

Test Bank

CHAPTER 1

Multiple Choice: Select the appropriate answer(s):

1. From the following list, select the items which are associated with the development of drugs.
 - a. flowers
 - b. water
 - c. glass
 - d. plants
 - e. genes
2. From the following list, select the items which are associated with drug names.
 - a. brand
 - b. generic
 - c. trade
 - d. chemical
3. In which of the following pregnancy categories is systemic tetracycline classified?
 - a. A
 - b. B
 - c. C
 - d. D
 - e. X
4. Which of the following terms is defined as “an effect that is noxious and unintended, and that occurs at doses used in man for prophylaxis, diagnosis, or therapy”?
 - a. toxic reaction
 - b. adverse drug reaction
 - c. adverse drug event
 - d. idiosyncratic reaction
5. Which of the following adverse effects is evident with antihistamines?
 - a. diarrhea
 - b. xerostomia
 - c. sedation
 - c. increased salivation
 - d. increased urination
6. Acetaminophen is a:
 - a. generic name
 - b. chemical name
 - c. trade name
 - d. brand name
7. Which of the following is an undesirable effect produced by a drug that has a predictable response and is dose related?
 - a. therapeutic effect
 - b. adverse effect
 - c. teratogenic effect
 - d. idiosyncratic reaction
8. Any type of adverse drug reaction should be reported to the
 - a. Food and Drug Administration (FDA).
 - b. Centers for Disease Control and Prevention (CDC).
 - c. Environmental Protection Agency (EPA).
 - d. Department of Human Resources.

9. Prescription drugs are controlled by the
 - a. United States Food and Drug Administration (FDA).
 - b. Centers for Disease Control (CDC).
 - c. drug manufacturers.
 - d. local government.
10. Which of the following are goals of prescription writing?
 - a. To give an order for medications to be dispensed to the patient.
 - b. To communicate with the pharmacist to minimize errors in dispensing.
 - c. To comply with any rules governing prescribing that could affect the patient's ability to obtain the drug.
 - d. To have written logs for the number of prescriptions written in the United States.
11. Which of the following is (are) found in the body of a prescription?
 - a. date
 - b. telephone number of prescriber
 - c. address of prescriber
 - d. name of drug
 - e. dosage of the drug
12. From the list, select the items which are found in the heading of a prescription?
 - a. dosage of drug
 - b. age of the patient
 - c. name of drug
 - d. Rx symbol
 - e. patient's name
13. From the list, select the items which are found in the closing of a prescription.
 - a. date the prescription was written
 - b. number of allowable refills
 - c. directions to label the container
 - d. age of patient
 - e. name of patient
14. Which of the following terms is used to indicate that medical studies have shown that the drug causes a significant risk of serious or even life-threatening adverse effects?
 - a. package insert
 - b. black box warning
 - c. DEA number
 - d. indications
15. From the following list, select the items associated with the metric system.
 - a. liter
 - b. gram
 - c. grain
 - d. scruple
 - e. milligram
 - f. drams
 - g. minim
16. Which of the following units is a measure in the apothecary system?
 - a. liter
 - b. grain
 - c. milligram
 - d. kilogram
17. From the following list, select the items associated with allowing for substitutions on a prescription.
 - a. generic drugs are better than brand name drugs.
 - b. generic drugs are cheaper for the patient.

- c. generic drugs are cheaper for the insurance company
 - d. generic drugs are more expensive.
 - e. generic drugs have less strength.
18. From the following list, select the items associated with how many times can a prescription for a schedule III drug be refilled.
- a. twice
 - b. three
 - c. four
 - d. five
 - e. six
 - f. eight
 - g. ten
19. From the following list, select the items associated with ways to avoid medication errors.
- a. write clearly on the prescription.
 - b. call the pharmacist after writing the prescription.
 - c. make a copy of the prescription.
 - d. talk to the patient about the medication he or she will be taking.
 - e. write in ink.
 - f. avoid abbreviations.
20. The abbreviation “ac” means
- a. before meals.
 - b. after meals.
 - c. at bedtime.
 - d. take with food.
21. Which part of the prescription is the signature of the prescriber?
- a. heading
 - b. middle
 - c. body
 - d. closing
22. Which of the following ways may help reduce prescription errors?
- a. Prescriptions should be written in pencil.
 - b. Electronic prescribing.
 - c. Prescriber should always use prescriptions with the drug name preprinted.
 - d. Telephone all prescriptions to the pharmacist.
23. According to the prescription, how many capsules are being prescribed?

License: 0111111

DEA # AW123445555

John David, DDS
1111 Main Street
New York, NY 11111
(212) 111-1234

Name Mary Smith Age 56

Address 1234 South St. NY Date 7/1/06

Amoxicillin 500 mg

Disp: # caps.

Sig: Take two caps stat, followed by one cap tid for 7 days until finished for dental infection

-

This prescription will be filled generically unless prescriber writes “daw” in the box below

label

- a. 21
 - b. 22
 - c. 24
 - d. 25
24. Taking the “two caps stat” is considered to be a
- a. loading dose.
 - b. maintenance dose.
 - c. toxic dose.
 - d. allergic dose.
25. Written on a prescription is “Sig: 1 qid pc and hs.” This is translated to mean
- a. take one 3 times a day and at night.
 - b. take one 5 times a day and after meals.
 - c. take one 4 times a day after meals and at bedtime.
 - d. take one 4 times a day before meals and in the morning.
26. Which of the following is required to be on a prescription?
- a. side effects of the medicine
 - b. drug interactions
 - c. telephone number of patient
 - d. age of the patient
 - e. date prescription was written
27. The abbreviation “prn” means
- a. as needed.
 - b. take frequently.
 - c. as directed.
 - d. with meals.
28. If a prescriber signs the “substitution permissible” line, then the pharmacist
- a. must use the cheaper generic drug.
 - b. can ask the patient if he/she prefers the generic or brand name drug.
 - c. must use the more expensive drug.
 - d. must use the brand name drug.
 - e. uses whatever drug is available.

True or False

- 1. Another name for the *trade name* of a drug is proprietary name.
- 2. Clarithromycin (Biaxin) is an antibiotic and has an “A” pregnancy category.
- 3. The Harrison Narcotics Act of 1914 established the first drug abuse legislation in the United States.
- 4. Posology is the study of the dosages of medicines and drugs.
- 5. The FDA stands for the Food and Drug Agency.
- 6. Pharmacokinetics is the study of how the drug is handled by the body.
- 7. To minimize the number of prescriptions, the written and verbal prescriptions should be identical.
- 8. The metric system uses the old measures of weights.
- 9. Drug dosages for infants are the same as for adults.
- 10. OTC drugs require a prescription.
- 11. Prescriptions for C-II narcotics cannot be refilled by the pharmacist.
- 12. Federal laws allow the prescriber to prescribe a drug for an “off-labeled use.”
- 13. A dentist can write a prescription for a drug for a heart condition.

- 14. It is not necessary to write on a prescription the dose and dose frequency of the medication because the patient knows what drug he or she is taking.
- 15. Writing "take as directed" is correct and legal.
- 16. 1 gm equals to 1000 mg.

Fill in the Blank

1. are caused by drug induced damage to DNA (deoxyribonucleic acid) present in the male and female gametes.
2. is defined as harmful effects associated with drug overdose.
3. The name for a drug is a registered trademark belonging to a particular drug manufacturer.
4. refers to the unexplained responses of a drug.
5. Penicillin has a FDA pregnancy category of .
6. It is important to avoid complications to minimize medication .
7. Drugs that have a high abuse potential are called drugs.
8. DAW is an abbreviation for .
9. The abbreviation of a gram is .
10. The abbreviation of a milliliter is .
11. The generic name of Vibramycin is .
12. The abbreviation for "twice a day" is .
13. The abbreviation for "three times a day" is .
14. The abbreviation for "four times a day" is .
15. The abbreviation for "immediately" is .
16. The abbreviation for "every hour" is .
17. The abbreviation "SIG" means .
18. The abbreviation "PO" means .
19. Drug Enforcement Administration is abbreviated .
20. The abbreviation "hs" indicates to take the medicine at .
21. The abbreviation "qd" indicated to take the medicine .
22. The date the prescription was written is contained in the of the prescription.
23. The generic drug is usually than the brand name.
24. "NR" on a prescription indicates .
25. Tylenol with codeine #3, which is a C-III, may be refilled times.

EXTENDED MATCHING

1. For each term listed below, select the correct definition from the list provided.

Term Definition

- | | |
|-------------------|---|
| 1. Adverse effect | a. more of a drug is needed to obtain the same effect |
| 2. Idiosyncrasy | b. unexplained, uncharacteristic response to a drug |
| 3. Tolerance | c. drug-induced damage to the developing fetus |
| 4. Teratogenic | d. undesirable side effects that develop |

2. For each drug schedule listed below, select the correct drug from the list provided

- | | |
|----------|---|
| 1. C-I | a. oxycodone with acetaminophen (Percodan) |
| 2. C-II | b. acetaminophen (Tylenol) with codeine |
| 3. C-III | c. alprazolam (Xanax) |
| 4. C-IV | d. cough syrup with codeine |
| 5. C-V | e. heroin |
| | f. hydrocodone with acetaminophen (Vicodin) |

Case Study

A 65-year-old male patient presents to the dental office. His medical history revealed that he gets a rash when he takes penicillin. The patient occasionally gets angina attacks for which he takes nitroglycerin tablets. The patient takes ibuprofen daily. The patient is scheduled for a restorative procedure and an oral prophylaxis. The patient requires an antibiotic because of a endodontic infection.

1. What information is related to the patient's allergy to penicillin?
2. What are reference sources that can be used to look up medications the patient is taking?
3. What precautions should be taken while the patient is receiving dental treatment?
4. What are the different ways to determine if there are any drug interactions with the drugs the patient is taking?
5. The patient asks you about what to expect in terms of good and bad effects of the drugs he is taking. How do you explain this to the patient?

Case Study

1. What steps should be taken to reduce medication and prescription error in this case?
2. Label the parts of the prescription.
3. What would be the intended directions to the patient?
4. Explain the prescription to the patient.
5. The patient asked if there is a difference between the brand name and the generic form. What is your reply?

License: 0111111

DEA # AW123445555

John David, DDS

1111 Main Street

New York, NY 11111

(212) 111-1234

Name Mary Smith Age A

Address 1234 South St. NY Date 7/1/06

Hydrocodone/acetaminophen

Disp: # 10 tablets

Sig: Take as directed

-

This prescription will be filled generically unless prescriber writes "daw" in the box below

Label

CHAPTER 2

Multiple Choice: Select the appropriate answer(s):

1. Which of the following routes of drug administration is used for the placement of Arestin (minocycline)?
 - a. transdermal
 - b. topical
 - c. intramuscular
 - d. subcutaneous
2. Which of the following terms describes the actions of a tablet on the body after ingestion and absorption?
 - a. pharmacology
 - b. pharmacokinetics
 - c. pharmacodynamics
 - d. toxicology
3. Which of the following terms describes the absorption of lidocaine local anesthetic after it is injected into the tissues?
 - a. pharmacokinetics
 - b. pharmacodynamics
 - c. toxicology
 - d. adverse drug event
4. Which of the following dosage forms describes chlorhexidine gluconate oral rinse?
 - a. emulsion
 - b. solution
 - c. suppository
 - d. elixir
5. From the following list, select the items associated with enteral drug administration
 - a. oral
 - b. sublingual
 - c. intravenous
 - d. subcutaneous
 - e. rectal
 - d. transdermal
 - e. subgingival
 - f. inhalation
 - g. intramuscular
6. From the following list select the items associated with adverse drug reaction
 - a. noxious drug response

- b. unintended response to a drug
- c. reaction occurs to properly prescribed drug (normal dose or amount)
- d. medical errors (miscalculation of dose)
- e. confusion with name of drug prescribed (sounds similar to other drugs)

7. By which of the following routes of administration is insulin usually taken?
 - a. oral
 - b. subcutaneous
 - c. intramuscular
 - d. rectal
8. Which of the following routes of administration should a dental patient use for a nicotine patch?
 - a. oral
 - b. topical
 - c. transdermal
 - d. rectal
9. Nitroglycerin tablets are taken
 - a. sublingually.
 - b. transdermally.
 - c. topically.
 - d. intramuscularly.
10. Oraquix is a local anesthetic applied subgingivally. Which of the following routes of drug administration is used to deliver the anesthetic?
 - a. topical
 - b. oral
 - c. transdermal
 - d. parenteral
11. Pharmacokinetics involves all of the following concepts?
 - a. absorption
 - b. distribution
 - c. metabolism
 - d. elimination
 - e. binding
12. Which of the following terms is used for metabolism?
 - a. biotransformation
 - b. excretion
 - c. liberation
 - d. elimination
13. Which of the following terms describes how much of a drug will be available in the body to produce a pharmacologic response after it is administered?
 - a. bioequivalence
 - b. bioavailability
 - c. biotransformation
 - d. liberation
14. Absorption is bypassed if a drug is administered by which route?
 - a. topical
 - b. inhalation
 - c. intravenous
 - d. rectal
15. Which of the following drug characteristics will increase the tendency of a drug to cross cell membranes?

- a. ionized and high lipid solubility
 - b. nonionized and high lipid solubility
 - c. nonionized and low lipid solubility
 - d. ionized and low lipid solubility
16. How many half-lives does it take for a drug to be eliminated from the body?
- a. 1-2
 - b. 2-3
 - c. 4-5
 - d. 5-6
17. Sublingual or buccal administered drugs must initially be able to go through the
- a. epithelium of the oral mucosa (tongue or buccal mucosa).
 - b. connective tissue of the GI tract.
 - c. tissues of the stomach.
 - d. tissues of the nasopharynx.
18. Which of the following routes of drug absorption into the bloodstream is most common?
- a. passive diffusion
 - b. active transport
 - c. facilitated diffusion
 - d. protein transport
19. All of the following alter the rate of absorption of drugs except one. Which one is the exception?
- a. fatty foods
 - b. blood flow to the target organ
 - c. hydrogen ion concentration
 - d. surface area of the esophagus
20. Orally administered drugs must pass through the liver (via the hepatic portal vein) prior to reaching general circulation and site of action. This is referred to as
- a. enterohepatic circulation.
 - b. first-pass metabolism.
 - c. passive diffusion.
 - d. distribution.
21. Which of the following terms describes the movement of a drug once it is absorbed throughout the body fluids to organs/tissues, which are the site of drug action?
- a. absorption
 - b. liberation
 - c. distribution
 - d. elimination
22. Which route(s) of drug administration undergoes significant enterohepatic circulation?
- a. oral
 - b. intravenous
 - c. intramuscular
 - d. subcutaneous
23. The primary site of drug biotransformation is the
- a. gallbladder.
 - b. small intestine.
 - c. large intestine.
 - d. liver.
24. Which of the following enzymes found in the liver is primarily responsible for the biotransformation of many dental drugs?
- a. collagenase
 - b. cytochrome P450
 - c. hyaluronidase

- d. elastase
- 25. The time it takes for the drug to eliminate 50% of the amount of its concentration in the plasma or body is referred to as its
 - a. half-life.
 - b. excretion.
 - c. zero-order kinetics.
 - d. clearance.
- 26. The capacity of a body to eliminate a drug is referred to as
 - a. drug clearance.
 - b. half-life.
 - c. steady-state.
 - d. tubular reabsorption.
- 27. Which of the following terms describes the actions a drug has on the body?
 - a. pharmacokinetics
 - b. pharmacodynamics
 - c. pharmacology
 - d. toxicology
- 28. A drug that rapidly combines with a receptor to initiate a response and rapidly dissociates or releases from the receptor is called a (an)
 - a. agonist.
 - b. antagonist.
 - c. receptor.
 - d. ligand.
- 29. Which of the following terms describes the drug dose that produces 50% of the maximum possible response?
 - a. effective dose (ED_{50})
 - b. lethal dose
 - c. maximum response
 - d. half-life ($t^{1/2}$)
- 30. Tachyphylaxis is a very rapid development of
 - a. tolerance.
 - b. adaptation.
 - c. mutation.
 - d. adjustment.
- 31. The term used to describe a decreased response to repeated administration of a drug is
 - a. drug dependence.
 - b. drug interaction.
 - c. tachyphylaxis.
 - d. tolerance.
- 32. Receptor binding is primarily composed of
 - a. protein.
 - b. fat.
 - c. part of the drug.
 - d. cell membrane.
- 33. When a drug enters the blood, it may bind to molecules such as albumin, which makes the drug inactive. This is termed
 - a. protein binding.
 - b. protein affinity.
 - c. drug action.
 - d. drug binding.

34. All of the following are disadvantages of orally administered drugs except one. Which one is the exception?
- undergoes first-pass effect
 - food interferes with absorption
 - cannot take if patient is vomiting
 - convenient form to administer
35. A maintenance dose of drug is given to
- achieve an initial high drug concentration.
 - keep blood concentration in the therapeutic range.
 - allow the drug concentration to drop to 50% of its initial concentration.
 - achieve a maximal response.

True or False

- 1. After a drug is taken orally, it immediately passes into the bloodstream.
- _ 2. Cell membranes are composed of three layers of fat.
- _ 3. A drug that is soluble in fat is called hydrophilic.
- _ 4. Passive diffusion of drugs across cell membranes/tissue barriers does not require energy.
- _ 5. A lipophilic drug is more easily excreted in the urine.
- _ 6. Weak acids such as aspirin are more readily absorbed from the stomach than weak bases.
- _ 7. Drugs that are weak bases (e.g., erythromycin, codeine, and morphine) are more lipid soluble and have greater absorption in the small intestine.
- _ 8. Morphine has to be injected because it has a high first-pass metabolism.
- _ 9. Polar drugs that are not metabolized are excreted unchanged in the urine.
- _ 10. Drug dose is defined as the quantity of drug administered.
- _ 11. A drug that is administered intravenously has 100% bioavailability.
- 12. Administration of lidocaine with epinephrine is by intramuscular injection.
- 13. Application of benzocaine 20% is topical.
- 14. Atridox is administered intramuscularly.

Fill in the Blank

- Once a drug is orally administered into the body, it must be into the bloodstream.
- refers to how much of a drug is absorbed into the blood after the dose is administered.
- A drug that is intravenously injected has percent bioavailability.
- ~~And administered drugs absorbed in the stomach~~
- Before a drug is absorbed into the blood, the drug must be absorbed through many on its way from the GI tract into the blood.
- The barrier membrane between the blood and the tissue is called the barrier.
- During diffusion the drug penetrates the membrane exclusively by diffusion, in which the rate of transport is solely proportional to the concentration gradient.
- ~~Unlike enteral-administered drugs,~~ administration of drugs bypasses the gastrointestinal tract.

9. The major barrier to absorption of topical administration of a drug is the top layer of skin called the .
10. A drug is eliminated either unchanged or as a .
11. To be readily excreted in the urine a drug must be in a soluble form.
12. A is inactive when administered orally but becomes active after metabolism in the liver.
13. The enzymes in the liver are called enzymes.
14. Most drugs undergo of elimination.
15. The purpose of giving a dose is to rapidly establish a therapeutic plasma drug concentration.
16. The site of drug attachment on the tissue is called the .
17. A response is the dose of drug that will give the greatest response, and increasing the dose will not increase the response.
18. The of a drug is the dose or amount of drug required to produce a particular or specific biologic effect.
19. is a homeostatic adjustment that may occur during a continued or prolonged presence of a drug.
20. A is a treatment during research that is similar to the active medication except that it does not contain the active drug.
21. is the application of drugs to the skin that will be absorbed into the bloodstream.
22. An injection is used when performing the tuberculin skin test for tuberculosis.
23. Oraqix is administered by the route.
24. Arestin is applied in the .

EXTENDED MATCHING

1.

For each route of drug administration listed below, select the correct drug that is administered by that route of administration from the list provided

Route of drug administration

1. transdermal
2. subcutaneous
3. intramuscular
4. topical

Drug

- a. dental anesthetic (e.g., lidocaine)
- b. hepatitis B vaccine
- c. nicotine patch
- d. Arestin or Atridox
- e. insulin
- f. benozcaine 20%

2.

For each term listed below, select the correct definition from the list provided

1. half-life
2. affinity
3. bioavailability
4. pharmacokinetics

- a. rate and extent to which a drug is absorbed
- b. time taken for the blood concentration of a drug to decrease 50% or one-half its concentration
- c. binding of a drug to a receptor
- d. therapeutic response cannot be increased with a higher dose of the drug

- 5. pharmacodynamics e. the effects of drugs on the body and mechanisms of drug action
- 6. ceiling effect f. absorption of a drug
 g. distribution of a drug through the blood
 h. metabolism of a drug

Case Study

A 75-year-old male patient comes to the dental office for regular maintenance visits. The patient has hypercholesterol levels and is taking simvastatin (Zocor). He presents to the office with an intraoral swelling around the mandibular first molar region. A radiograph was taken and revealed a large radiolucent area. Root canal treatment will have to be started. The patient is given a prescription for penicillin V.

License: 0111111

DEA # AW123445555

John David, DDS

1111 Main Street

New York, NY 11111

(212) 111-1234

Name Mary Smith Age 35

Address 1234 South St. NY Date 7/1/06

Penicillin VK 500mg

Disp: # 29 tabs

Sig: Take two tablets orally at once, followed by one tablet four times a day.

-

This prescription will be filled generically unless prescriber writes "daw" in the box below

label

1. Why is it important to ask this patient if he has any allergies?
2. Why is an initial dose of 1000 mg (2 tablets of 500 mg) given to the patient?
3. What should be reviewed before the prescription is given to the patient?
4. What pharmacokinetic factor should be considered when prescribing this antibiotic to the patient?
5. When the patient swallows the tablet how does it reach the site of action? Also, what is the intended site of action in this patient?

Chapter 3

Multiple Choice: Select the appropriate answer(s):

1. Drugs that act as mediators of sympathetic transmission (cause a sympathetic response) are called
 - a. sympathomimetics.
 - b. parasympathetics.
 - c. cholinergics.
 - d. anticholinergics.
2. Drugs that decrease sympathetic activity are called
 - a. sympatholytics.
 - b. anticholinergics.
 - c. cholinergics.
 - d. adrenergics.
3. The two major types of receptors on or in the effectors (tissues) in the sympathetic or adrenergic neuroeffector system are
 - a. nicotinic and muscarinic.
 - b. α (alpha) and β (beta).
 - c. nicotinic and beta.
 - d. muscarinic and alpha.
4. Which of the following is true about the initial effects of an injection of epinephrine in local anesthetics?
 - a. It increases systolic blood pressure.
 - b. It decreases systolic blood pressure.
 - c. It increases diastolic blood pressure.
 - d. It has no effect on blood pressure.
5. From the following list, select the items associated with epinephrine
 - a. increase systolic blood pressure.
 - b. increase cardiac output.
 - c. decrease heart rate.
 - d. decrease diastolic blood pressure
 - e. lower peripheral resistance
6. Which of the following organs/tissues has/have α_1 -receptors?
 - a. lung
 - b. liver
 - c. blood vessels
 - d. adrenal medulla
7. Which of the following organs/tissues has α_2 -receptors?
 - a. heart
 - b. lung
 - c. liver
 - d. presynaptic neurons
8. Which of the following organs/tissues has β_1 -receptors?
 - a. heart
 - b. lung
 - c. liver
 - d. kidney
9. From the following list, select the items associated with stimulation of the parasympathetic division

- a. xerostomia.
 - b. saliva secretion.
 - c. increased heart rate.
 - d. urine retention.
 - e. tear secretion
 - f. urinary outflow
 - g. bronchiole constriction
10. A drug that stimulates β_1 -receptors is called a/an
- a. sympathomimetic.
 - b. adrenergic agonist
 - c. adrenergic antagonist
 - d. sympatholytic.
 - e. cholinergic.
 - f. anticholinergic.
11. From the following list select the items associated with the actions of a drug that stimulates β_1 -receptors
- a. increased heart rate
 - b. decrease blood pressure
 - c. decrease heart contractility
 - d. increase heart contraction
 - e. increase heart conduction**
 - d. no effect on the heart
12. Which of the following organs/tissues has/have β_2 -receptors?
- a. lung
 - b. heart
 - c. adrenal medulla
 - d. lacrimal (eye) gland
13. All of the following events occur with an α_1 -agonist except which one?
- a. vasoconstriction of smooth muscle
 - b. nasal decongestant
 - c. increase blood pressure
 - d. vasodilation of skeletal muscle
14. Which of the following drugs is an α_1 -agonist?
- a. clonidine
 - b. phenylephrine
 - c. aspirin
 - d. ibuprofen
15. The nervous system is divided into the
- a. central and peripheral nervous system.
 - b. autonomic and peripheral nervous system.
 - c. sympathetic and parasympathetic nervous system.
 - d. central and autonomic nervous system.
16. In which of the following classifications do drugs for the management of attention-deficit hyperactivity disorder (ADHD) belong?
- a. direct-acting adrenergic agonists
 - b. indirect-acting adrenergic agonists
 - c. mixed-acting adrenergic agonists
 - d. cholinergic agonists