Oral Pharmacology for the Dental Hygienist 2nd edition Fine Test Bank

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1
Introduction to Clinical Pharmacology

EDUCATIONAL OBJECTIVES

After reading this chapter, the reader should be able to:

1. Describe the role of pharmacology in the dental hygiene process of care.
2. List and utilize the various online and computer drug references.
3. Discuss various federal drug laws and their impact on drug regulation.
4. List and discuss different types of undesirable drug effects.
5. Identify various parts of a written prescription.
6. Discuss how to avoid errors in prescription writing.
7. Discuss the concept of generic substitution.

LECTURE OUTLINE

I. Introduction
   A. History of pharmacology.
   B. Drug development.
      1. Ancient times.
II. Terminology
III. Dental Hygiene Process of Care
   A. Role of dental hygienist.
      1. Assessment of medications.
      2. Review process.
      3. Medication effects on oral tissues.
      4. Prescribing.
IV. Sources of Drug Information
   A. Printed resources.
      1. Books.
      2. Journals.
      3. Websites (publishers).
   B. Computer resources.
      1. Personal digital assistants (PDAs).
   C. Online resources.
      1. Journals, literature.

V. Regulation and Classification of Drugs
    A. Development of new drugs and drug safety.
        1. Early drug remedies.
        2. U.S. Pharmacopeia (USP).
        3. Food and Drug Administration (FDA).
        4. Listing of all medication ingredients 1938.
        5. Federal Food, Drug and Cosmetic Act (FD&C).
VI. Stages of Approval for Therapeutic and Biological Drugs
    A. Labeling requirement for OTC drugs.
    B. Phases of clinical human studies.
        1. Phase 1.
        2. Phase 2.
        3. Phase 3.
        4. Phase 4.
VII. Drug Names and Properties
    A. Chemical name.
    B. Generic name.
    C. Trade name.

VIII. Prescriptions
    A. Goals of prescription writing.
        1. To give an order for prescription medications to be dispensed to the patient.
        2. To communicate with the pharmacist to minimize errors in dispensing.
        3. To comply with any rules governing prescribing that could affect the patient's ability to obtain the drug.
    B. Parts of a prescription
        1. Heading: prescriber and patient information: the prescriber's name, address, and telephone number and the patient's name, address, and age. The patient's age is very important to provide and unfortunately is frequently omitted.
        2. The body: drug preparation including the name of the drug, dosage form, and dosage.
        3. Closing: prescriber signature.
    C. Units of measurement.
        1. Metric system.
            a. First used in the United States in 1866.
                i. *Meter* is the unit of length, the *liter* of volume, and the *gram* of weight.
                ii. Units of measure in the metric system.
                iii. Today most prescribers and pharmacies use the metric system.
IX. Generic versus Brand Name

A. At the bottom of prescriptions, there is a statement about dispensing the medication as written (DAW) or allowing substitution.
B. Allowing for substitution refers to dispensing the generic form of the drug, which is the same as a brand-name drug in dosage, safety, and strength.
C. Prescribing by generic name allows the pharmacist flexibility in selecting the particular drug product to be filled in the prescription. The patient can also save money if there is price competition. For example, if the prescription for doxycycline hyclate is written but the DAW box is not signed, the pharmacist can dispense the generic or brand name. If the prescription is for Vibramycin and the DAW is not signed, then the pharmacist can dispense the generic.

X. Units of Measurement
A. Metric system: First used in the United States in 1866.
1. *Meter* is the unit of length, the *liter* of volume, and the *gram* of weight.
2. Table 2–1 lists some units of measure in the metric system.
3. Today most prescribers and pharmacies use the metric system.
B. Apothecary system
1. Uses old measures of weights and volumes such as grains (gr).
2. It is important not to abbreviate when using the apothecary system to prevent confusion between "grains" and "grams."
3. Some practitioners still use the apothecary system when writing prescriptions.
C. Avoirdupois or household system
1. Uses units of ounce, teaspoonful, and tablespoonful.
2. Used in the United States and is considered more modern than the apothecary system.

XI. Latin Abbreviations: Common abbreviations used in prescription writing are listed in Table 2–3.

XII. Prescription and Nonprescription Drugs
A. Prescription drugs require a written prescription or a telephone order to the pharmacy and can only be prescribed by a dentist, physician, podiatrist, or veterinarian and in some states dental hygienists, nurse practitioners, physician assistants, and opticians.
B. Nonprescription drugs are medications that can be obtained over-the-counter (OTC) or without a prescription.
C. The Food and Drug Administration regulates prescription and nonprescription drugs.
D. In 1992, the OTC Drugs Advisory Committee was created to assist the FDA in reviewing OTC drugs. An OTC drug review, which started in 1972, is a three-phase process that involves an advisory panel review, tentative final monograph publication, and a final monograph publication.

E. Hydrocortisone was the first drug approved for OTC sales; other OTCs include cimetadine (Tagamet) and famotidine (Pepcid) for ulcers; naproxen sodium (Aleve) and ketoprofen (Actron), analgesics; and clotrimazole (Gyne-Lotrimin), an antifungal.

XIII. Labeled Use

A. FDA approves a drug to be used for specific purposes.

B. Use is explained in the package insert (PI) in the box that the drug came in.

XIV. Off-Labeled Use: Allows the prescriber to prescribe a drug for a different purpose than what was originally indicated. For example, diflunisal (Dolobid) is an analgesic that is indicated for use in mild to moderate pain, osteoarthritis, and rheumatoid arthritis. Although dental pain is not an indication, it still can be prescribed for that purpose.

XV. Controlled Drug Substances: The Harrison Narcotics Act of 1914

A. Established the first drug abuse legislation in the United States due to the high incidence of heroin abuse.

B. Regulated the distribution and use of all narcotics. Habit-forming drugs are classified according to their abuse potential and placed in schedules by the Federal Drug Enforcement Administration (DEA).

C. Schedules: Prescribers must also be assigned a number by the DEA in order to write prescriptions for controlled substances. The registration must be renewed annually, and the certificate must be maintained at the registered location.

D. There are five categories of scheduled drugs.

1. Schedule I (C-I): Most abuse potential; not used clinically.
2. Schedule II (C-II): Highly abused.
3. Schedule III (C-III): Less abused.
4. Schedule IV (C-IV): Less abused.
5. Schedule V (C-V): Very low abuse (e.g., cough syrups).

E. Prescription-filling requirements.

XVI. Package Insert (PI)

A. Literature written about the drug accompanies all prescription drugs.

B. Negotiated between the company and the FDA.

C. Beginning June 2006, major revisions of PI.

1. "Highlights" section.
2. Table of contents following the "Highlights" section.
3. The labeling change was needed because the FDA decided that the "existing labeling is too complicated, too long, and too difficult to find important information."

XVII. Black Box Warning

A. Medical studies have shown that the drug causes a significant risk of serious or even life-threatening adverse effects.

B. A black border is placed around the text of the warning.

XVIII. Bioequivalence and Bioavailability

A. Bioequivalence: Generic versus brand.
    1. Generic is cheaper for patient and insurance.
    2. Some prescribers do not want to substitute.
B. Bioavailability: FDA annually publishes a book called *Approved Drug Products with Therapeutic Equivalence Evaluations* (known as the "orange book") that lists which trade name drugs are generically interchangeable.

XIX. Electronic Prescribing
A. Prescription is electronically transmitted via a database exchange, which is usually a computer or PDA, or email converted to fax to the patient's pharmacy.
B. Handwriting is eliminated, meaning fewer prescription errors.

XX. Safety of Prescription Pads
A. Stolen pads.
B. Forgery.

XXI. Reducing Medication Errors
A. Write in ink and clearly (print, not script) or use electronic transmission.
B. Avoid open-ended statements, such as "take as directed."
C. Prescriptions written for patients should be copied into the patient's chart. The number of refills should be entered on the prescription as well as the dose and dose frequency.

XXII. Prescribing for Children
A. Drug dosage formulas have been suggested (e.g., Clark's and Young's rules).
B. Instead of using these rules, pediatric doses should be calculated from age, body weight, or body surface area (BSA), which is the preferred method.

XXIII. Pregnancy
A. Safety.
B. Pregnancy categories.
    1. A
    2. B
    3. C
    4. D
    5. X

TEACHING TIPS

1. Impress upon the students the impact medication use has on the dental hygiene process of care.
2. Explain the importance of drug reference. Teach the students the importance of utilizing drug references (books, computer) in the dental office.
3. Make students aware of the importance of recognizing that many drug names sound and look the same but are different.

4. Have students explain the various drug effects and specify which are related to dentistry.
5. Have students compare and give examples of therapeutic effects and adverse drug events including adverse effects, toxicity, and idiosyncrasy.

FACTOIDS

1. In the eighteenth century (colonial times) the apothecary acted as a pharmacist, dentist, physician, and general storekeeper.
2. Since 1976, the Dutch have maintained a formal legal prohibition of cannabis (marjiuana) while tolerating sales up to 30 grams.
3. In the 1800s many medicines advertising cures had secret ingredients. One such nostrum contained arsenic and other harmful ingredients that claimed to be a cure for cancer, tuberculosis, syphilis, narcotic addiction, and other serious diseases.
4. In the late 1800s salesmen sold snake oil from door to door. They claimed that oil extracted from snakes relieved pain. It wasn't until 1915 that the U.S. government banned the sale of snake oil.s
5. The word "prescription" stems from the Latin term *praescriptus.*
6. "Sig" comes from the Latin *signare,* which means "to write or sign."
7. Many ancient prescriptions were noted for their multiple ingredients and complexity of preparations.
8. During Prohibition (1920s), when liquor was illegal, physicians were allowed to write prescriptions for whiskey. An average of 10 million prescriptions were issued each year during that time.
9. Prior to the Harrison Narcotics Act of 1914, narcotics and marijuana were available over-the-counter.

DISCUSSION QUESTIONS

1. What are the major differences between a chemical, generic, and trade name of a drug?
2. Discuss the latest Black Box Warning about aeetaminophen?
3. Discuss how drug laws have changed over time.
4. Discuss the importance of adverse drug events and adverse drug reactions and reporting them to the FDA.
5. List and discuss the various types of drug references used in dentistry.
6. Discuss the goals of prescription writing.
7. Discuss the legality of a prescription and the importance of filling in every part of the prescription.

CLASSROOM ACTIVITIES

1. Visit www.fda.gov/ceder. Review the policy for use of drug name terms and the definition of the various drug names.
2. Visit www.usp.org/standards. Click on "reference standards." Have students read the definition of reference standards and discuss in class.
3. Have students visit www.drugs.com. Have students search for Vicodin and report on their findings. Have them discuss the components and controlled substance schedule.

4 . Have groups of students write a sample prescription and label the different parts of the prescription.

5. Compile a list of various pharmacy journals, reference books, and Web sites. Have the students go to the library and find a journal or reference book and also search the different Web sites.