

# Pharmacology for the Dental Hygienist

Lamar Institute of  
Technology

DHYG 1235

Course Syllabus

Revised Spring 2018

Taught by:  
Michelle DeMoss, RDH, BS  
[mdemoss@lit.edu](mailto:mdemoss@lit.edu)  
981-6814



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**DHYG 1235: Pharmacology**  
**Lecture Schedule: Tuesday and Thursday**  
**8:00–8:50 a.m.**

DATE	TOPIC	ASSIGN.	WHAT IS DUE
WEEK 1	Introduction to Course Chapter 1 Information, Sources, Regulatory Agencies, Drug Legislation & Prescription Writing	Syllabus, textbook, and Drug book	
WEEK 2	Chapter 2 Drug Action and Handling	Read Chapter	
WEEK 2	Chapter 3 Adverse Reactions	Read Chapter	
WEEK 3	Chapter 4 Autonomic Drugs	Read Chapter	
WEEK 3	Chapter 24 Emergency Drugs	Read Chapter	
WEEK 4	<b>Exam 1</b> <b>Chapters 1, 2, 3, 4, 24</b>	Review Chapters/Study	
WEEK 4	Chapter 27 Natural/Herbal Products & Dietary Supplements	Read Chapter	
WEEK 5	Chapter 5 Nonopioid Analgesics	Read Chapter	
WEEK 5	Chapter 6 Opioid Analgesics and Antagonists	Read Chapter	
WEEK 6	Chapter 7 Antiinfective Agents	Read Chapter	
WEEK 6	<b>Exam 2</b> <b>Chapters 5, 6, 7, 27</b>	Review Chapters/Study	
WEEK 7	Chapter 8 Antifungal and Antiviral Agents	Read Chapter	
WEEK 7	Chapter 9 Local Anesthetics	Read Chapter	
WEEK 8	Chapter 10 General Anesthetics	Read Chapter	

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WEEK 8	Chapter 11 Antianxiety Agents	Read Chapter	
WEEK 9	Chapter 13 Oral Conditions and Their Treatment	Read Chapter	
WEEK 9	<b>Exam 3</b> <b>Chapters 8, 9, 10, 11, 13</b>	Review Chapters/Study	
<b>WEEK 10</b>	<b><i>Spring Break – Have Fun!!</i></b>		
WEEK 11	Chapter 14 Drugs for the Treatment of Cardiovascular Disease	Read Chapter	
WEEK 11	Chapter 15 Drugs for the Treatment of Gastrointestinal Disorders	Read Chapter	
WEEK 12	Chapter 16 Drugs for the Treatment of Seizure Disorders	Read Chapter	
WEEK 12	Chapter 17 Drugs for the Treatment of CNS Disorders	Read Chapter	
WEEK 13	<b>Exam 4</b> <b>Chapters 14, 15 16, 17</b>	Review Chapters/Study	
<b>WEEK 13</b>	<b><i>All College Day – No Class</i></b>	Read Chapter	
WEEK 14	Chapter 18 Adrenocorticosteroids	Read Chapter	<b>Case Study Due</b>
WEEK 14	Chapter 19 Drugs for the Treatment of Respiratory Disorders	Read Chapter	
WEEK 15	Chapter 20 Drugs for the Treatment of Allergic Rhinitis	Read Chapter	
WEEK 15	Chapter 21 Drugs for the Treatment of Diabetes Mellitus	Read Chapters	
WEEK 16	Chapter 22 Drugs for the Treatment of Endocrine Disorders	Read Chapter	
WEEK 16	Chapter 23 Antineoplastic Drugs	Read Chapter	

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WEEK 17	Chapter 25 Pregnancy and Breast Feeding	Read Chapter	
WEEK 17	Chapter 26 Drug Abuse	Read Chapter	

**Exam 5 (Chapters 18, 19, 20, 21, 22, 23, 25, 26) DATE TO BE  
ANNOUNCED**

*Exam 5 will cover more chapters and material than the previous exams. It will count as  
your final exam.*

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## **COURSE DESCRIPTION**

A study of the classes of drugs and their uses, actions, interactions, side effects, contraindications, and oral manifestations with emphasis on dental applications.

## **PREREQUISITE**

DHYG 1301

## **COURSE GOALS**

**Upon completion of this course the student will be able to:**

1. Apply general information to the treatment of patients regarding the nature of, source, administration routes and techniques, mechanisms of distribution and action, toxicity and side effects of drugs the patient may be taking.
2. Discuss the absorption, bio-transformation and elimination processes of drugs according to their chemical properties.
3. Apply knowledge of prescription practice by defining dose regimes and defining parts of the prescription.
4. State the purpose and routes of administration of each drug in an ADA accepted Emergency Kit given the appropriate emergency treatment.
5. Apply knowledge of medications that the dental hygienist is legally entitled to use in the practice of professional skills.
6. Apply knowledge of the effects of drugs which are used or dispensed in the dental office.
7. Apply knowledge of drugs which are being taken by your patients who are under the care of another health professional and whose diseases necessitate the use of those drugs.
8. Analyze the patient health history and apply pharmacologic information to determine patient care.
9. Apply and use written and electronic data base to research pharmacologic information.

## **CREDIT HOURS**

Class: 50 minutes, 2 days per week

Credit: 2 semester hours

## **CLASS MEETING TIME**

Lecture: Tuesday and Thursday 8:00 – 8:50 am

Room: 103 MPC

## **INSTRUCTOR**

Michelle DeMoss, RDH, BS

Dental Hygiene Instructor 1

Office: 211 Multi-Purpose Center

Phone: 409-981-6814

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## **COURSE POLICIES**

### **General Policy Statements:**

#### **1. Attendance Policy**

Students should plan on attending classes, labs and clinic sessions as assigned throughout the semester. Family outings, vacations and personal business should be scheduled when school is not in session and will not be considered excuses for missing assignments, examinations, classes, labs or clinic time.

#### **Absenteeism**

- In order to ensure the students in the dental hygiene program achieve the necessary didactic and clinical competencies outlined in the curriculum, it is necessary that the student complete all assigned lecture classes, clinical and laboratory hours.
- If you are unable to attend lecture class, clinic or lab, it is **mandatory that you call the appropriate instructor prior to the scheduled class, clinic or lab time**. The student is responsible for all material missed at the time of absence. Extenuating circumstances will be taken into account. Extenuating circumstances might include: funeral of immediate family member, maternity, hospitalization, etc.
- It is expected that students will appear to take their exams at the regularly scheduled examination time. Make-up examinations will be given **only** if the absence is due to illness (confirmed by a physicians' excuse), a death in the immediate family, or at the discretion of the instructor.

#### **Fall/Spring Semesters:**

Dental hygiene students will be allowed **two excused absences** in any lecture, clinic or lab. Absences must be accompanied by a written excuse on the next class day. In the event that a student misses class, clinic or lab beyond the allowed absences, the following policy will be enforced:

1 absence = verbal warning

Beginning with the 2<sup>nd</sup> absence, **2 points** will be deducted from the final course grade for each absence thereafter.

#### **2. Tardiness**

- Tardiness is disruptive to the instructor and the students in the classroom. It is expected that students will arrive on time for class, clinic or lab, and remain until dismissed by the instructor. If tardiness becomes an issue, the following policy will be enforced:

Tardy 1 time = verbal warning

Tardy 2 times is considered an absence.

- 3. Electronic devices:** Electronic devices are a part of many individual's lives today. Devices such as recorders, radios, phones, and paging devices may be disturbing to faculty and classmates. Students, therefore, must receive the instructor's permission to operate all electronic devices in the classroom and clinic. Texting on cell phones **will not be allowed during class. Texting during an exam will be considered academic dishonesty. The exam will be considered over and the student will receive a zero for the exam.**

- 4. Late coursework.** Assignments must be completed by the due date. Late assignments will not be accepted and will result in a zero for that assignment.

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### **Americans with Disabilities Act (ADA)**

The Americans with Disabilities Act of 1992 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. Among other things this statute requires that all students with documented disabilities be guaranteed a learning environment that provides for reasonable accommodations of their disabilities. If you believe you have a disability requiring an accommodation, please contact Special Populations Coordinator at 409-880-1737 or visit the office located in the Cecil Beeson Building, room 116B. You may also visit the online resource at <http://www.lit.edu/depts/stuserv/special/defaults.aspx>.

### **Technical Requirements (for Blackboard)**

The latest technical requirements, including hardware, compatible browsers, operating systems, software, Java, etc. can be found online at:

[https://help.blackboard.com/en-us/Learn/9.1\\_2014\\_04/Student/015\\_Browser\\_Support/015\\_Browser\\_Support\\_Policy](https://help.blackboard.com/en-us/Learn/9.1_2014_04/Student/015_Browser_Support/015_Browser_Support_Policy). A functional broadband internet connection, such as DSL, cable, or WiFi is necessary to maximize the use of the online technology and resources.

### **Student Code of Conduct Statement**

It is the responsibility of all registered Lamar Institute of Technology students to access, read, understand and abide by all published policies, regulations, and procedures listed in the *LIT Catalog and Student Handbook*. The *LIT Catalog and Student Handbook* may be accessed at [www.lit.edu](http://www.lit.edu) or obtained in print upon request at the Student Services Office. Please note that the online version of the *LIT Catalog and Student Handbook* supersedes all other versions of the same document.



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## **TEACHING METHODOLOGY**

Lectures/Discussion  
Power Point Presentations  
Case Study  
Cooperative Learning  
Exams  
Online activities

## **REQUIRED TEXT**

Haveles, Elena Bablenis, **Applied Pharmacology for the Dental Hygienist**, 7th Edition, Elsevier Health Sciences, 2016.

ISBN # 978-0-323-17111-3

Jeske, Arthur H., **Mosby's Dental Drug Reference**, 11<sup>th</sup> Edition, Elsevier Health Sciences, 2014.

ISBN # 978-0-323-16916-5

## **REFERENCES**

Holland, Norman, and Michael Patrick Adams, **Core Concepts in Pharmacology**, 4th Edition, Pearson Education, Inc., 2014.

Pickett, Frieda Atherton, and Geza T. Terezhalmly, **Basic Principles of Pharmacology with Dental Hygiene Applications**, 1<sup>st</sup> Edition, Lippincott Williams & Williams, 2008.

## **COURSE REQUIREMENTS**

### **Exams**

Five (5) exams will be given. Exams will cover lectures and assignments scheduled since the previous exam. Exams will comprise **85%** of your grade.

### **Case Study**

The Case Study is an individual learning activity that will comprise **10%** of your grade. See Appendix for Case Study instructions and rubric.

### **Class Participation**

Class participation will comprise **5%** of your grade and will include an Herb assignment, cooperative learning, professional journal articles and class participation in discussions and activities.

## **GRADE SCALE:**

A = 92 – 100

B = 83 – 91

C = 75 – 82

D = 60-74

F = 59 and below

**REMEDATION POLICY:** See student handbook for remediation policy.

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## **LEARNING OBJECTIVES**

### **Chapter 01: Information, Sources, Regulatory Agencies, Drug Legislation, and Prescription Writing**

1. Discuss the history of pharmacology and its relationship to the dental hygienist.
2. List where detailed and updated information on medications can be found.
3. Define the ways in which drugs are named and the significance of each.
4. Define generic equivalence and how it is related to drug substitution.
5. Describe the acts and agencies within the federal government designed to regulate drugs.
6. Identify the four phases of clinical evaluation involved in drug approval and the five schedules of drugs.
7. Discuss the history of drug legislation, including:
  - List the five schedules of controlled substances
  - Explain package inserts and black box warnings
  - Differentiate between labeled and off-label uses
  - Explain orphan drugs and drug recalls

### **Chapter 02: Drug Action and Handling**

1. Differentiate dose, potency, and efficacy in the context of the actions of drugs.
2. Explain the pharmacologic effect of a drug.
3. Discuss the major steps of pharmacokinetics: absorption, distribution, metabolism, and excretion.
4. Explain how altering absorption, distribution, metabolism, and excretion can affect clinical pharmacokinetics.
5. Explain how half-life relates to clinical pharmacokinetics.
6. Provide example of factors that may alter the effect of a drug.
7. Summarize the various routes of drug administration and the common dose forms used.

### **Chapter 03: Adverse Reactions**

1. Define an adverse drug reaction, and name five categories of reaction.
2. Discuss the risk-to-benefit ratio of the use of a drug for therapeutic effect and its potential adverse reactions.
3. Explain how the toxic effects of drugs are evaluated.
4. Discuss the importance of recognizing adverse drug effects.

### **Chapter 04: Autonomic Drugs**

1. Identify the major components and functional organization of the autonomic nervous system.
2. Discuss the pharmacologic effects, adverse reactions, contraindications, and dental considerations of cholinergic agents.
3. Discuss the pharmacologic effects, adverse reactions, contraindications, and dental considerations of anticholinergic agents which are part of the parasympathetic autonomic nervous system.
4. Discuss the major neurotransmitters in the sympathetic autonomic nervous system and the importance of receptors.
5. Discuss the pharmacologic effects, adverse reactions, contraindications, and dental considerations of adrenergic agents and list several adrenergic agents.
6. Explain the workings of adrenergic blocking agents and neuromuscular blocking agents.

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### **Chapter 05: Nonopioid (Nonnarcotic) Analgesics**

1. Describe pain and its purpose and the main components.
2. Discuss the classification of analgesic agents and the chemistry, pharmacokinetics, pharmacologic effects, adverse reactions, toxicity, drug interactions, and uses of aspirin.
3. Define the term nonsteroidal antiinflammatory drug (NSAID), and discuss the chemistry, pharmacokinetics, pharmacologic effects, adverse reactions, toxicity, drug interactions, uses of these drugs, and several examples of these drugs.
4. Discuss the properties, pharmacologic effects, adverse reactions, drug interactions, uses, and dosing of acetaminophen.
5. Explain the disease known as gout, and summarize the drugs used to treat it.

### **Chapter 06: Opioid (Narcotic) Analgesics and Antagonists**

1. Explain the classification, mechanism of action, and pharmacokinetics of opioids.
2. List and describe the pharmacologic effects and potential adverse reactions of opioids.
3. Discuss the addiction potential of opioids, including treatment.
4. Name and explain the analgesic actions of the most common opioid agonists.
5. Discuss the actions and provide examples of the mixed opioids.
6. Summarize the mechanism of action and adverse reactions of tramadol.
7. Apply the use of opioids to dentistry.

### **Chapter 07: Antiinfective Agents**

1. Outline the history and basic principles of infection and its relevance to dentistry, including:
  - Define the terms pertinent to a discussion about infection.
  - Identify the factors that determine the likelihood of an infection.
  - Describe the importance of cultures and sensitivity in relation to infections.
  - Discuss the reasons an understanding of “resistance” is important with regard to infections.
2. Summarize the principal indications for the use of antimicrobial agents.
3. Name and describe the major adverse reactions and disadvantages associated with the use of antiinfective agents.
4. Discuss penicillins, macrolides, tetracyclines, cephalosporins—their chemical makeup, properties, mechanisms of action, uses, and potential adverse reactions—and name several specific types of each.
5. Name and describe two other types of antibiotics and antiinfectives, including their chemical makeup, properties, mechanisms of action, potential adverse reactions, and uses.
6. Discuss the rationale for the use of antiinfective agents in dentistry.
7. Discuss antimicrobial agents for nondental uses including their pharmacokinetics, mechanism of action, adverse reactions, and spectrum of use.
8. Describe the drugs used to treat tuberculosis and the difficulties this disease presents.
9. Discuss the use of topical antibiotics in dentistry.
10. Summarize the concept and practice of antibiotic prophylaxis in dentistry.

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### **Chapter 08: Antifungal and Antiviral Agents**

1. Name several types of antifungal agents, and discuss their indications in dentistry and potential adverse reactions.
2. Discuss the use of antiviral agents in the treatment of herpes simplex.
3. Describe the various drugs and drug combinations used to treat acquired immunodeficiency syndrome (AIDS).
4. Describe the various drugs used to treat chronic hepatitis.

### **Chapter 09: Local Anesthetics**

1. Discuss the history and reasons for the use of local anesthetics in dentistry.
2. Explain the mechanism of action, pharmacokinetics, pharmacologic effects, and adverse reactions of local anesthetics.
3. Describe the composition of each of the drugs used in local anesthetic solutions, and summarize the factors involved in the choice of a local anesthetic.
4. Briefly discuss the use, types, and doses of topical anesthetics used in dentistry.

### **Chapter 10: General Anesthetics**

1. Summarize the history of general anesthesia in dentistry.
2. Describe how general anesthesia works and the stages and planes involved, as well as possible adverse reactions associated with its use.
3. Compare and contrast the classifications of general anesthesia.
4. Discuss the use of nitrous oxide in dentistry, including how it works, the pharmacologic effects, adverse reactions, and contraindications.
5. Name and describe several types of halogenated hydrocarbons.
6. List the goals of surgical anesthesia and the importance of using balanced general anesthesia.

### **Chapter 11: Antianxiety Agents**

1. Discuss the value of patient relaxation in dentistry.
2. Describe the pharmacokinetics, mechanism of action, pharmacologic effects, adverse reactions, drug interactions, medical uses and dental relevance of the benzodiazepines and barbiturates.
3. Name and briefly describe the mechanism of action of the nonbenzodiazepine-nonbarbiturate sedative-hypnotics and the nonbenzodiazepine-nonbarbiturate receptor agonists.
4. Name a melatonin receptor agonist, and summarize its actions.
5. Explain the workings of the centrally acting muscle relaxants and how they are used.
6. Name and briefly describe a few of the miscellaneous muscle relaxant agents that can be used.
7. Discuss some general precautions about which the dental practitioner should be aware with the use of antianxiety agents.

### **Chapter 12: Oral Conditions and Their Treatment**

1. Name several common infectious lesions of the oral cavity, and summarize the treatments for each.
2. Describe immune reactions resulting in canker sores and lichen planus, and discuss the treatments for each.
3. Name several oral conditions that result from inflammation and the measures used to treat them.
4. Discuss treatment options for xerostomia, and name several other possible drug-induced oral side effects.

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5. Discuss the pharmacologic agents most commonly used to treat oral lesions.

#### **Chapter 14: Drugs for the Treatment of Cardiovascular Disease**

1. Identify the dental implications of cardiovascular disease including the contraindications to treatment, vasoconstrictor use and its relationship to periodontal disease.
2. Describe heart failure and identify drugs commonly used to treat it, including the mechanisms of action, pharmacologic effects, and adverse reactions.
3. Discuss the use of digoxin and the management of dental patients taking it.
4. Define arrhythmia and dysrhythmia, and describe how the heart maintains its normal rhythm.
5. Describe the classifications, mechanisms of action, adverse reactions, and uses of antiarrhythmic agents, and identify the issues to consider in dental treatment.
6. Define angina pectoris, and describe the types of drugs used to treat it; identify the dental implications of these drugs.
7. Define hypertension, describe the categories it is divided into and identify its treatment with the various types of antihypertensive agents.
8. Define hyperlipidemia and hyperlipoproteinemia, and summarize the types of drugs used to restore cholesterol homeostasis in the body including the dental implications of their use.
9. Describe the role of warfarin in blood coagulation and the potential adverse reactions and interactions associated with its use.
10. Identify several other drugs that affect blood coagulation.

#### **Chapter 15: Drug for the Treatment of Gastrointestinal Disorders**

1. Summarize the most common types of gastrointestinal (GI) diseases and their impact on oral health care.
2. Name and describe the types of drugs used to treat GI diseases, their uses, adverse reactions, drug interactions and any implications to dentistry.
3. Discuss several miscellaneous GI drugs that can be used and their possible side effects.
4. List the different types of laxatives and know the advantages and disadvantages of each.
5. List the medications used to treat diarrhea.
6. Define the term antiemetic and give examples of drugs used to treat vomiting and nausea.
7. Discuss the medications used to manage chronic inflammatory bowel disease (IBD).

#### **Chapter 16: Drugs for the Treatment of Seizure Disorders**

1. Define epilepsy, and briefly summarize the various types of seizures.
2. Discuss drug therapy of patients with epilepsy and describe the general adverse reactions to antiepileptic agents.
3. Summarize the pharmacologic effects, adverse reactions, and drug interactions of the main antiepileptics— valproate, lamotrigine, levetiracetam, oxcarbazepine, carbamazepine, and phenytoin.
4. Discuss ethosuximide and benzodiazepines (two miscellaneous antiepileptics) and describe the workings of each.
5. Provide several examples of new types of antiepileptics, including the mechanism of action, indications, and adverse reactions of each.
6. Outline the dental treatment of patients with epilepsy.

#### **Chapter 17: Drugs for the Treatment of Central Nervous System Disorders**

1. Name and describe the three categories of functional disorders discussed in this chapter.

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2. Outline some basic precautions that the dental health care professional should keep in mind when treating patients with psychiatric disorders.
  3. Discuss antipsychotic agents and their mechanism of action and adverse reactions/ effects.
  4. Discuss antidepressant agents and their mechanism of action and adverse reactions/ effects.
  5. Name several other types of antidepressants and their possible adverse reactions and dental implications.
  6. List several drugs used to treat bipolar disorder.

### **Chapter 18: Adrenocorticosteroids**

1. Define adrenocorticosteroids, and describe how the body releases them.
2. Summarize the classification, administration, mechanism of action, and pharmacologic effects of adrenocorticosteroids.
3. Describes the various adverse reactions and uses of adrenocorticosteroids, including their application to dentistry.
4. List several examples of corticosteroid products and describe the ways in which they are differentiated.
5. List several dental implications to the use of steroids.

### **Chapter 19: Drugs for the Treatment of Respiratory Disorders**

1. Summarize the two groups of respiratory diseases.
2. Name and describe the mechanisms of action of several types of drugs used to treat respiratory diseases.
3. Discuss the types of drugs used to treat respiratory infections, including the implications to dentistry.

### **Chapter 20: Drugs for the Treatment of Allergic Rhinitis**

1. Define allergic rhinitis and describe the dental implications, pharmacologic effects, adverse reactions, and toxicity of antihistamines.
2. Describe the dental implications, pharmacologic effects, and adverse reactions of the intranasal corticosteroids.
3. Discuss montelukast, cromolyn sodium, and ipratropium bromide and describe their role in treating allergic rhinitis. Also describe the adverse reactions of ipratropium bromide.
4. Describe the use of decongestants, including:
  - Discuss the pharmacologic effects, adverse reactions and uses in treating allergies.
  - Discuss the use of intranasal decongestants as an alternative to oral decongestants.

### **Chapter 21: Drugs for the Treatment of Diabetes Mellitus**

1. Describe the importance of the hormones released by the endocrine glands in maintaining homeostasis, including:
  - a. Discuss the two primary hormones secreted by the pancreas and their role in relation to diabetes mellitus.
  - b. Define diabetes mellitus, list and describe the two types of this disease, its complications, issues involving dentistry, cautions and contraindications in the treatment of patients with diabetes.
2. Describe the systemic complications of diabetes and the evaluation of the dental patient with diabetes.
3. Discuss the goals of therapy and describe the types of drugs used to treat diabetes.

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4. Discuss the dental concerns associated with antidiabetic therapy.
  5. Discuss four new drugs being used to treat diabetes and summarize their mechanism of action and possible adverse effects.
  6. Discuss the treatment of hypoglycemia.

### **Chapter 22: Drugs for the Treatment of Other Endocrine Disorders**

1. Discuss pituitary hormones, the functions of the anterior and posterior pituitary glands and describe the negative feedback mechanism that takes place in endocrine glands.
2. Provide an overview of the thyroid hormones and the conditions known as hypothyroidism and hyperthyroidism and the antithyroid drugs.
3. Summarize the major female and male sex hormones, and name and describe several types of hormonal contraceptives.
4. Discuss other agents that affect sex hormone systems.

### **Chapter 23: Antineoplastic Drugs**

1. Define antineoplastic agents and summarize their use, mechanisms of action, and classification.
2. Describe several adverse drug effects associated with antineoplastic agents.
3. Discuss the dental implications of patients planning to take or actively taking antineoplastic drugs.

### **Chapter 24: Emergency Drugs**

1. Summarize the general measures a dental professional should follow to train for an emergency and the preparation for treatment in the event of an emergency.
2. Name and describe several categories of emergencies, and provide common examples within each category.
3. List the critical drugs to include in a dental office emergency kit and several examples of second- or third-level drugs that would be optional.
4. Name several pieces of equipment that would be included in the emergency kit.

### **Chapter 25: Pregnancy and Breast Feeding**

1. List the two main concerns in the administration of drugs during pregnancy.
2. Describe the pregnancy trimesters in relation to dental treatment, define teratogenicity, outline the Food and Drug Administration's (FDA) pregnancy categories for drugs, and discuss how breastfeeding affects dental drug use.
3. Name several types of local anesthetic, antiinfective, and antianxiety agents and state their indications or contraindications for pregnant women.

### **Chapter 26: Drug Abuse**

1. Define abuse and misuse and be familiar with the terms relating to drug abuse that are used in this chapter.
2. Name several types of central nervous system (CNS) depressants that are commonly abused and outline the typical pattern of abuse, treatment, adverse reactions, management of overdose and withdrawal, and dental treatment implications of each.
3. Identify several types of CNS stimulants that are commonly abused.
4. Describe the pattern of abuse, as well as the withdrawal and treatment options associated with tobacco use, and summarize the role of the dental hygienist in tobacco cessation.

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5. Discuss ways in which the dental hygienist can identify patients or colleagues who may be abusing drugs.

### **Chapter 27: Natural/Herbal Products and Dietary Supplements**

1. Discuss why people choose herbal products over traditional medicine.
2. Discuss the federal legislation governing herbal and dietary products.
3. Discuss the safety of herbal and nutritional products and explain the adverse effects associated with their use and their impact on oral health care.
4. Explain the drug interactions associated with herbal products and their impact on oral health care.
5. Discuss the standardization of herbal products and the Good Manufacturing Practice (GMP) standard introduced by the FDA.
6. Discuss the herbal supplements that are used in oral health care.



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## **CHAPTER OUTLINE**

### **Chapter 01: Information, Sources, Regulatory Agencies, Drug Legislation & Prescription Writing**

1. History
2. Role of the Dental Hygienist
3. Sources of Information
4. Drug Names
  - a. Drug Substitution
5. Federal Regulations and Regulatory Agencies
  - a. Harrison Narcotic Act
  - b. Food and Drug Administration
  - c. Federal Trade Commission
  - d. Drug Enforcement Administration
  - e. Omnibus Budget Reconciliation Act
6. Clinical Evaluation of a New Drug
7. Drug Legislation
8. Prescription Writing
9. Dental Hygiene Considerations

### **Chapter 02: Drug Action and Handling**

1. Characterization of Drug Action
  - a. Log Dose Effect Curve
  - b. Potency
  - c. Efficacy
  - d. Therapeutic Index
2. Mechanism of Action of Drugs
  - a. Receptors
3. Pharmacokinetics
  - a. Passage across Body Membranes
    - i. Passive Transfer
    - ii. Specialized Transport
  - b. Absorption
    - i. Effect of Ionization
    - ii. Oral Absorption
    - iii. Absorption from Injection Site
  - c. Distribution
    - i. Basic Principles
    - ii. Distribution by Plasma
  - d. Blood-Brain Barrier
    - i. Placenta
    - ii. Enterohepatic Circulation
  - e. Redistribution
  - f. Metabolism (Biotransformation)
    - i. First-Pass Effect
      1. Phase I
      2. Phase II

- ii. Excretion
- 4. Clinical Pharmacokinetics
- 5. Factors that alter Drug Effects
- 6. Routes of Administration and Dose Forms
  - a. Routes of Administration
  - b. Dose Forms
- 7. Dental Hygiene Considerations

### **Chapter 03: Adverse Reactions**

- 1. Definitions and Classifications
- 2. Clinical Manifestations of Adverse Reactions
  - a. Exaggerated Effect on Target Tissues
  - b. Effect on Nontarget Tissues
  - c. Effect on Fetal Development (Teratogenic Effect)
  - d. Local Effect
  - e. Drug Interactions
  - f. Hypersensitivity (Allergic Reaction)
  - g. Idiosyncrasy
  - h. Interference with Natural Defense Mechanisms
- 3. Toxicologic Evaluation of Drugs
- 4. Recognizing Adverse Drug Effects
- 5. Dental Hygiene Considerations

### **Chapter 04: Autonomic Drugs**

- 1. Autonomic Nervous System
  - a. Anatomy
  - b. Parasympathetic Autonomic Nervous System
  - c. Sympathetic Autonomic Nervous System
  - d. Functional Organization
  - e. Neurotransmitters
- 2. Parasympathetic Autonomic Nervous System
  - a. Cholinergic (Parasympathomimetic) Agents
    - i. Pharmacologic Effects
    - ii. Adverse Reactions
    - iii. Dental Issues
    - iv. Contraindications
    - v. Uses
  - b. Anticholinergic (Parasympatholytic) Agents
    - i. Pharmacologic Effects
    - ii. Adverse Reactions
    - iii. Contraindications
    - iv. Uses
    - v. Drug Interactions
  - c. Nicotinic Agonists and Antagonists
- 3. Sympathetic Autonomic Nervous System
  - a. Sympathetic Nervous System Receptors
  - b. Adrenergic (Sympathomimetic) Agents
    - i. Pharmacologic Effects

- ii. Adverse Reactions
- iii. Contraindications
- iv. Uses
- v. Specific Adrenergic Agents
  - 1. Epinephrine
  - 2. Phenylephrine
  - 3. Levonordefrin
  - 4. Ephedrine and Pseudoephedrine
  - 5. Dopamine
  - 6. Dipivefrin
- c. Adrenergic Blocking Agents
  - i.  $\alpha$ -Adrenergic Blocking Agents
  - ii.  $\beta$ -Adrenergic Blocking Agents
  - iii.  $\alpha$ - and  $\beta$ -Blocking Agents
- d. Neuromuscular Blocking Drugs
  - i. Nondepolarizing (Competitive) Blockers
  - ii. Depolarizing Agents
- 4. Dental Hygiene Considerations

#### **Chapter 05: Nonopioid (Nonnarcotic) Analgesics**

- 1. Pain
- 2. Classification
- 3. Salicylates
  - a. Acetylsalicylic Acid
    - i. Chemistry
    - ii. Mechanism of Action
    - iii. Pharmacokinetics
    - iv. Pharmacologic Effects
    - v. Adverse Reactions
    - vi. Toxicity
    - vii. Drug Interactions
    - viii. Uses
    - ix. Dose and Preparations
  - b. Nonacetylated Salicylates
- 4. Nonsteroidal Antiinflammatory Drugs
  - a. Chemical Classification
  - b. Mechanism of Action
  - c. Pharmacokinetics
  - d. Pharmacologic Effects
  - e. Adverse Reactions
  - f. Drug Interactions
  - g. Contraindications and Cautions
  - h. Therapeutic Uses
  - i. Specific Nonsteroidal Antiinflammatory Drugs
    - i. Ibuprofen
    - ii. Naproxen and Naproxen Sodium
    - iii. Other Nonsteroidal Antiinflammatory Drugs
    - iv. Cyclo-Oxygenase II Specific Agents

5. Acetaminophen
  - a. Pharmacokinetics
  - b. Pharmacologic Effects
  - c. Adverse Reactions
  - d. Drug Interactions
  - e. Uses
  - f. Dose and Preparations
6. Drugs Used to Treat Gout
  - a. Colchicine
  - b. Allopurinol
  - c. Probenecid
7. Dental Hygiene Considerations

### **Chapter 06: Opioid (Narcotic) Analgesics and Antagonists**

1. History
2. Classification
3. Mechanism of Action
4. Pharmacokinetics
5. Pharmacologic Effects
6. Adverse Reactions
7. Specific Opioids
8. Dental Use of Opioids
9. Chronic Dental Pain and Opioid Use
10. Dental Hygiene Considerations

### **Chapter 07: Antiinfective Agents**

1. Dental Infection “Evolution”
2. Definitions
3. Infection
4. Resistance
5. Indications for Antimicrobial Agents
  - a. Therapeutic Indications
  - b. Prophylactic Indications
6. General Adverse Reactions and Disadvantages Associated with Antiinfective Agents
  - a. Superinfection (Suprainfection)
  - b. Allergic Reactions
  - c. Drug Interactions
  - d. Gastrointestinal Complaints
  - e. Pregnancy Considerations
  - f. Dose Forms
  - g. Cost
7. Penicillins
  - a. Source and Chemistry
  - b. Pharmacokinetics
  - c. Mechanism of Action
  - d. Spectrum
  - e. Resistance

- f. Adverse Reactions
  - g. Uses
  - h. Specific Penicillins
- 8. Cephalosporins
  - a. Pharmacokinetics
  - b. Spectrum
  - c. Mechanism of Action
  - d. Adverse Reactions
  - e. Uses
- 9. Macrolides
  - a. Erythromycin
    - i. Mechanism and Spectrum
    - ii. Pharmacokinetics
    - iii. Adverse Reactions
    - iv. Drug Interactions
    - v. Uses
  - b. Azithromycin and Clarithromycin
- 10. Tetracyclines
  - a. Pharmacokinetics
  - b. Spectrum
  - c. Adverse Reactions
  - d. Drug Interactions
  - e. Uses
- 11. Clindamycin
  - a. Pharmacokinetics
  - b. Spectrum
  - c. Adverse Reactions
  - d. Uses
- 12. Metronidazole
  - a. Pharmacokinetics
  - b. Spectrum
  - c. Adverse Reactions
  - d. Drug Interactions
  - e. Uses
- 13. Rational Use of Antiinfective Agents in Dentistry
  - a. Stage 1
  - b. Stage 2
  - c. Stage 3
- 14. Antimicrobial Agents for Nondental Use
  - a. Vancomycin
    - i. Spectrum
    - ii. Adverse Reactions
  - b. Aminoglycosides
    - i. Pharmacokinetics
    - ii. Spectrum
    - iii. Adverse Reactions
    - iv. Uses
  - c. Chloramphenicol

- d. Sulfonamides
  - i. Mechanism of Action
  - ii. Spectrum
  - iii. Adverse Reactions
  - iv. Uses
- e. Sulfamethoxazole-Trimethoprim
- f. Nitrofurantoin
- g. Quinolones (Fluoroquinolones)
  - i. Pharmacokinetics
  - ii. Spectrum
  - iii. Adverse Reactions
  - iv. Uses
- 15. Antituberculosis Agents
  - a. Isoniazid
    - i. Pharmacokinetics
    - ii. Adverse Reactions
    - iii. Uses
  - b. Rifampin
    - i. Pharmacokinetics
    - ii. Adverse Reactions
    - iii. Uses
  - c. Pyrazinamide
  - d. Ethambutol
- 16. Topical Antibiotics
  - a. Neomycin, Polymyxin, and Bacitracin
  - b. Mupirocin
- 17. Antibiotic Prophylaxis Used in Dentistry
  - a. Prevention of Infective Endocarditis
    - i. Dental Procedures
    - ii. Cardiac Conditions
    - iii. Antibiotic Regimens for Dental Procedures
  - b. Prosthetic Joint Prophylaxis
  - c. Noncardiac Medical Conditions
- 18. Dental Hygiene Considerations

## **Chapter 08: Antifungal and Antiviral Agents**

- 1. Antifungal Agents
  - a. Nystatin
  - b. Imidazoles
    - i. Clotrimazole
    - ii. Ketoconazole
      - 1. Pharmacokinetics
      - 2. Spectrum
      - 3. Adverse Reactions
      - 4. Drug Interactions
      - 5. Uses
      - 6. Dose

- iii. Other Imidazoles
  - 2. Antiviral Agents
    - a. Herpes Simplex
      - i. Acyclovir
        - 1. Pharmacokinetics
        - 2. Spectrum
        - 3. Adverse Reactions
        - 4. Uses
        - 5. Dose
      - ii. Docosanol 10%
      - iii. Penciclovir
      - iv. Famciclovir
    - b. Acquired Immunodeficiency Syndrome
      - i. Nucleoside Reverse Transcriptase Inhibitors
      - ii. Nonnucleoside Reverse Transcriptase Inhibitors
      - iii. Protease Inhibitors
      - iv. Combinations
    - c. Chronic Hepatitis
  - 3. Dental Hygiene Considerations

### **Chapter 09: Local Anesthetics**

- 1. History
- 2. Ideal Local Anesthetic
- 3. Chemistry
- 4. Mechanism of Action
- 5. Pharmacokinetics
- 6. Pharmacologic Effects
- 7. Adverse Reactions
  - a. Toxicity
  - b. Local Effects
  - c. Malignant Hyperthermia
  - d. Pregnancy and Nursing Considerations
  - e. Allergy
- 8. Composition of Local Anesthetic Solutions
- 9. Local Anesthetic Agents
  - a. Amides
    - i. Lidocaine
    - ii. Mepivacaine
    - iii. Prilocaine
    - iv. Bupivacaine
    - v. Articaine
  - b. Esters
    - i. Procaine
    - ii. Propoxycaine
    - iii. Tetracaine
  - c. Other Local Anesthetics
    - i. Dyclonine
    - ii. Benzonatate

- 10. Vasoconstrictors
  - a. Overview
  - b. Drug Interactions
- 11. Choice of Local Anesthetic
- 12. Topical Anesthetics
  - a. Amides
    - i. Lidocaine
    - ii. Lidocaine and Prilocaine
  - b. Esters
    - i. Benzocaine
    - ii. Cocaine
  - c. Precautions in Topical Anesthesia
- 13. Doses of Local Anesthetic and Vasoconstrictor
- 14. Dental Hygiene Considerations

### **Chapter 10: General Anesthetics**

- 1. History
- 2. Mechanism of Action
  - a. Overview
  - b. Stages and Planes of Anesthesia
- 3. Adverse Reactions
- 4. General Anesthetics
  - a. Classification of Anesthetic Agents
    - i. Inhalation Anesthetics
    - ii. Physical Factors
    - iii. Intravenous Anesthetics
  - b. Induction Anesthesia
  - c. Induction and Maintenance Anesthesia
  - d. Nitrous Oxide
    - i. Pharmacologic Effects
    - ii. Adverse Reactions
    - iii. Contraindications and Dental Issues
  - e. Halogenated Hydrocarbons
    - i. Halothane
    - ii. Enflurane
    - iii. Isoflurane
    - iv. Desflurane and Sevoflurane
- 5. Balanced General Anesthesia
- 6. Dental Hygiene Considerations

### **Chapter 11: Antianxiety Agents**

- 1. Definitions
- 2. Benzodiazepines
  - a. Chemistry
  - b. Pharmacokinetics
  - c. Mechanism of Action
  - d. Pharmacologic Effects
  - e. Adverse Reactions



- f. Abuse and Tolerance
- g. Drug Interactions
- h. Medical Uses
- i. Management of the Dental Patient Taking Benzodiazepines
- 3. Barbiturates
  - a. Chemistry
  - b. Pharmacokinetics
  - c. Mechanism of Action
  - d. Pharmacologic Effects
  - e. Adverse Reactions
  - f. Long-Term Use
  - g. Contraindications
  - h. Drug Interactions
  - i. Uses
- 4. Nonbenzodiazepine-Nonbarbiturate Sedative-Hypnotics
  - a. Chloral Hydrate
  - b. Buspirone
- 5. Nonbenzodiazepine-Nonbarbiturate Receptor Agonists
  - a. Zolpidem
  - b. Zaleplon
  - c. Eszopiclone
- 6. Melatonin Receptor Agonist
- 7. Centrally Acting Muscle Relaxants
  - a. Pharmacologic Effects
  - b. Individual Centrally Acting Muscle Relaxants
- 8. Miscellaneous Agents
  - a. Baclofen
  - b. Tizanidine
  - c. Dantrolene
- 9. General Comments about Antianxiety Agents
  - a. Analgesic-Sedative Combinations
  - b. Special Considerations
  - c. Precautions
- 10. Dental Hygiene Considerations

## **Chapter 12: Oral Conditions and Their Treatment**

- 1. Infectious Lesions
  - a. Acute Necrotizing Ulcerative Gingivitis
  - b. Herpes Infections
    - i. Overview
    - ii. Treatment
      - 1. Acyclovir
      - 2. Penciclovir
      - 3. Famciclovir and Valacyclovir
      - 4. Treatment of Symptoms
  - c. Candidiasis (Moniliasis)
  - d. Angular Cheilitis/Cheilosis
  - e. Alveolar Osteitis

2. Immune Reactions
  - a. Recurrent Aphthous Stomatitis
    - i. Corticosteroids
    - ii. Aphthasol
    - iii. Diphenhydramine
    - iv. Immunosuppressives
  - b. Lichen Planus
3. Miscellaneous Oral Conditions
  - a. Geographic Tongue
  - b. Burning Mouth or Tongue Syndrome
4. Inflammation
  - a. Pericoronitis
  - b. Postirradiation Caries
  - c. Root Sensitivity
  - d. Actinic Lip Changes
  - e. Stomatitis
5. Drug-Induced Oral Side Effects
  - a. Xerostomia
  - b. Sialorrhea
  - c. Hypersensitivity-Type Reactions
  - d. Oral Lesions That Resemble Autoimmune-Type Reactions
  - e. Stains
  - f. Gingival Enlargement
  - g. Osteonecrosis of the Jaw
6. Agents Commonly Used to Treat Oral Lesions
  - a. Corticosteroids
  - b. Palliative Treatment
7. Dental Hygiene Considerations

#### **Chapter 14: Drugs for the Treatment of Cardiovascular Drugs**

1. Dental Implications of Cardiovascular Disease
  - a. Contraindications to Treatment
  - b. Vasoconstrictor Limit
  - c. Periodontal Disease and Cardiovascular Disease
2. Heart Failure
3. Cardiac Glycosides
  - a. Digitalis Glycosides
    - i. Pharmacologic Effects
    - ii. Uses
    - iii. Adverse Reactions
    - iv. Management of the Dental Patient Taking Digoxin
    - v. Other Drugs
4. Antiarrhythmic Agents
  - a. Automaticity
  - b. Arrhythmias
  - c. Antiarrhythmic Agents
5. Antianginal Drugs
  - a. Angina Pectoris

- b. Nitroglycerin-Like Compounds
    - i. Mechanism
    - ii. Adverse Reactions
    - iii. Significant Drug Interactions and Contraindications
    - iv. Storage
  - c.  $\beta$ -Adrenergic Blocking Agents
  - d. Calcium Channel Blocking Agents
  - e. Ranolazine
  - f. Angiotensin-Converting Enzyme Inhibitors
  - g. Angiotensin Receptor Blockers
  - h. Dental Implications
6. Antihypertensive Agents
- a. Patient Evaluation
  - b. Treatment of Hypertension
  - c. Diuretic Agents
    - i. Thiazide Diuretics
    - ii. Loop Diuretics
    - iii. Potassium-Sparing Diuretics
    - iv. Potassium Salts
  - d. Angiotensin Receptor Blockers
  - e. Direct Renin Inhibitors
  - f. Calcium Channel Blocking Agents
    - i. Mechanism
    - ii. Pharmacologic Effects
    - iii. Adverse Reactions
    - iv. Oral Manifestations
    - v. Dental Drug Interactions
  - g.  $\beta$ -Adrenergic Blocking Agents
    - i. Dental Drug Interactions
    - ii.  $\alpha$ - and  $\beta$ -Adrenergic Blocking Drug
  - h.  $\alpha_1$ -Adrenergic Blocking Agents
    - i. Mechanism
    - ii. Adverse Reactions
    - iii. Dental Drug Interactions
    - iv. Uses
  - i. Central  $\alpha$  -Adrenergic Agonists
  - j. Peripheral Adrenergic Neuron Antagonist
  - k. Management of the Dental Patient Taking Antihypertensive Agents
    - i. Adverse Reactions
7. Antihyperlipidemic Agents
- a. 3-Hydroxy-3-Methylglutaryl Coenzyme A Reductase Inhibitors
    - i. Adverse Effects
  - b. Inhibitors of Intestinal Absorption of Cholesterol
  - c. Niacin
    - i. Overview
    - ii. Dental Implications
  - d. Cholestyramine
  - e. Fibric Acid Derivatives

- f. Fish oils
- g. Dental Implications of Elevated Cholesterol Levels
- 8. Drugs That Affect Blood Coagulation
  - a. Anticoagulants
    - i. Hemostasis
    - ii. Warfarin
    - iii. Heparin
    - iv. Clopidogrel
    - v. Ticlopidine
    - vi. Streptokinase and Alteplase
    - vii. Dipyridamole
    - viii. Pentoxifylline
  - b. Factor Xa Inhibitors
  - c. Direct Thrombin Inhibitor
  - d. Clopidogrel
  - e. Ticlopidine
  - f. Streptokinase and Alteplase
  - g. Dipyridamole
  - h. Pentoxifylline
- 9. Drugs That Increase Blood Clotting
  - a. Hemostatic Agents
- 10. Dental Hygiene Considerations

### **Chapter 15: Drugs for the Treatment of Gastrointestinal Disorders**

- 1. Gastrointestinal Drugs
  - a. Gastrointestinal Diseases
  - b. Dental implications
- 2. Drugs Used to Treat Gastrointestinal Diseases
  - a. Histamine<sub>2</sub>-Blocking Agents
    - i. Uses
    - ii. Adverse Reactions
    - iii. Dental Drug Interactions
  - b. Proton Pump Inhibitors
  - c. Mixed Antiinfective Therapy for Ulcer Treatment
  - d. Antacids
  - e. Miscellaneous Gastrointestinal Drugs
    - i. Misoprostol
    - ii. Antitussives
  - f. Laxatives and Antidiarrheals
  - g. Agents Used to Manage Chronic Inflammatory Bowel Disease
- 3. Dental Hygiene Considerations

### **Chapter 16: Drugs for the Treatment of Seizure Disorders**

- 1. Epilepsy
  - a. Generalized Seizures
    - i. Absence Seizures (Petit Mal)
    - ii. Tonic-Clonic Seizures
    - iii. Status Epilepticus

- b. Partial (Focal) Seizures
- 2. Drug Therapy for Patients with Epilepsy
  - a. General Adverse Reactions of Antiepileptic Agents
  - b. Valproate
  - c. Lamotrigine
  - d. Levetiracetam
  - e. Oxcarbazepine
  - f. Carbamazepine
  - g. Phenytoin
  - h. Ethosuximide
  - i. Benzodiazepines
  - j. Other Antiepileptic Agents
- 3. Dental Treatment of the Patient with Epilepsy
- 4. Nonseizure Uses of Anticonvulsants
  - a. Neurologic Pain
  - b. Psychiatric Use
- 5. Dental Hygiene Considerations

### **Chapter 17: Drugs for the Treatment of Central Nervous System Disorders**

- 1. Psychiatric Disorders
- 2. Antipsychotic Agents
  - a. Mechanism of Action
  - b. Pharmacologic Effects
  - c. Drug Interactions
  - d. Uses
  - e. Dental Implications
- 3. Antidepressant Agents
  - a. Selective Serotonin Reuptake Inhibitors
  - b. Serotonin-Norepinephrine Reuptake Inhibitors
  - c. Tricyclic Antidepressants
  - d. Monoamine Oxidase Inhibitors
  - e. Other Antidepressants
  - f. Suicide and Antidepressants
  - g. Dental Implications
- 4. Drugs for Treatment of Bipolar Disorder
  - a. Lithium
  - b. Antiepileptic Drugs
  - c. Second-Generation Antipsychotics
- 5. Dental Implications

### **Chapter 18: Adrenocorticosteroids**

- 1. Mechanism of Release
- 2. Classification
- 3. Definitions
- 4. Routes of Administration
- 5. Mechanism of Action
- 6. Pharmacologic Effects
- 7. Adverse Reactions

8. Uses
9. Corticosteroid Products
10. Dental Implications
  - a. Adverse Reactions
  - b. Steroid Supplementation
  - c. Topical Use
11. Dental Hygiene Considerations

## **Chapter 19: Drugs for the Treatment of Respiratory Disorders**

1. Respiratory Diseases
  - a. Asthma
  - b. Chronic Obstructive Pulmonary Disease
2. Drugs Used to Treat Respiratory Diseases
  - a. Metered-Dose Inhalers
  - b. Sympathomimetic Agents
    - i. Short-Acting  $\beta_2$ -Agonists
    - ii. Long-Acting  $\beta_2$ -Agonists
  - c. Corticosteroids
  - d. Leukotriene Modifiers
  - e. Cromolyn
  - f. Methylxanthines
  - g. Anticholinergics
  - h. Anti-Immunoglobulin E Antibodies
  - i. Agents Used to Manage Upper Respiratory Infections
    - i. Nasal Decongestants
    - ii. Expectorants and Mucolytics
    - iii. Antitussives
3. Dental implications
4. Dental Hygiene Considerations

## **Chapter 20: Drugs for the Treatment of Allergic Rhinitis**

1. Allergic Rhinitis
2. Antihistamines (H1-Receptor Antagonists)
  - a. Pharmacologic Effects
  - b. Adverse Reactions
  - c. Toxicity
  - d. Adverse Reactions of Intranasal Dose Form
3. Intranasal Corticosteroids
  - a. Adverse Effects
4. Leukotriene Modifiers
5. Mast Cell Stabilizers
6. Intranasal Anticholinergic Drugs
7. Decongestants
  - a. Oral Decongestants
  - b. Intranasal Decongestants
8. Dental Hygiene Considerations

## **Chapter 21: Drugs for the Treatment of Diabetes Mellitus**

1. Pancreatic Hormones
2. Diabetes Mellitus
  - a. Types of Diabetes
  - b. Dental Implications of Diabetes
  - c. Systemic Complications of Diabetes
  - d. Evaluation of the Dental Patient with Diabetes
  - e. Goals of Therapy
3. Drugs Used to Manage Diabetes
  - a. Insulins
  - b. Oral Antidiabetic Agents
4. Treatment of Hypoglycemia
  - a. Glucagon
5. Dental Hygiene Considerations

## **Chapter 22: Drugs for the Treatment of Other Endocrine Disorders**

1. Pituitary Hormones
  - a. Anterior Pituitary
  - b. Posterior Pituitary
2. Thyroid Hormones
  - a. Iodine
  - b. Hypothyroidism
  - c. Hyperthyroidism
3. Female Sex Hormones
  - a. Estrogens
  - b. Progestins
  - c. Hormonal Contraceptives
4. Male Sex Hormones
  - a. Androgens
5. Other Agents That Affect Sex Hormone Systems
  - a. Clomiphene
  - b. Leuprolide
  - c. Tamoxifen
  - d. Danazol
  - e. Aromatase Inhibitors
6. Dental Hygiene Considerations

## **Chapter 23: Antineoplastic Drugs**

1. Use of Antineoplastic Agents
2. Mechanisms of Action
3. Classification
4. Adverse Drug Effects
5. Combinations
6. Dental Implications
7. Dental Hygiene Considerations

## Chapter 24: Emergency Drugs

1. General Measures
  - a. Steps Indicated
  - b. Preparation for Treatment
2. Categories of Emergencies
  - a. Lost or Altered Consciousness
    - i. Syncope
    - ii. Hypoglycemia
    - iii. Diabetic Coma
    - iv. Convulsions or Seizures
  - b. Respiratory Emergencies
    - i. Hyperventilation
    - ii. Asthma
    - iii. Anaphylactic Shock
    - iv. Acute Airway Obstruction
    - v. Other Cardiovascular Emergencies
  - c. Other Emergency Situations
    - i. Extrapyrarnidal Reactions
    - ii. Acute Adrenocortical Insufficiency
    - iii. Thyroid Storm
    - iv. Malignant Hyperthermia
  - d. Drug-Related Emergencies
    - i. Opioid Overdose
    - ii. Reaction to Local Anesthetic Agents
3. Emergency Kit for the Dental Office
  - a. Drugs
    - i. Level 1 (Critical) Drugs
      1. Epinephrine
      2. Diphenhydramine
      3. Oxygen
      4. Nitroglycerin
      5. Glucose
      6. Albuterol
    - ii. Level 2 Drugs
      1. Benzodiazepines
      2. Aromatic Ammonia Spirits
      3. Morphine
      4. Hydrocortisone
      5. Dextrose
      6. Glucagon
      7. Atropine
      8.  $\beta$ -Blockers
    - iii. Other Drugs
      1. Naloxone
      2. Flumazenil
      3. Antiarrhythmics
  - b. Equipment
4. Dental Hygiene Considerations



## **Chapter 25: Pregnancy and Breast Feeding**

1. General Principles
  - a. Two Main Concerns
  - b. History
2. Pregnancy
  - a. Pregnancy Trimesters
  - b. Teratogenicity
  - c. U.S. Food and Drug Administration Pregnancy Categories
3. Breast Feeding
4. Dental Drugs
  - a. Local Anesthetic Agents
  - b. Epinephrine
  - c. Analgesics
    - i. Aspirin
    - ii. Nonsteroidal Antiinflammatory Drugs
    - iii. Acetaminophen
    - iv. Opioids
  - d. Antiinfective Agents
    - i. Amoxicillin
    - ii. Erythromycin
    - iii. Cephalosporins
    - iv. Tetracyclines
    - v. Clindamycin
    - vi. Metronidazole
    - vii. Nystatin
    - viii. Clotrimazole
    - ix. Ketoconazole
  - e. Antianxiety Agents
    - i. Nitrous Oxide–Oxygen Mixture
    - ii. Benzodiazepines
    - iii. Alcohol
5. Dental Hygiene Considerations

## **Chapter 26: Drug Abuse**

1. General Considerations
  - a. Psychological Dependence
  - b. Physical Dependence
  - c. Tolerance
  - d. Addiction, Habituation, and Dependence
2. Central Nervous System Depressants
  - a. Ethyl Alcohol
    - i. Pharmacokinetics
    - ii. Acute Intoxication
    - iii. Withdrawal
    - iv. Chronic Effects
    - v. Alcoholism
    - vi. Treatment

1. Alcoholics Anonymous
      2. Drug Treatment
    - vii. Dental Treatment of the Alcoholic Patient
  - b. Nitrous Oxide
    - i. Abuse Pattern
    - ii. Adverse Reactions
      1. General
      2. Myeloneuropathic
  - c. Opioid Analgesics
    - i. Pattern of Abuse
    - ii. Management of Acute Overdose and Withdrawal
    - iii. Dental Implications
      1. Pain Control
      2. Prescriptions for Opioids
      3. Increased Incidence of Disease
      4. Chronic Pain
    - iv. Opioid Street Drugs
  - d. Sedative-Hypnotics
    - i. Pattern of Abuse
    - ii. Management of Acute Overdose and Withdrawal
3. Central Nervous System Stimulants
  - a. Cocaine
  - b. Amphetamines
    - i. Pattern of Abuse
    - ii. Management of Acute Overdose and Withdrawal
  - c. Caffeine
  - d. Tobacco
    - i. Nicotine
    - ii. Pattern of Abuse
    - iii. Smokeless Tobacco
    - iv. Management and Withdrawal
    - v. Bupropion
    - vi. Varenicline
    - vii. The Dental Health Care Worker's Role in Tobacco Cessation
4. Psychedelics (Hallucinogens)
  - a. Lysergic Acid Diethylamide
  - b. Phencyclidine
  - c. Marijuana
5. Identifying the Drug Abuser
6. The Impaired Dental Health Care Worker
7. Dental Hygiene Considerations

## **Chapter 27: Natural/Herbal Products and Dietary Supplements**

1. Limited Regulation
  - a. Dietary Supplement Health and Education Act
  - b. Package Labeling
2. Safety of Herbal and Nutritional Products
  - a. Oral Adverse Effects

3. Drug Interactions
4. Standardization of Herbal Products
5. Good Manufacturing Practice
6. Herbal Supplements Used in Oral Health Care
  - a. Acemannan
  - b. Essential Oil Mouth Rinse
  - c. Oil of Cloves (Eugenol)
  - d. Triclosan
  - e. Xylitol
7. Dental Hygiene Considerations

## APPENDIX

### Pharmacology Case Study

Purpose: In order to treat a patient effectively, the drugs that are being used by the patient to treat specific diseases/conditions must be fully understood.

Objective: Apply drug information to the comprehensive patient care and the management of patients.

#### Instructions:

##### Part 1

#### Complete the Case Study Table and Questions

##### Part 2

#### Make Drug Cards

Using the Medical/Dental History of the patient you have been given, make a drug card for all the medications this patient is taking using the format shown below. The information should be put on 4 x 6 index cards. Other index sizes or notebook paper will not be accepted. Handwrite and initial the drug cards.

Information on the Drug Card:

- 1) **Generic Name** of the drug.  
**Common Brand Names** for the drug.
- 2) **Drug Class** - to facilitate drug identification.
- 3) **MOA** - describe the mechanism of action of the drug.
- 4) **Uses** - or indication for the drug approved by the FDA.
- 5) **Side Effects/Adverse Reactions**
- 6) **Contraindications** - instances in which the indication should absolutely not be given.
- 7) **Drug Interactions** - may be beneficial or harmful.
- 8) **Dental Considerations** - include general information related to dental concerns in treating a patient taking a given drug, suggestions for medical consultations, and recommendations for the patient/family in preventing dental complications
- 9) **Patient / Oral Health Education**

## Pharmacology Case Study Table and Questions

Student Name: \_\_\_\_\_

Name of Drug and Drug Class	Indication for Use	Adverse Effects	Oral Manifestations	Patient Education Topics
1.				
2.				
3.				
4.				
5.				

1. Is the patient taking several drugs that have the same indication for use?

What could this mean?

2. Do any of the patient's drugs or disease conditions require a change in the treatment plan? Explain.

3. What monitoring parameters does the patient's condition require? Explain.
  
4. What procedures may be required before dental treatment can be provided to this patient?
  
5. Do any of the drugs the patient is taking have dental drug interactions? If yes, how should the interactions be handled?

**DHYG 1235**

**Pharmacology Case Study**

LIT Dental Hygiene Competencies	PC.1	Systematically collect, analyze, and record data on the general, oral, and psychosocial health status of a variety of patients.
		<ul style="list-style-type: none"> <li>b. Recognize predisposing and etiologic risk factors that require intervention to prevent disease.</li> <li>d. Recognize health conditions and medications that impact overall patient care.</li> <li>e. Identify patients at risk for a medical emergency and manage the patient care in a manner that prevents an emergency.</li> </ul>
	PC.2	Use critical decision making skills to reach conclusions about the patient's dental hygiene needs based on all available assessment data.
		<ul style="list-style-type: none"> <li>b. Identify patient needs and significant findings that impact the delivery of dental hygiene services.</li> </ul>
Student		Date:
Instructor		AAP Type
Patient		Prophy Type
<b>Point values:</b> 1= Meets all requirements ½= Needs improvement 0= Does not meet all requirements		Final grade awarded: _____ Minimum grade required: 70%
The student, in accordance with the standards set forth by the ADA and the Dental Hygiene Program, has demonstrated the following criteria.		Points Awarded
1.	Identified each drug and it's classification	
2.	Identified indications for the use of each drug	
3.	Identified adverse reactions/side effects of each drug	
4.	Identified oral manifestations of each drug	
5.	Identified excess medication and discussed meaning	
6.	Considered the oral manifestations of each drug and thoroughly discussed all patient education topics needed for this patient	
7.	Explained drug or disease conditions which require a change in the treatment plan	
8.	Identified what patient parameters require monitoring	
9.	Identified procedures required before treatment can be provided to this patient	
10.	Identified dental drug interactions that might affect treatment	
11.	All drug cards were made using the correct format and including all information	
The grade will be determined by points awarded divided by total points possible.		

## **Herb Assignment**

Purpose: In order to treat a patient effectively, the herbs that are being used by the patient to treat specific diseases/conditions must be fully understood.

Objective: Apply herb information to the comprehensive patient care and the management of patients.

### **Instructions:**

Research your assigned Herb and post the following information on Blackboard.

- 1) **Name** of the herb.
- 2) **Uses** - or indication for the herb.
- 3) **Side Effects/Adverse Reactions**
- 4) **Contraindications** - instances in which the indication should absolutely not be given.
- 5) **Drug Interactions** - may be beneficial or harmful.
- 6) **Dental Considerations** - include general information related to dental concerns in treating a patient taking the herb, suggestions for medical consultations, and recommendations for the patient/family in preventing dental complications.



## Pharmacology Grade Computation Sheet

Exams

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ = Avg. \_\_\_\_\_ X .85 = \_\_\_\_\_

Case Study

\_\_\_\_\_ = Avg. \_\_\_\_\_ X .10 = \_\_\_\_\_

Herb Assignment, article,  
and Class Participation

\_\_\_\_\_ = Avg. \_\_\_\_\_ X .05 = \_\_\_\_\_

Final Grade = \_\_\_\_\_