



21 Fall Semester

Pain Management

DHY 203

Number of Credits: 2

Days Class Meets: (LEC) online format (materials posted every Monday); (LAB) Tuesday – 10/6-11/24

Meeting Times: LEC: online format; LAB: TU: 1:00PM-4:57PM

Location/Venue: 104G

Instructor: Patricia Guenther (Lead); Robert Cole, DDS, Mark Iocca, DDS (Lab instructor)

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Course Description

This course will provide the student with basic and current concepts of local anesthesia and pain control for the safe and effective administration of local anesthesia and nitrous oxide/oxygen sedation. Instruction in local anesthetic technique and an introduction to the use of nitrous oxide as an analgesia is included. Successful completion of this course confers eligibility to take the CDCA exams for Local Anesthesia and Nitrous Oxide/Oxygen sedation with Program Director Approval.

Prerequisite(s)

Prerequisites: DHY 104, 111, 114, 115, 121,

Co-requisites: DHY 120, 201, 204, 205

Course Goals

1. Prepare for the successful completion of the Commission on Dental Competency Assessments (CDCA) for certification in local anesthesia administration and nitrous oxide sedation monitoring.
2. Analyze patients' medical and pharmacologic histories to determine the suitability and proper selection of local anesthesia with or without vasoconstrictors.
3. Describe and demonstrate the principles of local anesthetic administration and safety.
4. Describe and demonstrate the principles of nitrous oxide sedation and safety.

Associated Program Competences with Evaluation Methods:

- 2.1:** The dental hygiene graduate must be competent in the application of self-assessment skills to prepare themselves for life-long learning. (Self-evaluation prior to skill evaluations)
- 3.1:** Provide quality, safe and comfortable dental hygiene care for the child, adolescent, adult, geriatric and medically compromised client. (Final exam, injections and skill evaluations)
- 7.2:** Provide safe and comfortable care for clients through the use of appropriate referrals, client management strategies, pain control measures, medical emergency management, and life support measures. (Review of Medical Emergencies, Final exam, Injection Skill evaluations, Nitrous oxide analgesia skill evaluations)
- 7.4:** Provide supportive and preventive dental hygiene services that can be legally performed in any state. (Skill evaluations)

Course Objectives

DHY 203 – PAIN MANAGEMENT:

Upon completion of the reading material and lecture and laboratory experiences, the student will be able to:

Chapter 1: Discovery, History, and Evolution of N₂O/O₂ Sedation

1. Understand the significance of the discovery of nitrous oxide and oxygen.
2. Recognize the paucity of pain control in the early nineteenth century.
3. Appreciate the foresight and ingenuity of Horace Wells as the individual responsible for recognizing the anesthetic value of nitrous oxide.
4. Appreciate the evolutionary path of nitrous oxide to its current place in the spectrum of analgesia and sedation options.

Chapter 2: Guidelines for Best Practice

1. Recognize the historical safety record of N₂O/O₂ sedation.
2. Recognize current practice guidelines established for non-anesthesiologists working in an ambulatory setting.
3. Formulate an initial understanding of the virtuous characteristics of N₂O/O₂ sedation.

Chapter 3: Pain and Anxiety Management

1. Identify the physiologic mechanism of pain.
2. Appreciate the many variations of pain reactions among individuals.
3. Recognize methods for assessing and measuring pain.
4. Appreciate the relationship between pain and anxiety.
5. Recognize methods for assessing and measuring fear and anxiety.
6. Define the American Society of Anesthesiologists (ASA) levels of minimal, moderate, deep, and general analgesia-sedation.
7. Recognize the spectrum of pain and anxiety management options.

Chapter 4: Desirable Characteristics of N₂O/O₂ Sedation

1. Identify the analgesic properties of N₂O/O₂ sedation.
2. Identify the anxiolytic properties of N₂O/O₂ sedation.
3. Identify the amnestic effect when using N₂O/O₂ sedation.
4. Describe the onset of action.
5. Discuss the advantage of N₂O/O₂ sedation with regard to the ability to titrate the drug.
6. Identify the recovery process following N₂O/O₂ sedation.
7. Recognize the process of nitrous oxide elimination from the body.
8. Appreciate the well-documented acceptance of N₂O/O₂ sedation.
9. Recognize other methods of patient management that are combined with N₂O and O₂ and discuss the advantages and disadvantages of each.

Chapter 5: Physical Properties and Pharmacokinetics/Pharmacodynamics of N₂O

1. Recognize physical and chemical properties of nitrous oxide.
2. Recognize physical and chemical properties of oxygen.
3. Discuss the pharmacokinetic properties of nitrous oxide.
4. Discuss the pharmacodynamic properties of nitrous oxide.

Chapter 6: Manufacturing and Distribution of N₂O and O₂ Gases

1. Understand the simplicity of the nitrous oxide manufacturing process.
2. Recognize the primary users of nitrous oxide.
3. Recognize the regulatory agencies responsible for the oversight of nitrous oxide.
4. Identify how nitrous oxide is stored.
5. Identify properties of nitrous oxide and oxygen cylinders.

Chapter 7: Delivery of N₂O/O₂ Sedation

1. Appreciate the history and evolution of N₂O/O₂ sedation delivery equipment.
2. Understand the differences between a central gas and portable gas supply system.
3. Identify each component and its purpose in the N₂O/O₂ sedation delivery system.
4. Recognize variations of N₂O/O₂ sedation delivery systems.
5. Identify the safety features found on the N₂O/O₂ sedation delivery system.

Chapter 8: Anatomy and Physiology of Respiration and Airway Management

1. Review the anatomy of the upper and lower airways.
2. Recognize the potential for airway obstruction.
3. Review acceptable airway management techniques.
4. Review the physiology of respiration.
5. Appreciate the critical gas exchange across pressure gradients with nitrous oxide.
6. Identify the role of pulse oximetry in N₂O/O₂ sedation.
7. Recognize the clinical significance of diffusion hypoxia in N₂O/O₂ sedation.
8. Describe how to manage patients in the category of moderate sedation (> 50% N₂O).

Chapter 9: N₂O and Its Interaction with the Body

1. Identify the interaction of nitrous oxide with body systems.
2. Identify how nitrous oxide interacts with patients who have other health issues that could impact the sedation experience.

Chapter 10: Patient Assessment

1. Appreciate the value of patient health history information.
2. Understand the necessity of assessing patient risk before N₂O/O₂ sedation.
3. Recognize the ASA Physical Status Classification System as a method of categorizing patient health.
4. Identify the components included in a preprocedural patient evaluation for N₂O/O₂ sedation.
5. Recognize measures for patient preparation before N₂O/O₂ sedation.
6. Understand the necessity for patient monitoring during N₂O/O₂ sedation.
7. Recognize the monitoring procedures associated with N₂O/O₂ sedation.
8. Recognize the importance of emergency preparedness in terms of personnel preparation and necessary equipment.

Chapter 11: Titration of N₂O and O₂ Gases

1. Define titration as a method of drug administration.
2. Understand the significance of titration.
3. Understand the concept of individual biovariability.
4. Recognize the advantages of the ability to adjust sedation levels using N₂O/O₂ sedation.

Chapter 12: Signs and Symptoms of N₂O/O₂ Sedation

1. Recognize the signs and symptoms of appropriate minimal sedation using nitrous oxide and oxygen.
2. Recognize the signs and symptoms of oversedation using nitrous oxide and oxygen.

Chapter 13: Technique for N₂O/O₂ administration and Assessment of Recovery

1. Understand the fundamental principles for appropriate N₂O/O₂ sedation.
2. Discuss general unit preparation activities before N₂O/O₂ administration.
3. Understand how to activate N₂O/O₂ sedation equipment.
4. Describe measures taken to prepare the patient before N₂O/O₂ sedation.
5. Describe the technique steps for the appropriate administration of N₂O/O₂ sedation.
6. Understand the principles of recovery.
7. Describe the psychological and psychomotor effects of N₂O/O₂ sedation recovery.
8. Recognize the appropriate technique for assessing adequate recovery from N₂O/O₂ sedation.
9. Recognize the signs and symptoms of adequate N₂O/O₂ sedation recovery.
10. Understand how individual biovariability affects N₂O/O₂ sedation recovery time.
11. Recognize appropriate sterilization and disinfection procedures for N₂O/O₂ sedation equipment.
12. Recognize important documentation procedures associated with N₂O/O₂ sedation.

Chapter 16: Potential Biohazards for Health Personnel Associated with Chronic Exposure to N₂O

1. Recognize specific biologic issues and health concerns associated with chronic exposure to nitrous oxide.
2. Understand the history of nitrous oxide literature and how it relates to the changes in its use and practice.
3. Identify methods for the detection and monitoring of trace nitrous oxide gas in ambient air.
4. Understand what is meant by a nitrous oxide scavenging system.
5. Recognize best practice control measures to minimize trace nitrous oxide.

Chapter 17: Nitrous Oxide Abuse Issues

1. Recognize common substances that are abused by inhalation.
2. Recognize the dangers of inhalant abuse.
3. Understand how nitrous oxide is abused.
4. Recognize the health hazards associated with chronic exposure to nitrous oxide.
5. Understand how euphoric effects associated with nitrous oxide abuse can be related to sexual phenomena.
6. Discuss the addictive nature of nitrous oxide.
7. Discuss legislation and regulation issues regarding the sale or purchase of nitrous oxide.

Chapter 18: Ethical and Legal Considerations Regarding N₂O/O₂ Administration

1. Understand there are legal requirements for administering N₂O/O₂ sedation.
2. Recognize appropriate educational levels and training requirements for N₂O/O₂ administration.
3. Understand the importance of obtaining written informed consent before N₂O/O₂ sedation.
4. Recognize the components of appropriate informed consent for N₂O/O₂ sedation.
5. Identify the ethical principles associated with N₂O/O₂ sedation.
6. Identify ethical responsibilities associated with the administration of N₂O/O₂ sedation.
7. Identify appropriate practice guidelines for the administration of N₂O/O₂ sedation based on ethical and legal principles.

Logothetis Text

Chapter 1: Local Anesthesia in Dental Hygiene Practice: An Introduction

1. Describe the history of pain control in health care and specifically to the practice of dental hygiene.
2. Describe how anesthesia is practiced by dental hygienists.
3. List state requirements for local anesthesia provided by dental hygienists.
4. Discuss patients' perception of anesthesia and pain control.
5. Describe the human needs paradigm as it relates to pain control.

Chapter 2: Neurophysiology

1. Discuss the organization of the nervous system.
2. Name the functional unit of a nerve system and explain its main function.
3. Discuss the structure and classification of neurons and differentiate between afferent and efferent nerves.
4. Describe the basic structures and functions of a sensory neuron:
 - a. Dendritic (input) zone
 - b. Cell body (soma)
 - c. Axon hillock (summation zone)
 - d. Axon
 - e. Output zone (synaptic knobs)
5. Discuss peripheral nerve anatomy and discuss the speed of impulse propagation with myelinated versus non-myelinated nerves.
6. Differentiate between type A, B, and C fibers in terms of their function, size, and relative speed of impulse transmission.
7. Discuss neurophysiology and action potential.
8. Compare the ions in nerve transmission in regard to their functional element, relative concentrations and location during the resting stage, depolarization, and repolarization.
9. Discuss the mode of action of local anesthetic agents on nerves.

Chapter 3: Pharmacology of Local Anesthetic Agents

1. Define local anesthetics.
2. Discuss the mechanism of actions of local anesthetics.
3. Describe the structure of local anesthetics.
4. Discuss the difference between esters and amides.
5. Discuss the properties and ionization factors of local anesthetics.

6. Discuss the two major routes of delivery of local anesthetics.
7. Describe pH and the dissociation constant (pKa), as well as their effects on the onset of action of local anesthetics.
8. Discuss how infection in the area of local anesthetic administration decreases its efficiency.
9. Discuss the buffering process of local anesthetics.

10. Describe the differences between the membrane expansion theory and the specific protein receptor theory.
11. Discuss the pharmacokinetics of local anesthetics, including onset of action, induction, duration, absorption, distribution, metabolism (biotransformation) of both esters and amides, and excretion.
12. Discuss the systemic effects of local anesthetic drugs on the central nervous system and cardiovascular system.

Chapter 4: Pharmacology of Vasoconstrictors

1. Discuss the problems associated with the vasodilatory properties of local anesthetics.
2. Discuss the benefits of adding vasoconstrictors to local anesthetic solutions.
3. Name the two vasoconstrictors that are added to local anesthetics available in the United States.
4. Discuss the use of vasoconstrictors in dentistry.
5. Discuss epinephrine, including:
 - a. Its mechanism of action
 - b. Epinephrine dilutions
 - c. Sodium bisulfate preservative
 - d. The actions of epinephrine on specific systems and tissue
 - e. Termination of action
 - f. Maximum recommended dose
6. Discuss levonordefrin, including:
 - a. Actions on specific systems and tissue
 - b. Levonordefrin dilution
 - c. Sodium bisulfate preservative
 - d. Termination of action
 - e. Maximum recommended dose
7. Discuss the effects, mechanisms of action, and uses of norepinephrine, phenylephrine, and felypressin.
8. Discuss the side effects and overdose of vasoconstrictors.

Chapter 5: Local Anesthetic Agents

1. List and describe the composition of local anesthetic agents.
2. Define ester and amide local anesthetics.
3. List and discuss amide local anesthetics using their generic and proprietary names.
4. Discuss the selection considerations when choosing a local anesthetic.
5. Describe the factors that determine the duration of a local anesthetic.
6. Discuss posttreatment pain control in relation to local anesthetics.
7. Differentiate between a relative and an absolute contraindication.
8. Summarize allergies that affect local anesthetic selection.
9. Stress why the need for hemostasis control is needed.
10. Discuss the properties, helpful tips, precautions, and maximum recommended dose for the following amide local anesthetics:
 - a. Lidocaine
 - b. Mepivacaine
 - c. Prilocaine
 - d. Articaine
 - e. Bupivacaine
11. Discuss procaine and other ester local anesthetics.

Chapter 6: Topical Anesthetic Agents

1. Discuss the purpose of topical anesthetics.
2. Identify ideal properties of topical anesthetics and discuss their mechanism of action.
3. List common forms of topical anesthetics and describe the methods for delivery of topical anesthetic drugs.
4. Identify and describe the common topical anesthetic agents used in dentistry, including classification, available concentrations, onsets of action, duration, considerations, and maximum recommended dosages.
5. Identify and describe topical anesthetic drug combinations used in dentistry.

6. Discuss special considerations when dealing with topical anesthetics in dentistry, including recognizing signs and symptoms of adverse reactions to topical anesthetics.

Chapter 7: Preanesthetic Assessment

1. Discuss the importance of obtaining a patient's medical history, dental history, and dialogue history.
2. Discuss the role that emotional status, blood pressure, pulse, respiration, and weight have on selection/utilization of local anesthetics.
3. Describe dental fear and how dental professionals deal with patient fears through psychological, physical, and chemical parameters.
4. Determine the relative risk presented by a patient prior to administering local anesthesia by interpretation of the health history.
5. Differentiate between relative and absolute contraindications.
6. Describe the drug-to-drug interactions that may occur between the vasoconstrictor and other drugs.
7. Describe vasoconstrictor and systemic disease interactions and summarize vasoconstrictor contraindications.
8. List the concerns for patients with cardiovascular disease, hyperthyroidism, asthma, sickle cell anemia, and allergies when selecting local anesthetics and scheduling treatment.
9. Summarize the ester derivative local anesthetic interactions.
10. Discuss the importance of amide local anesthetic drug/drug interactions.
11. List the concerns about other amide local anesthetic interactions for patients with malignant hyperthermia, methemoglobinemia, liver disease, kidney disease, pregnancy, and bleeding disorders.

Chapter 8: Determining Drug Doses

1. Define maximum recommended dose (MRD) for a local anesthetic and discuss factors involved.
2. Name the steps to calculate MRDs for local anesthetics and perform calculations as needed.
3. Calculate the following:
 - a. Maximum number of cartridges based on MRD
 - b. Milligrams of anesthetic administered
 - c. Additional dosages of the same drug
 - d. Additional dosages of different drugs
4. Discuss the factors involved in calculating MRDs for vasoconstrictors for medically compromised and elderly patients and perform calculations as needed.
5. Discuss the issues to take into consideration when giving a local anesthetic to children and perform pediatric dosage calculations as needed.
6. Name the two potentially limiting drugs in the local anesthetic solution when administering local anesthetics with vasoconstrictors.
7. Discuss vasoconstrictor dilutions and the MRD for vasoconstrictor drugs.
8. Name the steps to calculate vasoconstrictor drug doses and perform calculations as needed.
9. Calculate milligrams of vasoconstrictor administered and additional doses of the same vasoconstrictor.
10. Determine the limiting drug when a local anesthetic agent and a vasoconstrictor are combined in an anesthetic cartridge.

Chapter 9: Armamentarium/Syringe Preparation

1. Name and discuss the three main components to the armamentarium of anesthetic equipment and supplies.
2. Discuss the criteria for acceptance of local anesthetic syringes.
3. Name and discuss the components of the anesthetic syringe.
4. List and describe the seven types of syringes used in anesthetic procedures and the advantages and disadvantages of each.
5. Discuss routine maintenance of reusable syringes.
6. Name and discuss the components of the needle, as well as recognize manufacturer color codes for needle gauge.
7. Discuss proper care and handling of needles to minimize the risk of cross contamination.
8. Discuss problems relative to the needle, which may occur during anesthetic procedures.
9. Name and discuss the components of an anesthetic cartridge, as well as recognize the American Dental Association standard color codes for anesthetic cartridges.
10. Discuss the proper care and handling of the cartridge.
11. Discuss problems relative to the cartridge, which are rare but can occur.
12. List and describe necessary supplemental equipment.

13. List and discuss the steps necessary to prepare, as well as unload, the breech-loading aspirating syringe.

Chapter 10: Anatomic Considerations for Local Anesthesia

1. Locate and identify the skull bones that are relevant to the administration of local anesthesia.
2. Indicate and describe in detail the various landmarks of the maxillae, palatine bones, and mandible that are relevant to the administration of local anesthesia on a diagram, skull, peer, and patient.
3. Discuss the importance of the trigeminal nerve in relation to administration of local anesthesia and name the three divisions of the sensory root.
4. Identify and trace the branches of the trigeminal nerve that are relevant to the administration of local anesthesia on a diagram, skull, peer, or patient.
5. Discuss the importance of the facial nerve and the surrounding parotid salivary gland when administering local anesthetics.
6. Identify and trace the routes of the blood vessels of the head and neck that are relevant to the administration of local anesthesia on a diagram, skull, peer, and patient.

Chapter 11: Basic Injection Techniques

1. Describe the four anesthetic administration techniques.
2. List the steps to providing a successful injection, describe the importance of each, and discuss various rapport strategies to reduce stress in the patient.
3. Describe basic injection techniques for computer controlled local anesthetic delivery.

Chapter 12: Maxillary Anesthesia

1. Discuss the importance of understanding the anatomy of the maxillary nerve and its branches when it comes to the utilization of local anesthesia within the maxillary arch.
2. Discuss the clinical effectiveness of maxillary nerve blocks in relationship to anatomy and compare them to similar mandibular nerve blocks.
3. Concerning the three supplementals that can be administered within the maxillary arch as well as the mandibular arch, including the suprapariosteal, intraseptal, and periodontal ligament injections:
 - a. List and describe the supplemental injections.
 - b. Identify the target location of each.
 - c. Demonstrate the correct placement of the local anesthetic for each injection within the maxillary arch on a skull, peer, and a patient.
4. Concerning the four maxillary facial nerve blocks, including the posterior superior alveolar, middle superior alveolar, anterior superior alveolar, and infraorbital blocks:
 - a. List and describe the various types of maxillary facial nerve blocks.
 - b. Identify the correct tissue inserted into by the local anesthetic needle for each maxillary facial injection.
 - c. Identify the target location for the maxillary facial nerve blocks and demonstrate correct administration of local anesthesia during dental hygiene clinical practice.
 - d. Discuss the indications of clinically effective injections as well as possible complications.
5. Concerning the three palatal nerve blocks, including the greater palatine, nasopalatine, and anterior middle superior alveolar blocks:
 - a. List and describe the various types of palatal nerve blocks.
 - b. Identify the correct tissue inserted into by the local anesthetic for each palatal injection.
 - c. Identify the target location for the palatal nerve blocks and demonstrate correct administration of local anesthesia during dental hygiene clinical practice.
 - d. Discuss the indications of clinically effective injections as well as possible complications.
6. Discuss common technique errors associated with maxillary injections.

Chapter 13: Mandibular Anesthesia

1. Discuss the importance of understanding the anatomy of the mandibular nerve and its branches when it comes to the utilization of local anesthesia within the mandibular arch.
2. Discuss the overall clinical effectiveness of mandibular nerve blocks in relationship to anatomy and compare them to similar maxillary nerve blocks.
3. Describe the various types of mandibular nerve blocks.
4. Concerning the inferior alveolar block:
 - a. Discuss its coverage and common uses
 - b. Describe what can occur when bilateral blocks are implemented.
 - c. Identify the correct tissue inserted by the local anesthetic needle.
 - d. Demonstrate the correct placement of the needle at the injection site and target area.
 - e. Demonstrate correct administration of local anesthesia during dental hygiene clinical practice.

- f. Discuss the indications of a clinically effective block as well as possible complications.
5. Concerning the buccal block:
 - a. Discuss its coverage and common uses.
 - b. Demonstrate the correct placement of the needle at the injection site and target area.
 - c. Demonstrate correct administration of local anesthesia during dental hygiene clinical practice.
 - d. Discuss the indications of a clinically effective block as well as possible complications.
6. Concerning the mental block:
 - a. Discuss its coverage and common uses.
 - b. Demonstrate the correct placement of the needle at the injection site target area.
 - c. Demonstrate correct administration of local anesthesia during dental hygiene clinical practice.
 - d. Discuss the indications of a clinically effective block as well as possible complications.
7. Concerning the incisive block:
 - a. Discuss its coverage and common uses.
 - b. Demonstrate the correct placement of the needle at the injection site and target area.
 - c. Demonstrate correct administration of local anesthesia during dental hygiene clinical practice.
 - d. Discuss the indications of a clinically effective block as well as possible complications.
8. Concerning the Gow-Gates mandibular block:
 - a. Discuss its coverage and common uses.
 - b. Demonstrate the correct placement of the needle at the injection site and target area.
 - c. Demonstrate correct administration of local anesthesia during dental hygiene clinical practice.
 - d. Discuss the indications of a clinically effective block as well as possible complications.
9. Discuss the associated troubleshooting paradigm and its implications.
 - a. Concerning the Vazirani-Akinosi mandibular block:
 - b. Discuss its coverage and common uses.
 - c. Demonstrate the correct placement of the needle at the injection site and target area.
 - d. Demonstrate correct administration of local anesthesia during dental hygiene clinical practice.
 - e. Discuss the associated troubleshooting paradigm and its implications.
 - f. Discuss the indications of a clinically effective block as well as possible complications.
10. List and describe the three supplemental injections that can be administered within the mandibular arch as well as the maxillary arch.
11. Discuss when mandibular supraperiosteal injections and mandibular intraseptal injections are typically necessary.
12. Concerning periodontal ligament injections that can be used on the mandibular arch as well as the maxillary arch:
 - a. Discuss its coverage and common uses.
 - b. Demonstrate the correct placement of the needle at the injection site and target area within the dental arch.
 - c. Discuss the indications of a clinically effective injection as well as possible complications.

Chapter 15: Local Anesthetic Complications

1. Define local and systemic anesthetic complications and describe the three primary categories for local anesthetic complications.
2. Discuss the possible complications (as well as management and prevention) of local anesthetic administration, such as needle breakage, pain during injection, burning during injection, hematoma, facial nerve paralysis, paresthesia, trismus, infection, edema, soft tissue trauma, and sloughing of tissue.
3. Discuss the possible systemic complications (as well as management and prevention) of local anesthetic administration, such as local anesthetic and epinephrine overdose.
4. Discuss allergic reactions derived by an immunologic reaction to an antigen, including prevention and clinical manifestations and management of allergic reactions.
5. List and discuss the common drugs used in a dental emergency kit.
6. List and describe the signs, symptoms, and management of the following emergency situations:
 - a. Syncope
 - b. Hyperventilation
 - c. Bronchial asthma
 - d. Angina pectoris
 - e. Myocardial infarction

- f. Cerebrovascular accident
- g. Seizures
- h. Hypoglycemia
- i. Hyperglycemia
- j. Mild allergic reaction
- k. Anaphylaxis
- l. Mild local anesthetic overdose
- m. Severe anesthetic overdose
- n. Vasoconstrictor overdose

Chapter 16: Legal Considerations and Risk Management

1. Name the primary objective of providing dental hygiene care and describe how risk management plays a role in accomplishing this objective.
2. Discuss the importance of effective dental hygienist-to-patient communication before treatment.
3. Discuss the importance of effective dental hygienist-to-employer communication.
4. Discuss the legal issues related to dental hygiene treatment and prevention strategies to reduce the risk of litigation.
5. Describe the type of information that should always be included in patient documentation for the administration of local anesthetics.
6. List and describe the three categories of prevention and management of injury in dentistry.
7. Describe the procedures to reduce the risk of accidental needle exposure.
8. Describe postexposure management.

Textbook

Local Anesthesia for the Dental Hygienist – Second edition - 2017; Logothetis, Demetra Daskalos; Elsevier; ISBN-978-0-323-39633-2

Handbook of Nitrous Oxide and Oxygen Sedation – Fifth edition – 2019; Clark, Morris S., Burnick, Ann L. Elsevier; ISBN-978-0-323-56742-8

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Extras

N/A

Exam Process- Respondus

To protect the fairness and integrity of the exams, students will be required to take exams using Respondus Lockdown Browser and Monitor. This is an online test proctoring software that requires a download to your computer. Training and practice of Respondus technology will be provided in advance of the first exam. A Mac or PC that has a webcam and microphone is required to use Respondus. If you do not have this technology, please contact your instructor right away. Students are expected to complete the Respondus Practice quiz on time. This is to give our IT department time to help troubleshoot issues **before** exam 1 begins. Failure to complete the Respondus quiz on time may result in instructor-initiated drop.

Grading Criteria:

COURSE LEARNING EXPERIENCES:

4 Unit Exams (4 @ 35-50 points each)	200 (possible)
Lab Quizzes (3 @ 25 points each)	75
Medical/Dental Emergency Case Scenarios (4 @ 10 points each)	40
Laboratory Skills Evaluations (3 totaling 28 points)	28
Clinical Competencies* (9 total)	<u>372</u>
Total	715

*Upon successful completion of the laboratory skills evaluations and appropriate quizzes, students will participate in the clinical competency experiences for local anesthesia administration on a student partner under the direct supervision of the dental hygiene faculty and clinic dentist.

Grading Procedure:

Unit Exams: (35-50 points each)

This course will include **4 unit examinations**. Each exam will include only course information covered prior to the examination. Any scheduled exam missed because of an absence must be completed before the next class or it will automatically become a zero. It is the student's responsibility to make arrangements with the course instructor for a make-up exam. Make-up exams may include questions in an alternative format, such as short answer and essay questions.

***Note: Pain Management involves the skills and knowledge necessary to administer Nitrous Oxide Analgesia and Local Anesthetic injections. It will be extremely important to be prepared for the labs in this course. If a lab instructor communicates that a student seems unprepared for labs, the course director will meet with you to discuss reasons for unpreparedness. It is always important to be prepared, but in this lab, you are administering drugs to your student partner, so it is imperative that you be prepared. In order to proceed with injections, you must pass **all** lecture exams at a 75%. Failure to achieve a 75% will require successful remediation before advancing to injection practice.

Lab Quizzes (25 points each)

This course will include **3 quizzes covering the lab reading assignment for the day**. Quizzes will be given at the beginning of the lab session. The purpose of the quiz is to insure students have completed reading assignments and are prepared for lab activities and discussions. There are no make-up quizzes.

Medical/Dental Emergency Case Scenarios: (10 points each)

Students will be given four (4) medical emergency simulations to complete during the semester. Each case scenario will include medical history review questions, local anesthesia information and a realistic dental office situation. Students will work individually to complete this assignment and bring to the following lab session. The purpose of this simulation exercise is to help prepare you for potential emergency situations that can occur in the dental office.

Laboratory Skills Evaluations: (3 totaling 28 points)

This course includes three (3) lab skills evaluations that must be successfully completed prior to beginning partner injection competencies. Lab skills evaluations include: Assembling of local anesthesia armamentarium (6 points), Operator safety and infection control procedures (7 points) and Identification of oral landmarks for the administration of local anesthesia (15 points).

Clinical Competencies: (9 totaling 372 points)

Administration of local anesthesia and nitrous oxide must be demonstrated to lab clinical competency.

Evaluation will be according to the criteria described in class and on competency evaluation sheets.

Technique for the following injections will be tested and evaluated: anterior superior alveolar nerve block, middle superior alveolar nerve block, posterior superior alveolar nerve block, greater palatine block, nasopalatine block, inferior alveolar nerve block/lingual nerve block, buccal nerve block, mental nerve block/incisive nerve block. Nitrous oxide administration will also be evaluated. Competencies must be passed **at 85%** proficiency for students to pass this course and be approved to begin administering local anesthesia and nitrous oxide analgesia to clinic patients in DHY 215 Clinic IV.

Attendance/Professionalism Policy (2 - 10-point deduction from final grade total)

You are preparing for a career where punctuality, professionalism and dependability are expected.

Therefore, your attendance and participation in all courses are required and necessary for preparing you for future employment. If the online course has mandatory Big Blue Button sessions and the student is not present and ready to begin at class start time 10 points will be deducted from overall course grade. JetNet will always report your current attendance grade in the course. Any discrepancies or questions about your attendance grade should be addressed with your instructor as soon as possible. Infractions related to the professionalism rules and regulations will result in a 2-point deduction. Professionalism deductions include but are not limited to the rules and regulations listed under course policies. All professionalism guidelines are listed in the Jackson College Dental Hygiene Program Manual.

It is the student's responsibility to officially withdraw from any class that she/he ceases to attend – see the

College Calendar for official withdrawal and refund dates. Failure to withdraw will result in the recording of an "0" grade for that course.

Grading Scale

GPA	GRADE RANGE
4.0	94-100%
3.5	89-93%
3.0	84-88%
2.5	78-83%
*2.0	72-77%
1.5	66-71%
1.0	60-65%
0.5	55-59%
0.0	0-54%

COURSE POLICIES FOR LAB:

Rules and regulations:

1. Turn off your cell phone when you come to lab. Cell phones, pagers and iPods must be turned off during this class. You will be asked to leave lab for the remainder of the day if you answer a cell phone or reply to a text message during lab.
2. If a cell phone goes off during lab it will be confiscated by the instructor for the remainder of the class.
3. Laptops, tablets and notebooks may ONLY be used for learning purposes during class. Do not e-mail, surf or do work from other classes in this class.
4. Be in class, seated, and ready to participate at the beginning of class time. A tardy is defined as missing over 5 minutes of a class period once the instructor has begun the class.
5. It is the student's responsibility to notify instructor of an absence.
6. Talking between students during class is prohibited. The instructor reserves the right to assign seating for the benefit of the learning experience for the entire class.
7. Plan to spend the entire period in class unless you have cleared an exception with the instructor beforehand.
8. Expect to attend to bathroom and other needs before class. Students must request permission from the instructor for emergency needs.
9. Expect to contribute your share of work toward any teamwork projects and put forth measurable effort to make the teamwork experience a positive one. Teamwork will be evaluated as a part of project grading.
10. Should a "pop" quiz be administered during class time, all backpacks, phones, etc. shall be brought to the front of the classroom.
11. The student will be responsible for reading the assigned chapters and other resources BEFORE class each week.
12. The student is expected to demonstrate responsible behavior towards peers and faculty.

Student email and JetNet:

It is the student's responsibility to utilize and check his/her JC email account and JetNet on a DAILY basis.

Failure

Students must successfully demonstrate skills learned in this course and receive a grade of 75% (2.0) or higher to progress in the Dental Hygiene Program.

Academic Honesty Policy

Academic Honesty is defined as ethical behavior that includes student production of their own work and not representing others' work as their own, by cheating or by helping others to do so.

Plagiarism is defined as the failure to give credit for the use of material from outside sources.

Plagiarism includes but is not limited to:

- Submitting other's work as your own
- Using data, illustrations, pictures, quotations, or paraphrases from other sources without adequate documentation
- Reusing significant, identical or nearly identical portions of one's own prior work without acknowledging that one is doing so or without citing this original work (self-plagiarism)

Cheating is defined as obtaining answers/material from an outside source without authorization.

Cheating includes, but is not limited to:

- Plagiarizing in any form
- Using notes/books/electronic material without authorization
- Copying
- Submitting others' work as your own or submitting your work for others
- Altering graded work
- Falsifying data
- Exhibiting other behaviors generally considered unethical

Allowing your work to be submitted by others

JC Dental Hygiene Program Academic Integrity and Honesty Policy

Dental Hygienists are highly regarded as trusted professionals. We are committed to the ideals that honesty and integrity are essential qualities for the profession of dental hygiene. Here at Jackson College each of us has a personal responsibility to strive for veracity, integrity, and trust in our work and relationships.

Academic integrity and honesty is expected of all students. Any student found to be cheating on an exam, quiz, or other assessment will be subjected to corrective action in accordance with the level of infraction as outlined in the JC Dental Hygiene Performance Notice Procedure and JC Students Rights, Responsibilities and Code of Conduct (<https://www.jccmi.edu/wp-content/uploads/2701.pdf>). Corrective action may include receiving a maximum grade of 0.0 for the course with permanent removal from the program.

Accessibility

Jackson College understands that cultivating a broadly diverse community is crucial to our educational mission and to our foundational commitment to leadership and service. Jackson College is fully committed to ensuring our courses are accessible to everyone including those with disabilities. We are currently working to increase accessibility and usability of our course materials in order to meet or exceed the requirements of Section 508 of the Rehabilitation Act of 1973, the Americans with Disabilities Act of 1991 and Web Content Accessibility Guidelines (WCAG) 2.0. For more information about Jackson College's efforts to ensure accessibility please visit the [Jackson College accessibility web page](#).

If you have an accessibility need in any of our classes please e-mail the Center for Student Success at JCCSS@jccmi.edu or visit the [Center for Student Success web page](#).

At the Center for Student Success (CSS), we are committed to providing all students the opportunity to achieve academic success by providing a variety of support services free of charge to Jackson College students. This includes, but is not limited to, peer and faculty tutoring, mental health referral, temporary assistance with transportation, various workshops/seminars, and the TRIO program.

In addition, the CSS staff is committed to adapting the College's general services to meet the individual needs of otherwise qualified students with disabilities, for the purpose of providing equal access to all programs and facilities.

Student Grievance Procedure, Due Process, and Appeals

A student who has a problem with the course or the course instructor should make every attempt to resolve the problem with the course instructor *first*. If the issue remains unresolved, the student should then discuss their concerns with the Dental Hygiene Program Director. If the response is not adequate to the student, the student should then follow the outlined JC policy for student grievances which can be found at the college website: <https://www.jccmi.edu/ombudsman/student-complaint-process/>

Course Management

Late Work and Missed Deadlines:

Absence for any reason, including illness or late registration, in no way relieves the student of the responsibility for completing all work in the course. All assignments and projects are due on the dates and times given in the course schedule and syllabus. They are subject to change at the discretion of the course instructor. Each missed due date for class assignments will result in a 5-point deduction, per day, for every day the project is late. Missing a deadline could substantially lower your grade.

****If you foresee difficulty in meeting a deadline for an assignment please meet with your instructor immediately to determine a plan of action to complete your assignment. Assignment completions may be handled on a case by case basis at the discretion of the lead faculty. ****

Incomplete Grade Policy

In order to receive a grade in a Dental Hygiene course, all course learning experiences must be completed by the student. An Incomplete grade may be given by the Lead Faculty when the student has not completed all requirements for the course grade. The Lead Faculty will determine if there is proper cause for giving an "I" rather than a grade. An I/Incomplete grade will be accompanied with a Performance Notice prepared by the Lead Faculty. This form stipulates the reason for the "I" grade and describes the following for changing the "I" to a grade:

- The activities/requirements the student must complete
- The date the requirements must be completed
- The final grade that will be granted if the requirements are completed as stated.

Help

Academic Advising

It is important to contact a Center for Student Success professional prior to the start of the semester in order to receive accommodations in a timely manner. While we will make every effort to coordinate accommodations in a timely manner, failure to self-identify prior to the start of the semester may delay notification to instructors and timeliness of acquiring accommodations. Accommodations do not automatically carry over to the next semester. Please e-mail JCCSS@jccmi.edu or visit the [Accommodations for Students with Disabilities](#) web page.

Joint Commission on National Dental Examinations Accommodations for Students with Disabilities

The Joint Commission on National Dental Examinations (JCNDHE) provides reasonable and appropriate accommodations in accordance with the Americans with Disabilities Act for individuals with documented disabilities or a medical condition who demonstrate a need for accommodations and request accommodations prior to testing. Accommodations will not be noted on test results or shared with any third party (e.g. dental schools, state licensing agencies, etc.).

[JCNDHE Accommodations Request](#)

Special Accommodations Request for the CDCA examinations (Commission on Dental Competency Assessments)

All requests are reviewed by the CDCA Director of Examinations and are subject to approval. A doctor's note on his/her official letterhead (or with official stamp) that explains the candidate's condition and what accommodations are requested must be uploaded to the candidate's online profile. [Contact us](#) to indicate that you are requesting special accommodations

and that you have uploaded the documentation to your profile. Include your full name in your email for faster processing. Without a doctor's request for accommodations, your request will not be reviewed by the Director of Examinations, which means that your request will be automatically denied. You must submit a new request for each exam you register for. Do not contact Prometric to schedule an appointment before you receive a final response from CDCA regarding your accommodation request.

[CDCA Special Accommodations](#)

Attendance- Participation Policy

Regular class participation and keeping up on the reading and assignments is strongly correlated with survival in college. It is my recommendation that you plan to do your assignments and take your exams BEFORE the last day they are due. If problems occur, there is time to fix them before the deadline.

In compliance with Federal Title IV funding requirements, as well as college initiatives, I will be monitoring student participation on a regular basis and officially reporting student activity throughout the term to assure compliance with college policy and federal regulations. It is imperative that you log in to the course and actively participate within the first couple of days of the term to validate your enrollment in the course. After that, not actively participating in class may result in you being withdrawn from the course. Being withdrawn from a course can have an impact on financial aid, billing, athletic eligibility, and housing status. As a college student you are responsible for how your participation impacts your academic progress; the accountability lies with you.

Caveat

Please note: The format and timing of this course may need to change due to unforeseen circumstances. In particular: school closings, instructor illness, weather, or other situations that may arise. If you are taking an in -person class, you will be required to complete a Reintegration Video Training course in JetNet prior to being admitted to campus.

All COVID safety protocols in place are based on current guidelines and will be enforced while students are on campus.

Important Dates: Fall 2021

DATE	EVENT
MONDAY 09/06/2021	LABOR DAY HOLIDAY – NO CLASSES
AUG. 30 – DEC. 18, 2021	SEMESTER DATES
NOV. 24 – 28, 2021	THANKSGIVING BREAK. NO CLASSES
DEC. 18, 2021	END OF FALL SEMESTER

Course Schedule for DHY 203 Pain Management

Class Meeting Dates	Topics <i>Pain Management</i>	Reading Assignment Other assignments
Week 1: 8/30/21	<ul style="list-style-type: none"> • Discovery, History, and Evolution of N2O/O2 Sedation • Guidelines for Best Practice • Pain and Anxiety Management • Desirable Characteristics of N2O/O2 Sedation • Physical Properties and Pharmacokinetics/Pharmacodynamics of N2O • Manufacturing and Distribution of N2O and O2 Gases 	Clark/Brunick: Chapters 1-6
Week 2 9/6/21	<ul style="list-style-type: none"> • Anatomy and Physiology of Respiration and Airway Management • N2O and Its Interaction with the Body • Potential Biohazards for Health Personnel Associated with Chronic Exposure to N2O • Nitrous Oxide Abuse Issues • Ethical and Legal Considerations Regarding N2O/O2 Administration • Future Trends in N2O/O2 Sedation 	Clark/Brunick 8-9, 16-18, 20
Week 3: 9/13/21	<p>Exam #1 – N2O/O2 (online exam-posting date TBD)</p> <ul style="list-style-type: none"> • Local Anesthesia in Dental Hygiene Practice: An Introduction 	EXAM covers chapters listed above Logothetis text: CH 1
Week 4: 9/20/21	<ul style="list-style-type: none"> • Neurophysiology • Pharmacology of Local Anesthetic Agents 	CH 2-3
Week 5: 9/27/21	<ul style="list-style-type: none"> • Pharmacology of Vasoconstrictors • Dental Local Anesthetic Agents 	CH 4-5

Week 6: 10/4/21	Exam #2 (online exam-posting date TBD) <ul style="list-style-type: none"> • Topical Anesthetics • Preanesthetic Assessment 	Exam covers CH 1-5 CH 6-7
Week 7: 10/11/21	<ul style="list-style-type: none"> • Anatomical Consideration for Local Anesthesia Administration • Basic Injection Techniques • Injections for Maxillary Pain Control I & II • Injections for Mandibular Pain control 	CH 10 CH 11-13
Week 8: 10/18/21	Exam #3 (online exam-posting date TBD)	Exam covers CH 6, 7, 10, 11-13
Week 9: 10/25/21	<ul style="list-style-type: none"> • Local Anesthesia Complications and Management • Legal Considerations and Risk Management • Determining Drug Doses 	CH 15-16 CH 8
Week 10: 11/1/21	<ul style="list-style-type: none"> • Exam #4 (online exam-posting date TBD) 	Exam covers CH 8, 15 and 16
Week 11: 11/8/21	If necessary	
Class Meeting Dates	Topics <i>Pain Management Lab</i>	Reading Assignment Other assignments
Week 1: 10/5	Quiz on reading assignment <ul style="list-style-type: none"> • Delivery of N2O/O2 Sedation • Patient Assessment • Technique for N2O/O2 Administration and Assessment for Recovery • Frequently Asked Questions Regarding N2O/O2 Sedation <p>Video on Nitrous technique Nitrous Oxide Administration experience on student partner</p>	Clark/Brunick: CH 7, 10-13, 19

<p>Week 2 10/12</p>	<p>Quiz on Reading Assignments</p> <p>Practice:</p> <ul style="list-style-type: none"> • Syringe Loading/Armamentarium • Disassembly and Infection Control Procedures during the Administration of Local Anesthesia • Anatomical Landmarks <ul style="list-style-type: none"> • Practice on student partner with capped syringe. Locate all of the landmarks needed for all maxillary and mandibular injections <p>Lab Skill Evaluation:</p> <ul style="list-style-type: none"> • Nitrous competency 	<p>Logothetics: Chapters 9</p>
<p>Week 3: 10/19</p>	<p>Lab Skill Evaluations:</p> <ul style="list-style-type: none"> • Syringe Loading/Armamentarium • Disassembly and Infection Control Procedures during the Administration of Local Anesthesia • Anatomical Landmarks <ul style="list-style-type: none"> • Practice on student partner with capped syringe. Locate all the landmarks needed for all maxillary and mandibular injections 	
<p>Week 4: 10/26</p>	<p>Injection Practice: Dominant Side (MAX and MAND) ASA, MSA, PSA Blocks; MPI and infiltration; Greater Palatine, Nasopalatine Blocks, Infiltration of Maxillary and Mandibular Papilla; Inferior Alveolar/Lingual Block, Buccal, Mental/Incisive</p>	<p>Medical/Dental Emergency Case Scenario #1 due by next lab session</p>
<p>Week 5: 11/2</p>	<p>Injection Practice: Dominant Side (MAX and MAND) ASA, MSA, PSA Blocks; MPI and infiltration; Greater Palatine, Nasopalatine Blocks, Infiltration of Maxillary and Mandibular Papilla; Inferior Alveolar/Lingual Block, Buccal, Mental/Incisive</p>	<p>Medical/Dental Emergency Case Scenario #2 due by next lab session</p>
<p>Week 6: 11/9</p>	<p>Injection Practice: Final Practice before competency exam (MAX and MAND) ASA, MSA, PSA Blocks; MPI and infiltration; Greater Palatine, Nasopalatine Blocks, Infiltration of Maxillary and Mandibular Papilla; Inferior Alveolar/Lingual Block, Buccal, Mental/Incisive</p>	<p>Medical/Dental Emergency Case Scenario #3 due by next lab session</p>

<p>Week 7: 11/16</p>	<p>Competency Testing: Injections</p> <p>Skill Evaluations: Dominant side ASA Block, MSA Block, PSA Block, Greater Palatine Block, Nasopalatine Block, Inferior Alveolar Block, Lingual Block, Buccal, Mental, Incisive</p>	<p>Medical/Dental Emergency Case Scenario #4 due by next lab session</p>
<p>Week 8: 11/23</p>	<p>Competency Testing: Injections</p> <p>Skill Evaluations: Non-Dominant side: ASA Block, MSA Block, PSA Block, Greater Palatine Block, Nasopalatine Block, Inferior Alveolar Block, Lingual Block, Buccal, Mental, Incisive</p>	<p>Review for CDCA LA exam</p> <p>Review for CDCA Nitrous exam</p> <p>(online narrated PPT.)</p>