

LEHNE'S PHARMACOTHERAPEUTICS FOR ADVANCED PRACTICE NURSES AND PHYSICIAN ASSISTANTS 2ND EDITION ROSENTHAL TEST BANK

Chapter 1: Prescriptive Authority

Test Bank

Multiple Choice

1. An APRN works in a urology clinic under the supervision of a physician who does not restrict the types of medications the APRN is allowed to prescribe. State law does not require the APRN to practice under physician supervision. How would the APRN's prescriptive authority be described?
 - a. Full authority
 - b. Independent
 - c. Without limitation
 - d. Limited authority

ANS: B

The APRN has independent prescriptive authority because the regulating body does not require that the APRN work under physician supervision. Full prescriptive authority gives the provider the right to prescribe independently and without limitation. Limited authority places restrictions on the types of drugs that can be prescribed. DIF: Cognitive Level: Comprehension REF: p. 1 TOP: Nursing Process: I MSC: NCLEX Client Needs Category: Physiologic Integrity: Pharmacologic and Parenteral Therapies

2. Which factors increase the need for APRNs to have full prescriptive authority?
 - a. More patients will have access to health care.
 - b. Enrollment in medical schools is predicted to decrease.
 - c. Physician's assistants are being utilized less often.
 - d. APRN education is more complex than education for physicians.

ANS: A

Implementation of the Affordable Care Act has increased the number of individuals with health care coverage, and thus the number who have access to health care services. The increase in the number of patients creates the need for more providers with prescriptive authority. APRNs can fill this practice gap. DIF: Cognitive Level: Comprehension REF: p. 2 TOP: Nursing Process: Implementation MSC: NCLEX Client Needs Category: Physiologic Integrity: Pharmacologic and Parenteral Therapies

3. Which factors could be attributed to limited prescriptive authority for APRNs? Select all that apply.

- a. Inaccessibility of patient care
- b. Higher health care costs
- c. Higher quality medical treatment
- d. Improved collaborative care
- e. Enhanced health literacy

ANS: A , B

Limiting prescriptive authority for APRNs can create barriers to quality, affordable, and accessible patient care. It may also lead to poor collaboration among providers and higher health care costs. It would not directly impact patient's health literacy. DIF: Cognitive Level: Comprehension REF:

p. 2 TOP: Nursing Process: Implementation MSC: NCLEX Client Needs Category: Physiologic Integrity: Pharmacologic and Parenteral Therapies

4. Which aspects support the APRN's provision for full prescriptive authority? Select all that apply.
 - a. Clinical education includes prescription of medications and disease processes.
 - b. Federal regulations support the provision of full authority for APRNs.
 - c. National examinations provide validation of the APRN's ability to provide safe care.
 - d. Licensure ensures compliance with health care and safety standards.
 - e. Limiting provision can decrease health care affordability.

ANS: A , C , D

APRNs are educated to practice and prescribe independently without supervision. National examinations validate the ability to provide safe and competent care. Licensure ensures compliance with standards to promote public health and safety. Limited prescriptive authority creates numerous barriers to quality, affordable, and accessible patient care. DIF: Cognitive Level: Comprehension REF: pp. 1-2 TOP: Nursing Process: Implementation MSC: NCLEX Client Needs Category: Physiologic Integrity: Pharmacologic and Parenteral Therapies

5. Which aspects support the APRN's provision for full prescriptive authority? Select all that apply.
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ComprehensionREF: pp. 1-2TOP: Nursing Process: Implementation MSC: NCLEX
Client Needs Category: Physiologic Integrity: Pharmacologic and Parenteral Therapies

6. A family nurse practitioner practicing in Maine is hired at a practice across state lines in Virginia. Which aspect of practice may change for the APRN?
- The APRN will have less prescriptive authority in the new position.
 - The APRN will have more prescriptive authority in the new position.
 - The APRN will have equal prescriptive authority in the new position.
 - The APRN's authority will depend on federal regulations.

ANS: A

Virginia allows limited prescriptive authority, while Maine gives full authority to certified nurse practitioners. The federal government does not regulate prescriptive authority.DIF: Cognitive Level: ComprehensionREF: p. 3TOP: Nursing Process: Implementation MSC: NCLEX Client Needs Category: Physiologic Integrity: Pharmacologic and Parenteral Therapies

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Chapter 2: Rational Drug Selection and Prescription Writing

Test Bank

Multiple Choice

7. How can collaboration with a pharmacist improve positive outcomes for patients? Select all that apply.
- Pharmacists can suggest foods that will help with the patient's condition.
 - Pharmacists have additional information on drug interactions.
 - The pharmacist can suggest adequate medication dosing.
 - Pharmacists have firsthand knowledge of the facility formulary.
 - Pharmacy can alter prescriptions when necessary to prevent patient harm.

ANS: B , C , D

Providers should collaborate with pharmacists because they will likely have additional information on formulary, drug interactions, and suggestions for adequate medication dosing. Dietitians can make food recommendations to treat the patient's condition. The pharmacist can contact the prescriber about questionable prescriptions, but cannot alter the prescription without notification of and approval by the provider.DIF: Cognitive Level: ComprehensionREF: p. 9TOP: Nursing Process: Diagnosis MSC: NCLEX Client Needs Category: Physiologic Integrity: Reduction of Risk Potential

8. A patient presents with delirium tremens requiring Ativan administration. The provider of care is not in the facility. Which action by the nurse is most appropriate?
- Obtain a telephone order.
 - Contact the on-call hospitalist.
 - Obtain an order from the charge nurse.
 - Wait for a written Ativan order.

ANS: A

In an emergency situation, such as delirium tremens with seizure activity, it is acceptable to provide a telephone order. Contacting the on-call hospitalist or waiting for a written order would take more time than available for a patient with high seizure risk. Writing an order is outside the scope of practice for the charge nurse. DIF: Cognitive Level: Application REF: p. 7 TOP: Nursing Process: Implementation MSC: NCLEX Client Needs Category: Physiologic Integrity: Reduction of Risk Potential

9. A patient with chronic pain calls the provider's office to request a refill on their oxycodone. Which action is most appropriate?
- Fax an order to the pharmacy.
 - Schedule an appointment with the patient.
 - Verify the patient's adherence to drug regimen.
 - Determine the patient's current medication dosage.

ANS: B

Schedule II medications are not eligible for refills, and prescriptions must be handwritten. It is important to verify the patient's adherence to the drug regimen and determine the current dosage of medication; however, this can be accomplished by scheduling an appointment and evaluating the patient in person. DIF: Cognitive Level: Application REF: p. 8 TOP: Nursing Process: Implementation MSC: NCLEX Client Needs Category: Physiologic Integrity: Reduction of Risk Potential

10. A patient prescribed amoxicillin for streptococcal pharyngitis reports new onset of a flat, itchy red rash on the chest and neck. Which action is most important?
- Provide a different prescription.
 - Discontinue the medication.
 - Prescribe an antihistamine cream.
 - Assess for respiratory compromise.

ANS: B

The priority action is to discontinue the medication to prevent worsening of the patient's symptoms. A different prescription would be provided, topical antihistamine may be administered, and the patient would be assessed for respiratory involvement, but these actions would not be

performed first.DIF: Cognitive Level: ApplicationREF: p. 6TOP: Nursing Process: Implementation MSC: NCLEX Client Needs Category: Physiologic Integrity: Reduction of Risk Potential

11. A patient taking three medications for hypertension is diagnosed with COPD. Which action should be taken prior to prescribing medications to treat COPD?
- Obtain baseline laboratory values.
 - Obtain a complete medication history.
 - Assess liver enzyme levels.
 - Determine if patient has insurance coverage.

ANS: B

Prior to adding medications to the treatment regimen, it is essential to assess for any potential drug- drug interactions through a complete medical history. Baseline laboratory values are not necessary for COPD treatment. Liver enzyme levels may give insight into the possibility of altered metabolism but would not be the first action. The presence of insurance coverage would affect the patient's access to treatment but may not affect the type of medication prescribed.DIF: Cognitive Level: ApplicationREF: p. 6TOP: Nursing Process: Implementation MSC: NCLEX Client Needs Category: Physiologic Integrity: Reduction of Risk Potential

12. A patient with diabetes reports losing their job and an inability to purchase required medications. Which action is most appropriate?
- Provide a 7-day sample pack.
 - Decrease the daily dose by half.
 - Contact a different pharmacy.
 - Prescribe a different medication.

ANS: C

Providing a 7-day sample will address the patient's immediate need, but will not help with the patient's long-term need for medication. Decreasing the daily dose will diminish the effectiveness of the medication. Selecting a different pharmacy could decrease the cost of the medication, as costs vary based on the location and the pharmacy dispensing the medication. Prescribing a different medication would be the last option.DIF: Cognitive Level: ApplicationREF: p. 5TOP: Nursing Process: Implementation MSC: NCLEX Client Needs Category: Physiologic Integrity: Reduction of Risk Potential

13. A patient recently prescribed hydrocodone calls to report they are unable to fill the prescription. Which factors could contribute to the inability to fill the prescription? Select all that apply.
- DEA number missing from prescription

- b. Prescription sent via electronic messenger
- c. Dose higher than typically prescribed
- d. Prescriber license number not included
- e. Patient name and date of birth were handwritten

ANS: A , B , D

In order to fill a hydrocodone prescription, the prescriber name, license number, DEA number, and contact information must be included. Schedule II medications, such as narcotics, must be prescribed using written prescriptions. Though the pharmacist may question the high dosing, that would not prevent filling the prescription. The patient's name and date of birth must be included on the prescription, but there are no regulations that the name cannot be handwritten. DIF: Cognitive Level: Comprehension REF: pp. 6-8 TOP: Nursing Process: Diagnosis MSC: NCLEX Client Needs Category: Physiologic Integrity: Reduction of Risk Potential

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Chapter 3: Promoting Positive Outcomes of Drug Therapy

Test Bank

Multiple Choice

14. A patient reports that a medication prescribed for recurrent migraine headaches is not working. Which action should be taken first?
- a. Ask the patient about the number and frequency of tablets taken.
 - b. Assess the patient's headache pain on a scale from 1 to 10.
 - c. Report the patient's complaint to the prescriber.
 - d. Suggest biofeedback as an adjunct to drug therapy.

ANS: A

When evaluating the effectiveness of a drug, it is important to determine whether the patient is using the drug as ordered. Asking the patient to tell the nurse how many tablets are taken and how often helps the nurse determine compliance. Assessing current pain does not yield information about how well the medication is working unless the patient is currently taking it. The nurse should gather as much information about compliance, symptoms, and drug effectiveness as possible before contacting the prescriber. Biofeedback may be an effective adjunct to treatment, but it should not be recommended without complete information about drug effectiveness. DIF: Cognitive Level: Application REF: pp. 15-16 TOP: Nursing Process: Evaluation MSC: NCLEX Client Needs Category: Physiologic Integrity: Pharmacologic and Parenteral Therapies

15. A patient is prescribed metronidazole for bacterial vaginosis. Which patient history finding would be most concerning?

- a. Recent yeast infection
- b. Family history of cervical cancer
- c. Drinks two glasses of wine every night
- d. Patient is currently unemployed

ANS: C

Patients taking metronidazole should be educated not to drink alcohol to prevent adverse reactions. It would be concerning that the patient drinks wine daily. History of a yeast infection may indicate increased risk for recurrence with administration of an antimicrobial. A family history of cervical cancer is not related to administration of metronidazole. Unemployment can indicate lack of insurance coverage, which may limit the patient's ability to purchase medications, but is not the most concerning patient finding. DIF: Cognitive Level: Application REF: p. 12 TOP: Nursing Process: Implementation MSC: NCLEX Client Needs Category: Physiologic Integrity: Reduction of Risk Potential

16. A patient is using a metered-dose inhaler containing albuterol for asthma. The medication label instructs the patient to administer "two puffs every 4 hours as needed for coughing or wheezing." The patient reports feeling jittery sometimes when taking the medication, and she doesn't feel that the medication is always effective. Which action is most appropriate?
- a. Asking the patient to demonstrate use of the inhaler
 - b. Assessing the patient's exposure to tobacco smoke
 - c. Auscultating lung sounds and obtaining vital signs
 - d. Suggesting that the patient use one puff to reduce side effects

ANS: C

Asking the patient to demonstrate inhaler use helps to evaluate the patient's ability to administer the medication properly and is part of the nurse's evaluation, but is not a priority intervention based on the patient's current report. Assessing tobacco smoke exposure helps the nurse determine whether nondrug therapies, such as smoke avoidance, can be used as an adjunct to drug therapy, but does not relate to the patient's current problem. Performing a physical assessment helps the nurse evaluate the patient's response to the medication and identify the presence of other side effects. DIF: Cognitive Level: Application REF: p. 13 TOP: Nursing Process: Implementation MSC: NCLEX Client Needs Category: Physiologic Integrity: Pharmacologic and Parenteral Therapies

17. A patient newly diagnosed with diabetes is to be discharged from the hospital. Which action should be taken first during medication education?
- a. Asking the patient to demonstrate how to measure and administer insulin
 - b. Discussing methods of storing insulin and discarding syringes
 - c. Giving information about how diet and exercise affect insulin requirements
 - d. Teaching the patient about the long-term consequences of poor diabetes control

ANS: A

Because insulin must be given correctly to control symptoms and because an overdose can be fatal, it is most important for the patient to know how to administer it. Asking for a demonstration of technique is the best way to determine whether the patient has understood the teaching. When a patient is receiving a lot of new information, the information presented first is the most likely to be remembered. The other teaching points are important as well, but they are not as critical and can be taught later. DIF: Cognitive Level: Application REF: p. 11 TOP: Nursing Process: Planning MSC: NCLEX Client Needs Category: Physiologic Integrity: Reduction of Risk Potential

18. The drug manual states that older adult patients are at increased risk for hepatic side effects. Which action is most important when prescribing this medication to an 80-year-old patient?
- Obtain pretreatment laboratory work.
 - Ensure that the drug is given in the correct dose at the correct time to minimize the risk of adverse effects.
 - Discontinue the order; the drug is contraindicated for this patient.
 - Give the medication intravenously so that the drug does not pass through the liver.

ANS: A

The drug manual indicates that this drug should be given with caution to elderly patients. Getting information about liver function before giving the drug establishes baseline data that can be compared with post-treatment data to determine whether the drug is affecting the liver. Giving the correct dose at the correct interval helps to minimize risk, but without baseline information, the effects cannot be determined. The drug is not contraindicated. DIF: Cognitive Level: Analysis REF:

p. 12 TOP: Nursing Process: Implementation MSC: NCLEX Client Needs Category: Physiologic Integrity: Reduction of Risk Potential

19. A patient recently diagnosed with HIV is prescribed several medications to treat the condition. Which factors could impact the patient's adherence to the treatment regimen? Select all that apply.
- The patient is uninsured
 - The patient works three part-time jobs
 - The medication regimen includes six different pills
 - Patient has an eighth-grade reading comprehension level
 - Medication regimen requires medication be taken at regular 4-hour intervals.

ANS: A , B , C , E

Lack of insurance coverage can inhibit the patient from purchasing the medications, limiting his access to treatment. Having three part-time jobs indicates that the patient has a busy schedule, which contributes to forgetfulness and poor adherence. The more complex the medication regimen, the more difficult it is to maintain patient adherence. Although a patient with an eighth-grade reading comprehension level may have difficulty understanding professional medical language, medication teaching can be adjusted to meet the patient's learning needs. DIF: Cognitive Level:

ComprehensionREF: pp. 13-14TOP: Nursing Process: Evaluation MSC: NCLEX Client Needs Category: Physiologic Integrity: Reduction of Risk Potential

20. A patient diagnosed with bipolar disorder is prescribed daily lithium. Which action is most important to determine if the therapeutic level is maintained?
- Obtain preadministration blood work.
 - Administer medication at regular intervals.
 - Ensure periodic laboratory testing is completed.
 - Assess the patient for adverse effects.

ANS: C

Therapeutic serum levels are determined through periodic laboratory testing. Preadministration blood work may be necessary to determine the patient's physical condition but will not determine therapeutic levels. Scheduling medication administration at regular intervals will help to ensure medication is absorbed and metabolized predictably, but will not determine therapeutic blood levels. Assessing the patient for physical signs of adverse effects does not determine if a therapeutic level has been obtained.DIF: Cognitive Level: ApplicationREF: p. 12TOP: Nursing Process: Evaluation MSC: NCLEX Client Needs Category: Physiologic Integrity: Reduction of Risk Potential

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Chapter 4: Pharmacokinetics, Pharmacodynamics, and Drug Interactions

Test Bank

Multiple Choice

21. The nurse administers naloxone [Narcan] to a patient who has received a toxic dose of morphine sulfate. The nurse understands that the naloxone is effective because of which action?
- Countering the effects of morphine sulfate by agonist actions
 - Increasing the excretion of morphine sulfate by altering serum pH
 - Preventing activation of opioid receptors through antagonist actions
 - Regulating the sensitivity of opioid receptors by neurochemicalalterations

ANS: C

Naloxone acts by blocking the action of opioids at opioid receptors. An opioid agonist would increase the effects of morphine. Naloxone does not affect serum pH or excretion of opioids. Naloxone does not alter the sensitivity of opioid receptors.DIF: Cognitive Level: AnalysisREF: p. 31TOP: Nursing Process: Implementation MSC: NCLEX Client Needs Category: Physiologic Integrity: Pharmacologic and Parenteral Therapies

22. A patient is taking drug X and receives a new prescription for drug Y, which is listed as an inducing agent. The nurse caring for this patient understands that this patient may require doses of drug .
- lower; X
 - lower; Y
 - higher; X
 - higher; Y

ANS: C

An inducing agent stimulates the synthesis of CYP isoenzymes, which may increase the metabolism of other drugs as much as two- to threefold, thereby lowering the level of those drugs in the body and requiring higher doses to maintain drug effectiveness. DIF: Cognitive Level: Application REF: p. 36 TOP: Nursing Process: Planning MSC: NCLEX Client Needs Category: Physiologic Integrity: Pharmacologic and Parenteral Therapies

23. The nurse is preparing to administer penicillin G intramuscularly to a child. The child's parents ask why the drug cannot be given in an oral liquid form. What is the nurse's reply?
- "This drug causes severe gastric upset if given orally."
 - "This drug has a narrow therapeutic range, and the dose must be tightly controlled."
 - "This drug is absorbed much too quickly in an oral form."
 - "This drug would be inactivated by enzymes in the stomach."

ANS: D

Penicillin G is inactivated by digestive enzymes in the stomach and cannot be given orally. It does not have a narrow therapeutic range. DIF: Cognitive Level: Application REF: p. 20 TOP: Nursing Process: Implementation MSC: NCLEX Client Needs Category: Physiologic Integrity: Pharmacologic and Parenteral Therapies

24. Which statement about food and drug interactions is true?
- Foods alter drug absorption and metabolism but not drug action.
 - Medications are best absorbed on an empty stomach.
 - Patient discomfort is the food and drug interaction of most concern.
 - Some foods can inhibit CYP isoenzymes and alter drug metabolism.

ANS: D

Grapefruit juice inhibits CYP3A4, which lowers the metabolism of some drugs, leading to toxic effects of drugs affected by these isoenzymes. Foods can alter all pharmacokinetic and pharmacodynamic processes. Not all medications are absorbed better on an empty stomach; some require certain foods to enhance absorption. Patient comfort is a concern, but it is not as important as more severe and possibly life-threatening food and drug interactions. DIF: Cognitive Level:

AnalysisREF: p. 39TOP: Nursing Process: Assessment MSC: NCLEX Client Needs Category: Physiologic Integrity: Reduction of Risk Potential

25. A nurse is teaching a patient about a drug that induces P-glycoprotein. The nurse will explain that this drug may cause which effect on other drugs?
- Decreased absorption in the intestines
 - Decreased elimination through the kidneys
 - Increased brain exposure
 - Increased fetal absorption

ANS: B

Drugs that induce PGP can increase drug export from cells of the intestinal epithelium into the intestinal lumen, thus decreasing absorption of the drug. PGP inducers also increase drug elimination and decrease brain and fetal drug exposure.DIF: Cognitive Level: AnalysisREF: p. 36TOP: Nursing Process: Assessment MSC: NCLEX Client Needs Category: Physiologic Integrity: Pharmacologic and Parenteral Therapies

26. A patient claims to get better effects with a tablet of Brand X of a drug than with a tablet of Brand Y of the same drug. Both brands contain the same amount of the active ingredient. What does the nurse know to be most likely?
- Advertising by pharmaceutical companies can enhance patient expectations of one brand over another, leading to a placebo effect.
 - Because the drug preparations are chemically equivalent, the effects of the two brands must be identical.
 - Tablets can differ in composition and can have differing rates of disintegration and dissolution, which can alter the drug's effects in the body.
 - The bioavailability of a drug is determined by the amount of the drug in each dose.

ANS: C

Even if two brands of a drug are chemically equivalent (i.e., they have identical amounts of the same chemical compound), they can have different effects in the body if they differ in bioavailability. Tablets made by different manufacturers contain different binders and fillers, which disintegrate and dissolve at different rates and affect the bioavailability of the drug. Two brands may be chemically equivalent and still differ in bioavailability, which is not determined by the amount of drug in the dose.DIF: Cognitive Level: ApplicationREF: p. 19TOP: Nursing Process: Diagnosis MSC: NCLEX Client Needs Category: Physiologic Integrity: Pharmacologic and Parenteral Therapies

27. Two nurses are discussing theories of drug-receptor interaction. Which statements are true regarding the affinity of a drug and its receptor?
Select all that apply.

- a. Affinity and intrinsic activity are dependent properties.
- b. Affinity refers to the strength of the attraction between a drug and its receptor.
- c. Drugs with high affinity are strongly attracted to their receptors.
- d. Drugs with low affinity are strongly attracted to their receptors.
- e. The affinity of a drug for its receptors is reflected in its potency.

ANS: B , C , E

Affinity refers to the strength of the attraction between a drug and its receptor. Drugs with high affinity are strongly attracted to their receptors, and the affinity of a drug and its receptors is reflected in its potency. Affinity and intrinsic activity are independent properties. Drugs with low affinity are weakly attracted to their receptors. DIF: Cognitive Level: Comprehension REF: pp. 30-31 TOP: Nursing Process: Diagnosis MSC: NCLEX Client Needs Category: Physiologic Integrity: Pharmacologic and Parenteral Therapies

28. A patient receives a drug that has a narrow therapeutic range. The nurse administering this medication will expect to do what?
- a. Administer the drug at intervals longer than the drug half-life.
 - b. Administer this medication intravenously.
 - c. Monitor plasma drug levels.
 - d. Teach the patient that maximum drug effects will occur within a short period.

ANS: C

A drug with a narrow therapeutic range is more difficult to administer safely, because the difference between the minimum effective concentration and the toxic concentration is small. Patients taking these medications must have their plasma drug levels monitored closely to ensure that they are getting an effective dose that is not toxic. Administering medications at longer intervals only increases the time required to reach effective plasma drug levels. Drugs that have a narrow therapeutic range may be given by any route and do not differ from other medications in the amount of time it takes for them to take effect, which is a function of a drug's half-life and dosing frequency. DIF: Cognitive Level: Application REF: p. 25 TOP: Nursing Process: Evaluation MSC: NCLEX Client Needs Category: Physiologic Integrity: Reduction of Risk Potential

29. What occurs when a drug binds to a receptor in the body?
- a. It alters the receptor to become nonresponsive to its usual endogenous molecules.
 - b. It increases or decreases the activity of that receptor.
 - c. It gives the receptor a new function.
 - d. It prevents the action of the receptor by altering its response to chemical mediators.

ANS: B

When a drug binds to a receptor, it mimics or blocks the actions of the usual endogenous regulatory molecules, either increasing or decreasing the rate of the physiologic activity normally controlled

by that receptor. It does not alter the activity of the receptor and does not give the receptor a new function. DIF: Cognitive Level: Analysis REF: p. 29 TOP: Nursing Process: Assessment MSC: NCLEX Client Needs Category: Physiologic Integrity: Pharmacologic and Parenteral Therapies

30. A patient is receiving intravenous gentamicin. A serum drug test reveals toxic levels. The dosing is correct, and this medication has been tolerated by this patient in the past. Which could be a probable cause of the test result?
- A loading dose was not given.
 - The drug was not completely dissolved in the IV solution.
 - The patient is taking another medication that binds to serum albumin.
 - The medication is being given at a frequency that is longer than its half-life.

ANS: C

Gentamicin binds to albumin, but only weakly, and in the presence of another drug that binds to albumin, it can rise to toxic levels in blood serum. A loading dose increases the initial amount of a drug and is used to bring drug levels to the desired plateau more quickly. A drug that is not completely dissolved carries a risk of causing embolism. A drug given at a frequency longer than the drug half-life will likely be at subtherapeutic levels and not at toxic levels. DIF: Cognitive Level: Analysis REF: p. 21 TOP: Nursing Process: Evaluation MSC: NCLEX Client Needs Category: Physiologic Integrity: Reduction of Risk Potential

31. A patient reports becoming “immune” to a medication because it no longer works to alleviate symptoms. The nurse recognizes that this decreased effectiveness is likely caused by:
- antagonists produced by the body that compete with the drug for receptor sites.
 - decreased selectivity of receptor sites, resulting in a variety of effects.
 - desensitization of receptor sites by continual exposure to the drug.
 - synthesis of more receptor sites in response to the medication.

ANS: C

Continual exposure to an agonist would cause the cell to become less responsive or desensitized. The body does not produce antagonists as a response to a medication. Receptor site selectivity is determined by physiologic factors and not by the substances that bind to them. Medications do not cause more receptors to be produced. DIF: Cognitive Level: Analysis REF: p. 32-33 TOP: Nursing Process: Diagnosis MSC: NCLEX Client Needs Category: Physiologic Integrity: Pharmacologic and Parenteral Therapies

32. A patient who is taking morphine for pain asks the nurse how a pain medication can also cause constipation. What does the nurse know about morphine?
- It binds to different types of receptors in the body.
 - It can cause constipation in toxic doses.

- c. It causes only one type of response, and the constipation is coincidental.
- d. It is selective to receptors that regulate more than one body process.

ANS: D

Morphine is a medication that is selective to receptor type that regulates more than one process. Because it is selective to receptor type, it does not bind to different types of receptors. Constipation is a normal side effect and is not significant for toxicity. DIF: Cognitive Level: Analysis REF: p. 35 TOP: Nursing Process: Implementation MSC: NCLEX Client Needs Category: Physiologic Integrity: Pharmacologic and Parenteral Therapies

33. The nurse is administering morning medications. The nurse gives a patient multiple medications, two of which compete for plasma albumin receptor sites. As a result of this concurrent administration, the nurse can anticipate that what might occur?
Select all that apply.

- a. Binding of one or both agents will be reduced.
- b. Plasma levels of free drug will rise.
- c. Plasma levels of free drug will fall.
- d. The increase in free drug will intensify effects.
- e. The increase in bound drug will intensify effects.

ANS: A , B , D

When two drugs bind to the same site on plasma albumin, coadministration of those drugs produces competition for binding. As a result, binding of one or both agents is reduced, causing plasma levels of free drug to rise. The increase in free drug can intensify the effect, but it usually undergoes rapid elimination. The increase in plasma levels of free drug is rarely sustained. DIF: Cognitive Level: Analysis REF: p. 36 TOP: Nursing Process: Diagnosis MSC: NCLEX Client Needs Category: Physiologic Integrity: Pharmacologic and Parenteral Therapies

34. When administering medications to infants, it is important to remember which of the following?
Select all that apply.

- a. Breast-feeding infants are more likely to develop toxicity when given lipid-soluble drugs.
- b. Immaturity of renal function in infancy causes infants to excrete drugs less efficiently.
- c. Infants have immature livers, which slows drug metabolism.
- d. Infants are more sensitive to medications that act on the central nervous system (CNS).
- e. Oral medications are contraindicated in infants, because PO administration requires a cooperative patient.

ANS: B , C , D

Immature renal function causes infants to excrete drugs more slowly, and infants are at risk for toxicity until renal function is well developed. Infants' livers are not completely developed, and they are less able to metabolize drugs efficiently. Because the blood-brain barrier is not well

developed in infants, caution must be used when administering CNS drugs. Lipid-soluble drugs may be excreted in breast milk if the mother is taking them, but breastfeeding does not affect medications given directly to the infant. Oral medications may be given safely to infants as long as they are awake and can swallow the drug. DIF: Cognitive Level: Comprehension REF: "pp. 20,22,24" TOP: Nursing Process: Assessment MSC: NCLEX Client Needs Category: Physiologic Integrity: Reduction of Risk Potential

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Chapter 5: Adverse Drug Reactions and Medication Errors

Test Bank

Multiple Choice

35. A nursing student is preparing to give a medication that has a boxed warning. The student asks the nurse what this means. What will the nurse explain about boxed warnings?
- They indicate that a drug should not be given except in life-threatening circumstances.
 - They provide detailed information about the adverse effects of the drug.
 - They alert prescribers to measures to mitigate potential harm from side effects.
 - They provide information about antidotes in the event that toxicity occurs.

ANS: C

Boxed warnings (also known as black box warnings) are used to alert providers to potential side effects and to ways to prevent or reduce harm from these side effects. A boxed warning is placed on any drug that, although useful, has serious side effects; this is a way to keep drugs on the market while protecting patients. Many of these drugs are used in situations that are not life-threatening. The boxed warning provides a concise summary and not a detailed explanation of drug side effects. The boxed warning does not include antidotes to toxicity. DIF: Cognitive Level: Analysis REF: p. 45 TOP: Nursing Process: Implementation MSC: NCLEX Client Needs Category: Physiologic Integrity: Reduction of Risk Potential

36. A nurse is preparing to administer a drug. Upon reading the medication guide, the nurse notes that the drug has been linked to symptoms of Parkinson disease in some patients. What will the nurse do?
- Ask the patient to report these symptoms, which are known to be teratogenic effects.
 - Observe the patient closely for such symptoms and prepare to treat them if needed.
 - Request an order to evaluate the patient's genetic predisposition to this effect.
 - Warn the patient about these effects and provide reassurance that this is expected.

ANS: B

A drug that causes disease-like symptoms is known to be iatrogenic. Nurses should be prepared for this possibility and be prepared to withdraw the drug if necessary and treat the symptoms. Such

effects are not teratogenic, since teratogenic effects affect the fetus. Patients with a genetic predisposition to respond differently to drugs are known to have idiosyncratic effects. Iatrogenic effects, even when known, are not typically expected side effects. DIF: Cognitive Level: Application REF: pp. 41-42 TOP: Nursing Process: Diagnosis MSC: NCLEX Client Needs Category: Physiologic Integrity: Pharmacologic and Parenteral Therapies

37. Which patients are at increased risk for adverse drug events? Select all that apply.

- a. A 2-month-old infant taking a medication for gastroesophageal reflux disease
- b. A 23-year-old female taking an antibiotic for the first time
- c. A 40-year-old male who is intubated in the intensive care unit and taking antibiotics and cardiac medications
- d. A 7-year-old female receiving insulin for diabetes
- e. An 80-year-old male taking medications for COPD

ANS: A , C , E

Patients at increased risk for adverse drug events include the very young, the very old, and those who have serious illnesses. Females, children, and young adults taking single medications do not have increased risk for adverse events. DIF: Cognitive Level: Analysis REF: "pp. 42,46" TOP: Nursing Process: Assessment MSC: NCLEX Client Needs Category: Physiologic Integrity: Reduction of Risk Potential

38. A nurse provides teaching to a patient who will begin taking a drug with a known risk of hepatotoxicity. Which statement by the patient indicates a need for further teaching?

- a. "I should avoid taking acetaminophen while taking this drug."
- b. "I will need periodic evaluation of aspartate aminotransferase and alanine aminotransferase levels."
- c. "If I experience nausea, vomiting, or abdominal pain, I should call my provider."
- d. "Routine testing and early detection of problems will prevent liver failure."

ANS: D

Drug-induced liver injury can progress from undetectable to advanced between routine tests; therefore, routine testing does not always prevent liver failure. Patients taking known hepatotoxic drugs should avoid other drugs, such as acetaminophen, that can cause liver damage. Aspartate aminotransferase (AST) and alanine aminotransferase (ALT) are liver enzymes that are routinely monitored when a patient is taking hepatotoxic drugs. Nausea, vomiting, and abdominal pain are signs of liver injury and should be reported. DIF: Cognitive Level: Application REF: p. 44 TOP: Nursing Process: Implementation MSC: NCLEX Client Needs Category: Physiologic Integrity: Reduction of Risk Potential

39. A nurse is reviewing a medication administration record before administering medications. Which order will the nurse implement?

- a. Furosemide [Lasix] 20 mg QD PO
- b. Furosemide [Lasix] 20 mg qd PO
- c. Furosemide [Lasix] 20 mg daily
- d. Furosemide [Lasix] 20 mg PO daily

ANS: D

The correct answer is a complete order; it contains the medication, dose, route, and time. “qd” is no longer an accepted abbreviation; it should be written out as “daily” or “every day.” The order of “20 mg daily” does not specify the route to be used. DIF: Cognitive Level: Analysis REF: p. 48 TOP: Nursing Process: Planning MSC: NCLEX Client Needs Category: Physiologic Integrity: Reduction of Risk Potential

40. A patient is given a new medication and reports nausea within an hour after taking the drug. The nurse consults the drug information manual and learns that nausea is not an expected adverse effect of this drug. When the next dose is due, what will the nurse do?

- a. Administer the drug and tell the patient to report further nausea.
- b. Hold the drug and notify the provider of the patient’s symptoms.
- c. Report the symptoms of nausea to the MEDWATCH program.
- d. Request an order for an antiemetic to counter this drug’s effects.

ANS: A

Not all adverse drug reactions (ADRs) can be detected during clinical trials, and nurses should be alert to any effects that may result from drug administration. Because nausea is not a serious effect and because it is not yet known whether the drug is the cause of this patient’s nausea, the nurse should administer the medication and observe the patient for recurrence of the symptom. It is not necessary to hold the drug, because nausea is not a serious side effect. The MEDWATCH program should be notified when there is a greater suspicion that the drug may have caused the nausea if the nausea occurs with subsequent doses. Until there is greater suspicion that the drug actually caused this patient’s nausea, giving an antiemetic is not indicated. DIF: Cognitive Level: Application REF: p. 42 TOP: Nursing Process: Evaluation MSC: NCLEX Client Needs Category: Physiologic Integrity: Reduction of Risk Potential

41. A nurse is preparing to give an antibiotic to a patient who reports being allergic to antibiotics. Before giving the medication, what will the nurse do first?

- a. Ask whether the patient has taken this antibiotic for other infections
- b. Question the patient about allergies to other medications
- c. Request an order for a lower dose of the antibiotic
- d. Request an order for an antihistamine

ANS: A

The nurse needs to assess whether the patient is truly allergic to this drug. Allergic reactions require previous exposure to the drug, so the nurse should ask whether the patient has taken this antibiotic before. If a patient is allergic to a drug, lowering the dose will not decrease the risk of allergic reaction. Antihistamines sometimes are given when patients must take a drug to which they are allergic. DIF: Cognitive Level: Application REF: p. 41 TOP: Nursing Process: Assessment MSC: NCLEX Client Needs Category: Physiologic Integrity: Reduction of Risk Potential

42. A patient is taking sertraline [Zoloft] for depression, and the provider orders azithromycin [Zithromax] to treat an infection. What will the nurse do?
- Contact the provider to discuss an alternative to azithromycin.
 - Request an order for a different antidepressant medication.
 - Request an order to reduce the dose of sertraline.
 - Withhold the sertraline while giving the azithromycin.

ANS: A

Both sertraline and azithromycin prolong the QT interval, and when taken together, they increase the risk of fatal dysrhythmias. Because the antibiotic is used for a short time, it is correct to consider using a different antibiotic. Reducing the dose of sertraline does not alter the combined effects of two drugs that lengthen the QT interval. Sertraline should not be stopped abruptly, so withholding it during antibiotic therapy is not indicated. DIF: Cognitive Level: Application REF: p. 44 TOP: Nursing Process: Planning MSC: NCLEX Client Needs Category: Physiologic Integrity: Pharmacologic and Parenteral Therapies

43. A patient is given a drug for the first time and develops shortness of breath. The patient's heart rate is 76 beats/minute, the respiratory rate is 20 breaths/minute, and the blood pressure is 120/70 mm Hg. The nurse checks a drug administration manual to make sure the correct dose was given and learns that some patients taking the drug experience shortness of breath. The nurse will contact the provider to report what?
- An allergic reaction
 - An idiosyncratic effect
 - An iatrogenic response
 - A side effect

ANS: D

A side effect is a secondary drug effect produced at therapeutic doses. This patient received the correct dose of the drug and developed shortness of breath, which, in this case, is a drug side effect. To experience an allergic reaction, a patient must have prior exposure to a drug and sensitization of the immune response. An idiosyncratic effect results from a genetic predisposition to an uncommon drug response. An iatrogenic response occurs when a drug causes symptoms of a disease. DIF: Cognitive Level: Application REF: p. 41 TOP: Nursing Process: Implementation MSC: NCLEX Client Needs Category: Physiologic Integrity: Reduction of Risk Potential

44. Which are effective ways to help prevent medication errors? Select all that apply.

- a. Developing non-punitive approaches to track errors
- b. Focusing on caregivers who make errors
- c. Helping patients to be active, informed members of the healthcare team
- d. Naming, blaming, and shaming those who make errors
- e. Using electronic medical order entry systems

ANS: A , C , E

To help prevent medication errors, it is important to create an environment for tracking errors that is non-punitive so that caregivers can learn from mistakes and work together to change systems appropriately. Helping patients be active, informed members of the healthcare team is a useful tool in this process. Using electronic order entry helps eliminate confusion from poor handwriting and allows built-in systems to warn caregivers about possible overdoses, side effects, and drug interactions; it also helps ensure the right dose at the right time to the right patient. An approach that focuses on those who make mistakes by naming, blaming, and shaming is not productive and often results in personnel who cover up mistakes instead of working to make things better. DIF: Cognitive Level: Analysis REF: pp. 46-47 TOP: Nursing Process: Assessment MSC: NCLEX Client Needs Category: Physiologic Integrity: Pharmacologic and Parenteral Therapies

45. A patient is taking a drug that has known toxic side effects. What will the nurse do?

- a. Discontinue the drug at the first signs of toxicity.
- b. Ensure that complete blood counts are ordered periodically.
- c. Monitor the function of all organs potentially affected by the drug.
- d. Teach the patient how to treat the symptoms if they develop.

ANS: C

When a drug is administered that has known toxic side effects, the nurse is responsible for monitoring all organ systems potentially affected by the drug. Not all toxic side effects warrant discontinuation of the drug, and a nurse cannot discontinue a drug without an order from the provider. Complete blood counts are indicated only for drugs that affect the blood. Some drugs need to be discontinued, so teaching a patient to treat symptoms is not correct in all cases. DIF: Cognitive Level: Application REF: pp. 42-43 TOP: Nursing Process: Planning MSC: NCLEX Client Needs Category: Physiologic Integrity: Reduction of Risk Potential

46. A patient is being discharged after surgery. During the admission history, the nurse learned that the patient normally consumes two or three glasses of wine each day. The prescriber has ordered hydrocodone with acetaminophen [Lortab] for pain. What will the nurse do?

- a. Request an order for acetaminophen without hydrocodone for pain.

- b. Suggest that the patient use ibuprofen for pain.
- c. Tell the patient not to drink wine while taking Lortab.
- d. Tell the patient to limit wine intake to one or two glasses per day.

ANS: C

Combining a hepatotoxic drug with certain other drugs may increase the risk of hepatotoxicity. When even therapeutic doses of acetaminophen are taken with alcohol, the acetaminophen can cause liver damage. Patients should be cautioned not to drink alcohol; even two drinks with acetaminophen can produce this effect. Hydrocodone does not contribute to hepatotoxicity. Ibuprofen is not indicated for post-operative pain unless the pain is mild. Limiting wine to one or two glasses per day still increases the risk of hepatotoxicity. DIF: Cognitive Level: Application REF: p. 42 TOP: Nursing Process: Diagnosis MSC: NCLEX Client Needs Category: Physiologic Integrity: Reduction of Risk Potential

47. Which actions occur in 90% of fatal medication errors? Select all that apply.

- a. Confusing drugs with similar packaging
- b. Giving a drug intravenously instead of intramuscularly
- c. Giving Nasarel instead of Nizoral
- d. Using an infusion device that malfunctions
- e. Writing a prescription illegibly

ANS: B , C , E

Ninety percent of fatal medication errors fall into three categories: human factors, communication mistakes, and name confusion. Giving a drug IV (intravenously) instead of IM (intramuscularly) is an example of a human factor; writing a prescription so that it is illegible is an example of a communication mistake; and giving a drug with a name that sounds like the name of another drug is an example of name confusion. Confusion of drugs with similar packaging and using a faulty device also can cause fatal drug errors, but these factors do not fall into the categories that account for 90% of fatal errors. DIF: Cognitive Level: Analysis REF: pp. 45-46 TOP: Nursing Process: Assessment MSC: NCLEX Client Needs Category: Physiologic Integrity: Pharmacologic and Parenteral Therapies

Rosenthal: Lehne's Pharmacotherapeutics for Advanced Practice Providers, 2nd Ed.

Chapter 6: Individual Variation in Drug Responses

Test Bank

Multiple Choice

48. A nurse is caring for a woman with breast cancer who is receiving tamoxifen. A review of this patient's chart reveals a deficiency of the CYP2D6 gene. The nurse will contact the provider to suggest:
- a different medication.
 - an increased dose.
 - a reduced dose.
 - serum drug levels.

ANS: A

Women with a deficiency of the CYP2D6 gene lack the ability to convert tamoxifen to its active form, endoxifen, and will not benefit from this drug. Another drug should be used to treat this patient's breast cancer. Increasing the dose, reducing the dose, or monitoring serum drug levels will not make this drug more effective in these women. DIF: Cognitive Level: Application REF: p. 53 TOP: Nursing Process: Planning MSC: NCLEX Client Needs Category: Physiologic Integrity: Reduction of Risk Potential

49. Which groups of people are especially sensitive to medication effects? Select all that apply.
- Older adults
 - Caucasians
 - Infants
 - Minorities
 - Women

ANS: A , C

Older adults and infants are the two groups most sensitive to drugs because of differences in organs that absorb, metabolize, and excrete drugs. In the older adult, organ degeneration accounts for these differences, whereas in infants the differences are related to organ immaturity. Racial and gender differences tend to be related to genetic differences and not race and gender per se. These groups are more sensitive to drug effects in some cases and less sensitive in other cases. DIF: Cognitive Level: Comprehension REF: p. 51 TOP: Nursing Process: Diagnosis MSC: NCLEX Client Needs Category: Physiologic Integrity: Pharmacologic and Parenteral Therapies

50. A post-operative patient who is worried about pain control will be discharged several days after surgery. The nurse providing discharge teaching tells the patient that the prescribed Lortab is not as strong as the morphine the patient was given in the immediate post-operative period. Which response is the patient likely to experience?
- A decreased likelihood of filling the prescription for the drug
 - A negative placebo effect when taking the medication
 - An increased compliance with the drug regimen
 - Optimistic, realistic expectations about the drug

ANS: B

The full extent of placebo effects, if they truly occur, is not well documented or understood, although a decrease in pain as a placebo effect has been demonstrated to some extent. To foster a beneficial placebo effect, it is important for all members of the healthcare team to present an optimistic and realistic assessment of the effects of the drug the patient is taking. If the nurse tells an anxious patient that the medication being given is not as strong as what has been given, the patient is likely to have lowered expectations of the effectiveness of the drug, causing a negative placebo effect. Lowered expectations do not mean that the patient will give up on the drug entirely; in fact, the patient may actually fill the prescription and then take more drug than what is prescribed to get a better effect. DIF: Cognitive Level: Application REF: p. 52 TOP: Nursing Process: Planning MSC: NCLEX Client Needs Category: Physiologic Integrity: Pharmacologic and Parenteral Therapies

51. A patient has been taking narcotic analgesics for chronic pain for several months. The nurse caring for this patient notes that the prescribed dose is higher than the recommended dose. The patient has normal vital signs, is awake and alert, and reports mild pain. What does the nurse recognize about this patient?
- This patient exhibits a negative placebo effect with a reduced response to the drug.
 - This patient has developed a reaction known as tachyphylaxis because of repeated exposure to the drug.
 - This patient has developed pharmacodynamic tolerance, which has increased the minimal effective concentration (MEC) needed for analgesic effect.
 - This patient produces higher than normal hepatic enzymes as a result of prolonged exposure to the drug.

ANS: C

Pharmacodynamic tolerance results when a patient takes a drug over a period of time. Adaptive processes occur in response to chronic receptor occupation. The result is that the body requires increased drug, or an increased MEC, to achieve the same effect. This patient is getting adequate pain relief, so there is no negative placebo effect. Tachyphylaxis is a form of tolerance that can be defined as a reduction in drug responsiveness brought on by repeated dosing over a short time; this occurs over several months. Barbiturates induce synthesis of hepatic enzymes that cause increased metabolism of the drug, but it does not increase the MEC. DIF: Cognitive Level: Application REF: p. 52 TOP: Nursing Process: Evaluation MSC: NCLEX Client Needs Category: Physiologic Integrity: Pharmacologic and Parenteral Therapies

52. A patient asks a nurse why a friend who is taking the same drug responds differently to that drug. The nurse knows that the most common variation in drug response is due to differences in each patient's:
- drug receptor sites.
 - hypersensitivity potential.

- c. metabolism of drugs.
- d. psychosocial response.

ANS: C

The most common source of genetic variation in drug response is related to alterations in drug metabolism and is determined by genetic codes for various drug-metabolizing isoenzymes. There are known genetic differences in codes for drug target sites, but these are not as numerous as those for metabolic isoenzymes. Hypersensitivity potential is also genetically determined, but variations produce differences in adverse reactions to drugs and not in drug effectiveness. Psychosocial responses vary for many less measurable reasons, such as individual personalities and variations in cultures. DIF: Cognitive Level: Analysis REF: p. 53 TOP: Nursing Process: Evaluation MSC: NCLEX Client Needs Category: Physiologic Integrity: Pharmacologic and Parenteral Therapies

53. The nurse is assessing a newly admitted older patient who has recently lost 15 pounds. The nurse notes that the patient is taking warfarin (Coumadin). Which laboratory tests will the nurse discuss with this patient's provider?
- a. Blood glucose and C-reactive protein
 - b. Complete blood count and hepatic function tests
 - c. Renal function tests and serum electrolytes
 - d. Serum albumin and coagulation studies

ANS: D

Older patients and those who are malnourished are at increased risk for low serum albumin. Since warfarin binds to albumin, such patients are at increased risk for elevated warfarin levels, which can cause increased bleeding. The nurse should request albumin levels and coagulation studies. DIF: Cognitive Level: Analysis REF: p. 54 TOP: Nursing Process: Assessment MSC: NCLEX Client Needs Category: Physiologic Integrity: Pharmacologic and Parenteral Therapies

54. A nurse is preparing to care for a patient who is receiving digoxin. When screening for potential adverse effects from this drug, the nurse will review which of this patient's laboratory results?
- a. Albumin
 - b. Blood urea nitrogen (BUN) and creatinine
 - c. Hepatic enzymes
 - d. Serum electrolytes

ANS: D

Patients with low serum potassium are at risk for fatal cardiac dysrhythmias when taking digoxin, and it is essential to know this level before this medication is administered. Knowing a patient's albumin level would be important when giving drugs that are protein bound. The BUN and creatinine levels are indicators of renal function. Hepatic enzymes are important to know when drugs are metabolized by the liver. DIF: Cognitive Level: Application REF: p. 51 TOP: Nursing

Process: Assessment MSC: NCLEX Client Needs Category: Physiologic Integrity: Reduction of Risk Potential

55. A nurse administers the same medication in the same preparation in the same dose to several patients and notes that some patients have a better response to the drug than others. What is the most likely explanation for this phenomenon?
- Altered bioavailability of the drug
 - Patient compliance with the therapeutic regimen
 - Pharmacogenomic differences among individuals
 - Placebo effects enhancing expectations of drug efficacy

ANS: C

Each patient's genetic makeup can determine how that patient responds to drugs quantitatively and qualitatively, and this is the most likely cause of individual variation when the same drug is given at the same dose. The bioavailability of a drug is determined by the drug's composition and varies across formulations of the drug. The patients in this example were given the same drug. The nurse was administering the medication to the patients, so compliance is not an issue. Nothing in this example indicates that a placebo effect was in play. DIF: Cognitive Level: Comprehension REF: p. 53 TOP: Nursing Process: Evaluation MSC: NCLEX Client Needs Category: Physiologic Integrity: Pharmacologic and Parenteral Therapies

56. A nurse is teaching a group of women about medications. The women want to know why so many drugs have unpredictable effects in women. The nurse will tell them that:
- drugs usually have more toxic effects in women.
 - most known drug effects are based on drug trials in men.
 - women have varying responses to drugs during menstrual cycles.
 - women metabolize drugs more slowly.

ANS: B

Until 1997 almost all clinical drug trials were performed in men. Women may have more toxic effects with some drugs and fewer toxic effects with others. Not all drugs are influenced by hormonal changes. Women metabolize some drugs more slowly and other drugs more quickly. Unless drug trials are performed in both women and men, the effects of drugs in women will not be clear. DIF: Cognitive Level: Application REF: p. 55 TOP: Nursing Process: Implementation MSC: NCLEX Client Needs Category: Physiologic Integrity: Pharmacologic and Parenteral Therapies

57. The U.S. Food and Drug Administration (FDA) recommends genetic testing of patients receiving certain medications. Genetic testing helps prescribers:
- better establish a drug's therapeutic index.