

CHAPTER 35

BASIC PHARMACOLOGY

Overview

It is essential that medical assisting students have a working knowledge of basic pharmacology, including uses, sources, forms, and delivery routes of drugs. In addition, they should recognize the governmental laws and regulations that oversee the distribution and administration of medications and demonstrate a knowledge of drug classifications and actions that will allow them to caution patients in the use of drugs. Students understand how to access medical resources and reference books for information relating to pharmaceutical products, including drug classification, routes, forms of storage, and side effects, as well as contraindications. Medical assisting students also display the skills to recognize the signs of drug abuse and misuse, and understand their roles and responsibilities in cases of suspected misuse and abuse in patients and in the workplace. Students should be reminded that only a licensed provider may prescribe drugs or recommend over-the-counter (OTC) medications to patients.

Lesson Plan

I. LEARNING OUTCOMES	ABHES	CAAHEP
A. Define, spell, and pronounce the key terms as presented in the glossary.		I.C.11–12
B. Recall five medical uses for drugs.		I.C.11
C. Describe three types of drug names and give an example, for one drug, of all three names.	MA.A.1.6.b	I.C.11
D. List five sources of drugs.	MA.A.1.6.b	I.C.11
E. Describe the federal Food, Drug, and Cosmetic Act and the Controlled Substances Act of 1970.	MA.A.1.6.e	IX.A.3
F. Name the five controlled substances schedules and describe appropriate storage of the substances.		I.C.11–12
G. Define the law in terms of administering, prescribing, and dispensing drugs.	MA.A.1.6.e	IX.P.4, IX.A.3
H. Describe how to use the four most commonly used sections of the <i>Physician's Desk Reference</i> (PDR).	MA.A.1.6.b	I.C.11
I. Describe the principal actions of drugs and three undesirable reactions.	MA.A.1.6.b	I.C.11
J. Identify the classifications of medications.	MA.A.1.6.b	I.C.11
K. Describe routes of drug administration and drug forms.	MA.A.1.6.b	I.C.11–12
L. Describe handling and storing of drugs.		I.C.11
M. List emergency drugs and supplies.	MA.A.1.9.e	
N. Recall commonly abused drugs and describe their physical and emotional effects.	MA.A.1.6.b	I.C.11–12
O. Critique the legal role and responsibilities of the medical assistant.	MA.A.6.e	IX.P.4, IX.A.3
P. Analyze the professionalism questions and apply them to this chapter's content.		

II. PROFESSIONALISM QUESTIONS

- A. Communication
 1. Did you speak at the patient's level of understanding?
- B. Presentation
 1. Did your actions attend to both the psychological and the physiological aspects of the patient's illness or condition?

- C. Competency
 - 1. Did you pay attention to detail?
 - 2. Were you knowledgeable and accountable?
 - 3. Did you recognize the importance of local, state, and federal legislation and regulations in the practice setting?
- D. Initiative
 - 1. Did you seek out opportunities to expand your knowledge base?
 - 2. Did you direct the patient to other resources when necessary or helpful, with the approval of the provider?
- E. Integrity
 - 1. Did you work within your scope of practice?
 - 2. Did you immediately report any error you had made?
 - 3. Did you report situations that were harmful or illegal?
 - 4. Did you maintain your moral and ethical standards?
 - 5. Did you do “the right thing” even when no one was observing?

III. REFERENCES

- A. Lindh, Wilburta Q., Pooler, Marilyn S., Tamparo, Carol D., Dahl, Barbara M., & Morris, Julie A., *Delmar's Comprehensive Medical Assisting: Administrative and Clinical Competencies*, 5e
- B. See text Chapter 35, References/Bibliography
- C. Any other teacher-preferred reference material

IV. VISUAL AIDS

- A. Computer access to identified Internet resources
- B. Any other teacher-preferred visual aids (PowerPoint, etc.)
- C. Perform an Internet search for videos online of accurate medication administration (Example: <http://www.youtube.com/watch?v=wgxf7JsB5yk>)

V. EQUIPMENT AND MATERIALS

- A. Computer, TV monitor, and Internet access
- B. Handouts and pamphlets on drug abuse
- C. Copies of drug references, such as from the PDR
- D. See IV: Visual Aids

VI. SAFETY

- A. Basic classroom procedures
- B. Advise about following provider's orders
- C. Follow Standard Precautions
- D. Attend to patient
- E. Set a good example

VII. PREPARATION

- A. Arrange for visual aids equipment.
- B. Collect materials.
- C. Review Chapter 35 in the text, the Study Guide, the Competency Manual, and the Instructor's Manual.

VIII. INTRODUCTORY REMARKS/ACTIONS

- A. Read Learning Outcomes in the text with students to introduce the chapter.
- B. Ask students to list any experiences they would like to share with the class concerning substance abuse or unfavorable reactions to drugs.
- C. Introduce the discussion of the increasing use of prescription opioid medication in the United States and current initiatives to limit or change prescribing options.

IX. PRESENTATION

- A. Medical Uses of Drugs
- B. Drug Names
 - 1. Chemical name
 - 2. Generic name
 - 3. Trade or brand name

- C. History and Sources of Drugs
- D. Drug Regulations and Legal Classifications of Drugs
 - 1. Must comply with federal and state laws
 - 2. Laws govern manufacture, sale, possession, administration, dispensing, and prescribing of drugs
 - 3. Federal Food, Drug, and Cosmetic Act
 - a. Protects public by ensuring purity, strength, and composition of foods, drugs, and cosmetics
 - b. Prohibits movement in interstate commerce of altered and misbranded food, drugs, devices, and cosmetics
 - c. Enforced by Food and Drug Administration (FDA)
 - 4. Controlled Substances Act of 1970
 - a. Regulates drugs with potential for abuse or addiction
 - b. Controls manufacture, importation, compounding, selling, dealing in, and giving away of drugs that have potential for abuse
 - c. Controlled substances
 - d. Drug Enforcement Administration (DEA)
 - e. Provider registration
 - f. Controlled substances Schedules I–V
 - g. Storage of controlled substances
 - (1) Separation from other drugs
 - (2) Well-constructed metal box or compartment with double lock
 - (3) Record book
 - (4) Counted, verified, and recorded at end of workday
 - h. Medical assistant's role and responsibilities
 - (1) Monitor provider's DEA registration renewal date
 - (2) Maintain legally designated records and inventories of drugs
 - (3) Provide security for all drugs, in particular controlled substances
 - (4) Provide security for prescription pads
 - (5) Properly destroy expired drugs and document it
 - (6) Know and understand federal and state laws that regulate drugs, including controlled substances
 - 5. Prescription Drugs (legend drugs)
 - a. E-prescribing
 - 6. Nonprescription Drugs
 - a. Over-the-counter (OTC) drugs and herbals
 - b. Accessibility to public
 - 7. Proper Disposal of Drugs
 - a. Expired drugs could be harmful
 - 8. Administer, Prescribe, Dispense
- E. Drug References and Standards
 - 1. U.S. Pharmacopeia/National Formulary (USP/NF)
 - a. Lists drugs certified as meeting established standards of quality, purity, and potency
 - 2. *Physician's Desk Reference* (PDR)
 - a. Published annually by Thomson Healthcare in cooperation with pharmaceutical companies
 - b. Sections of drug information
 - c. How to Use the PDR
 - 3. Other Reference Sources
 - a. Other drug reference books
 - b. Packet insert that comes in drug package
 - c. Pharmacists
 - d. Reliable online sources
- F. Classification of Drugs and Their Actions
- G. Principal Actions of Drugs
 - 1. Local action
 - 2. Remote action
 - 3. Systemic action
 - 4. Synergistic action

5. Factors that Affect Drug Action
 - a. Absorption
 - b. Distribution
 - c. Biotransformation
 - d. Elimination
6. Undesirable Actions of Drugs
 - a. Side effects
 - b. Drug interaction
 - c. Adverse reactions
- H. Drug Routes
 1. Oral
 2. Parenteral
 3. Direct application to skin
 4. Sublingual
 5. Buccal
 6. Rectal
 7. Vaginal
 8. Inhalation
 9. Instillation
- I. Forms of Drugs
 1. Liquid Preparations
 2. Solid and Semisolid Preparations
 3. Inhalation and medication
 4. Other Drug Delivery Systems
 - a. Transdermal system
 - b. Eye-curing lens
 - c. Implantable devices
- J. Storage and Handling of Medications
 1. Original containers
 2. Darkness
 3. Refrigeration
 4. Glass containers
 5. Consult drug label for storage
 6. Organization
- K. Emergency Drugs and Supplies
 1. Crash cart
 2. Emergency drugs
 3. Emergency equipment
- L. Drug Abuse
 1. Recognizing symptoms of drug abuse
 2. Drug abuse programs
 3. Examples of drug types commonly abused
 4. Effects of drug abuse
 5. Prevention programs
- X. APPLICATION
 - A. Use the Learning Outcomes at the beginning of Chapter 35 in the text as the basis for questions to assess comprehension.
 - B. See the Classroom Activities section below for numerous application activities.
 - C. Assign students to complete Chapter 35 in the Study Guide.
 - D. Complete the Procedure in Chapter 35, using the Competency Manual to evaluate.
- XI. EVALUATION
 - A. Evaluate any assigned application activities.
 - B. Evaluate student participation in the classroom setting.
 - C. Grade responses to Chapter 35 in the Study Guide.
 - D. Evaluate student performance on Chapter 35 Procedure.

Classroom Activities

1. Obtain a variety of prescription medication warning labels. Discuss with students what each one means. Assign students to role-play being the patient and the pharmacist. The pharmacist should explain the warning labels to the patient, and the patient should ask appropriate questions.
2. Obtain copies of a patient medication record, either paper or electronic. Students should practice recording sample prescriptions.
3. Arrange to have a speaker from a local drug rehabilitation facility speak to the class about the facility and drug addiction in general.
4. Ask a pharmacist to speak to the class about drug administration and drug abuse.
5. Assign students to research one of the sources of drugs and report findings to the class.
6. Create a \$100,000 Pyramid-type game with pharmacology facts in categories. Allow classroom time for everyone to participate.

Answers to Case Studies

Case Study 35-1

Refer to the scenario at the beginning of the chapter.

Mrs. Maynard has an appointment to see Dr. Hoback this morning. She brings in her bag with all of her prescription medications. When Claire Bloom, CMA (AAMA), is updating Mrs. Maynard's electronic medical record, she becomes aware that there is a mistake in the record of Mrs. Maynard's medication history. The prescription bottle states "Zantac 150 mg by mouth twice a day." The electronic record reveals that the medication prescribed was "Zyrtec 10 mg by mouth once a day."

1. What are the first steps that Ms. Bloom should take to clarify this issue?

The prescription should be verified to assure which one is the correct medication, dose, and frequency. Then the EMR should be updated to reflect the correct information.

2. What kind of questions would Ms. Bloom need to ask Mrs. Maynard about the medications?

Ms. Bloom should ask Ms. Maynard what symptoms the medication is treating. Inquire if her symptoms have been relieved. Then, share this information with the provider.

Case Study 35-2

Maria Jover reports vaginal discharge and discomfort. Dr. King confirms the diagnosis of a yeast infection by performing a smear and identifying the microorganism. Dr. King prescribes over-the-counter vaginal suppositories. After asking Maria if she has any questions, clinical medical assistant Audrey Jones, RMA (AMT), proceeds to help Maria understand the self-administration of this particular medication.

1. The patient, Maria, asks Audrey Jones whether she can use some vaginal suppositories she bought last year. How should Audrey respond?

Audrey should advise Maria to discard any medication—prescription or nonprescription—that is not used prior to its expiration date. Most medications lose their potency after a period of time, and others become toxic. Maria should discard the leftover suppositories and buy a new supply.

2. Maria tells Audrey that the last time she had a vaginal yeast infection she only used part of the recommended number of suppositories because the infection cleared up. How should Audrey respond?

Sometimes an infection or other condition will clear up before a patient finishes all medication, and the patient discontinues use. Audrey should tell Maria that in this and other cases, medication should be taken exactly as directed for the prescribed number of days, etc., in order to assure complete treatment of the infection and to decrease the likelihood of drug-resistant strains of microorganisms developing.

3. Maria does not really like using suppositories. Should Audrey ask Dr. King to prescribe another form of medication for the yeast infection? What other forms might be available?

To discover whether another form of medication might be available for Maria's yeast infection, Audrey consults the PDR. She finds that medications are available that can be taken by mouth or intravenously or applied topically, but that the suppository is the most effective form. The student should consult the PDR to discover what Audrey learned during her research.

Case Study 35-3

Dr. Lewis keeps a small quantity of various controlled substances on the premises for use in an emergency situation.

1. What are the legalities surrounding controlled substances that concern Joe Guerrero, CMA (AAMA), the clinical medical assistant?

Per the Controlled Substances Act, Joe is responsible for monitoring DEA registration dates, maintaining legally designated records, providing security for all controlled substances, and documenting the destruction of expired products.

2. What are his responsibilities?

Since Dr. Lewis keeps controlled substances on the premises, Joe Guerrero, the certified medical assistant, has the legal responsibility to do the following:

1. Monitor the provider's DEA registration renewal date
2. Maintain legally designated records
3. Provide security for all drugs—in particular, controlled substances
4. Provide security for prescription pads
5. Return expired drugs to the DEA and properly document that the DEA was notified
6. Know and understand federal and state laws that regulate drugs, including controlled substances

Answers to Certification Review

1. d. Epinephrine
2. d. Brand
3. b. cortisone
4. a. Nembutal
5. d. dispose of it by returning it to the pharmacist to dispose of Document.
6. a. Schedule I
7. d. all of the above
8. a. Therapeutic, diagnostic, curative
9. d. Both b and c
10. d. All of the above

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