which statements are made?

Note: Credit will be given only if all correct choices and no incorrect choices are selected. Select all that apply.

1. “Pharmacology is the development of medicines.”

2. “Pharmacology is the study of medicines.”

3. “Therapeutics relates to drug use to treat suffering.”

4. “Therapeutics is the study of drug interactions.”

5. “Pharmacology is the study of drugs to prevent disease.”

Correct answer: 2,3,5

Rationale 1: Pharmacology is not the development of medicines.

Rationale 2: Pharmacology is the study of medicines.

Rationale 3: Therapeutics is the use of drugs in the treatment of suffering.

Rationale 4: Therapeutics is not related to the study of drug interactions.

Rationale 5: Pharmacotherapy is the application of drugs for the purpose of disease prevention.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Evaluation

Learning Outcome: 1-3 Compare and contrast therapeutics and pharmacology.

Question 17

A nurse administers a vaccine to a client. What is the nurse‘s best understanding as it relates to the manufacture of a vaccine?

1. The vaccine is produced by natural plant extracts in the laboratory.

2. The vaccine is naturally produced in animal cells or microorganisms.

3. The vaccine is produced by a combination of animal and plant products.

4. The vaccine is most commonly synthesized in a laboratory.

Correct answer: 2

Rationale 1: Vaccines are not produced by natural plant extracts.

Rationale 2: Vaccines are naturally produced in animal cells, microorganisms, or by the body itself.

Rationale 3: Vaccines are not produced by a combination of animal and plant products.

Rationale 4: Vaccines are not synthesized in a laboratory.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Evaluation

Learning Outcome: 1-4 Compare and contrast traditional drugs, biologics, and complementary and alternative medicine therapies.

Question 18

A nurse is preparing to teach pharmacology concepts to a group of students. The nurse should include which of the following?

1. Biologics include natural plant extracts and dietary supplements.

2. Biosimilar drugs don‘t require the same clinical testing as the comparable biologic drug.

3. Alternative therapies are agents produced in animal cells or by microorganisms.

4. Therapeutics is using drugs for the purpose of treating diseases and treatment of suffering.

Correct answer: 2

Rationale 1: Biologics are agents naturally produced in animal cells, by microorganisms, or by the body itself.

Rationale 2: Biosimilar drugs are similar to current biologic agents. They do not require the same level of testing as their comparable biologic agents.

Rationale 3: Alternative therapies include natural plant extracts, herbs, vitamins, minerals, dietary supplements, and additional techniques outside the realm of conventional therapeutics.

Rationale 4: Therapeutics is concerned with the prevention of disease and treatment of suffering.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Assessment

Learning Outcome: 1-3 Compare and contrast therapeutics and pharmacology.

Question 19

A client with chronic back pain informs the nurse they have been receiving therapeutic touch in addition to their medications. What is the nurse‘s best classification of this client‘s treatment?

1. Pharmacotherapy

2. Drug-absence therapy

3. Complementary therapy

4. Biologic therapy

Correct Answer: 3

Rationale 1: Pharmacotherapy is the application of drugs for the purpose of treating diseases and alleviating human suffering.

Rationale 2: The client is using medications as well as an alternative therapy.

Rationale 3: The client is using a nonconventional type of treatment (therapeutic touch) that is classified as complementary to their conventional pharmacotherapy. Biologic therapy involves the use of naturally produced substances by microorganisms or within the body. The client is using medications as well as an alternative therapy, which is why complementary therapy is the best choice.

Rationale 4: Biologic therapy involves the use of naturally produced substances by microorganisms or within the body.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Analysis

Learning Outcome: 1-4 Compare and contrast traditional drugs, biologics, and complementary and alternative medicine therapies.

Question 20

A nurse is documenting a client’s list of current medications. Which substances would be categorized as complementary and alternative medicine?

Note: Credit will be given only if all correct choices and no incorrect choices are selected. Select all that apply.

1. Garlic

2. Vitamin C

3. Zinc

4. Aspirin

5. Benadryl

Correct Answer: 1,2,3

Rationale 1: Garlic is considered an herb, which is considered complementary and alternative medicine therapy.

Rationale 2: Vitamins are considered complementary and alternative medicine therapy.

Rationale 3: Zinc is a mineral and is considered complementary and alternative medicine therapy.

Rationale 4: Aspirin is an over-the-counter medication.

Rationale 5: Benadryl is an over-the-counter medication.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Analysis

Learning Outcome: 1-4 Compare and contrast traditional drugs, biologics, and complementary and alternative medicine therapies.

Question 21

A client says to a nurse, “Why do you need to know the names of all the over-the-counter supplements I take? They aren‘t drugs.” Which of the nurse‘s responses are appropriate?

Note: Credit will be given only if all correct choices and no incorrect choices are selected. Select all that apply.

1. “The healthcare provider needs to know everything you are taking.”

2. “You‘re right. I‘m not sure why the admitting paperwork asks for this information. Would you mind listing them anyway?”

3. “The law requires us to keep a list of over-the-counter drugs and supplements you are taking.”

4. “It is true that supplements are not considered drugs; however, some of these products can cause adverse effects with prescribed drugs.”

5. “We need to know if you are having an allergic reaction to one of them.”

Correct Answer: 1,4

Rationale 1: The healthcare providers involved in this client‘s care will need to know everything they are taking—both prescription and over-the-counter (OTC).

Rationale 2: While it is true that supplements are not considered drugs, there is a specific reason why the healthcare team needs to know this information, which is the reason for the requested list on the paperwork. The nurse’s answer did not address the client’s question appropriately.

Rationale 3: No law requires hospitals to keep records of OTC drugs and supplements that clients take. This information is needed, however, for other reasons.

Rationale 4: Supplements are not subject to the same regulatory process as drugs, and some of these products can cause adverse effects and interact with medications.

Rationale 5: It is possible that this client could be having an allergic reaction, but there is not enough information to determine this, and this is not the main reason why the healthcare team needs to know what OTC medications they are taking.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 1-4 Compare and contrast traditional drugs, biologics, and complementary and alternative medicine therapies.

Question 22  
A client with advanced heart disease says, “I read about a new drug that was just released. Do you think my doctor could get it for me?” What should the nurse include in discussion with the client?

Note: Credit will be given only if all correct choices and no incorrect choices are selected. Select all that apply.

1. “Since the drug is new it is dangerous to use.”

2 “Decisions on using drugs are based on many different variables.”

3. “We certainly can talk to your physician about the drug.”

4. “When drugs are first developed, they are very expensive and their use is limited to those who can afford to purchase them.”

5. “People who are very sick often have unrealistic expectations of what drugs can do.”

Correct Answer: 2, 3

Rationale 1: It is nontherapeutic to tell the client the drug is dangerous. At this point, the nurse has no knowledge of which drug is being discussed.

Rationale 2: Use of particular drugs is based on many different variables, including the cost-benefit ratio.

Rationale 3: The nurse should support the client’s interest in this drug by advocating for a discussion about its use.

Rationale 4: The nurse should not assume the drug is expensive or that the client is unable to obtain it.

Rationale 5: It is nontherapeutic to tell the client that interest in this drug is unrealistic.

Cognitive Level: Analyzing

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 1-6 Identify key Canadian drug regulations that help to ensure the safety and efficacy of medications.

Chapter 2

Drug Classes and Schedules in Canada

Question 1

Type: MCMA

The client asks the charge nurse how the healthcare provider will decide which medication to prescribe. The nurse bases their response on which characteristics of the “ideal drug”?

Note: Credit will be given only if all correct choices and no incorrect choices are selected.

Standard Text: Select all that apply.

1. Effectively treats, prevents, or cures the client’s condition

2. Is slowly eliminated by the body so that it can produce its effects over a prolonged period of time

3. Produces minimal adverse effects

4. Produces a rapid and predictable response

5. Is inexpensive and easily accessible

Correct Answer: 1,4,5

Rationale 1: The goal of pharmacology is to select a drug that will effectively treat, prevent, or cure a condition.

Rationale 2: The goal of pharmacology is to select a drug that will be quickly eliminated by the body after it produces its effects.

Rationale 3: The goal of pharmacology is to select a drug that will produce no short-term or long-term adverse effects.

Rationale 4: The goal of pharmacology is to select a drug that will produce a rapid, predictable response at relatively low doses.

Rationale 5: The ideal drug is affordable and easily accessible.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 2-1 Explain what characterizes an ideal drug and how drugs are classified.

Question 2

Type: MCSA

The nurse is creating a teaching plan for a client on the cardiac unit and is researching the medications the client is currently taking to understand how each drug produces its effects in the body. To find this information, the nurse looks up which classification for each medication?

1. Therapeutic

2. Biologic

3. Cardiac

4. Pharmacologic

Correct Answer: 4

Rationale 1: The therapeutic classification describes what condition is being treated by a drug, not how the drug works in the body.

Rationale 2: There is no biologic category.

Rationale 3: There is no cardiac category.

Rationale 4: The nurse researches the pharmacologic classification to discover how a drug works in the body.

Cognitive Level: Analyzing

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Assessment

Learning Outcome: 2-1 Explain what characterizes an ideal drug and how drugs are classified.

Question 3

Type: MCMA

A client tells the nurse that the healthcare provider has prescribed a new medication that “has just come on the market.” The nurse has not heard of this particular medication but is able to give the client important information based on its prototype drug because of which principles?

Note: Credit will be given only if all correct choices and no incorrect choices are selected.

Standard Text: Select all that apply.

1. Knowing the prototype drug allows the nurse to predict the mechanism of action of the new medication.

2. The information regarding the prototype drug can be extended to any drug in the same class.

3. The prototype drug is the drug to which all drugs in a class are compared.

4. Knowing the prototype drug’s therapeutic or pharmacologic classification can reveal important information about other drugs in the same class.

5. This is a new drug on the market. It may not have a prototype drug yet and its properties cannot be predicted.

Correct Answer: 1,2,3,4

Rationale 1: Knowledge about the prototype drug can help the nurse predict important information such as actions, side effects, mechanisms of action, and contraindications for other drugs in the same class.

Rationale 2: Knowledge about the prototype drug can help the nurse predict important information such as actions, side effects, mechanisms of action, and contraindications for other drugs in the same class.

Rationale 3: The prototype drug is chosen to be the representative medication in a particular classification.

Rationale 4: Just knowing a drug’s therapeutic or pharmacologic classification can reveal important information about the drug.

Rationale 5: Knowledge about the prototype drug can help the nurse predict important information such as actions, side effects, mechanisms of action, and contraindications for other drugs in the same class.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 2-3 Discuss the prototype approach to drug classification.

Question 4

Type: MCMA

Chemical names are assigned for each drug. What are the primary reasons why nurses usually do not use the chemical name of the drugs?

Note: Credit will be given only if all correct choices and no incorrect choices are selected.

Standard Text: Select all that apply.

1. They are usually not brief or easy to remember.

2. They are often difficult to pronounce.

3. There is no standard for assigning names.

4. They do not explain the nature of the drug.

5. There are multiple chemical names for each drug.

Correct Answer: 1,2

Rationale 1: Chemical names are usually not brief or easy to remember.

Rationale 2: Chemical names are often difficult to pronounce.

Rationale 3: Chemical names are assigned by a standard nomenclature.

Rationale 4: Chemical names do explain the nature of the drug.

Rationale 5: Each drug has only one chemical name

Cognitive Level: Remembering

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 2-5 Distinguish between a drug’s chemical, generic, and trade name.

Question 5

Type: MCSA

The trade name for a drug is usually selected to be short and easy to remember. What is the reason the nurse does not use the trade name for a drug?

1. There are no trade names for combination drugs.

2. A drug can have more than one trade name.

3. The trade name will expire and no longer be used.

4. A company might change the trade name for a drug.

Correct Answer: 2

Rationale 1: There are trade names for combination drugs.

Rationale 2: A drug can have more than one trade name.

Rationale 3: The trade name does not expire and will continue to be used.

Rationale 4: Companies usually do not change the trade name of a drug.

Cognitive Level: Remembering

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 2-6 Explain why generic names are preferred to trade names when referring to drugs.

Question 6

Type: MCSA

Before administering a drug, what pertinent information must the nurse obtain from the client?

1. Physical assessment, medical history, previous medications, and learning capabilities

2. Medical history, growth and developmental level of client, and ability to pay for the medication

3. Medical history, client’s growth and developmental level, and potential adverse effects of the medication

4. Medical history, physical assessment, disease process, and learning needs

Correct Answer: 1

Rationale 1: Physical assessment, medical history, previous medications, and learning capabilities are all important pieces of information the nurse should have prior to administering drugs to clients.

Rationale 2: Medical history and growth and development are important pieces of information. However, while the client’s ability to pay for the drug is important prescription information, it is not necessary for the nurse to know this prior to administering a drug.

Rationale 3: The medical history and growth and development information are important, but the nurse would not obtain information regarding potential adverse effects of the medication from the client.

Rationale 4: The medical history, physical assessment, disease process, and learning needs are all important information the nurse needs. However, the nurse would not obtain information about the disease process from the client.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 2-12 Connect pharmacotherapy to nursing practice.

Question 7

Type: MCSA

The clinical nurse educator is preparing a class on cardiac medications with the student nurse to teach to a cardiac rehab group. The student asks why they categorize the medications according to their therapeutic classification. What is the best response of the nurse?

1. “Therapeutic classification clearly states what a drug does, and its simple description may be easier for laypersons to understand.”

2. “There is only one cardiac pharmacological classification; the therapeutic classification allows us to explore its subcategories with the group.”

3. “A pharmacological classification is less specific than the therapeutic and does not provide enough information to the clients.”

4. “Therapeutic classification states how a drug exerts its effect on the body and is a simpler description compared with the pharmacological.”

Correct Answer :1

Rationale 1: Therapeutic classification provides information on what the drug is intended to treat and is usually expressed in simpler explanations.

Rationale 2: There are many pharmacological classifications of cardiac drugs; therapeutics do not represent a subcategory of them.

Rationale 3: A pharmacological classification is more specific, not less.

Rationale 4: A pharmacological classification states how a drug exerts its effect on the body, not a therapeutic. It is a more complex description, not less.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 2-2 Explain the basis for placing drugs into therapeutic and pharmacological classifications.

Question 8

Type: MCSA

In her first class in pharmacology, a student nurse asks why it is important to study drug prototypes. What is the best response?

1. It is always the most commonly ordered drug in its class.

2. It predicts actions of other drugs in the same therapeutic classification.

3. It may predict similar adverse effects of drugs in the same therapeutic classification.

4. It is a well-understood drug model with which other drugs in a pharmacological class are compared.

Correct Answer: 4

Rationale 1: This is not always true; the original drug prototype is not always the most widely used drug in its class. Newer drugs in the same class may be more effective and have a more favourable safety profile,

Rationale 2: It does predict the actions of other drugs but in a pharmacological classification, not therapeutic.

Rationale 3: It does predict similar adverse effects but in a pharmacological classification, not therapeutic.

Rationale 4: Tt is common practice to select a single drug from a class and compare all other medications to this representative drug.

Cognitive Level: Understanding

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 2-3 Discuss the prototype approach to drug classification.

Question 9

Type MCSA

Which of the following is true about a drug’s generic name?

1. It is the proprietary name of the drug.

2. It describes the pharmacological properties of a drug.

3. A drug can have more than one generic name.

4. It is assigned by the manufacturer of the drug.

Correct Answer 2

Rationale 1: The proprietary name is the trade name.

Rationale 2: the generic name describes the chemical substance or pharmacological properties of a drug.

Rationale 3: A drug has only one generic name but may have many trade names.

Rationale 4: The trade name is assigned by the manufacturer marketing the drug.

Cognitive Level: Remembering

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 2-5 Distinguish between a drug’s chemical, generic, and trade name.

Question 10

Type: MCSA

The client says to the nurse, “I wonder if I am considered a drug addict. I went to pick up my medication from the drug store and the pharmacist told me that the drug was a controlled substance.” What does that mean? Which response by the nurse is the most accurate?

1. “If you continue on this medication for a long time, you will become addicted to it.”

2. “You are not an addict, but the Controlled Drugs and Substances Act requires that your prescription drug habits be monitored.”

3. “Any drug that has a potential for abuse is considered a controlled substance and is restricted. The pharmacist is responsible for sharing this information with you.”

4. “Do you think you are addicted to your medication?”

Correct Answer: 3

Rationale 1: Clients can be on controlled substances for various lengths of time without becoming addicted.

Rationale 2: The Controlled Drugs and Substances Act does not require monitoring of prescription drug use by clients who are ordered controlled substances.

Rationale 3: The pharmacist recognizes all drugs with the potential for abuse are considered controlled substances and carry restrictions.

Rationale 4: Asking the client if they think they are addicted does not answer their question about controlled substances.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 2-8 Explain the meaning of controlled substance.

Question 11

Type: MCSA

Kadin goes to the pharmacy to pick up their prescriptions following their surgery. The pharmacist tells them that one of their medications is a controlled substance. How does the pharmacist explain to Kadin how this medication is different from their other prescriptions?

1. Controlled drugs may only be dispensed at hospital pharmacies where high security measures are in place.

2. The Controlled Drugs and Substances Act controls which clients physicians can order narcotics for.

3. The pharmacist can control the amount and dose of drug prescribed according to the Controlled Drugs and Substances Act.

4. These drugs are regulated under the Controlled Substances and Drugs Act to reduce the availability of drugs that may be harmful if misused.

Correct Answer 4

Rationale 1: Any pharmacy can dispense controlled substances. They must all provide the required physical security measures for controlled substances in their possession and maintain records of all movements of controlled substances into and out of their inventory.

Rationale 2: The Controlled Drugs and Substances Act does not control which client can receive narcotic prescriptions.

Rationale 3: The physician is responsible for determining the amount of and dosage of narcotic ordered.

Rationale 4: Controlled substances are controlled by a number of agencies within Health Canada. They are responsible for controlling the import, production, export, distribution, and possession of narcotics.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 2-9 Explain the Controlled Drugs and Substances Act (CDSA) of 1997 and the role of the Drug Strategy and Controlled Substances Programme in controlling drug abuse and misuse.

Question 12

Type: MCSA

The student nurse has attended a class on the various drug schedules and how drugs are categorized for distribution in Canada. What statement by the student indicates an accurate understanding of drug schedules?

1. “All prescription drugs are categorized under Schedule II.”

2. “Controlled substances are in a subcategory Schedule F.”

3. “A drug with the potential for abuse will influence what schedule it is in.”

4. “Schedule I drugs must be retained in an area with no public access.”

Correct Answer: 3

Rationale 1: Prescription drugs are categorized under Schedule I.

Rationale 2: Controlled substances are within Schedule I in a subcategory of G.

Rationale 3: A set of factors is used to determine the schedule under which a drug can be sold. These factors include potential for dependency and abuse, adverse reactions, and interaction with other drugs.

Rationale 4: Drugs that must be retained in an area with no public access are in Schedule II.

Cognitive Level: Remembering

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 2-10 Explain how drugs are scheduled according to Canada’s Food and Drug Act, the CDSA, and the Narcotic Control Regulations (NCR).

Question 13

Type MCMA

As students were learning about drug schedules, they were asked to explore their neighbourhood pharmacy to help them understand the different criteria for each drug schedule. Which of the following drugs would the students accurately identify belong in Schedule I?

Note: Credit will be given only if all correct choices and no incorrect choices are selected.

Standard Text: Select all that apply.

1. Cough medicines

2. Antihypertensive

3. Vaccines

4. Narcotics

5. Extra strength Tylenol

Correct Answer: 2,4

Rationale 1: Cough medicines would be categorized under Schedule III, OTC.

Rationale 2: All prescription medications would be included in Schedule I.

Rationale 3: Vaccines would be included in Schedule II and are only available from a pharmacist; they must be retained in an area with no public access.

Rationale 4: Narcotics are included in Schedule I

Rationale 5: Extra strength Tylenol would be included in Schedule III, OTC.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 2-11 Identify the drug schedules and give examples at each level.

Question 14

Type: MCMA

A client is admitted to the hospital with high blood pressure. They are being cared for by a student nurse. The healthcare provider orders a diuretic and tells the student this medication will lower the client’s blood pressure by decreasing intravascular fluid volume. What does this description address?

Note: Credit will be given only if all correct choices and no incorrect choices are selected.

Standard Text: Select all that apply.

1. The drug’s mechanism of action

2. The drug’s pharmacologic classification

3. How the drug produces its effects in the body

4. The drug’s therapeutic classification

5. What condition is being treated by the drug

Correct Answer: 1,2,3

Rationale 1: Mechanism of action describes how a drug produces its effects in the body—in this case, how it lowers blood pressure.

Rationale 2: The pharmacologic classification describes how a drug produces its effects in the body—in this case, how it lowers blood pressure.

Rationale 3: The diuretic lowers blood pressure by lowering fluid volume in the vasculature.

Rationale 4: The therapeutic classification states what condition the drug is used to treat.

Rationale 5: A drug’s therapeutic classification states what condition the drug is used to treat.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 2-12: Connect pharmacotherapy to nursing practice.

Question 15

Type: MCMA

When a drug is ordered for a client, what is the nurse responsible for knowing and understanding about the drug?

Note: Credit will be given only if all correct choices and no incorrect choices are selected.

Standard Text: Select all that apply.

1. Trade name

2. Contraindications

3. Intended use

4. Adverse effects

5. Gender considerations

Correct Answer: 2,3,4

Rationale 1: There can be many trade names for a particular drug, therefore knowing the generic name would be more appropriate in most situations.

Rationale 2: Contraindications for drugs are important for the nurse to know.

Rationale 3: Intended use gives the nurse important information needed to administer medications safely.

Rationale 4: Adverse effects are important to know so the nurse can monitor and evaluate the effects of the drug.

Rationale 5: Gender considerations may not be necessary to know and understand in all situations.

Cognitive Level: Understanding

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 2-12 Connect pharmacotherapy to nursing practice.

Question 16

MCSA

What statement indicates the mechanism of action?

1. A diuretic treats hypertension by lowering plasma volume.

2. The mechanism of action describes the movement of a substance across body membranes to circulating fluids.

3. The mechanism of action describes the process of converting a drug to a form more easily excreted.

4. The mechanism of action describes the time during which a drug remains in the therapeutic range.

Correct Answer: 1

Rationale 1: A drug’s mechanism of action is essentially how the drug produces its effect in the body.

Rationale 2: This statement describes the absorption of a medication.

Rationale 3: This statement describes the metabolism of a drug.

Rationale 4: This statement describes duration of action not mechanism.

Cognitive Level: Understanding

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Planning

Learning Outcome: 2-4 Describe what is meant by a drug’s mechanism of action.

Question 17

MCSA

A nurse is teaching a medication class for parents of children with attention-deficit/hyperactivity disorder (ADHD) who are receiving stimulant medications. The nurse has reviewed reasons why the medications are restricted. The nurse determines that learning has occurred when the parents make which responses?

Note: Credit will be given only if all correct choices and no incorrect choices are selected.

Standard Text: Select all that apply.

1. “The use of these medications is restricted so that the pharmacies can track the rate of drug abuse in our city.”

2. “The use of these medications is restricted because the physician needs to evaluate our child more often.”

3. “The use of these medications is restricted because they have the potential for abuse.”

4. “The use of these medications is restricted so that the drug companies can make a bigger profit.”

5. “The use of these medications is restricted because this is the current law.”

Correct Answer: 3,5

Rationale 1: Pharmacies do not track the rate of drug abuse in cities.

Rationale 2: More frequent evaluations is a good plan, but this is not the reason for restricted use of stimulant medications.

Rationale 3: Medications with abuse potential are restricted.

Rationale 4: Drug companies do not make a bigger profit when medications are listed as restricted.

Rationale 5: The Controlled Drugs and Substances Act is the law under which medications with abuse potential are restricted. Stimulant medications are considered controlled substances.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Evaluation

Learning Outcome: 2-7 Discuss why drugs are sometimes placed on a restrictive list and the controversy surrounding this issue.

Question 18

MCSA

A nurse provides medication education to a client with terminal cancer. The physician has ordered morphine, a Schedule I controlled drug, for the client. The nurse determines that learning has occurred when the client makes which statement?

1. “I need to call the office for a refill before my medication runs out.”

2. “This drug is addictive so I should only take it when my pain becomes severe.”

3. “Maybe my physician could change me to a non-controlled drug.”

4. “I need to see my doctor before my prescription runs out so I can get a refill.”

Answer: 4

Rationale 1: Controlled drugs cannot be refilled by phone order.

Rationale 2: Not taking pain medication until the pain becomes severe is an inappropriate use of pain medication for a client with terminal cancer.

Rationale 3: A non-controlled drug may not effectively relieve the client’s pain.

Rationale 4: The client must see the physician for a refill.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need/Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Evaluation

Learning Outcome: 2-7 Discuss why drugs are sometimes placed on a restrictive list and the controversy surrounding this issue.

Chapter 3

Pharmacokinetics

Question 1

Type: MCSA

What are the four phases of pharmacokinetics that a drug goes through?

1. Absorption, passive transport, ionization, and metabolism

2. Diffusion, bioavailability, metabolism, and excretion

3. Absorption, distribution, metabolism, and excretion

4. Active transport, ionization, diffusion, and excretion

Correct Answer: 3

Rationale 1: Passive transport explains one way a drug travels across plasma membranes.

Rationale 2: Diffusion describes a type of passive transport. Bioavailability refers to the amount of active drug available to body tissues.

Rationale 3: A drug undergoes the pharmacokinetics of absorption, distribution, metabolism, and excretion.

Rationale 4: Active transport describes one way a drug moves across plasma membranes. Ionization is the chemical property of a drug where it takes on positive or negative charges.

Cognitive Level: Remembering

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Assessment

Learning Outcome: 3-2 Identify the four primary processes of pharmacokinetics.

Question 2

Type: MCMA

The nurse is teaching a client the importance of taking the medication as prescribed. Client teaching is guided by the nurse’s knowledge of which principles of pharmacokinetics?

Note: Credit will be given only if all correct choices and no incorrect choices are selected.

Standard Text: Select all that apply.

1. A medication taken by injection must cross the membranes of the gastrointestinal tract to get to the blood stream before it can be distributed throughout the body.

2. A drug may be exposed to several physiological processes while en route to target cells.

3. Liver enzymes may chemically change the drug.

4. Excretion organs such as kidneys and intestines must be healthy enough to eliminate the drug.

5. Many processes to which drugs are exposed are destructive, thereby facilitating the drug’s movement throughout the body.

Correct Answer: 2,3,4,5

Rationale 1: Medications taken by mouth must cross the membranes of the GI tracts to get to the blood stream to be distributed throughout the body. This is not the case for medications administered by injection.

Rationale 2: Drugs taken orally are often exposed to physiological processes such as stomach acid and digestive enzymes.

Rationale 3: Enzymes in the liver may chemically change some drugs.

Rationale 4: Drugs will continue to act on the body until they are either metabolized to an inactive form or are excreted. Pathologic states such as kidney disease can increase the drug’s action on the body.

Rationale 5: Many destructive processes, such as when stomach acid breaks down food, can break down the drug molecule before it can reach the target cells. This will facilitate the drug’s movement throughout the body.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 3-1 Explain the application of pharmacokinetics to clinical practice.

Question 3

Type: MCSA

When the nurse administers a drug that must move from an area of low concentration to an area of high concentration, what mechanism will the drug require?

1. Simple diffusion

2. Active transport

3. An intravenous route

4. A transdermal delivery system

Correct Answer: 2

Rationale 1: The movement from high to low concentration involves simple diffusion.

Rationale 2: The movement from low to high concentration is against a gradient and will require energy via the process of active transport.

Rationale 3: Drugs can be given via any route and need to move from an area of low to high concentration; they do not need to be given via IV.

Rationale 4: Drugs do not need to be given transdermally.

Cognitive Level: Understanding

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 3-3 Explain how substances travel across the plasma membrane.

Question 4

Type: MCMA

The nurse is reviewing the role of diffusion in the distribution of medications. What characteristics of drugs require alternate means to passive transport to reach target cells?

Note: Credit will be given only if all correct choices and no incorrect choices are selected.

Standard Text: Select all that apply.

1. Large molecules

2. Ionized drugs

3. Water-soluble agents

4. Alcohol-based drugs

5. Urea molecules

Correct Answer: 1,2,3

Rationale 1: Large molecules have difficulty crossing plasma membranes by simple diffusion. These molecules may require carrier, or transport, proteins to cross membranes.

Rationale 2: Ionized drugs have difficulty crossing plasma membranes by simple diffusion. These drugs may require carrier, or transport, proteins to cross membranes.

Rationale 3: Water-soluble agents have difficulty crossing plasma membranes by simple diffusion. These agents may require carrier, or transport proteins to cross membranes.

Rationale 4: Diffusion assumes that the chemical is able to freely cross the plasma membrane. Drugs may also enter through open channels in the plasma membrane; however, the molecule must be very small, such as alcohol.

Rationale 5: Diffusion assumes that the chemical is able to freely cross the plasma membrane. Drugs may also enter through open channels in the plasma membrane; however, the molecule must be very small, such as urea.

Cognitive Level: Analyzing

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Evaluation

Learning Outcome: 3-3 Explain how substances travel across the plasma membrane.

Question 5

Type: MCSA

The nurse has just administered a client’s morning dose of medications following a high-fat breakfast. How will the absorption of the medication be affected?

1. It will be blocked.

2. It will be slowed.

3. It will be accelerated.

4. It will not be affected.

Correct Answer: 2

Rationale 1: Fatty foods will not block absorption of medications.

Rationale 2: Fatty foods in the stomach almost always slow drug absorption.

Rationale 3: The absorption rate will increase if the stomach is empty.

Rationale 4: Most medications are affected by a full or empty stomach.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 3-4 Discuss factors affecting drug absorption.

Question 6

Type: MCSA

The nurse recognizes that adding a vasoconstrictor to a local anesthetic agent will have which effect on absorption of the anesthetic agent?

1. It will increase blood flow to the area.

2. It will help to eliminate the drug sooner.

3. It will produce a more localized effect.

4. It will slow absorption of the agent.

Correct Answer: 4

Rationale 1: Vasoconstriction will reduce blood flow to the area.

Rationale 2: Vasoconstrictors will not alter the anesthetic agent’s rate of elimination.

Rationale 3: It will not produce a more localized effect.

Rationale 4: Vasoconstriction reduces blood flow to the site and slows absorption of the agent.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 3-4 Discuss factors affecting drug absorption.

Question 7

Type: MCSA

The student nurse is administering an antibiotic for their client with a wound abscess. The student nurse asks their instructor what requirements are necessary for the antibiotic to reach its target cells. What is the instructor’s best response?

1. “The drug needs to be lipid soluble.”

2. “There needs to be adequate blood perfusion to the area.”

3. “The drug needs to be bioavailable in an acidic environment.”

4. “The drug needs to be administered in topical form.”

Correct Answer: 2

Rationale 1: Lipid-soluble medications have a high affinity for adipose tissue and may not stay in the vascular compartment long enough to reach the abscess.

Rationale 2: Antibiotics can have difficulty reaching areas of necrotic or abscessed tissues unless they have an adequate blood supply available.

Rationale 3: Ionization of a drug in an acidic environment affects absorption, not distribution, of the drug.

Rationale 4: A topical antibiotic might be indicated for external wounds, but abscesses are often internal and require medication to be delivered via blood vessels, unless they have been incised and drained.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 3-6 Discuss how drugs are distributed throughout the body.

Question 8

Type: MCSA

The nurse recognizes that when a client is receiving a lipid-soluble medication, higher concentrations will accumulate in which tissues?

1. Cardiac muscle

2. Liver

3. Bone marrow

4. Skeletal muscle

Correct Answer: 3

Rationale 1: Lipid-soluble drugs do not have greater affinity for cardiac muscle tissue.

Rationale 2: Lipid-soluble drugs do not have greater affinity for the liver.

Rationale 3: Lipid-soluble drugs have a higher affinity for bone marrow, teeth, the eye, and adipose tissue.

Rationale 4: Lipid-soluble drugs do not have greater affinity for skeletal muscle tissue.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 3-6 Discuss how drugs are distributed throughout the body.

Question 9

Type: MCSA

A client is admitted to the burn unit with 75% body surface area burns. Which drug route would provide the client with the most immediate pain relief?

Note: Credit will be given only if all correct choices and no incorrect choices are selected.

Standard Text: Select all that apply.

1. Intravenous

2. Orally

3. Intramuscular

4. Subcutaneous

Correct Answer: 1

Rationale 1: Pain medication given by the intravenous (IV) route will be rapidly distributed because it bypasses absorption barriers and results in immediate systemic response.

Rationale 2: Intramuscular, oral, and subcutaneous routes are slower because they need to be absorbed first before they can be distributed to target cells.

Rationale 3: Intramuscular, oral, and subcutaneous routes are slower because they need to be absorbed first before they can be distributed to target cells.

Rationale 4: Intramuscular, oral, and subcutaneous routes are slower because they need to be absorbed first before they can be distributed to target cells.

Cognitive Level: Analyzing

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Assessment

Learning Outcome: 3-6 Discuss how drugs are distributed throughout the body.

Question 10

Type: MCSA

During pharmacology class, a student asks their instructor how protein binding affects the pharmacokinetics of a drug. What is the instructor’s best response?

1. “The duration of action will be prolonged.”

2. “Drug excretion will be accelerated.”

3. “Metabolism of the drug will be delayed.”

4. “The onset of drug action will be prolonged.”

Correct Answer: 1

Rationale 1: The portion of the drug that is protein bound is not available to the tissues, but as it is released, it becomes a free drug; a drug that is highly protein bound has a high percentage of bound or unavailable drug that will produce a longer duration of action.

Rationale 2: Drug excretion will not be accelerated.

Rationale 3: Metabolism of the drug will occur as the free drug portion becomes available.

Rationale 4: Onset of action of the drug will not be affected.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 3-7 Describe how plasma proteins affect drug distribution.

Question 11

Type: MCSA

The nurse checks a newly ordered medication and finds it to be 92% protein bound. What percentage of the medication is readily available for distribution?

1. 8

2 50

3. 92

4. 100

Correct Answer: 1

Rationale 1: This is the portion of drug that is unbound and is free and able to reach target tissue.

Rationale 2: If 50% of the drug is available to the client, then 50% is protein bound.

Rationale 3: This is the percent of the drug that is NOT readily available for distribution to body tissues.

Rationale 4: If 100% of the drug were available to the client, none of it would be protein bound.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Assessment

Learning Outcome: 3-7 Describe how plasma proteins affect drug distribution.

Question 12

Type: FIB

A client who was recently started on the anticoagulant warfarin (Coumadin) asks about adverse reactions. The nurse explains that adverse effects may occur because the drug is highly protein bound with only \_\_\_\_% available to reach the target cells.

Standard Text: Record your answer, rounding to the nearest whole number.

Correct Answer: 1

Rationale: When giving a medication that is highly protein bound, the nurse should carefully monitor for adverse effects. The anticoagulant warfarin (Coumadin) is highly protein bound; 99% of the drug in the plasma exists in drug–protein complexes and only 1% exists as a free drug available to reach target cells.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Planning

Learning Outcome: 3-7 Describe how plasma proteins affect drug distribution.

Question 13

Type: MCSA

A client with severe liver cirrhosis is in hospital with ascites. What is the reason why the doses on their medications need to be adjusted?

1. Absorption of medications is decreased by the liver.

2. Metabolic activity is decreased.

3. Drugs synthesize more microsomal enzymes.

4. Drugs are excreted at a slower rate.

Correct Answer: 2

Rationale 1: Drugs are not absorbed by the liver.

Rationale 2: The drug will be metabolized by the liver at a slower rate due to decreased microsomal activity.

Rationale 3: There is decreased microsomal enzyme activity, therefore the metabolism slows.

Rationale 4: Excretion rate will not be affected as it does not take place in the liver.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Assessment

Learning Outcome: 3-5 Explain the metabolism of drugs and its applications to pharmacotherapy.

Question 14

Type: MCSA

What does the nurse anticipate about the medications ordered for a client with liver disease?

1. They will be in lower doses than normal.

2. They will be administered by the parenteral route.

3. They will need to be divided evenly throughout the day.

4. They will need to be given with an antacid.

Correct Answer: 1

Rationale 1: Liver function is decreased in cirrhosis, leading to a reduction in drug metabolism. Drugs given at normal doses could lead to toxicity.

Rationale 2: Drugs can still be administered by the oral route; the parenteral route would be indicated if the drug is altered by gastric juices or needs to avoid the first pass effect.

Rationale 3: The doses do not need to be evenly divided throughout the day.

Rationale 4: The medications do not need to be given with antacids. Most medications should not be given with antacids, since this alters the pH and could interfere with adequate absorption.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Planning

Learning Outcome: 3-5 Explain the metabolism of drugs and its applications to pharmacotherapy.

Question 15

Type: MCSA

The nurse is teaching a young person about taking medications while breastfeeding. Which statement by the young person indicates that they understood the instructions?

1. “I will be sure to take medications just before breastfeeding.”

2. “I know it is safe to take over-the-counter meds, but not prescription meds.”

3. “I will check with my healthcare provider before taking any medication.”

4. “I will only use herbal supplements while breastfeeding.”

Correct Answer: 3

Rationale 1: Although drug levels might be lower if the drug is taken just prior to feeding, the mother needs to determine that the drug is safe for the infant.

Rationale 2: OTC meds might be unsafe to use during pregnancy.

Rationale 3: This reflects the safest way to determine if a drug can be taken while breastfeeding.

Rationale 4: It is not safe to assume herbal medications are safe; they can be secreted in breast milk and might be unsafe for the infant.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Assessment

Learning Outcome: 3-8 Identify major processes by which drugs are excreted.

Question 16

Type: MCMA

What are the sites of excretion for elimination of drugs from the body?

Note: Credit will be given only if all correct choices and no incorrect choices are selected.

Standard Text: Select all that apply.

1. Fecal

2. Gastric

3. Glandular

4. Pulmonary

5. Renal

Correct Answer: 1,3,4,5

Rationale 1: Drugs can be excreted via feces.

Rationale 2: Drugs are not excreted through the gastric system.

Rationale 3: Drugs can be secreted glandularly (breast milk).

Rationale 4: Drugs can be secreted via the lungs.

Rationale 5: Drugs can be excreted by the renal route.

Cognitive Level: Understanding

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 3-8 Identify major processes by which drugs are excreted.

Question 17

Type: MCSA

The nurse reads that a drug undergoes enterohepatic recirculation. How would the nurse explain the impact of this process to a colleague?

1. The drug will need to be given several times a day.

2. The drug will have a very low therapeutic effect.

3. The drug will be concentrated in the liver.

4. The drug might have prolonged activity in the body.

Correct Answer: 4

Rationale 1: The drug will not need to be given several times a day.

Rationale 2: Enterohepatic recirculation will not necessarily lower the therapeutic effect.

Rationale 3: The drugs are recirculated through the liver but are not concentrated in the liver.

Rationale 4: Drugs secreted into the bile are sent back to the liver through enterohepatic recirculation and can be recirculated several times, thus prolonging their activity.

Cognitive Level: Understanding

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 3-9 Explain how enterohepatic recirculation affects drug activity.

Question 18

Type: MCSA

A healthcare provider has discontinued the client’s medication, digoxin (Lanoxin). Recalling that this drug undergoes enterohepatic recirculation, which statement does the nurse make to the client?

1. “You might continue to have effects of the drug for a few weeks.”

2. “You might experience some toxic effects from the drug in the next few days.”

3. “Expect to experience some side effects until the drug is totally eliminated.”

4. “The drug will be totally out of your system in the next 48 hours.”

Correct Answer: 1

Rationale 1: Since the drug is recirculated several times through enterohepatic recirculation, continued effects of the drug may be expected.

Rationale 2: The client should expect to continue experiencing some effects of the drug, but not toxic effects.

Rationale 3: The client might have some side effects of the drug if they have been having them all along, but they should not be told to expect side effects.

Rationale 4: The drug might take several weeks to be totally eliminated from the body.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Physiological Adaptation

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 3-9 Explain how enterohepatic recirculation affects drug activity.

Question 19

Type: MCMA

The nurse is caring for a client who is receiving medications from several different classifications for the treatment of multiple health problems. Which of the following medications or classifications does the nurse anticipate prolonged activity due to enterohepatic recirculation?

Note: Credit will be given only if all correct choices and no incorrect choices are selected.

Standard Text: Select all that apply.

1. Cardiac glycosides

2. Phenothiazines

3. Topical steroids

4. Topical anti-infectives

Correct Answer: 1,2

Rationale 1: Some drugs may be recirculated numerous times with the bile, thus extending their stay in the body; biliary excretion is influential in prolonging the activity of cardiac glycosides.

Rationale 2: Some drugs may be recirculated numerous times with the bile, thus extending their stay in the body; biliary excretion is influential in prolonging the activity of phenothiazines.

Rationale 3: Topical steroids are not subject to enterohepatic recirculation.

Rationale 4: Topical anti-infectives are not subject to enterohepatic recirculation.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Assessment

Learning Outcome: 3-9 Explain how enterohepatic recirculation affects drug activity.

Question 20

Type: MCSA

A client has been started on a medication for postoperative pain. When does the nurse anticipate the client will receive optimal pain relief?

1. When the drug concentrates in the muscle tissue

2. When the drug reaches a therapeutic range

3. When the drug achieves a minimal effective concentration

4. When the drug approaches a toxic concentration

Correct Answer: 2

Rationale 1: The drug does not have to concentrate in muscle tissue to relieve pain.

Rationale 2: The goal of therapy is to reach and maintain a plasma level in the therapeutic range.

Rationale 3: The client might experience some pain relief at a minimum effective concentration but probably not optimal pain relief.

Rationale 4: A toxic concentration does not need to be reached to achieve pain relief; in fact, it should be avoided.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Assessment

Learning Outcome: 3-11 Explain how a drug reaches and maintains its therapeutic range in the plasma.

Question 21

Type: MCSA

A client is receiving an antibiotic with the potential for nephrotoxicity. Which item should the nurse plan to monitor?

1. Urinary concentration of the drug

2. Route of drug administration

3. Plasma levels of the drug

4. Rate of intravenous administration

Correct Answer: 3

Rationale 1: The urinary concentration of a drug will not provide an accurate measurement of nephrotoxicity.

Rationale 2: The route of administration will not determine nephrotoxicity.

Rationale 3: Plasma levels of a drug are an indicator of whether a drug is at a therapeutic or toxic level and will provide information as to whether a drug dosage needs adjustment.

Rationale 4: Although the rate at which a drug is administered intravenously can affect plasma levels and irritation to the vein, it would not provide the best measure of nephrotoxicity.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Planning

Learning Outcome: 3-11 Explain how a drug reaches and maintains its therapeutic range in the plasma.

Question 22

Type: MCSA

The nurse is preparing to medicate a client for a migraine headache. The nurse should choose the drug with which half-life?

1. 10 to 20 hours

2. 5 to 10 days

3. 2 to 3 hours

4. 1 to 3 minutes

Correct Answer: 3

Rationale 1: A half-life of 10 to 20 hours is longer than would be needed to provide migraine pain relief.

Rationale 2: A half-life of 5 to 10 days is longer than would be needed to provide migraine pain relief.

Rationale 3: A drug with a half-life of 2 to 3 hours will be reduced by 50% in 2 to 3 hours, providing adequate time for the client to obtain pain relief.

Rationale 4: A drug with a half-life of 1 to 3 minutes would be eliminated in a very short time period and would not provide adequate pain relief.

Cognitive Level: Analyzing

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Assessment

Learning Outcome: 3-10 Explain the applications of a drug’s plasma half-life (t1/2) to pharmacotherapy.

Question 23

Type: MCSA

The nurse is discussing the concept of a drug’s half-life with a student nurse. What is the nurse’s best explanation?

1. “It is the time it takes for one-half of the drug to be absorbed.”

2. “It describes when one-half of the drug is eliminated by the body.”

3. “It is the time it takes for the drug to elicit a therapeutic response.”

4. “It is the time it takes the drug to reach the target tissue.”

Correct Answer: 2

Rationale 1: A drug’s half-life is the time it takes for one-half of the original dose to be eliminated by the body.

Rationale 2: A drug’s half-life is the time it takes for one-half of the original dose to be eliminated by the body.

Rationale 3: A therapeutic response can be reached before the half-life occurs.

Rationale 4: Target tissue is reached on the onset of action, not at half-life.

Cognitive Level: Understanding

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 3-10 Explain the applications of a drug’s plasma half-life (t1/2) to pharmacotherapy.

Question 24

Type: MCSA

The nurse is administering a drug with a half-life of 6 hours. The nurse understands the client will eliminate most of the drug in how many hours?

1. 36

2. 24

3. 6

4. 12

Correct Answer: 2

Rationale 1: After four half-lives, 94% of the drug has been eliminated by the body.

Rationale 2: After four half-lives, 94% of the drug has been eliminated by the body. A drug with a half-life of 6 hours will go through four half-lives in 24 hours.

Rationale 3: After four half-lives, 94% of the drug has been eliminated by the body.

Rationale 4: After four half-lives, 94% of the drug has been eliminated by the body.

Cognitive Level: Understanding

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 3-10 Explain the applications of a drug’s plasma half-life (t1/2) to pharmacotherapy.

Question 25

Type: MCSA

The nurse is preparing to administer naloxone to a hospitalized client who is experiencing apnea from a dose of morphine. Naloxone’s half-life is much shorter than morphine’s. Why is this information important for the nurse to know?

1. The dose of naloxone may need to be increased.

2. The next dose of morphine will need to be delayed.

3. The dose of naloxone may need to be repeated.

4. Morphine will need to be discontinued.

Correct Answer: 3

Rationale 1: The dose of naloxone does not need to be increased, but the nurse will need to continue to monitor the client for apnea as the morphine will still be in their system after the naloxone has been excreted.

Rationale 2: The morphine dose may need to be adjusted, but not necessarily delayed.

Rationale 3: When the naloxone dose is cleared, because morphine is still in the client’s system, the client can still experience the side effects (apnea) of the drug. The client needs to be monitored for side effects and additional doses given of naloxone until the morphine has cleared.

Rationale 4: Morphine can still be used for pain relief with dosage adjustments.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Reduction of Risk Potential

Nursing/Integrated Concepts: Nursing Process: Assessment

Learning Outcome: 3-10 Explain the applications of a drug’s plasma half-life (t1/2) to pharmacotherapy.

Question 26

Type: MCSA

A client is prescribed a loading dose of a cardiac glycoside for an exacerbation of heart failure. When the client comments, “I usually take a much lower dose,” which response by the nurse is the most appropriate?

1. “Giving a large dose will reduce the incidence of side effects.”

2. “You are being given a large dose to increase blood levels of the drug quickly.”

3. “The healthcare provider ordered this dose, so I need to administer it.”

4. “Your usual dose is no longer effective, so you need to be on a higher dose now.”

Correct Answer: 2

Rationale 1: Giving a larger dose actually could increase the incidence of side effects.

Rationale 2: Loading doses of medications are used to provide a more rapid increase in the blood level of the drug, resulting in a quicker therapeutic response.

Rationale 3: Although this is an accurate statement, it does not provide an explanation to the client as to why a larger dose is being administered.

Rationale 4: A loading dose is usually only given once, and the client will then be put back on the average daily dose.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 3-12 Differentiate between loading and maintenance doses.

Question 27

Type: MCSA

Following the administration of a loading dose of an antibiotic, which dosing schedule does the nurse anticipate will follow?

1. A second loading dose

2. Regularly intermittent doses of the antibiotic

3. Alternating high and low doses of the antibiotic

4. Daily bolus injections

Correct Answer: 2

Rationale 1: A loading dose of a medication is usually only given once. Repeating the loading dose could cause toxicity.

Rationale 2: Following a loading dose, the usual maintenance dose of a drug is given to maintain a therapeutic blood level of the drug.

Rationale 3: Alternating high and low doses would not allow for a plateau of the drug level to be reached, which is needed for a therapeutic response.

Rationale 4: Bolus injections are usually only given once, not daily.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Planning

Learning Outcome: 3-12 Differentiate between loading and maintenance doses.

Question 28

Type: FIB

The nurse is teaching a student about the loading dose of antibiotic that will be administered later in the day. The student demonstrates understanding by stating that the medication will reach a therapeutic dose in\_\_\_\_ hour(s) versus the 48 hours that would be required for the routine medication dose.

Standard Text: Record your answer rounding to the nearest whole number.

Correct Answer: 12

Rationale: It takes almost five doses (48 hours) before a therapeutic level is reached using a routine dosing schedule. With a loading dose, a therapeutic level is reached within 12 hours.

Cognitive Level: Analyzing

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Evaluation

Learning Outcome: 3-12 Differentiate between loading and maintenance doses.

Question 29

Type MCMA

A student nurse asks their instructor why pharmacokinetics is so important to learn. Isn’t it enough to just learn the actions and side effects of the drugs we give? What is the instructor’s best response?

Note: Credit will be given only if all correct choices and no incorrect choices are selected.

Standard Text: Select all that apply.

1. “Pharmacokinetics gives us important information about how different routes affect absorption.”

2. “Pharmacokinetics offers us with information on how the body’s response to drugs are affected by different disease processes.”

3. “Pharmacokinetics provides nurses with specific information on what may impact how long a drug stays in the system.”

4. “Pharmacokinetics provides us with information on adverse effects and how these can be prevented.”

5. “Pharmacokinetics provides the nurse with information on how plasma membranes change in order to move different forms of drugs throughout the body.”

Correct Answer 1,2,3

Rationale 1: Absorption is the primary pharmacokinetic factor that determines the length of time it takes a drug to exert its desired effect.

Rationale 2: For example, we understand that metabolism of a drug can be affected by liver disease.

Rationale 3: Delay in excretion can be due to both liver and renal disease.

Rationale 4: Pharmacokinetics does not provide us with specific information on adverse effects of drugs.

Rationale 5: Plasma membranes do not change with different forms of drugs, but the mechanism which is used (active versus passive transport) may.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Planning

Learning Outcome: 3-1 Explain the application of pharmacokinetics to clinical practice.

Question 30

Type MCMA

Which of the following factors affect a drugs absorption rate?

Note: Credit will be given only if all correct choices and no incorrect choices are selected.

Standard Text: Select all that apply.

1. Route

2. Drug form

3. Liver function

4. Food

5. Renal function

Correct Answer: 1,2,4

Rationale 1: The route that the drug is administered will affect its absorption, with intravenous being the quickest.

Rationale 2: The form of a drug affects its absorption, elixirs and syrups being quicker than pill form.

Rationale 3: Liver function affects metabolism and excretion, not absorption.

Rationale 4: Food can delay the absorption of some drugs.

Rationale 5: Renal function will impact excretion, not absorption.

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Planning

Learning Outcome: 3-4 Discuss factors affecting drug absorption.

Chapter 4

Pharmacodynamics

Question 1

Type: MCSA

The client and their wife receive the same medication for hypertension. The wife asks the nurse why their spouse is receiving a higher dose of the medication. Which response by the nurse is the most appropriate?

1. “You have a greater percentage of body fat, so you need more medication.”

2. “Females have a higher metabolism, so you need more medication.”

3. “Your hormones are different from your spouse’s, so you need more medication.”

4. “Everyone is unique and responds differently to medication.”

Correct Answer: 4

Rationale 1: The percentage of body fat is only one of the variables involved in a client’s response to medication.

Rationale 2: Females do not necessarily have higher metabolic rates than males.

Rationale 3: Hormones are only one of the variables involved in a client’s response to medication.

Rationale 4: Many variables influence how clients respond to medications; each client must be evaluated for response.

Cognitive Level: Understanding

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 4-2 Discuss how frequency response curves may be used to explain how clients respond differently to medications.

Question 2

Type: MCSA

A client asks the nurse why their dose of an antihypertensive medication is different from their neighbour’s dose, stating “We both take the exact same drug, but I take 60 mg and they take only 25 mg.” Which response by the nurse is the most appropriate?

1. “Your neighbour’s dose may be different because they are younger than you.”

2. “Individuals often have widely different responses to the same medications.”

3. “Their dose may be adjusted if they are on other medications.”

4. “Your generic medication will require a higher dose than your neighbour’s brand name drug.”

Correct Answer: 2

Rationale 1: Age can be a factor in dosing of medications, but this is not the best explanation of why different doses are needed for two different people.

Rationale 2: Genetic makeup and metabolism vary widely and account for the differences in response to drugs and the need for individualized doses.

Rationale 3: Taking other medications could be part of the reason why the dose is different, but this is not the best explanation.

Rationale 4: Generic and brand name drugs usually have the same dose equivalency.

Cognitive Level: Understanding

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 4-1 Apply principles of pharmacodynamics to clinical practice.

Question 3

Type: MCSA

The nursing instructor is teaching student nurses about how the median effective dose of a medication is related to clinical practice. Which statement reflects understanding by the student?

1. “About 50% of clients will experience severe side effects from the drug.”

2. “About 50% of clients will not experience any effect from the drug.”

3. “Some clients will respond differently, depending on their ethnic background.”

4. “Some clients will require more or less than the average dose of the drug.”

Correct Answer: 4

Rationale 1: The median effective dose does not predict how many clients will experience severe side effects from the drug.

Rationale 2: The median effective dose does not predict that 50% of clients will not experience an effect of the drug.

Rationale 3: The median effective dose is not related to ethnicity.

Rationale 4: The median effective dose is the dose required to produce a specific therapeutic response in 50% of a group of clients.

Cognitive Level: Understanding

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Planning

Learning Outcome: 4-3 Explain the importance of the median effective dose (ED50) to clinical practice.

Question 4

Type: MCSA

A client looks up the drug they are taking in a drug guide and asks the nurse why the healthcare provider prescribed a medication that has a lethal dose measure. Which response by the nurse is the most appropriate?

1. “Lethal dose refers to what is done in research; it is not used by doctors to prescribe drugs.”

2. “The lethal dose is a value determined in research that helps to establish the safe dose.”

3. “All drugs have the capacity to be lethal; the effects will be monitored by your physician.”

4. “Don’t worry about that. I will have your doctor explain it to you.”

Correct Answer: 2

Rationale 1: The lethal dose is considered by healthcare providers when prescribing medications.

Rationale 2: The difference between the median effective dose and the median lethal dose is measured to determine the drug’s safety margin as well as the safe effective dose.

Rationale 3: All drugs have the potential to be lethal, but telling this to the client might be frightening.

Rationale 4: Telling the client not to worry is condescending and does not answer the question.

Cognitive Level: Understanding

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 4-4 Compare and contrast median lethal dose (LD50) and median toxicity dose (TD50).

Question 5

Type: MCMA

The nurse explains to a student nurse that the median lethal dose of drugs is often determined in laboratory preclinical trials. Which rationales best support why this is done?

Note: Credit will be given only if all correct choices and no incorrect choices are selected.

Standard Text: Select all that apply.

1. It would be unethical to determine these values in human subjects.

2. The safety of the medication must be determined prior to clinical trials.

3. It is difficult to obtain sufficient participants for clinical trials.

4. Clinical trials determine only the effective dose of a drug.

5. It is too costly to conduct the studies during clinical trials.

Correct Answer: 1,2

Rationale 1: Laboratory animals are used in clinical trials to determine the LD50, or the dose that kills 50% of the subjects. It would be unethical to kill human subjects.

Rationale 2: Before a drug is released for trials in human subjects, its safety must be determined.

Rationale 3: It can be challenging to obtain sufficient subjects at times, but this is not the reason for doing lethal studies during preclinical trials.

Rationale 4: Clinical trials determine not only the effectiveness of a drug, but also its adverse and toxic effects.

Rationale 5: The cost of the trials is the reason they are conducted with animal subjects.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 4-4 Compare and contrast median lethal dose (LD50) and median toxicity dose (TD50).

Question 6

Type: MCSA

The nurse is researching a drug recently released on the market to determine what the median lethal dose (LD50) was in preclinical trials. The nurse recognizes that this number reflects what information?

1. The dose at which 50% of the research animals died

2. A measurement of the potency of the drug

3. The relative safety of the drug

4. The dose that produced signs of toxicity in 50% of lab animals

Correct Answer: 1

Rationale 1: The dose at which 50% of animals in the preclinical trials are killed is the median LD50 dose.

Rationale 2: A comparison of two drugs is done when defining the potency of a drug.

Rationale 3: Relative safety of a drug is reflected in the therapeutic index.

Rationale 4: The dose at which signs of toxicity are seen in 50% of laboratory subjects is the median toxicity dose.

Cognitive Level: Understanding

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Assessment

Learning Outcome: 4-4 Compare and contrast median lethal dose (LD50) and median toxicity dose (TD50).

Question 7

Type: MCSA

Prior to administering medications, the nurse notes that a drug has a narrow therapeutic index. What is the significance of this information?

1. It determines whether the healthcare provider has prescribed the best drug for the client.

2. It can predict when a client will begin to experience toxic drug effects.

3. It can determine interactions among the drugs the client is receiving.

4. It will determine clients who will need to have serum blood levels monitored.

Correct Answer: 4

Rationale 1: The therapeutic index does not help to determine whether the best drug has been prescribed for the client.

Rationale 2: The therapeutic index does not determine toxic doses of a drug, and clients differ in their response to drugs.

Rationale 3: The therapeutic index does not help to identify interactions among drugs.

Rationale 4: Drugs with a narrow therapeutic index have low margins of safety and need to be monitored through serum drug levels.

Cognitive Level: Understanding

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 4-5 Correlate a drug’s therapeutic index to its margin of safety.

Question 8

Type: FIB

The nurse checks the margin of safety (MOS) for a drug that will be administered to a client, knowing that the MOS is the amount of drug that is lethal to \_\_\_\_ % of animals divided by the amount that produces a therapeutic effect in \_\_\_\_ % of animals.

Standard Text: Record your answer rounding to the nearest whole number.

Correct Answers: 1, 99

Rationale: The MOS is calculated as the amount of drug that is lethal to 1% of animals (LD1) divided by the amount of drug that produces a therapeutic effect in 99% of the animals (ED99).

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

NLN Competencies: Knowledge and Science: Relationships between knowledge/science and quality and safe Client care

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 4-5 Correlate a drug’s therapeutic index to its margin of safety.

Question 9

Type: MCSA

The nurse is researching a drug that has a median effective dose (ED50) of 5 mg and a median lethal dose (LD50) of 20 mg. Which therapeutic index (TI) calculated by the nurse is correct?

1. 0.25

2. 4

3. 20

4. 100

Correct Answer: 2

Rationale 1: The TI is calculated by dividing the median LD by the median ED. Twenty divided by 5 does not equal 0.25.

Rationale 2: The TI is calculated by dividing the median LD by the median ED. Twenty divided by 5 equals 4.

Rationale 3: The TI is calculated by dividing the median LD by the median ED. Twenty divided by 5 does not equal 20.

Rationale 4: The TI is calculated by dividing the median LD by the median ED. Twenty divided by 5 does not equal 100.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Evaluation

Learning Outcome: 4-5 Correlate a drug’s therapeutic index to its margin of safety.

Question 10

Type: MCSA

A client receiving antibiotics for a serious infection asks the nurse, “Why don’t you just give me more of that drug to cure the infection faster?” Which response by the nurse is the most appropriate?

1. “I will check with the doctor to see if it is time to increase the medication.”

2. “You are at maximum dose; taking more will not help.”

3. “You are at maximum dose; taking more will cause interactions with other medications.”

4. “You must stay on this drug for two more weeks before the dosage can be increased.”

Correct Answer: 2

Rationale 1: The drug plateau has been reached; the nurse can provide this explanation to the client.

Rationale 2: When the plateau of a drug has been reached, administering more of the drug will not produce additional benefit.

Rationale 3: An increase in dosage could cause interactions with other medications, but this is not the best answer.

Rationale 4: Once the plateau of a drug has been reached, there is no time frame for an increase in dosage because an increase will not produce a greater effect.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 4-6 Identify the significance of the graded dose-response relationship to clinical practice.

Question 11

Type: MCSA

What does the nurse responsible for administering narcotics to postoperative clients understand is true about the potency of narcotics?

1. Codeine is less potent than morphine; it will not produce an allergic reaction.

2. Codeine is less potent than morphine; it will not relieve pain as well.

3. Morphine is more potent than codeine; it will produce more adverse effects.

4. Morphine is more potent than codeine; a lesser dose will be required.

Correct Answer: 4

Rationale 1: The potency of a drug is not related to its ability to cause an allergic reaction.

Rationale 2: Although codeine is less potent than morphine, less potent narcotics can be very effective with pain relief.

Rationale 3: Morphine is more potent than codeine, but greater potency does not imply the drug will produce more adverse effects.

Rationale 4: A drug that is more potent will produce a therapeutic effect at a lower dose.

Cognitive Level: Understanding

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 4-7 Compare and contrast the terms *potency* and *efficacy*.

Question 12

Type: MCSA

The nurse is discussing the difference between potency and efficacy with a client who has just received a prescription to treat congestive heart failure. Which statement by the client indicates that learning has occurred?

1. “The best drug for me is the one with the greatest efficacy.”

2. “A drug with the greatest efficacy will produce the least side effects.”

3. “Low-potency drugs have efficacy and do not produce side effects.”

4. “The best drug for me is the one with the highest potency.”

Correct Answer: 1

Rationale 1: Efficacy refers to the magnitude of maximal response that can be produced by a particular drug.

Rationale 2: Even though a drug is effective in treating a condition, it can still have side effects.

Rationale 3: Low potency does not guarantee a drug will not produce side effects.

Rationale 4: High-potency drugs do not necessarily provide the best response in the client.

Cognitive Level: Understanding

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

NLN Competencies: Knowledge and Science: Relationships between knowledge/science and quality and safe client care

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 4-6 Compare and contrast the terms *potency* and *efficacy*.

Question 13

Type: MCSA

A histamine-2 (H2) receptor in the stomach influences the production of gastric acid. What would the nurse expect an H2 blocker to do?

1. Increase acid production

2. Decrease acid production in the stomach

3. Produce an alkaline response from the receptor

4. Decrease receptor cells available for acid production

Correct Answer: 2

Rationale 1: Histamine-2 stimulates the production of gastric acid; blocking it will not increase acid production.

Rationale 2: Blocking the histamine-2 receptors will help to reduce the stimulation of gastric acid.

Rationale 3: Medications rarely induce their own cellular responses; instead, they either enhance or inhibit existing physiological and biochemical processes. A medication thus would either enhance gastric acid production or in this case inhibit or block its production.

Rationale 4: An H2 blocker will not change the number of receptor cells available.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 4-9 Explain the relationship between receptors and drug action.

Question 14

Type: MCSA

The nurse has taught a group of clients how their medications work in their bodies. Which comment by a client reflects correct understanding of the teaching?

1. “The normal function of a cell is enhanced or blocked by medications.”

2. “Medications help the body produce new enzymes.”

3. “Body tissue functions are changed by medications.”

4. “Medications change the function of cells in the body.”

Correct Answer: 1

Rationale 1: Many medications work by stimulating or enhancing the normal function of a cell or by blocking the normal function.

Rationale 2: Medications can stimulate enzyme reactions or even provide enzymes that are missing, but they do not help the body produce new ones.

Rationale 3: Body tissue functions are not changed.

Rationale 4: Functions of the cell can be enhanced or blocked, but they are not changed.

Cognitive Level: Understanding

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Evaluation

Learning Outcome: 4-9 Explain the relationship between receptors and drug action.

Question 15

Type: MCSA

Morphine is a drug that mimics the actions of endorphins at the opioid receptors. What term best describes this action?

1. Idiosyncratic response

2. Receptor ligands

3 Antagonist

4. Agonist

Correct Answer: 3

Rationale 1: This is a response to a drug that is unpredictable and unexplained.

Rationale 2: Receptor ligands is an intracellular molecule that can activate or inhibit receptors.

Rationale 3: An antagonist produces a response that may prevent the endogenous substance from its normal actions.

Rationale 4: An agonist is a drug that produces a similar response as the endogenous substance.

Cognitive Level: Analyzing

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 4-8 Distinguish between an agonist, partial agonist, and antagonist.

Question 16

Type: MCSA

The student nurse has been reading about the Human Genome Project and asks the nursing instructor how it will affect future pharmacological therapies. Which response by the instructor is the most appropriate?

1. “It will help prevent disease through gene manipulation, but it will not impact drugs.”

2. “We will be able to alter genes, so we will not need drugs.”

3. “We will be able to standardize drug doses to make prescribing easier.”

4. “It will help to individualize drug therapy for people in a more effective way.”

Correct Answer: 4

Rationale 1: Medications will be impacted greatly by this research.

Rationale 2: Altering genes to prevent illness is a possibility, but we will always need medications.

Rationale 3: Individuals will still respond differently to medications; not all drugs will have standardized doses.

Rationale 4: The goal of pharmacogenetics is to help individualize drug therapy for people in a more effective way.

Cognitive Level: Understanding

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Implementation

Learning Outcome: 4-10 Explain possible future developments in the field of pharmacogenetics.

Question 17

A student nurse asks a nurse about a drug that has been prescribed to decrease the effects of an endogenous chemical. The nurse understands this drug is placed in which category?

1. An agonist

2. A partial agonist

3. An antagonist

4. An agonist-antagonist

Correct Answer: 3

Rationale 1: An agonist drug produces the same type of response as the endogenous substance.

Rationale 2: A partial agonist produces a weaker, or less efficacious, response than an agonist.

Rationale 3: An antagonist occupies receptor sites, preventing them from being activated by the medication. This prevents the endogenous chemical from acting.

Rationale 4: An agonist-antagonist produces a weaker, or less efficacious, response than an agonist.

Cognitive Level: Applying

Client Need: Physiological Integrity:

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Analysis

Learning Outcome: 4.8 Distinguish among an agonist, a partial agonist, and an antagonist.

Question 18

The nurse reads that a newly discovered drug is a functional antagonist for some commonly administered medications. The nurse interprets this information as indicating the new drug could have which actions?

Note: Credit will be given only if all correct choices and no incorrect choices are selected.

Standard Text: Select all that apply.

1. Blocks alpha receptors

2. Enhances drug excretion

3. Blocks beta receptors

4. Speeds drug metabolism

5. Inhibits protein synthesis

Correct Answer: 2,4

Rationale 1: Functional antagonists do not block alpha receptors.

Rationale 2: Functional antagonists change pharmacokinetic factors such as excretion.

Rationale 3: Functional antagonists do not block beta receptors.

Rationale 4: Functional antagonists change pharmacokinetic factors such as metabolism.

Rationale 5: Drugs that bind with DNA may inhibit protein synthesis.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Analysis

Learning Outcome: 4.8 Distinguish among an agonist, a partial agonist, and an antagonist.

Question 19

The nurse is participating in the clinical trial of a new medication for the treatment of hypertension. To assess the effectiveness of the medication, which assessments would the nurse perform to help determine whether the average dose is effective for the client?

Note: Credit will be given only if all correct choices and no incorrect choices are selected.

Standard Text: Select all that apply.

1. Blood pressure

2. Heart rate

3. Laboratory values

4. Diet

5. Sleep habits

Correct Answer: 1,2,3

Rationale 1: By monitoring the client’s vital signs, the nurse helps to determine whether the average dose is effective for the client.

Rationale 2: By monitoring the client’s vital signs, the nurse helps to determine whether the average dose is effective for the client.

Rationale 3: By interpreting any associated laboratory data, the nurse helps to determine whether the average dose is effective for the client.

Rationale 4: Monitoring the client’s diet will not help determine if the average dose of a medication is effective for the client.

Rationale 5: Monitoring the client’s sleep habits will not help determine if the average dose of a medication is effective for the client.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Assessment

Learning Outcome: 4-1 Explain the applications of pharmacodynamics to clinical practice.

Question 20

Which factor is used to help predict the safety of the dose of drug for a client?

1. Potency

2. Efficacy

3. Graded dose response

4. Frequency distribution curve

Correct Answer: 4

Rationale 1: Potency is a means to compare medications within therapeutic and pharmacologic classes.

Rationale 2: The efficacy of a drug is the magnitude of maximal responsethat can be produced from a particular drug.

Rationale 3: The graded dose response is used to compare the client’s response of different dosages of the drug.

Rationale 4: A frequency distribution curve is a graphical representation of the number of clients responding to a drug action at different doses and can be used to help predict the safety of a dose of a drug.

Cognitive Level: Applying

Client Need: Physiological Integrity

Client Need Sub: Pharmacological and Parenteral Therapies

Nursing/Integrated Concepts: Nursing Process: Analysis

Learning Outcome: 4-3 Explain the importance of the median effective dose (ED50) to clinical practice.