Pharmacology for the Dental Hygienist

Lamar Institute of Technology

DHYG 1235

Course Syllabus

Fall

Taught by:
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DHYG 1235: Pharmacology
Lecture Schedule: Tuesday and Thursday
11:00 – 11:50

DATE	TOPIC	ASSIGNMENT
Week 1	Introduction to Course ***Part 1*** ***General Principles of Pharmacology*** Chapter 1 Intro to Pharmacology	Bring your course syllabus and your Pharmacology text to class.
	Chapter 2 General Principles of Pharmacology	Read Ch. 2
Week 2	Chapter 3 Principles of Prescription Writing and Other Pharmacotherapeutic Considerations	Read Ch. 3
	Chapter 4 Autonomic Pharmacology	Read Ch. 4
Week 2	Chapter 5 Adverse Drug Effects	Read Ch. 5
	Exam 1- Chapters 1-5	
Week 3	***Part 2*** ***Drugs Used in the Provision of Oral Health Care*** Chapter 6 Local Anesthetics: Topical and Injectable	Read Ch. 6
	Chapter 7 Topical Agents: Anticaries, Antigingivitis and Desensitizing Agents	Read Ch. 7
Week 4	Chapter 8 Nonopioid and Opioid Agents	Read Ch. 8
	Chapter 9 Antibacterial Drugs	Read Ch. 9
Week 5	Exam 2 – Chapters 6-9	
	Chapter 10 Antifungal and Antiviral Drugs	Read Ch. 10

Week 6	Chapter 11 Conscious Sedation and General Anesthesia	Read Ch. 11
	Chapter 12 Drugs for Medical Emergencies	Read Ch. 12
Week 7	Chapter 13 Pharmacologic Management of Selected Oral Conditions	Read Ch. 13
	Exam 3 – Chapters 10-13	
Week 8	***Part 3*** ***Drugs Used to Control Systemic Disorders*** Chapter 14 Drugs of the Endocrine System and Metabolic Agents	Read Ch. 14
	Chapter 15 Gastrointestinal System Drugs	Read Ch. 15
Week 9	Chapter 16 Respiratory System Drugs	Read Ch. 16
	Exam 4 – Chapters 14-16	
Week 10	Chapter 17 Cardiovascular System Drugs	Read Ch. 17
	Chapter 18 Clinical Implications for Central Nervous System Drugs	Read Ch. 18
Week 11	Chapter 19 Anticonvulsant Drugs	Read Ch. 19
	Exam 5 – Chapters 17,18,19	
Week 12	***Part 4*** ***Drugs Used by Special Populations*** Chapter 20 Herbal and Dietary Supplements	Read Ch. 20

	Chapter 21 Women's Issues	Read Ch. 21
Week 13	Chapter 22 Cancer Chemotherapy	Read Ch. 22 Herb Assignment must be posted
	Thanksgiving Holiday	***Enjoy your family!*** ***Eat lots of Turkey☺***
Week 14	Chapter 23 Substance Abuse	Read Ch. 23
	Chapter 24 Joint Disorders	Read Ch. 24
Week 16	**Exam 6 - Chapters 20-24**	
TBA	***Case Study Due***	

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 1401

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. **(F1.5, F4.2, F8.5, F9.5, F10.5, C7.5)***
2. Discuss the absorption, bio-transformation and elimination processes of drugs according to their chemical properties. **(C5.5, C7.5)***
3. Apply knowledge of prescription practice by defining dose regimes and defining parts of the prescription. **(F1.5, F4.2, F5.4, C5.5, C6.5, C7.5)***
4. State the purpose and routes of administration of each drug in an ADA accepted Emergency Kit given the appropriate emergency treatment. (**F1.5, F5.4, F10.5, F11.4)***
5. Apply knowledge of medications that the dental hygienist is legally entitled to use in the practice of professional skills. **(C9.4, C5.5, C6.5, C7.5)***
6. Apply knowledge of the effects of drugs which are used or dispensed in the dental office. **(C9.4, C5.5, C6.5, C7.5)***
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. **(C9.4, C5.5, C6.5, C7.5)***
8. Analyze the patient health history and apply pharmacologic information to determine patient care. **(F9.5, C5.5, C6.5, C7.5)***
9. Apply and use written and electronic data base to research pharmacologic information. **(C8.4)***

SCANS Skills and Competencies

Beginning in the late 1980's, the U.S. Department of Labor Secretary's Commission on Achieving Necessary Skills (SCANS) conducted extensive research and interviews with business owners, union leaders, supervisors, and laborer in a wide variety of work settings to determine what knowledge workers needed in order to perform well on a job. In 1991, the commission announced its findings in What Work Requires in Schools. In its research, the Commission determined that "workplace know-how" consist of two elements: foundation skills and workplace competencies. The three-part foundation skill and five-part workplace competencies are further defined in the SCANS attachment.

CREDIT HOURS

Class: 50 minutes, 2 days per week
Credit: 2 semester hours

CLASS MEETING TIME

Lecture: Tuesday and Thursday 11:00 – 11:50 am
Room : 113 MPC

INSTRUCTOR

Patti Parrott, RDH, BS, MDH
Program Director
Office: 216 Multi-Purpose Center
Phone: 409-880-8855

COURSE POLICIES

Attendance Policy

In order to ensure that the students in the dental hygiene program acquire 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. Dental hygiene students will be allowed **two** absences in any lecture.

Examination Policy

Students are expected to complete examinations as scheduled. Make–up examinations will be given only at the discretion of the instructor. All examinations must be returned to the instructor to be kept on file. Students may have access to the exams by appointment during the instructor's office hours. Exams may be reviewed up to two weeks following the exam date.

Please refer to the student handbook for a comprehensive listing of the program policies. Faculty has the authority to modify the above policies if unusual circumstances mandate a change.

Tardy Policy

Students are also expected to arrive and leave class according to the published schedule or as instructed by the faculty member. Students who arrive late for class not only miss important information but also disturb fellow classmates.

Late Assignments

Students are expected to turn in assignments on the specified due dates. Late assignments will not be accepted.

Please see the Dental Hygiene Student Handbook for additional information on Policies.

Americans with Disabilities Act (ADA)

The Americans with Disabilities Act (ADA) of 1992 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provides comprehensive civil rights for persons with disabilities. Among other things, these statutes require 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.

TEACHING METHODOLOGY

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

REQUIRED TEXT

Pickett, Frieda Atherton, and Geza T. Terezhalmy, **Basic Principles of Pharmacology with Dental Hygiene Applications**, 1st Edition, Lippincott Williams & Williams, 2009.

Pickett, Frieda Atherton, and Geza T. Terezhalmy, **Dental Drug Reference with Clinical Applications**, 2st Edition, Lippincott Williams & Williams, 2009.

REFERENCES

Holland, Norman, and Michael Patrick Adams, **Core Concepts in Pharmacology,** 2nd Edition, Pearson Education, Inc., 2007.
Requa-Clark, Barbara. **Applied Pharmacology for the Dental Hygienist**, 4th Edition, C. V. Mosby Co., 2000.
Turley, Susan M., **Understanding Pharmacology for Health Professionals**, 3rd Edition, Pearson Education, Inc., 2003.

COURSE REQUIREMENTS

Exams

Six 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 completion of a drug card, an Herb assignment, cooperative learning, and class participation in discussions and activities.

GRADE SCALE:

A = 90 – 100
B = 80 – 89
C = 70 - 79
D = 60-69
F = 68 and below

CONTENT OUTLINE

50 min. **Chapter 1 Introduction to Pharmacology: Role of Dental Hygienist, Regulations and Sources of Information**

a. History and Sources of Drugs
b. Drug Nomenclature, Equivalency and Classification
c. Regulatory Agencies
d. US Legislation That Affects Narcotics
e. Drug Information Sources
f. Roles of the Hygienist
g. Drug Card Preparation

50 min. **Chapter 2 General Principles of Pharmacology**

a. Pharmacodynamics
b. Pharmacokinetics

50 min. **Chapter 3 Principles of Prescription Writing and Other Pharmacotherapeutic Considerations**

a. Prescription Writing and Prescriptions for a Controlled Substance
b. Parts of the Prescription
c. Compliance
d. Counseling for a Prescription
e. Role of the RDH
f. Metric and Household Measures
g. Abbreviations
h. Dose Calculations for the Pediatric Patient
i. Regulations for Prescribing Controlled Substances

50 min. **Chapter 4 Autonomic Pharmacology**

a. Autonomic Nervous System
b. Autonomic Nervous System Responses in Specific Tissues
c. Cholinergic Drugs
d. Adrenergic Drugs
e. Dental Hygiene Implications

50 min. **Chapter 5 Adverse Drug Effects**

a. Alteration of Drug Effects
b. Etiology and Epidemiology
c. Types of Adverse Drug Effects
d. Clinical Manifestations of Adverse Drug Effects
e. Preventing Adverse Drug Effects

50 min. **Chapter 6 Local Anesthetics: Topical and Injectable**

a. History
b. Local Anesthetics
c. Pharmacodynamics Considerations
d. Pharmacokinetic Considerations
e. Pharmacotherapeutic Considerations
f. Adverse Drug Events
g. Dental Hygiene Applications

50 min. **Chapter 7 Topical Agents: Anticaries, Antigingivitis and Desensitizing**

a. Anticaries Agents
b. Antigingivitis Products
c. Dentinal Desensitization
d. Dental Hygiene Applications

50 min. **Chapter 8 Nonopioid and Opioid Agents**

a. Physiology and Epidemiology of Pain
b. Analgesics
c. Dental Hygiene Applications

50 min. Chapter 9 Antibacterial Drugs
a. Indications for Antibacterial Drugs
b. Pharmacotherapeutic Basis of Antibacterial Chemotherapy
c. Odontogenic Infection
d. Antibiotic Prophylaxis
e. Antibiotic-Associated Adverse Drug Events
f. Dental Hygiene Applications

50 min. Chapter 10 Antifungal and Antiviral Drugs
a. Antifungal Agents
b. Antiviral Agents
c. Antiviral Treatment for HIV Infection and Hepatitis
d. Dental Hygiene Applications

50 min. Chapter 11 Conscious Sedation and General Anesthesia
a. Use of Nitrous Oxide in the Oral Health Care Setting
b. General Anesthesia
c. Dental Hygiene Applications

50 min. Chapter 12 Drugs for Medical Emergencies
a. Determine the Risk Status
b. Medical Emergency Situations
c. Dental Hygiene Applications

50 min. Chapter 13 Pharmacologic Management of Selected Oral Conditions
a. Acute Odontogenic Pain
b. Oral Mucosal Conditions
c. Dental Hygiene Applications

50 min. Chapter 14 Drugs of the Endocrine System and Metabolic Agents
a. The Endocrine System
b. Thyroid Hormones
c. Parathyroid Hormones
d. Pancreatic Hormones
e. Dental Hygiene Applications

50 min. Chapter 15 Gastrointestinal System Drugs
a. Gastroesophageal Reflux Disease
b. Peptic Ulcer Disease
c. Constipation
d. Diarrhea
e. Nausea and Vomiting
f. Urinary Antispasmotics
g. Dental Hygiene Applications

50 min. Chapter 16 Respiratory System Drugs
a. The Respiratory System
b. Dental Hygiene Applications

50 min. Chapter 17 Cardiovascular System Drugs
a. Cardiovascular Disease
b. Dental Hygiene Applications

50 min. Chapter 18 Clinical Implications for Central Nervous System Drugs
a**.** Anxiety

b. Depressive Disorders
c. Schizophrenia
d. Insomnia
e. Parkinson Disease or Syndrome
f. Dental Hygiene Applications

50 min. Chapter 19 Anticonvulsant Drugs

a. Seizure Disorder
b. Types of Seizures
c. The Medical Management of Chronic (Neuropathic) Pain
d. Dental Hygiene Applications

50 min. Chapter 20 Herbal and Dietary Supplements

a. Herbal and Nutritional Supplements
b. Dental Hygiene Applications

50 min. Chapter 21 Women's Issues: Pregnancy, Lactation, Menopause, and Osteoporosis

a. The Physiology of Pregnancy
b. The Menopausal Patient
c. Dental Hygiene Applications

50 min. Chapter 22 Cancer Chemotherapy

a**.** Pathophysiololgy of Malignancy
b. Pharmacologic Basis of Anticancer Chemotherapy
c. Dental Hygiene Applications

50 min. Chapter 23 Substance Abuse

a. Substance or Drug Abuse
b. Dental Hygiene Applications

50 min. Chapter 24 Joint Disorders: Inflammatory Arthropathies and Gout

a. Joint Disorders
b. Gout
c. Dental Hygiene Applications

LEARNER OBJECTIVES

Chapter 1 Introduction to Pharmacology: Role of Dental Hygienist, Regulations and Sources of Information

1. Define the terms pharmacology and drug.
2. Explain why the health care professional should have knowledge of pharmacology.
3. Discuss the history and sources of drugs.
4. Explain drug nomenclature.
5. Define the terms pharmacopeia, empirical, legend drug, and biologic equivalence.
6. Explain the U.S. Controlled Substance Act of 1970 and the role of the U.S. Drug Enforcement Agency (DEA) in controlling drug abuse and misuse.
7. Identify sources for dentally related drug information that is relevant to dental hygiene practice.
8. Describe the steps required for a drug to get FDA approval.
9. Discuss the role of the Dental Hygienist in pharmacology.
10. Prepare a Drug Card.

Chapter 2 General Principles of Pharmacology

1. List four principles of pharmacology that the oral health professional must understand in order to provide information on drug effects.
2. Define pharmacodynamics and pharmacokinetics as they apply to drugs.
3. Describe the steps a drug follows after being delivered to body cells.
4. Define the roles of affinity and intrinsic activity in drug action.
5. Describe the relationship of efficacy and the ceiling dose concept.
6. Compare the ceiling dose with the threshold dose.
7. Define ED50, LD50 and the therapeutic index.
8. Describe features of distribution that affect a drug molecule reaching the receptor.
9. Describe the four ways drugs are altered during biotransformation.
10. Describe the process of drug excretion.
11. Define a drug's half-life.

Chapter 3 Principles of Prescription Writing and Other Pharmacotherapeutic Considerations

1. List the rules for prescription writing and describe information include in the three parts of a prescription
2. Describe five principles to include when counseling a patient about a prescription.
3. Identify the US agency that governs prescriptions for controlled substances.
4. Identify drugs in each of the five DEA schedules.

Chapter 4 Autonomic Pharmacology

1. Identify the divisions of the Autonomic Nervous System (ANS).
2. Identify the neurotransmitter, terms, and receptors in the PANS.
3. Identify the neurotransmitter, terms, and receptors in the SANS.
4. Describe the three parts of a synapse.
5. Compare and contrast the types of effects when a drug stimulates $alpha_1$, $alpha_2$, $beta_1$, or $beta_2$-adrenergic receptors.
6. For each of the following classes, explain the mechanism of drug action, primary actions, and important adverse effects.

1. Parasympathomimetics
2. Anticholinergics
3. Sympathomimetics
4. Adrenergic blockers

Chapter 5 Adverse Drug Effects

1. Describe the mechanisms involved in each component of Type-A and Type-B ADEs.
2. List examples of cytotoxic reactions, drug-drug reactions, drug-food reactions, and drug-disease reactions.
3. List features of the four types of hypersensitivity reactions.
4. Define teratogenic reaction.
5. List the various clinical manifestations of Type-A and Type-B ADEs.
6. Describe strategies to determine if oral or systemic complications may be the result of an ADE.

Chapter 6 Local Anesthetics: Topical and Injectable

1. Describe features of the two forms of Las and identify examples of drugs in each category.
2. List two main classes of LA agents, identify agents in each class, and state advantages and disadvantages of each.
3. Explain the mechanism of action of a LA agent.
4. Describe pharmacokinetics of topical LA agents and injectable agents.
5. Identify LA agents that have intermediate and long durations of action.
6. Describe the contents of the LA cartridge and the purpose of each component.

Chapter 7 Topical Agents: Anticaries, Antigingivitis, and Desensitizing Agents

1. Describe the mechanism of action for each anticaries agent.
2. Identify efficacious antigingivitis products and classify according to efficacy.
3. List and describe contributing factors that lead to dentin hypersensitivity.
4. Discuss dental hygiene management strategies for using:
    a. fluorides
    b. anticaries agents
    c. antigingivitis agents

Chapter 8 Nonopioid and Opioid

1. Relate the importance of pain assessment to effective pharmacotherapy.
2. Explain the neural mechanism for pain at the level of the spinal cord.
3. Explain how pain can be controlled by inhibiting the release of spinal neurotransmitters.
4. Compare and contrast the types of Opioid receptors and their importance to pharmacology.
5. For each of the major drug classes, know representative drug examples, and explain the mechanisms of drug action, primary actions, and important adverse effects for each.
6. Categorize drugs used in the treatment of pain based on their classifications and mechanisms of action.

Chapter 9 Antibacterial Drugs

1. Compare and contrast the terms *pathogenicity* and *virulence.*
2. Explain how bacteria are described and classified.

3. Compare and contrast the terms *bacteriostatic* and *bactericidal.*
4. Using a specific example, explain how resistance can develop to an anti-infective drug.
5. Explain the importance of culture and sensitivity testing to anti-infective chemotherapy.
6. Identify the mechanism of development and symptoms of super infections caused by anti-infective therapy.
7. For each of the following, identify representative drugs and explain the mechanisms of drug action, primary actions, and important adverse effects:
    a. Penicillin
    b. Cephalosporin
    c. Tetracycline
    d. Macrolide
    e. Aminoglycoside
    f. Fluroquinolone
    g. Sulfonamide
    h. Miscellaneous antibiotics
8. Categorize antibacterial drugs based on their classification and mechanism of action.
9. Explain how the pharmacotherapy of tuberculosis differs from that of other infections.

Chapter 10 Antifungal and Antiviral Drugs

1. Compare and contrast the pharmacotherapy of superficial and systemic fungal infections.
2. Describe the basic structure of a virus.
3. Identify viral diseases that may benefit from pharmacotherapy.
4. Explain the purpose and expected outcomes of HIV pharmacotherapy.
5. Define HAART, and explain why it is commonly used in the pharmacotherapy of HIV infection.
6. Identify protozoan and helminthes infections that may benefit from pharmacotherapy.
7. For each of the following classes, identify representative drugs, explain the mechanisms of drug action, primary actions, and important adverse effects.
    a. Systemic antifungal agents
    b. Superficial antifungal agents
    c. Antiretroviral and antiviral agents
    d. Antiprotozoal agents
    e. Antihelmintic agents
8. Categorize drugs used in the treatment of fungal, viral, protozoan, and helminthes infections based on their classifications and mechanisms of action.

Chapter 11 Conscious Sedation and General Anesthesia

1. Compare and contrast the five major routes for administering local anesthetics.
2. Describe differences between the two major chemical classes of local anesthetics.
3. Explain why epinephrine and sodium hydroxide are sometimes found as part of the local anesthetic medicine.
4. Identify the actions of general anesthetics within the CNS.
5. Compare and contrast the two primary ways that general anesthesia may be induced.

6. Identify the four stages of general anesthesia.
7. For each of the drug classes listed, know representative drugs and be able to explain their mechanisms of action, primary actions, and important adverse effects.
8. Categorize drugs used for anesthesia based on their classifications and actions in the body.

Chapter 12 Drugs for Medical Emergencies

1. State what general measures the dental hygienist should be familiar in order to respond to any emergency situation.
2. For each of the following common emergencies, state the signs, symptoms, and treatment:
    a. cardiac arrest
    b. angina pectoris
    c. acute myocardial infarction
    d. convulsions
    e. syncope
    f. asthma
    g. anaphylactic shock
    h. apnea
    i. hypoglycemia
3. List the equipment required to treat the emergencies in question 2 and explain the rationale for the inclusion of each item.
4. Give the names and potential uses of the drugs required in an emergency kit for the dental office.

Chapter 13 Pharmacologic Management of Selected Oral Conditions

1. Describe the role of the RDH in pharmacologic management of common oral conditions.
2. Identify recommended therapies and identify potential ADEs associated with the therapies, and describe oral health education topics and application instructions for each of the following conditions:
    a. Odontogenic pain
    b. RAS
    c. OLP
    d. oral EM
    e. oral CP
3. Differentiate between the clinical appearance of *herpes labials* and *intraoral recurrent herpetic infection*.
4. Differentiate between treatments for *primary* versus *recurrent herpetic infection.*
5. List products for the treatment of herpetic infection and describe instructions for their use.
6. List products for the treatment of candida infection and describe instructions for their use.
7. Describe clinical signs of the following conditions and describe agents for their management:
    a. xerostomia
    b. pericoronitis
    c. dry socket
    d. stomatitis
    e. NUG

f. burning mouth syndrome

Chapter 14 Drugs of the Endocrine System and Metabolic Agents

1. Describe the general structure and functions of the endocrine system.
2. Compare and contrast the functions of the pancreatic hormones.
3. Compare and contrast the causes, signs, symptoms, and treatment of type 1 and type 2 diabetes mellitus.
4. Identify the five types of insulin.
5. Describe the signs and symptoms of insulin overdose and under dose.
6. Explain the primary functions of the thyroid gland.
7. Identify the signs and symptoms of hypothyroidism and hyperthyroidism.
8. Explain the primary functions of the adrenal cortex.
9. Describe the signs and symptoms of Addison's disease and Cushing's syndrome.
10. For each of the following drugs or drug classes identify representative drugs, explain the mechanisms of drug action, primary actions, and important adverse effects:
    a. insulin
    b. oral hypoglycemic
    c. thyroid hormone
    d. antithyroid agents
    e. glucocorticoids
    f. growth hormone
    g. antidiuretic hormone
11. Categorize drugs used in the treatment of endocrine disorders based on their classifications and mechanisms of action.

Chapter 15 Gastrointestinal System Drugs

1. Describe the major anatomical structures of the digestive system.
2. Identify common causes, signs, and symptoms of peptic ulcer disease.
3. Identify the major classes of drugs used to treat peptic ulcer disease and GERD.
4. Explain why two or more antibiotics are used concurrently in the treatment of *H. pylori.*
5. Explain conditions when the drug treatment of constipation is warranted.
6. Identify the major classes of laxatives.
7. Explain conditions when the drug treatment of diarrhea is warranted.
8. Identify the major classes of antiemetic drugs.
9. Describe the types of drugs used in the short-term management of obesity and their effectiveness.
10. Describe the pharmacotherapy of pancreatic insufficiency.
11. For each of the following classes identify representative drugs, and explain the mechanisms of drug action, primary actions related to the digestive system, and important adverse effects:
    a. H_2-receptor blockers
    b. proton-pump inhibitors
    c. antacids
    d. antibiotics for *H. pylori*
    e. laxatives
    f. antidiarrheals
    g. antiemetic

h. anorexiant
i. pancreatic enzyme replacements

12. Categorize drugs used in the treatment of digestive system disorders based on their classifications and mechanisms of action.

Chapter 16 Respiratory System Drugs

1. Identify basic anatomical structures associated with the respiratory system.
2. Explain how the autonomic nervous system controls airflow in the bronchial tree.
3. Explain why inhalation is an effective route of drug administration for pulmonary medicines.
4. Describe the types of devices used to deliver medications via the inhalation route.
5. Describe some common causes and symptoms of asthma, chronic bronchitis, and emphysema.
6. For each of the following classes, identify representative drugs, explain the mechanisms of drug action, primary actions on the respiratory system, and important adverse effects:
    a. beta-adrenergic agents/sympathomimetics
    b. glucocorticoids
    c. anticholinergics
    d. mast-cell stabilizers
    e. leukotriene modifiers
    f. expectorants
    g. antitussives
    h. mucolytics
7. Categorize drugs used in the treatment of pulmonary disorders based on their classifications and mechanisms of action.

Chapter 17 Cardiovascular System Drugs

1. Identify the primary mechanisms by which coagulation-modifier drugs act.
2. For each of the following classes, identify representative medications and explain the mechanisms of drug action, primary actions, and important adverse effects:
    a. Anticoagulants
    b. Antiplatelet agents
    c. Thrombolytics
    d. Hemostatics
3. Categorize coagulation-modifying drugs based on their classifications and mechanisms of action.
4. Identify the major risk factors associated with hypertension.
5. Explain the effects of cardiac output, peripheral resistance, and blood volume on blood pressure.
6. Describe how hypertension is classified.
7. For each of the following classes, identify representative medications and explain the mechanism of drug action, primary actions, and important side effects.
    a. Diuretics
    b. Calcium channel blockers
    c. Renin-angiotensin modifiers
    d. Adrenergic blockers

e. Direct-acting vasodilators

8. Categorize antihypertensive drugs based on their classification and mechanism of action.
9. Identify the major risk factors associated with heart failure.
10. Identify drug classes that are used for first- and second-choice pharmacotherapy of heart failure.
11. For each of the following classes, identify representative medications and explain the mechanism of drug action, primary actions, and important adverse effects.
    a. Cardiac glycosides
    b. ACE inhibitors
    c. Diuretics
    d. Phosphodiesterase inhibitors
    e. Vasodilators
    f. Beta-adrenergic blockers
    g. Natriuretic peptides
12. Categorize heart failure drugs based on their classification and mechanism of action.
13. Explain how rhythm abnormalities can affect cardiac function.
14. Classify dysrhythmias based on their location and type of conduction abnormality.
15. Explain the importance of ion channels to myocardial function and the pharmacotherapy of dysrhythmias.
16. Identify basic mechanisms by which antidysrhythmic drugs act.
17. For each of the following classes, identify representative drugs, explain the mechanisms of drug action, primary actions, and important adverse effects:
    a. Sodium channel blockers
    b. Beta-adrenergic blockers
    c. Potassium channel blockers
    d. Calcium channel blockers
    e. Miscellaneous antidysrhythmic drugs
18. Categorize antidysrhthmic drugs based on their classifications and mechanisms of action.
19. Describe how the myocardium receives its oxygen and nutrient supply.
20. Explain the pathophysiology of angina pectoris.
21. For each of the following classes, identify representative drugs, explain the mechanisms of drug action, primary actions, and important adverse effects as they relate to the treatment of angina:
    a. Organic nitrates
    b. Beta-adrenergic blockers
    c. Calcium channel blockers
22. Explain the pathophysiology of myocardial infarction.
23. For each of the following classes, identify representative drugs, explain the mechanisms of drug action, primary actions, and important adverse effects as they relate to the treatment of myocardial infarction:
    d. Thrombolytics
    e. Beta-adrenergic blockers
    f. Anticoagulants and antiplatelet agents
    g. Analgesics
24. Explain the pathophysiology of cerebrovascular accident (CVA).
25. Identify strategies used in the pharmacological treatment of CVA.

26. Categorize drugs used to treat angina, myocardial infarction, and CVA based on their classification and mechanisms of action.

Chapter 18 Clinical Implications for Central Nervous System Drugs

1. Identify the major categories of anxiety disorders, mood and emotional disorders.
2. Identify the four categories of CNS agents used to treat anxiety and sleep disorders.
4. Explain the pharmacological management of nervous system disorders.
5. Categorize CNS drugs based on their classification and mechanism of action.
6. Explain theories for the cause of schizophrenia.
7. Compare and contrast the positive and negative symptoms of schizophrenia.
8. Explain the importance of patient drug compliance in the pharmacotherapy of schizophrenia.
9. Explain the symptoms associated with extrapyramidal side effects of antipsychotic drugs.
10. Identify the most common degenerative diseases of the CNS.
11. Describe symptoms of Parkinson's disease, Alzheimer's disease, and multiple sclerosis.
12. Explain the neurochemical basis for degenerative diseases of the CNS, focusing on the roles of important neurotransmitters in the brain.
13. For each of the drug classes, know representative drug examples and explain their mechanism of action, primary actions, and important adverse effects.
14. Explain the goals of pharmacotherapy and categorize drugs used in the treatment of psychosis and degenerative diseases based on their classification and drug action.

Chapter 19 Anticonvulsant Drugs

1. Compare and contrast the terms *epilepsy, seizures,* and *convulsions.*
2. Recognize the causes of epilepsy.
3. Relate signs and symptoms to specific types of seizures.
4. Describe the pharmacological management of epilepsy.
5. Explain the importance of patient drug compliance in the pharmacotherapy of epilepsy.
6. For each of the drug classes, know representative drug examples and explain their mechanisms of drug action, primary actions, and important adverse effects.
7. Categorize drugs used in the treatment of epilepsy based on their classifications and mechanisms of action

Chapter 20 Herbal and Dietary Supplements

1. Identify ADEs from various herbal or supplemental preparations that can impact oral health care.
2. Identify potential herb-drug interactions and the specific botanical agent involved.
3. Identify herbal products used for dental care and their mechanisms of action.
4. Identify oral herbal products with the ADA Seal of Acceptance.

Chapter 21 Women's Issues: Pregnancy, Lactation, Menopause and Osteoporosis

1. Identify and describe the primary functions of the steroid sex hormones.
2. Explain the mechanisms by which estrogen and progestins prevent conception.
3. Describe the role of drug therapy in the treatment of menopausal and postmenopausal symptoms.
4. Identify the role of the steroid sex hormones in the chemotherapy of cancer.
5. Describe the uses of progestins in the therapy of dysfunctional uterine bleeding.
6. Compare and contrast oxytocin and tocolytics in antepartum and postpartum treatment.
7. Explain the role of androgens in the treatment of hypogonadism.
8. Describe the role of drug therapy in the treatment of erectile dysfunction and benign prostatic hypertrophy (BPH).
9. For each of the following drugs or drug classes, identify representative drugs, and explain the mechanisms of drug action, primary actions, and important adverse effects:
    a. oral contraceptive preparations
    b. estrogens
    c. progestins
    d. oxytocin
    e. tocolytics
    f. androgens
    g. drugs for erectile dysfunction
    h. drugs for BPH
10. Categorize drugs used in the treatment of reproductive disorders and conditions based on their classifications and mechanisms of action.

Chapter 22 Cancer Chemotherapy

1. Explain differences between normal cells and cancer cells.
2. Identify the primary causes of cancer.
3. Describe how the probability of acquiring cancer can be reduced by adopting certain lifestyle changes.
4. Differentiate among the terms *neoplasm, benign, malignant,* and *carcinoma.*
5. Identify the three primary treatments for cancer.
6. Explain why cancer is difficult to cure.
7. Explain why multiple drugs and special dosing schedules increase the effectiveness of chemotherapy.
8. Describe the general adverse effects of chemotherapeutic agents.
9. For each of the following, explain the mechanisms of drug action, primary actions, and important adverse effects.
    a. alkylating agents
    b. antimetabolites
    c. antitumor antibiotics
    d. hormones and hormone antagonists
    e. plant extracts/natural products
    f. biologic response modifiers and miscellaneous drugs for cancer patients
10. Categorize anticancer drugs based on their classifications and mechanisms of action.
11. Identify oral manifestations of anticancer drugs.

Chapter 23 Substance Abuse

1. Differentiate between the following terms:
    a. drug misuse and drug abuse
    b. psychological dependence and physical dependence
    c. tolerance and dependence
    d. alcohol abuse and alcohol misuse
2. List four characteristics of drug abuse.
3. Describe the five stages of substance abuse.
4. Describe etiologic factors of drug abuse.
5. List commonly abused Opioid and the signs and symptoms to identify the abuse.
6. Describe the characteristics, the oral effects and any related dental drug interactions of the following:
    a. abstinence syndrome
    b. METH abuse
    c. cocaine abuse
    d. chronic alcohol use
    e. cannabis
    f. inhalants
    g. tobacco

Chapter 24 Joint Disorder: Inflammatory Arthropathies and Gout

1. Identify common signs and symptoms of inflammation.
2. Outline the basic steps in the acute inflammatory response.
3. Describe the central role of histamine in inflammation.
4. Compare and contrast the humoral and cell-mediated immune responses.
5. Differentiate between H_1- and H_2-histamine receptors.
6. Describe common causes and symptoms of allergic rhinitis.
7. For each of the following classes, identify representative drugs, explain the mechanisms of drug action, primary actions related to inflammation and/or the immune system, and important adverse effects:
    a. H_1-receptor blockers
    b. Nonsteroidal anti-inflammatory drugs
    c. Intranasal and systemic glucocorticoids
    d. Intranasal and oral sympathomimetics
    e. Immunosuppressant
    f. Vaccines
    g. Biologic response modifiers
8. Categorize drugs used in the treatment of inflammation, allergies, and immune disorders based on their classifications and mechanisms of action.

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
Answer the following questions on the patient that has been given to you. Your responses must be typed and turned in by the due date. No late work will be accepted.

CASE STUDY QUESTIONS

1. For each drug that the patient is taking identify:
    - the drug class
    - indications for the use of the drug
    - side effects/adverse reactions of the drug
    - oral manifestations of the drug

2. Is the patient taking several drugs that have the same indication for use? What could this mean?

3. Consider the oral manifestations of the drugs the patient is taking. What patient education topics would you discuss with this patient?

4. Do any of the patient's drugs or disease conditions require a change in the treatment plan? Explain. (e.g. helping the patient arise slowly from a supine position if a drug can cause orthostatic hypotension)?

5. What monitoring parameters does the patient's condition require (e.g., blood pressure monitoring in a patient with hypertension, international normalized ratio availability for a patient taking anticoagulants)?

6. What procedures may be required before dental treatment can be provided to this patient? Does he or she need antibiotic prophylaxis? Does patient need to stop taking any medications prior to treatment?

7. Do any of the drugs that the patient is taking have dental drug interactions? If so, how should these interactions be handled?

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 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) **Pharmacokinetics** - briefly describe.

8) **Drug Interactions -** may be beneficial or harmful.

9) **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.

DHYG 1235 **Pharmacology Case Study**			
Dental Hygiene Competency	PC.2 Use critical decision making skills to reach conclusions about the patient's dental hygiene needs based on all available assessment data. b. Identify patient needs and significant findings that impact the delivery of dental hygiene services. PC.1 Systematically collect, analyze, and record data on the general, oral, and psychosocial health status of a variety of patients. d. Recognize health conditions and medications that impact overall patient care. e. Identify patients at risk for a medical emergency and manage the patient care in a manner that prevents an emergency.		
Student		Date:	
Instructor		AAP Type	N/A
Patient		Prophy Type	N/A
Point values: 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
and Class Participation _____ = Avg. _____ X .05 = _____

Final Grade = _____