

# Dental Careers I

**8328/36 weeks**

## Table of Contents

Acknowledgments .....	1
Course Description .....	2
Task Essentials Table.....	2
Curriculum Framework .....	4
Introducing Dentistry and the Dental Team .....	5
Investigating Dental Ethics and Law .....	7
Examining Basic Dental-Related Anatomy and Physiology .....	9
Describing Dental Anatomy .....	14
Recording Patient Information and Assessment.....	17
Examining Preventive Dentistry and Nutrition .....	21
Performing Infection-Control Techniques.....	26
Managing Hazardous Chemicals and Waste .....	31
Assisting with Pain Control .....	33
Serving Patients with Special Needs .....	34
Demonstrating Administrative Functions and Chairside Procedures .....	36
SOL Correlation by Task.....	53
Appendix: Credentials, Course Sequences, and Career Cluster Information .....	58

## Acknowledgments

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## Course Description

**Suggested Grade Level:** 11

Students are introduced to careers in dentistry, including dentist (general and specialist), dental hygienist, dental assistant (I and II), dental laboratory technician, and dental receptionist. Students practice and learn many of the skills utilized in these professions while attaining the skills necessary to become entry-level dental assistants. Study includes infection control, Centers for Disease Control (CDC) guidelines and Occupational Safety and Health Administration (OSHA) standards; anatomy and physiology; tooth morphology; oral histology; preventive dentistry; applied psychology; effective communication; office administration and management; use of dental software; operative dentistry techniques; and dental materials/laboratory skills.

*As noted in [Superintendent's Memo #058-17 \(2-28-2017\)](#), this Career and Technical Education (CTE) course must maintain a maximum pupil-to-teacher ratio of 20 students to one teacher, due to safety regulations. The 2016-2018 biennial budget waiver of the teacher-to-pupil ratio staffing requirement does not apply.*

Suggested Prerequisites: Biology (4310), Chemistry (4410), and Introduction to Health and Medical Sciences (8302)

## Task Essentials Table

- by plus icons (⊕) in the left-hand column(s) are essential
- Tasks/competencies designated by empty-circle icons (○) are optional
- Tasks/competencies designated by minus icons (⊖) are omitted
- Tasks marked with an asterisk (\*) are sensitive.

8328	Tasks/Competencies	
	Introducing Dentistry and the Dental Team	
39	○	Trace key developments of dentistry from early civilizations to the present, including educational and professional developments in America.
40	⊕	List the members of a dental team and the characteristics, educational requirements, and responsibilities of each member.
41	⊕	Describe the roles of professional dental organizations.
	Investigating Dental Ethics and Law	
42	⊕	Examine ethical and legal issues related to the practice of dentistry.
43	⊕	Explain the ADA Principles of Ethics and Code of Professional Conduct.
44	⊕	Describe the role of the Virginia Dental Practice Act as it relates to the practice of dentistry.

8328	Tasks/Competencies	
45	+	Explain confidentiality and its connection to the Health Insurance Portability and Accountability Act (HIPAA).
Examining Basic Dental-Related Anatomy and Physiology		
46	+	Identify anatomical reference systems.
47	+	Identify the bones and major anatomic landmarks of the skull.
48	+	Describe the bone structure of cartilage, compact bone, spongy bone, and periosteum.
49	+	Describe the gliding hinge action of the temporomandibular joint (TMJ).
50	+	Identify the major muscles of mastication and facial expressions, the extrinsic muscles of the tongue, and the major posterior muscles of the mouth, including the floor of the mouth.
51	+	Identify the major veins, arteries, and nerves of the face and mouth.
52	+	Identify the major anatomic landmarks of the oral cavity.
53	+	Identify the salivary glands and their ducts.
54	+	Explain the anatomy and physiology of body systems and their relationship to the face and neck.
Describing Dental Anatomy		
55	+	Explain oral embryology and the histology of dentition.
56	+	Explain developmental disturbances that may occur during tooth development.
57	+	Identify the eruption order for the primary and permanent dentition.
58	+	Explain the specialized functions and classifications of the four types of teeth.
59	+	Describe the anatomical features of teeth.
60	+	Identify tooth surfaces.
61	+	Identify teeth, using the Universal, Federation Dentaire Internationale (FDI), and Palmer Numbering Systems.
Recording Patient Information and Assessment		
62	+	Demonstrate compliance with the privacy policy of HIPAA when recording patient information.
63	+	Manage personal information about a patient.
64	+	Update medical and dental history.
65	+	Explain the meaning and importance of informed consent.
66	+	Identify the standards and criteria for patient-record entries.
67	+	Obtain and record vital signs and observations.
68	+	Document initial findings, including recommended treatment.
69	+	Record treatment rendered.
70	+	Obtain intraoral and extraoral images.
Examining Preventive Dentistry and Nutrition		
71	+	Describe how dental decay occurs.
72	+	Identify risk factors for caries.
73	+	Identify the methods of detecting decay.
74	+	Describe systemic conditions associated with periodontal disease.
75	+	Identify risk factors for periodontal disease.
76	+	Demonstrate the components of preventive dentistry.
77	+	Describe the roles of systemic and topical fluorides.
78	+	Identify key nutrients.
79	+	Establish a diet for dental health maintenance.
Performing Infection-Control Techniques		
80	+	Describe the major groups of microorganisms that cause disease.
81	+	Describe the types of diseases caused by microorganisms.
82	+	Describe ways diseases are transmitted in the dental treatment environment.
83	+	Explain maintenance of aseptic chain in the dental treatment environment.
84	+	Demonstrate compliance with governmental regulations and guidelines.
85	+	Disinfect and/or sterilize dental instruments.
86	+	Demonstrate maintenance and sterilization of dental handpieces.
87	+	Demonstrate maintenance of the evacuation system.
88	+	Demonstrate maintenance of dental disinfecting/sterilizing equipment, including the renewal of solutions.
89	+	Explain maintenance of the dental unit waterline (DUWL).
Managing Hazardous Chemicals and Waste		

8328	Tasks/Competencies	
90	+	Identify methods of protection against exposure to hazardous chemicals.
91	+	Comply with the OSHA Hazard Communications Standard.
92	+	Describe the classification of waste.
93	+	Demonstrate compliance with governmental regulations regarding the management of hazardous chemicals and waste.
Assisting with Pain Control		
94	+	Explain pharmacology terms.
95	+	Explain the types of anesthesia used in dentistry.
Serving Patients with Special Needs		
96	+	Identify special-needs and medically-compromised patients.
97	+	Describe the management and treatment considerations of special-needs and medically-compromised patients as they relate to dental procedures.
98	+	Determine fearful patients' physical and emotional needs in order to alleviate anxiety.
Demonstrating Administrative Functions and Chairside Procedures		
99	+	Greet patients.
100	+	Manage records.
101	+	Seat and position patients.
102	+	Demonstrate ergonomics in the dental setting.
103	+	Demonstrate maintenance of a clear field.
104	+	Perform oral evacuation.
105	+	Prepare dental dam equipment and materials for use.
106	+	Prepare basic operatory setup.
107	+	Pass and retrieve instruments at chairside.
108	+	Perform a preventive dentistry treatment.
109	+	Dismiss patients.
Describing the Opioid Crisis		
110	+	Describe the history and current state of the opioid crisis in the United States.
111	+	Describe the history and current state of the opioid crisis in Virginia.
112	+	Define the pharmacological components and common uses of opioids.
Examining the Key Factors of Drug Addiction		
113	+	Examine the science of addiction.
114	+	Explain prevention and early intervention strategies.
115	+	Identify addiction and its behavioral elements, as defined by the Diagnostic and Statistical Manual of Mental Disorders (DSM-5).
116	+	Describe the treatment models of addiction therapy.
117	+	Describe the medication management antidote used to prevent fatal opioid overdoses.
Understanding Pain Management Protocols		
118	+	Explain the science of physiological and mental pain.
119	+	Describe the diagnostic tools used in developing pain management plans.
120	+	Describe pain treatment options available to various populations of patients.
121	+	Describe the effects of opioid dependency on the human body systems.
122	+	Explain the mechanism and physical effects of opioids on the human body.
123	+	Explain the use of opioids in practice settings, the role of opioids in pain management, and risk factors associated with the use of the medication.
124	+	Describe the withdrawal and tapering side effects of opioid use.
125	+	Describe storage and disposal options for opioids.
126	+	Explain community resources for education about opioid use.
Working with Patients and Caregivers		
127	+	Describe key communication topics involving opioids for patients.
128	+	Describe communication topics for caregivers and family members.

Legend: + Essential ○ Non-essential ⊖ Omitted

## Curriculum Framework

# Introducing Dentistry and the Dental Team

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## Task Number 39 Optional

**Trace key developments of dentistry from early civilizations to the present, including educational and professional developments in America.**

### Definition

Tracing of key developments should include the contributions of

- Hippocrates
- G. V. Black
- Juliette Southard
- C. Edmund Kells
- Pierre Fauchard
- Josiah Flagg
- Lucy Hobbs Taylor
- Robert Tanner Freeman

and the significance of the

- amalgam wars
- beginning of formal dental education
- invention of the first dental chair
- first female graduate of dentistry
- first African American graduate of dentistry
- use of nitrous oxide in dentistry
- use of x-radiation in dentistry.

### Process/Skill Questions

- What contributions of Hippocrates are still applied in medicine today?
- Who is known as the grand old man of dentistry?
- Who were two female American pioneers in dentistry, and what were their contributions?

### HOSA Competitive Events (High School)

HOSA Bowl (HB)

Dental Science (DS)

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## Task Number 40

## **List the members of a dental team and the characteristics, educational requirements, and responsibilities of each member.**

### **Definition**

List should include the following members of a dental team:

- General dentist
- Dental specialist
- Registered dental hygienist
- Certified dental assistant
- Registered dental assistant II
- Certified laboratory technician
- Anesthesia provider

### **Process/Skill Questions**

- How is the concept of a *team* applied in dentistry?
- How does the display of professional characteristics influence patient-staff relationships?
- Why is a dental team a good example of a career ladder?

### **HOSA Competitive Events (High School)**

Dental Science (DS)

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## **Task Number 41**

### **Describe the roles of professional dental organizations.**

#### **Definition**

Description should include the functions of the

- American Dental Association (ADA)
- American Dental Assistants Association (ADAA)
- Dental Assisting National Board, Inc. (DANB)
- American Dental Hygienist Association (ADHA)

in the areas of continuing education and professional development.

#### **Process/Skill Questions**

- Why is it important for each member of a dental team to belong to his or her specific professional dental organization?
  - Where can one find information pertaining to a specific professional dental organization?
  - What are some benefits of being a member of a professional dental organization?
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# Investigating Dental Ethics and Law

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## Task Number 42

### Examine ethical and legal issues related to the practice of dentistry.

#### Definition

Examination should include

- Dental Assisting National Board Inc. (DANB) Virginia State Requirements
- definitions of *ethics* and *code of ethics*
- a comparison of ethics and law
- an explanation of how a code of ethics should influence the work of a practicing dental professional
- the *standard of care*, including
  - malpractice
  - torts
  - assault and battery
  - defamation of character
  - invasion of privacy
  - fraud
  - Good Samaritan laws
  - Americans with Disabilities Act (ADA)
- the types of law, including contract and tort, related to the practice of dentistry
- the legal responsibilities of a practicing dental professional.

#### Process/Skill Questions

- What are the differences and similarities between ethics and law?
- How does ethics relate to the practice of dentistry?
- How might a dental assistant's professional ethics affect a patient? In a situation involving ethical questions, to whom is a dental assistant primarily responsible—the dentist or the patient?
- What type of law is most often applied in dentistry? What are the requirements for contract law to apply? How does contract law apply to the dentist-patient relationship?
- What is a breach of contract?
- What type of consent is required from a patient before performance of a routine dental procedure?
- What is the *standard of care*? What are the categories that comprise the *standard of care*?
- What are the four elements of negligence (malpractice)?
- What are the consequences of being found guilty of malpractice?

- How can a dental practice be guilty of invasion of privacy?

## **Task Number 43**

### **Explain the ADAA Principles of Ethics and Code of Professional Conduct.**

#### **Definition**

Explanation should include the reasons for the existence of the ADAA Principles of Ethics and Code of Professional Conduct, as well as a discussion of the obligations outlined by the ADAA in order to enrich the profession.

#### **Process/Skill Questions**

- Why is it important for professional organizations to have a code of conduct?
- What general items are commonly found in the codes of conduct of professional organizations?
- Is a code of conduct also a law? Why, or why not?

#### **HOSA Competitive Events (High School)**

Dental Science (DS)

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## **Task Number 44**

### **Describe the role of the Virginia Dental Practice Act as it relates to the practice of dentistry.**

#### **Definition**

Description should include the provisions of the Virginia Dental Practice Act and §54.1-2700 of the Code of Virginia and the roles of the following legal aspects of the practice of dentistry:

- [Virginia Board of Dentistry guidance document 60-7 on Delegation to Dental Assistants](#)
- [Commonwealth of Virginia Regulations Governing the Practice of Dental Assistants §18VAC60-30-10](#)
- Licensure/certification
- Level of supervision
- American Heart Association CPR certification

#### **Process/Skill Questions**

- What is the state Dental Practice Act?
- Whose duties are stated in the state Dental Practice Act?
- How is the role of the Virginia Board of Dentistry explained?
- What is the makeup of the membership of the Virginia Board of Dentistry?
- What type of credentialing is required for a dental assistant, a dentist, and a dental hygienist?
- Who is authorized to provide credentialing for dental assistants?



- What are the levels of auxiliary supervision?

## **HOSA Competitive Events (High School)**

Dental Science (DS)

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### **Task Number 45**

#### **Explain confidentiality and its connection to the Health Insurance Portability and Accountability Act (HIPAA).**

##### **Definition**

Explanation should include

- the definition of *confidentiality*
- the reasons that patient confidentiality is important in the practice of dentistry
- the possible consequences of not maintaining patient confidentiality
- a summary of the provisions found in HIPAA (e.g., privacy standard, patient rights, administrative requirements)
- the privacy standards mandated by the U.S. Department of Health and Human Services (HHS) to protect the privacy of patients
- [Virginia Code §32.1-127.1:03.](#)

##### **Process/Skill Questions**

- Why is confidentiality important in patient relationships?
  - What could be the consequences of not maintaining patient confidentiality?
  - When does patient confidentiality move from an ethical issue to a legal issue?
  - When was HIPAA enacted? Why was it enacted?
  - What types of health information are protected under HIPAA?
  - Who is responsible for the enforcement of HIPAA?
  - What are the consequences of violating HIPAA?
  - What are the privacy standards mandated by the HHS to protect the privacy of patients?
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## **Examining Basic Dental-Related Anatomy and Physiology**

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### **Task Number 46**

**Identify anatomical reference systems.**

## **Definition**

Identification should include

- sagittal plane
- frontal plane
- horizontal plane
- transverse plane
- mid-sagittal plane.

## **Process/Skill Questions**

- What are the three primary body planes?
- What are the two body cavities created by the body planes?
- What are the two parts of the dorsal cavity?
- What are the three parts of the ventral cavity?

## **HOSA Competitive Events (High School)**

HOSA Bowl (HB)

Dental Science (DS)

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## **Task Number 47**

### **Identify the bones and major anatomic landmarks of the skull.**

#### **Definition**

Identification should include the name and location of the eight bones of the cranium and the 14 bones of the face that constitute the major anatomic landmarks of the skull.

#### **Process/Skill Questions**

- What are the prominences of the dental arches?
- What is the function of the cranium?
- What is a foramen?

## **HOSA Competitive Events (High School)**

HOSA Bowl (HB)

Dental Science (DS)

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## **Task Number 48**

### **Describe the bone structure of cartilage, compact bone, spongy bone, and periosteum.**

## **Definition**

Description should include the definition, location, and function of each bone structure.

## **Process/Skill Questions**

- What are the two types of bone-forming cells?
- What is the makeup and function of cartilage?
- What are the two components found inside cancellous bone?

## **HOSA Competitive Events (High School)**

HOSA Bowl (HB)

Dental Science (DS)

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## **Task Number 49**

### **Describe the gliding hinge action of the temporomandibular joint (TMJ).**

#### **Definition**

Description should include

- a definition of *occlusion*
- an explanation of all TMJ parts and functions.

#### **Process/Skill Questions**

- What is the derivation of the term *temporomandibular*?
- What are the three stages of TMJ movement?
- What is the function of synovial fluid?

## **HOSA Competitive Events (High School)**

HOSA Bowl (HB)

Dental Science (DS)

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## **Task Number 50**

### **Identify the major muscles of mastication and facial expressions, the extrinsic muscles of the tongue, and the major posterior muscles of the mouth, including the floor of the mouth.**

#### **Definition**

Identification of the major muscles should include the name, location, and function of each major muscle.

### **Process/Skill Questions**

- Where is the hyoid bone located, and what is its shape?
- What are the two muscles of the soft palate?
- How are the muscles of the floor of the mouth innervated differently from other muscles of the mouth?

### **HOSA Competitive Events (High School)**

HOSA Bowl (HB)

Dental Science (DS)

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## **Task Number 51**

### **Identify the major veins, arteries, and nerves of the face and mouth.**

#### **Definition**

Identification should include explaining the functions of the three major blood vessels and diagramming the veins, arteries, and nerves of the face and mouth.

### **Process/Skill Questions**

- What four cranial nerves innervate the face and oral cavity?
- What are the three branches of the trigeminal nerve?
- Which division of the common carotid artery supplies blood to the face and oral cavity?

### **HOSA Competitive Events (High School)**

HOSA Bowl (HB)

Dental Science (DS)

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## **Task Number 52**

### **Identify the major anatomic landmarks of the oral cavity.**

#### **Definition**

Identification should include the name, location, and function of the

- lips
- soft palate
- hard palate
- cheeks
- pharyngeal area
- frenum
- oral mucosa
- tongue

as well as common abnormalities of the oral cavity.

### **Process/Skill Questions**

- What are the four types of papillae found on the dorsal surface of the tongue?
- What are tori?
- Where is the incisive papilla found?
- What are the three components of the floor of the mouth?
- What are the signs and symptoms of common abnormalities?

### **HOSA Competitive Events (High School)**

HOSA Bowl (HB)

Dental Science (DS)

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## **Task Number 53**

### **Identify the salivary glands and their ducts.**

#### **Definition**

Identification should include naming and locating the

- parotid glands and Stensen's duct
- submandibular gland and Wharton's duct
- sublingual gland and Wharton's duct/ducts of Rivinus.

### **Process/Skill Questions**

- What is the makeup of saliva?
- What is the approximate amount of saliva produced daily by a normal individual?
- What are the consequences of a saliva deficiency?

### **HOSA Competitive Events (High School)**

HOSA Bowl (HB)

Dental Science (DS)

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## **Task Number 54**

### **Explain the anatomy and physiology of body systems and their relationship to the face and neck.**

#### **Definition**

Explanation should include the components and functions of the circulatory, digestive, respiratory, and lymphatic systems and the ways in which the systems relate to the face and neck.

### **Process/Skill Questions**

- What respiratory system disease is considered a health hazard to a dental health team?

- What digestive system condition results in the dissolving of tooth structure?
- What types of patients are considered to be at high risk for bacterial endocarditis?

### **HOSA Competitive Events (High School)**

HOSA Bowl (HB)

Dental Science (DS)

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## **Describing Dental Anatomy**

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### **Task Number 55**

#### **Explain oral embryology and the histology of dentition.**

##### **Definition**

Explanation should include the names and functions of parts and tissues of the teeth and surrounding structures.

##### **Process/Skill Questions**

- What are the three stages of differentiation?
- What are the two types of cleft lips?
- What is the result of fusion failure of the palatal shelves?
- What are the four stages of the life cycle of the tooth?

### **HOSA Competitive Events (High School)**

HOSA Bowl (HB)

Dental Science (DS)

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### **Task Number 56**

#### **Explain developmental disturbances that may occur during tooth development.**

##### **Definition**

Explanation should include listing the major disturbances and explaining their causes.

##### **Process/Skill Questions**

- What do the prefixes *micro* and *macro* mean?
- What does the suffix *genesis* mean?
- What are supernumerary teeth?
- Which teeth are most likely to appear as supernumerary teeth?

## **HOSA Competitive Events (High School)**

HOSA Bowl (HB)

Dental Science (DS)

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### **Task Number 57**

#### **Identify the eruption order for the primary and permanent dentition.**

##### **Definition**

Identification should include listing all primary and secondary teeth in the correct eruption sequence.

##### **Process/Skill Questions**

- How many teeth are succedaneous?
- What permanent teeth are not succedaneous?
- What is a mixed dentition?

## **HOSA Competitive Events (High School)**

HOSA Bowl (HB)

Dental Science (DS)

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### **Task Number 58**

#### **Explain the specialized functions and classifications of the four types of teeth.**

##### **Definition**

Explanation should include identification and number of the four types of teeth (incisors, cuspids [canines], bicuspid [premolars], molars), as well as

- description of their functions
- classification as primary or permanent and as anterior or posterior
- number of each found in primary and permanent dentition
- identification of surfaces of anterior and posterior teeth in all dentitions.

##### **Process/Skill Questions**

- Which type of tooth is *not* found in a primary dentition?
- Which type of tooth is commonly called a *wisdom tooth*?
- What teeth are in the anterior region?
- What teeth are in the posterior region?

## **HOSA Competitive Events (High School)**

HOSA Bowl (HB)

## Task Number 59

### Describe the anatomical features of teeth.

#### Definition

Description should include all anatomical landmarks, structures, and common abnormalities of hard tissue.

#### Process/Skill Questions

- Which types of teeth have a convex surface?
- Which types of teeth have a concave surface?
- What type of cusp is found only on maxillary first permanent molars?
- Which teeth are bifurcated?
- Which teeth are trifurcated?
- Why are cuspids (canines) commonly known as *eye teeth*?
- What are signs and symptoms of abnormalities of hard tissue?

#### HOSA Competitive Events (High School)

HOSA Bowl (HB)

Dental Science (DS)

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## Task Number 60

### Identify tooth surfaces.

#### Definition

Identification should include all surfaces of anterior and posterior teeth.

#### Process/Skill Questions

- How many surfaces does each tooth have?
- What surface term can replace both *labial* and *buccal*?
- What are proximal surfaces?
- Where can two mesial surfaces be proximal?

#### HOSA Competitive Events (High School)

HOSA Bowl (HB)

Dental Science (DS)

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## Task Number 61



## **Identify teeth, using the Universal, Federation Dentaire Internationale (FDI), and Palmer Numbering Systems.**

### **Definition**

Identification should include labeling all primary and permanent teeth on dentition charts, using each system.

### **Process/Skill Questions**

- How would one identify a permanent tooth, using the Universal Numbering System?
- How would one identify a primary tooth, using the Universal Numbering System?
- Which numbering system numbers quadrants and teeth?
- Which numbering system uses symbols to denote quadrants?

### **HOSA Competitive Events (High School)**

Dental Science (DS)

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## **Recording Patient Information and Assessment**

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### **Task Number 62**

#### **Demonstrate compliance with the privacy policy of HIPAA when recording patient information.**

### **Definition**

Demonstration should include

- recording and handling confidential patient information
- explaining procedures meant to preserve patient privacy
- adhering to [Virginia Code §32.1-127.1:03](#) and [Virginia Register of Regulations Governing the Practice of Dental Assistants 18VAC60-30 Effective October 15, 2020](#).

### **Process/Skill Questions**

- When would one *not* record a patient's personal information?
- What information can one give another medical office about a patient? What information should one not share?
- How would one discuss treatment with a patient who needs an interpreter?
- How would one discuss treatment with a hard-of-hearing patient in an office that has been designed with an open-bay concept?

### **Task Number 63**

#### **Manage personal information about a patient.**

## **Definition**

Management should include gathering and recording personal information such as the following:

- Name
- Address
- Phone number
- Date of birth
- Insurance provider information
- Employment
- Party responsible for payment

## **Process/Skill Questions**

- How can one differentiate between two patients with the same name?
- What kind of information is recorded on the front of the chart?
- What kind of questions would one ask the provider of a new insurance-coverage policy?

## **HOSA Competitive Events (High School)**

Dental Science (DS)

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# **Task Number 64**

## **Update medical and dental history.**

### **Definition**

Update should include a list of

- allergies
- medications
- medical conditions
- hospitalizations
- specific dental symptoms.

### **Process/Skill Questions**

- What medical information is recorded on the front of the chart?
- What information can one give another medical office about a patient? What information can one *not* share?
- How would one handle a phone conversation with another medical office when receiving information about a patient's medications and health status?

## **HOSA Competitive Events (High School)**

Dental Science (DS)

Medical Assisting (MA)

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## **Task Number 65**

### **Explain the meaning and importance of informed consent.**

#### **Definition**

Explanation should include communicating to the patient the importance of the procedure to be performed, the risks involved, the expected outcome, other treatment options, and the risks of no treatment. Explanation must also include that informed consent must be obtained by the dentist at all times.

#### **Process/Skill Questions**

- Why is it necessary to give patients copies of consent forms?
- Why is informed consent not required for a routine procedure?
- How could a dentist obtain informed consent from a patient who is not fluent in English?

#### **HOSA Competitive Events (High School)**

Medical Law and Ethics (MLE)

Dental Science (DS)

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## **Task Number 66**

### **Identify the standards and criteria for patient-record entries.**

#### **Definition**

Identification should include legal issues, patient responses, storage, and record transfer.

#### **Process/Skill Questions**

- Who owns a patient's records?
- How would one respond to a patient who does not understand the purpose of an appointment?

#### **HOSA Competitive Events (High School)**

Dental Science (DS)

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## **Task Number 67**

### **Obtain and record vital signs and observations.**

#### **Definition**

Obtaining and recording should include the following:

- Vital signs (e.g., temperature, pulse, respiration, blood pressure)
- Observations (e.g., appearance, gait, speech, breath odors)

#### **Process/Skill Questions**

- Why would one take a radial pulse instead of a carotid artery pulse?

- What would one do if a patient presenting for treatment were showing vital signs that are above normal?
- What would one do if a patient were to claim that there is an inaccuracy in his or her recorded vital signs?

### **HOSA Competitive Events (High School)**

Medical Law and Ethics (MLE)

Dental Science (DS)

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## **Task Number 68**

### **Document initial findings, including recommended treatment.**

#### **Definition**

Documentation should include the following:

- Charting findings (in all current formats)—areas of inflammation; types of oral lesions and conditions; developmental defects; diseases of the teeth; and pulp, periodontal, and temporomandibular joint (TMJ) disorders
- Listing treatment—treatment(s) as determined by a Doctor of Dental Surgery (DDS)

#### **Process/Skill Questions**

- How does one respond to a patient who asks for clarification of the dentist's instructions?
- How does one respond to a patient who asks for advice on treatment options?

### **HOSA Competitive Events (High School)**

Dental Science (DS)

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## **Task Number 69**

### **Record treatment rendered.**

#### **Definition**

Recording should include

- tooth number
- dental restoration
- oral surgery
- medications or prescriptions
- anesthetic
- postoperative instructions (reviewed and understood by the patient)
- dental procedures (i.e., impressions, fluoride, vital signs)
- date

- operator
- assistant.

### **Process/Skill Questions**

- How often should a patient's health history be updated?
- Why should chart entries be written in ink? How should changes to entries be made?
- Why, or why not, do all recorded procedures require a tooth number?
- How should a multiple-tooth-restoration appointment be recorded?
- Why is it necessary to record all materials used in a procedure?
- How could waiting to record information be problematic?

### **HOSA Competitive Events (High School)**

Dental Science (DS)

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## **Task Number 70**

### **Obtain intraoral and extraoral images.**

#### **Definition**

Obtaining images should include explanations of how to use a digital intraoral camera for recording oral and facial images on a patient chart.

#### **Process/Skill Questions**

- How would one take intraoral images on a patient with limited opening?
- What records need to be presented during a treatment consultation?
- How may intraoral imaging become vital legally to the dentist in years to come?
- How can intraoral imaging be used as an educational tool for a dental practice?

### **HOSA Competitive Events (High School)**

Dental Science (DS)

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## **Examining Preventive Dentistry and Nutrition**

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### **Task Number 71**

#### **Describe how dental decay occurs.**

##### **Definition**

Description should include

- early childhood caries

- rampant caries
- effects of acid on the teeth
- demineralization and remineralization
- healthful and unhealthful snacks
- dry mouth
- drug use.

### **Process/Skill Questions**

- What questions would one ask a patient who has recurring caries at recall appointments?
- What information regarding dental caries can one offer to a newly expectant mother?
- How does the demineralization and remineralization process work on a daily basis?

### **HOSA Competitive Events (High School)**

Dental Science (DS)

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## **Task Number 72**

### **Identify risk factors for caries.**

#### **Definition**

Identification should include the use of caries risk assessment, such as

- dietary analysis
- bacterial analysis
- systemic diseases
- water fluoridation
- eating disorders.

### **Process/Skill Questions**

- How does one effectively analyze dietary components?
- How does caries risk assessment relate to rate of decay?
- What is meant by carcinogenicity?
- What bacteria is most commonly associated with caries?
- What is the minimal water fluoridation effective for the reduction of dental caries?
- How does one use caries risk assessment to develop a comprehensive plan to treat the disease of caries?

### **HOSA Competitive Events (High School)**

Dental Science (DS)

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## **Task Number 73**

## **Identify the methods of detecting decay.**

### **Definition**

Identification should include the use of

- explorer
- lasers
- radiographs
- appearance
- caries indicators.

### **Process/Skill Questions**

- How would one respond to a patient who asks, "What do you see on my X-ray?"
- How would one compare visual findings to the radiograph findings?
- Who is responsible for diagnosis when indicator dyes are used?

### **HOSA Competitive Events (High School)**

Dental Science (DS)

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## **Task Number 74**

### **Describe systemic conditions associated with periodontal disease.**

#### **Definition**

Description should include the effects of chronic diseases (e.g., cardiovascular disease, respiratory disease).

#### **Process/Skill Questions**

- How would one advise a patient who presents with a history of periodontal disease as well as a heart condition?
- What would one tell a pregnant patient who calls to cancel her periodontal recall appointment?
- What information would one give a patient with chronic respiratory illness?

### **HOSA Competitive Events (High School)**

Dental Science (DS)

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## **Task Number 75**

### **Identify risk factors for periodontal disease.**

#### **Definition**

Identification should include risk factors such as

- vaping/tobacco use
- diabetes
- poor oral hygiene

- compromised immune response
- malocclusion
- stress
- medications.

### **Process/Skill Questions**

- How does the use of various tobacco products affect periodontal health?
- What are the health benefits of using a mouth guard?
- What questions could one ask a patient in order to identify the cause of local periodontal disease?

### **HOSA Competitive Events (High School)**

Dental Science (DS)

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## **Task Number 76**

### **Demonstrate the components of preventive dentistry.**

#### **Definition**

Demonstration should include use of motivational interviewing techniques to provide oral hygiene instruction (OHI) in

- how to brush and floss
- use of oral hygiene aids
- use of disclosing agents
- use of educational tools.

#### **Process/Skill Questions**

- How would one teach proper brushing and flossing techniques to someone whose manual dexterity is challenged?
- How would one instruct someone with various dental appliances to adapt his or her brushing technique?
- How should one respond to a patient who asks for toothpaste recommendations?

### **HOSA Competitive Events (High School)**

Dental Science (DS)

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## **Task Number 77**

### **Describe the roles of systemic and topical fluorides.**

#### **Definition**

Description should include

- benefits
- risks



- safety precautions
- sources
- administration of fluorides.

### **Process/Skill Questions**

- What are the similarities and differences between systemic and topical fluorides?
- What precautions should be taken to prevent fluoride ingestion?
- What procedures would be necessary if a child were to ingest fluoride?
- What advice should be given to a patient who only drinks water without fluoride?

### **HOSA Competitive Events (High School)**

Dental Science (DS)

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## **Task Number 78**

### **Identify key nutrients.**

#### **Definition**

Identification should include

- nutrient sources
- nutrient functions
- indications of nutrient deficiencies.

### **Process/Skill Questions**

- What effect does malnutrition have on developing teeth?
- When is a dietary analysis needed?
- Why is a working knowledge of nutrition needed by a dental assistant?

### **HOSA Competitive Events (High School)**

Dental Science (DS)

Nutrition (NUT)

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## **Task Number 79**

### **Establish a diet for dental health maintenance.**

#### **Definition**

Establishment of a diet plan should include

- appropriate diet for routine dental health maintenance
- specific diets for special-needs patients
- postoperative care.

### **Process/Skill Questions**

- How would one counsel a lactose-intolerant patient?
- What foods should be suggested for snacking, and why?
- What foods should one suggest to the oral surgery patient who has limited opening or jaw strength?

### **HOSA Competitive Events (High School)**

Dental Science (DS)

Nutrition (NUT)

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## **Performing Infection-Control Techniques**

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### **Task Number 80**

**Describe the major groups of microorganisms that cause disease.**

#### **Definition**

Description should include

- a list with descriptions of the major groups of pathogenic microorganisms
- the ways bacteria are classified
- the ways oxygen contributes to the growth/destruction of bacteria
- the ways pathogens are passed to humans.

### **Process/Skill Questions**

- How are bacteria classified?
- How does oxygen contribute to the growth and/or destruction of bacteria?

### **HOSA Competitive Events (High School)**

Pathophysiology (PAT)

Dental Science (DS)

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### **Task Number 81**

**Describe the types of diseases caused by microorganisms.**

#### **Definition**

Description should include examples of diseases caused by

- bacteria
- viruses

- protozoa
- fungus/yeast/mold
- prions.

### **Process/Skill Questions**

- What fungal infection is commonly found on the oral mucosa?
- How are bacteria classified?
- What viral disease is of major concern to dental health workers?

### **HOSA Competitive Events (High School)**

Pathophysiology (PAT)

Dental Science (DS)

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## **Task Number 82**

### **Describe ways diseases are transmitted in the dental treatment environment.**

#### **Definition**

Description should include

- causes of disease and the body's defenses, including vaccinations and types of immunity (e.g., herd)
- chain of infection
- definitions and examples of modes of disease transmission
- major diseases of concern to dental healthcare workers.

### **Process/Skill Questions**

- Why is it important to break the chain of infection in the dental setting?
- What protocol helps prevent disease transmission from patient to dental team?
- What protocol helps prevent disease transmission from dental team to patient?
- What protocol helps prevent disease transmission from patient to patient?
- What types of pathogenic microorganism diseases are commonly prevented by vaccinations?

### **HOSA Competitive Events (High School)**

Pathophysiology (PAT)

Dental Science (DS)

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## **Task Number 83**

## **Explain maintenance of aseptic chain in the dental treatment environment.**

### **Definition**

Explanation should include

- sterilizing instruments and materials
- operating sterilized equipment, using autoclave and other acceptable methods such as dry heat and chemical-vapor sterilization
- conducting biological monitoring of sterilization equipment
- listing criteria for sterilization center
- washing hands
- disinfecting treatment areas
- maintaining Occupational Safety and Health Administration (OSHA) housekeeping requirements
- using protective barriers and disposable items
- disposing of medical waste
- attending to special considerations, including patient charts, radiographs, medical lab specimens, and disinfection of impressions, laboratory cases, and lab areas.

### **Process/Skill Questions**

- How could the chain of asepsis be broken?
- How does one know sterilization equipment is operating properly?
- How could the clinical staff endanger the front office staff?
- What is Tyndallization?

## **HOSA Competitive Events (High School)**

Pathophysiology (PAT)

Dental Science (DS)

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## **Task Number 84**

## **Demonstrate compliance with governmental regulations and guidelines.**

### **Definition**

Demonstration should include

- definition and use of *standard precautions*
- adherence to mandatory updates (e.g., routine or pandemic situations)
- use of personal protective equipment (PPE)

- explanation of the roles of state and federal agencies, including OSHA, U.S. Environmental Protection Agency (EPA), and Centers for Disease Control (CDC), regarding infection control and disease prevention.

### **Process/Skill Questions**

- What are PPE items? What are their protective values?
- What are some factors that could harm an individual even when using PPE?
- What is the difference between a recommendation and a regulation?
- What are the roles of OSHA, CDC, and EPA as they relate to dentistry?

### **HOSA Competitive Events (High School)**

Pathophysiology (PAT)

Dental Science (DS)

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## **Task Number 85**

### **Disinfect and/or sterilize dental instruments.**

#### **Definition**

Disinfection should include the selection and use of chemicals that destroy or deactivate most species of pathogenic microorganisms.

Sterilization should include the destruction of all microorganisms through the use of heat and/or chemicals.

#### **Process/Skill Questions**

- What three chemical disinfectants are most commonly used in dental offices? Why?
  - What is the minimum contact time for a surface disinfectant?
  - What agency regulates disinfectants?
  - What three methods of sterilizing are most commonly used in dental offices? Why?
- 

### **HOSA Competitive Events (High School)**

Medical Assisting (MA)

Dental Science (DS)

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## **Task Number 86**

### **Demonstrate maintenance and sterilization of dental handpieces.**

#### **Definition**

Demonstration should include

- gathering manufacturers' maintenance instructions for specific handpieces

- identifying all applicable lubricants, disinfecting solutions, and wrenches
- disassembling and cleaning handpieces according to manufacturers' specifications
- sterilizing handpieces according to manufacturers' specifications.

### **Process/Skill Questions**

- What should be done to a handpiece before it is autoclaved?
- What sterilization methods are appropriate for low-speed and high-speed handpieces?
- Why is it important to consult the manufacturer's instructions for maintenance of a handpiece?

### **HOSA Competitive Events (High School)**

Medical Assisting (MA)

Dental Science (DS)

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## **Task Number 87**

### **Demonstrate maintenance of the evacuation system.**

#### **Definition**

Demonstration should include caring for traps and the central vacuum compressor and flushing evacuation hoses.

#### **Process/Skill Questions**

- Why is it important to clean the traps?
  - How often should the hoses be cleaned and flushed?
  - What needs to be done to maintain the central vacuum compressor?
- 

## **Task Number 88**

### **Demonstrate maintenance of dental disinfecting/sterilizing equipment, including the renewal of solutions.**

#### **Definition**

Demonstration should include maintenance for

- central air compressor
- plaster trap
- model trimmer
- other equipment as specified.

Disinfection/sterilization procedure should include cleaning the

- cold sterile container
- ultrasonic cleaner

- tray container
- autoclave
- Chem-Clave
- dry-heat sterilizer
- other disinfecting containers.

All solutions must be discarded and replaced according to specified guidelines, and the autoclave indicator dials or liquid crystal display (LCD) readout must be monitored throughout the procedure.

### **Process/Skill Questions**

- How does one determine the correct cleaning procedure for an autoclave?
- Why should PPE be worn when using chemicals?
- How often should the solution in an ultrasonic cleaner be changed?
- How often should the plaster trap be checked?

### **HOSA Competitive Events (High School)**

Dental Science (DS)

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## **Task Number 89**

### **Explain maintenance of the dental unit waterline (DUWL).**

#### **Definition**

Explanation should include

- identifying the two primary sources of microorganisms in dental unit water as the public water supply and saliva that may be retracted into the waterline through a process called backflow
- identifying risks due to bacterial contamination of the DUWL
- describing methods for reducing bacterial contamination of the DUWL
- listing the CDC recommendations for the DUWL, biofilm, and water quality
- testing to determine acceptable levels of microbes in DUWL.

#### **Process/Skill Questions**

- What are the two primary sources of microorganisms in a DUWL?
  - Where is biofilm found?
  - How can biofilm be eliminated?
  - What precautions should one take when selecting a chemical for the dental unit?
- 

## **Managing Hazardous Chemicals and Waste**

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## **Task Number 90**

### **Identify methods of protection against exposure to hazardous chemicals.**

#### **Definition**

Identification should include various methods of protection against chemical exposure such as using masks, gloves, glasses, and lab coats.

#### **Process/Skill Questions**

- Why are protective devices needed in a dental office and lab?
- What should one do if they have a break in their glove?
- What chemicals could one be exposed to in a dental office?

#### **HOSA Competitive Events (High School)**

Dental Science (DS)

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## **Task Number 91**

### **Comply with the OSHA Hazard Communications Standard.**

#### **Definition**

Compliance should include

- describing the Globally Harmonized System (GHS)
- maintaining Safety Data Sheets (SDS)
- labeling potentially hazardous products
- handling hazardous chemicals and other materials
- handling engineering controls, laundry, and relevant housekeeping matters
- maintaining a written hazard communication program.

#### **Process/Skill Questions**

- What repercussions could the dentist expect if an employee is harmed by an undocumented chemical?
  - What process needs to be executed for a new chemical product to meet OSHA standards?
  - What information is needed about a product before transferring it into a new container?
  - What type of training regarding compliance is required of all employees?
  - Why must all materials containing hazardous chemicals be labeled with the National Fire Protection Association color and number methods?
  - What color always denotes that an item is a biohazard risk?
  - What do each of the icons in the GHS indicate?
- 

## **Task Number 92**



## **Describe the classification of waste.**

### **Definition**

Description should include general, chemical, and medical waste.

### **Process/Skill Questions**

- What are the dangers of not following local guidelines for the proper disposal of waste?
- How could improper disposal of radiographic solutions affect the community?
- How could improper disposal of sharps affect the community?

### **HOSA Competitive Events (High School)**

Dental Science (DS)

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## **Task Number 93**

### **Demonstrate compliance with governmental regulations regarding the management of hazardous chemicals and waste.**

#### **Definition**

Demonstration should include a list of regulations regarding chemicals and waste and a summary of the eight sections of SDS forms.

#### **Process/Skill Questions**

- Why do government regulations regarding the management of hazardous chemicals exist?
- Why were agencies such as the EPA established?
- What factors make some chemicals toxic and others nontoxic?
- What should one say to a coworker who places food in the sterilization room?
- How should one dispose of a tooth containing an amalgam filling?

### **HOSA Competitive Events (High School)**

Dental Science (DS)

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## **Assisting with Pain Control**

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### **Task Number 94**

#### **Explain pharmacology terms.**

##### **Definition**

Explanation of pharmacological terms should include their definitions and relationships to the dentistry field.

### **Process/Skill Questions**

- What should one say to a patient who wants to know the difference between a generic drug and a name-brand drug?
- What drugs might be recommended for a nervous patient? Why is it important to check a patient's medical history?

### **HOSA Competitive Events (High School)**

Pharmacology (PHA)

Dental Terminology (DT)

Dental Science (DS)

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## **Task Number 95**

### **Explain the types of anesthesia used in dentistry.**

#### **Definition**

Explanation should include topical and local anesthesia.

#### **Process/Skill Questions**

- What procedures should one employ to prevent needle-stick exposure?
- What are some uses for topicals other than restorations?
- What procedures require general anesthesia?

### **HOSA Competitive Events (High School)**

Dental Science (DS)

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## **Serving Patients with Special Needs**

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### **Task Number 96**

### **Identify special-needs and medically-compromised patients.**

#### **Definition**

Identification should include patients with

- developmental disorders
- physical disorders
- neurological disorders
- neuromuscular disorders
- pulmonary disorders
- blood disorders
- endocrine disorders

- behavioral and psychiatric disorders.

### **Process/Skill Questions**

- How would one describe a special-needs patient?
- How do special-needs clients affect the dental appointment?

### **HOSA Competitive Events (High School)**

Dental Science (DS)

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## **Task Number 97**

**Describe the management and treatment considerations of special-needs and medically-compromised patients as they relate to dental procedures.**

### **Definition**

Description should include

- medical, physical, and emotional considerations
- the use of stabilizing devices, sedatives, and restraining devices
- the need for a positive atmosphere of caring and concern
- the importance of obtaining informed consent for the management of a special-needs and/or medically-compromised patient during dental procedures.

### **Process/Skill Questions**

- What can one do to calm a special-needs patient?
- How can one discourage a parent from entering a treatment area inappropriately?
- How would one minimize stress when scheduling appointments for special-needs patients?
- What time of day is best for scheduling very young children for dental treatment?
- What factors determine the use of physical restraints?
- What type of anesthetic is required for patients with cardiovascular disorders?
- What behavior problems could be expected from children of different age groups late in the day?
- Why are nursing mothers considered to be a category of special-needs patients?
- How could a hearing-impaired individual be made to understand the purpose and need for specific treatment?
- What emotional obstacles might a patient with a cleft palate present?

### **HOSA Competitive Events (High School)**

Dental Science (DS)

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## **Task Number 98**

## **Determine fearful patients' physical and emotional needs in order to alleviate anxiety.**

### **Definition**

Determination should include notation of physical behaviors, vital signs, phobias, and treatments for such phobias.

### **Process/Skill Questions**

- What phobias can manifest in the dental setting?
- How might a phobia change a patient's perspective?
- What steps could be taken to calm a patient and alleviate his or her anxiety?

### **HOSA Competitive Events (High School)**

Behavioral Health (BH)

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## **Demonstrating Administrative Functions and Chairside Procedures**

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### **Task Number 99**

#### **Greet patients.**

### **Definition**

Greeting patients should include in-person, telephone, and written interactions.

### **Process/Skill Questions**

- What are some hallmarks of courteous behavior?
- How can one tell whether a patient is anxious about treatment?
- What information should be in a letter of introduction to a dental office?
- Why is it important to answer the phone on the first ring?

### **HOSA Competitive Events (High School)**

Dental Science (DS)

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### **Task Number 100**

#### **Manage records.**

### **Definition**

Management should include the development of files and filing systems and the protection and transfer of files.

Teacher resource:

### **Process/Skill Questions**

- What qualifies a patient to be considered active or inactive?
- What are the basic filing procedures?
- What are the regulations for record transfer?
- How are records protected?

### **HOSA Competitive Events (High School)**

Dental Science (DS)

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## **Task Number 101**

### **Seat and position patients.**

#### **Definition**

Seating and positioning of patients should include

- procedure for seating
- placement of patient napkin
- positioning for procedure.

#### **Process/Skill Questions**

- What should be moved out of the way in order to seat a patient safely?
- What is the proper position in which to place a patient for an operative procedure?
- What is the correct distance from the dental light to the oral cavity during treatment?

### **HOSA Competitive Events (High School)**

Dental Science (DS)

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## **Task Number 102**

### **Demonstrate ergonomics in the dental setting.**

#### **Definition**

Demonstration should include

- identifying risk factors that can contribute to injury
- assuming the neutral position
- performing exercises that reduce strain.
- considering the four zones of activity (i.e., static, operator, aux, transfer).

#### **Process/Skill Questions**

- What is meant by the term *ergonomics*?

- What is the goal of ergonomics?
- What types of disorders are considered to be musculoskeletal disorders?
- What are the four zones of activity?

### **HOSA Competitive Events (High School)**

Dental Science (DS)

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## **Task Number 103**

### **Demonstrate maintenance of a clear field.**

#### **Definition**

Demonstration should include

- using various items for retraction
- using a three-way syringe
- positioning a dental light.

#### **Process/Skill Questions**

- What are three uses for the mouth mirror?
- How can one prevent the mouth mirror from fogging?
- What precautions should be taken when retracting the tissue?

### **HOSA Competitive Events (High School)**

Dental Science (DS)

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## **Task Number 104**

### **Perform oral evacuation.**

#### **Definition**

Performance should include use of the saliva ejector and high-volume evacuator (HVE).

#### **Process/Skill Questions**

- What can be done if the HVE gets caught up with the cheek tissue?
- When a right-handed operator is preparing the maxillary left second molar for an occlusal amalgam, where should the HVE tip be placed?
- When a right-handed operator is preparing the mandibular right central incisor for a class V composite, where should the HVE tip be placed?

### **HOSA Competitive Events (High School)**

Dental Science (DS)

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## **Task Number 105**

## **Prepare dental dam equipment and materials for use.**

### **Definition**

Preparation should include instrumentation and selection of equipment, materials, and disposables.

### **Process/Skill Questions**

- What is the purpose of the inversion of a dental dam?
- What are at least four pieces of equipment needed to place or remove a dental dam?
- What direction is the dam pulled from the teeth upon removal?

## **HOSA Competitive Events (High School)**

Dental Science (DS)

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## **Task Number 106**

### **Prepare basic operatory setup.**

#### **Definition**

Preparation should include instrumentation and arrangement of disposable armamentarium.

#### **Process/Skill Questions**

- What instruments are included in the basic setup?
  - What is the order of use for the basic setup?
  - What are at least three disposable items included in the basic setup?
- 

## **Task Number 107**

### **Pass and retrieve instruments at chairside.**

#### **Definition**

Passing and retrieving should include

- pen-grasp transfer
- palm-grasp transfer
- palm-thumb grasp transfer
- alternating transfers
- provider hand-off signal.

#### **Process/Skill Questions**

- Where is the transfer zone?
- What is an example of a dental instrument for which the palm-thumb grasp should be used?

## HOSA Competitive Events (High School)

Dental Science (DS)

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### Task Number 108

#### Perform a preventive dentistry treatment.

##### Definition

Performance should include

- tray instrumentation
- selection of materials and disposables
- manipulation of materials
- performance of prophylaxis and fluoride treatment.

##### Process/Skill Questions

- What is the name of the dental condition that results from too much fluoride?
- What instructions should be given to a patient when performing an office fluoride treatment?
- What are the criteria for choosing the grit of prophylaxis paste?

## HOSA Competitive Events (High School)

Dental Science (DS)

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### Task Number 109

#### Dismiss patients.

##### Definition

Dismissal of patients should include

- repositioning the chair and preparing patients for dismissal
- reviewing postoperative instructions with patients
- escorting patients from operator [adhering to the Commonwealth of Virginia Board of Dentistry Regulations Governing the Practice of Dentistry 18VAC60-21-10 effective December 2, 2015.](#)

##### Process/Skill Questions

- What equipment needs to be removed before dismissing a patient?
- What are some examples of postoperative instructions that may need to be shared with a patient?
- What personal items may need to be returned to a patient?

## HOSA Competitive Events (High School)

Dental Science (DS)



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# Describing the Opioid Crisis

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## Task Number 110

**Describe the history and current state of the opioid crisis in the United States.**

### Definition

Description should include

- the relationship between opioid prescribing and illicit opioid use to overall opioid overdose deaths
- the prevalence of co-occurring mental health disorders
- the shift in attitudes in the 1990s toward pain management and use of opioids, including the role of pharmaceutical marketing
- the stigma associated with addiction and the changing view of addiction from a moral failing to a chronic, relapsing disease
- statistics, trends, and demographics surrounding the crisis
- population health and other public health aspects of the crisis, including its effects on family and neonates, as well as overall health costs.

### Process/Skill Questions

- How are opioids created?
- Can opioids be safely prescribed to patients taking psychotropic drugs?
- How does society stereotype individuals with a history of drug addiction?
- What are the current trends that have contributed to the nationwide opioid crisis?
- How has the opioid epidemic affected emergency rooms and the first responder system?

## HOSA Competitive Events (High School)

### Health Science Events

- Medical Spelling
- Medical Terminology

### Teamwork Events

- Creative Problem Solving
  - HOSA Bowl
  - Public Service Announcement
- 

## Task Number 111

**Describe the history and current state of the opioid crisis in Virginia.**

### Definition

Description should include

- the relationship between opioid prescribing and illicit opioid use to overall opioid overdose deaths
- the prevalence of co-occurring mental health disorders
- the shift in attitudes in the 1990s toward pain management and use of opioids, including the role of pharmaceutical marketing
- the stigma associated with addiction and the changing view of addiction from a moral failing to a chronic, relapsing disease
- statistics, trends, and demographics surrounding the crisis
- population health and other public health aspects of the crisis, including its effects on family and neonates, as well as overall health costs
- the Virginia Department of Health’s [Declaration of a Public Health Emergency](#) on November 21, 2016
- proposed legislation to address the crisis in Virginia (i.e., [House Bill 2161](#) and [Senate Bill 1179](#), which require the secretary of health and human resources to convene a workgroup to establish educational guidelines for training healthcare providers in the safe prescribing and appropriate use of opioids)
- the development of curricula and educational standards regarding opioid addiction.

Resource: [The Opioid Crisis Among Virginia Medicaid Beneficiaries](#)

### Process/Skill Questions

- What agencies participated in the governor’s task meeting on the opioid crisis?
- What educational organizations will be tasked with providing opioid training to their students?
- What is the benefit of educating future medical professionals about opioid addiction?
- What is the current attitude in society about opioid use and addiction?
- How is the local community affected by the opioid epidemic?

### HOSA Competitive Events (High School)

#### Health Science Events

- Medical Spelling
- Medical Terminology

#### Teamwork Events

- Creative Problem Solving
- HOSA Bowl
- Public Service Announcement

## Task Number 112

### Define the pharmacological components and common uses of opioids.

#### Definition

Definition should include

- plant-based opioids (e.g., opium from poppy seeds)
- names of legal and illegal opioids
- [heroin](#)
- names of the most common opioids
- [fentanyl](#)
- medical diagnoses and injuries associated with opioid prescriptions
- [commonly used terms](#).

Resource: [Prescription Pain Medications](#), National Institute on Drug Abuse for Teens

### **Process/Skill Questions**

- For what illnesses are opioids commonly prescribed?
- What is the current medical protocol when opioids are prescribed?

### **HOSA Competitive Events (High School)**

#### **Health Science Events**

- Medical Spelling
- Medical Terminology
- Knowledge Test: Pharmacology

#### **Health Professions Events**

- Clinical Nursing

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## **Examining the Key Factors of Drug Addiction**

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### **Task Number 113**

#### **Examine the science of addiction.**

##### **Definition**

Examination should include

- biopsychosocial aspects of addiction
- the role of endorphins and dopamine
- the role of religious beliefs
- behavioral aspects of addiction
- life cycle of addiction
- misuse of opioids.

##### **Process/Skill Questions**

- How will understanding the physiological absorption of opioids in the body provide a holistic assessment?
- What spiritual characteristics might be observed in the science of addiction?
- What are some genetic explanations for some family members being more prone to addiction?

### **Task Number 114**

#### **Explain prevention and early intervention strategies.**

##### **Definition**

Explanation should include

- risk and protective factors in opioid addiction
- specific populations at risk of addiction
- motivational interviewing and other communication strategies
- naloxone co-prescribing
- roles of family and social institutions in prevention and early intervention.

Resources:

- [Prevention Tip Card](#), Office of the Attorney General of Virginia
- [Prescription Opioids: Even When Prescribed by a Doctor](#) (video), Centers for Disease Control and Prevention (CDC)

### Process/Skill Questions

- What are the physiological characteristics of opioid addiction?
- What demographic is most affected by the opioid epidemic? What are some explanations for this?
- How can provision of naloxone and training in its use be sustained financially?
- What obligations do families and society as a whole have in preventing and providing early intervention related to drug addiction?

## Task Number 115

### Identify addiction and its behavioral elements, as defined by the Diagnostic and Statistical Manual of Mental Disorders (DSM-5).

#### Definition

Identification should include

- DSM-5 Criteria for Substance Use Disorders
- American Society of Addiction Medicine (ASAM) Criteria (i.e., The Six Dimensions of Multidimensional Assessment)
- CONTINUUM, The ASAM Criteria Decision Engine
- clinical and behavioral aspects of addiction
- practice-appropriate screening tools, including co-morbidity screening.

### Process/Skill Questions

- What are DSM-5 and ASAM and what information do they provide to healthcare professionals?
- What are clinical and behavioral elements of addiction that should be recognized by healthcare professionals?
- Who is responsible for providing the necessary screening tools and training?

### HOSA Competitive Events (High School)

#### Health Science Events

- Knowledge Test: Behavioral Health
- Knowledge Test: Medical Law and Ethics

#### Health Professions Events

- Clinical Nursing

## Task Number 116

### Describe the treatment models of addiction therapy.

#### Definition

Description should include

- a recognition that addiction is a chronic disease
- evidence-based treatment models for addiction in general and opioid addiction in particular
- medication-assisted treatment
- the continuum of care in opioid addiction treatment
- how and when to make a referral for treatment
- the roles in an interdisciplinary addiction team
- the role of peers in the treatment of addiction
- the difference between a drug culture and recovery culture
- the management of patients in recovery, including factors contributing to relapse.

#### Process/Skill Questions

- How many treatment models exist for addiction therapy? Why is one model better than the other?
- What are the advantages of evidence-based treatments and models?
- What medication-assisted treatment programs are available? Who provides them?

#### HOSA Competitive Events (High School)

##### Health Science Events

- Knowledge Test: Behavioral Health
- Knowledge Test: Medical Law and Ethics

##### Health Professions Events

- Clinical Nursing
- 

## Task Number 117

### Describe the medication management antidote used to prevent fatal opioid overdoses.

#### Definition

Description should include

- availability and use of naloxone
- naloxone training (e.g., [REVIVE!](#))
- naloxone training agencies
- monitoring of concurrent prescriptions.

Resources:

- [Frequently Asked Questions about Naloxone](#), Virginia Department of Health
- [How to prepare naloxone for administration](#), Virginia Department of Behavioral Health and Developmental Services

## Process/Skill Questions

- What is naloxone?
- How much does naloxone cost with health insurance? How much does naloxone cost without health insurance?
- Who should receive naloxone training?

## HOSA Competitive Events (High School)

### Health Science Events

- Medical Spelling
- Medical Terminology
- Knowledge Test: Pharmacology

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# Understanding Pain Management Protocols

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## Task Number 118

### Explain the science of physiological and mental pain.

#### Definition

Explanation should include

- definition of pain from the International Association for the Study of Pain (IASP)
- neurobiological basis of pain
- biopsychosocial model of pain
- types of pain (e.g., neuropathic)
- acute, sub-acute, and chronic pain, including pain generation
- spinal and brain modulation, behavioral adaptation and maladaptation, and the continuum from acute to chronic disabling pain
- the underlying science of pain relief.

## Process/Skill Questions

- What is the IASP definition of pain?
- How can a medical professional get a patient to describe physiological pain?
- What assessment tools can be used to help patients describe physiological pain? How do tools differ for describing mental pain?
- How are pain and levels of pain categorized?

## HOSA Competitive Events (High School)

### Health Science Events

- Knowledge Test: Nutrition
- Knowledge Test: Transcultural Health Care

### Teamwork Events

- Community Awareness
- Creative Problem Solving
- HOSA Bowl

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## Task Number 119

### Describe the diagnostic tools used in developing pain management plans.

#### Definition

Description should include

- pain-related health history and examination
- understanding the role of family in supporting individuals in need of pain management
- practice-appropriate screening tools that include aspects such as mood and function
- the use and limitations of pain scales
- differential diagnosis of pain and its placement on the pain continuum.

Resource: [Promoting Safer and More Effective Pain Management](#), CDC

#### Process/Skill Questions

- What are the Wong-Baker, LEGO, and Hospice assessment tools?
- How do pain assessment tools vary across the life span?
- When completing an assessment, is pain considered subjective or objective?

### HOSA Competitive Events (High School)

#### Health Science Events

- Knowledge Test: Nutrition
- Knowledge Test: Transcultural Health Care

#### Teamwork Events

- Community Awareness
- Creative Problem Solving
- HOSA Bowl

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## Task Number 120

### Describe pain treatment options available to various populations of patients.

#### Definition

Description should include

- special populations in pain management, such as palliative/end-of-life care patients, patients with cancer, pediatric patients, and geriatric populations
- non-pharmacologic treatment of pain, including active care and self-care, evidence- and non-evidence-based approaches, and multimodal pain management
- non-opioid pharmacologic management of pain
- the challenges in discussing the psychological aspects of pain and the role of the central nervous system
- adverse drug event prevention for all pain medications
- the roles in an interdisciplinary pain management team

- the significance of issues such as anxiety, depression, and sleep deprivation in pain management
- the placebo effect
- goals and expectations in the treatment of pain, based on diagnosis and pain continuum
- when to make a pain referral and to whom.

Resources:

- [CDC Fact Sheet for Prescribing Opioids for Chronic Pain](#)
- [CDC Guidelines for Prescribing Opioids for Chronic Pain](#)

### Process/Skill Questions

- What pain management resources are available for special populations?
- What are alternative forms of pain management?
- What role does the mind play in pain management?

### HOSA Competitive Events (High School)

#### Health Science Events

- Knowledge Test: Nutrition
- Knowledge Test: Transcultural Health Care

#### Teamwork Events

- Community Awareness
- Creative Problem Solving
- HOSA Bowl

## Task Number 121

### Describe the effects of opioid dependency on the human body systems.

#### Definition

Description should include the short- and long-term effects of opioids on the following:

- Nervous system
- Respiratory system
- Circulatory system
- Digestive system
- Skeletal system

Resource: [Drugs and Your Body](#), Scholastic

### Process/Skill Questions

- How does the misuse of opioids affect nutrition and weight loss?
- How might opioid misuse be evident in a person's vital signs?
- How do opioids affect the brain as the control center for homeostasis?

### HOSA Competitive Events (High School)

#### Health Science Events

- Medical Spelling



- Medical Terminology

#### **Teamwork Events**

- HOSA Bowl
- 

## **Task Number 122**

### **Explain the mechanism and physical effects of opioids on the human body.**

#### **Definition**

Explanation should include the following:

- Mechanism of action and metabolism of opioids
- Development of tolerance, dependence, and addiction
- Health consequences of drug misuse
  - HIV, hepatitis, and other infectious diseases
  - Cancer
  - Cardiovascular effects
  - Respiratory effects
  - Gastrointestinal effects
  - Musculoskeletal effects
  - Kidney damage
  - Liver damage
  - Neurological effects
  - Hormonal effects
  - Prenatal effects
  - Other health effects
  - Mental health effects
  - Death
- Withdrawal
  - Causes
  - Timeframe (i.e., peaks of withdrawal symptoms)
  - Physical signs (e.g., nausea, diarrhea, vomiting, cold flashes)

#### **Process/Skill Questions**

- What are the short- and long-term effects of withdrawal dependence symptoms?
- How long can the human body function while exhibiting the symptoms of withdrawal?
- What are other medical conditions that may arise because of the symptoms of physical dependence?

### **HOSA Competitive Events (High School)**

#### **Health Science Events**

- Medical Spelling
- Medical Terminology

#### **Teamwork Events**

- HOSA Bowl
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## Task Number 123

**Explain the use of opioids in practice settings, the role of opioids in pain management, and risk factors associated with the use of the medication.**

### Definition

Explanation should include

- appropriate use of different opioids in various practice settings
- the interactions, risks, and intolerance of prescription opioids
- the role and effectiveness of opioids in acute, sub-acute, and chronic pain
- a reassessment of opioid use based on stage of pain
- contemporary treatment guidelines, best practices, health policies, and government regulations related to opioid use
- use of opioids in pain management of patients with substance abuse disorders, in recovery, and in palliative/end-of-life care.

### Process/Skill Questions

- When should risk factors regarding opioids be reviewed with the patient?
- What are the options when treating patients with a history of substance abuse?
- What government regulations and policies are in place to improve the safe administration of opioids?

### HOSA Competitive Events (High School)

#### Health Science Events

- Medical Spelling
- Medical Terminology
- Knowledge Test: Pharmacology

#### Teamwork Events

- Creative Problem Solving
- HOSA Bowl

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## Task Number 124

**Describe the withdrawal and tapering side effects of opioid use.**

### Definition

Description should include

- characteristics of acute and protracted withdrawal from opioid dependence or addiction
- tapering
- pain contracts or agreements.

### Process/Skill Questions

- What are the stages of withdrawal in opioid abuse transition?
- What medications might be needed in the withdrawal stage?

- What information should be included in the pain management contract?

## **HOSA Competitive Events (High School)**

### **Health Science Events**

- Knowledge Test: Pharmacology

### **Health Professions Events**

- Clinical Nursing
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## **Task Number 125**

### **Describe storage and disposal options for opioids.**

#### **Definition**

Description should include

- medicine take-back options (e.g., [National Drug Take Back Day](#))
- disposal in the household trash and flushing certain potentially dangerous medicines down the toilet.

Resources:

- [Disposal of Unused Medicines: What You Should Know](#), Food and Drug Administration (FDA)
- [Prescription Drug Abuse and Tips for Proper Disposal](#), Office of the Attorney General of Virginia

#### **Process/Skill Questions**

- How should medications be stored in the house?
- What is National Prescription Drug Take Back Initiative?
- What is the *black box*?

## **HOSA Competitive Events (High School)**

### **Health Science Events**

- Knowledge Test: Pharmacology

### **Health Professions Events**

- Clinical Nursing
- 

## **Task Number 126**

### **Explain community resources for education about opioid use.**

#### **Definition**

Explanation should include key components of and resources for patient education in the use of opioids, including

- risks
- benefits
- side effects
- tolerance
- signs of sedation or overdose
- naloxone, including its storage and disposal.

### **Process/Skill Questions**

- What resources for opioid education are available locally, statewide, and nationally?
- Where should the patient first be informed about the resources available?
- How does social media aid in patient education on opioid addiction?

### **HOSA Competitive Events (High School)**

#### **Health Science Events**

- Knowledge Test: Pharmacology

#### **Health Professions Events**

- Clinical Nursing
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## **Working with Patients and Caregivers**

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### **Task Number 127**

### **Describe key communication topics involving opioids for patients.**

#### **Definition**

Description should include

- benefits and risks of opioids
- opioid risk screening (i.e., taking a social, medical, and financial history)
- risk mitigation (e.g., naloxone, safe storage, pain contracts)
- medication tapers and/or discontinuation of therapy.

### **Process/Skill Questions**

- What are the benefits of using opioids in medicine?
- What is the relationship between demographics and risk of opioid addiction?
- How does culture influence risk factors in opioid abuse?

### **HOSA Competitive Events (High School)**

#### **Health Science Events**

- Medical Spelling
- Medical Terminology

## Health Professions Events

- Clinical Nursing

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## Task Number 128

### Describe communication topics for caregivers and family members.

#### Definition

Description should include

- basic knowledge about opioids
- signs of addiction
- treatment options for addiction
- naloxone training for caregivers
- legal issues related to misuse.

#### Process/Skill Questions

- What rights do caregivers have in regard to medical information of the abuser?
- What legal steps might the caregiver or family have to take for treatment?
- Where can the caregiver or family members receive naloxone training? Are children of opioid abusers eligible for training?

### HOSA Competitive Events (High School)

#### Health Science Events

- Medical Spelling
- Medical Terminology

#### Health Professions Events

- Clinical Nursing

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## SOL Correlation by Task

39	Trace key developments of dentistry from early civilizations to the present, including educational and professional developments in America.	English: 11.5, 11.8  History: WHI 5, WHII 4
40	List the members of a dental team and the characteristics, educational requirements, and responsibilities of each member.	English: 11.5, 11.6
41	Describe the roles of professional dental organizations.	English: 11.5, 11.8

		History: Govt 15, 16
42	Examine ethical and legal issues related to the practice of dentistry.	English: 11.5  History: Govt 7, 8, 9, 15, 16
43	Explain the ADAA Principles of Ethics and Code of Professional Conduct.	English: 11.5  History: Govt 7, 8, 9, 15, 16
44	Describe the role of the Virginia Dental Practice Act as it relates to the practice of dentistry.	English: 11.5, 11.8  History: Govt 7, 8, 9, 15, 16
45	Explain confidentiality and its connection to the Health Insurance Portability and Accountability Act (HIPAA).	English: 11.3, 11.5, 11.8  History: Govt 7, 8, 9, 15, 16
46	Identify anatomical reference systems.	English: 11.5  Science: BIO.4
47	Identify the bones and major anatomic landmarks of the skull.	English: 11.5  Science: BIO.4
48	Describe the bone structure of cartilage, compact bone, spongy bone, and periosteum.	English: 11.3, 11.5  Science: BIO.4
49	Describe the gliding hinge action of the temporomandibular joint (TMJ).	English: 11.3, 11.5
50	Identify the major muscles of mastication and facial expressions, the extrinsic muscles of the tongue, and the major posterior muscles of the mouth, including the floor of the mouth.	English: 11.5  Science: BIO.4
51	Identify the major veins, arteries, and nerves of the face and mouth.	English: 11.5  History: WHII 4  Science: BIO.4
52	Identify the major anatomic landmarks of the oral cavity.	English: 11.5  Science: BIO.4
53	Identify the salivary glands and their ducts.	English: 11.5  Science: BIO.4
54	Explain the anatomy and physiology of body systems and their relationship to the face and neck.	English: 11.5  History: WHII 4  Science: BIO.4
55	Explain oral embryology and the histology of dentition.	English: 11.5  Science: BIO.4
56	Explain developmental disturbances that may occur during tooth development.	English: 11.5  Science: BIO.4
57	Identify the eruption order for the primary and permanent dentition.	English: 11.5

		Science: BIO.4
58	Explain the specialized functions and classifications of the four types of teeth.	English: 11.3, 11.5 Science: BIO.4
59	Describe the anatomical features of teeth.	English: 11.5 Science: BIO.4
60	Identify tooth surfaces.	English: 11.5 Science: BIO.4
61	Identify teeth, using the Universal, Federation Dentaire Internationale (FDI), and Palmer Numbering Systems.	English: 11.5
62	Demonstrate compliance with the privacy policy of HIPAA when recording patient information.	English: 11.5, 11.8 History: WHII 4
63	Manage personal information about a patient.	English: 11.6, 11.7
64	Update medical and dental history.	English: 11.5, 11.6, 11.7
65	Explain the meaning and importance of informed consent.	English: 11.5
66	Identify the standards and criteria for patient-record entries.	English: 11.5
67	Obtain and record vital signs and observations.	
68	Document initial findings, including recommended treatment.	English: 11.5, 11.6, 11.7
69	Record treatment rendered.	
70	Obtain intraoral and extraoral images.	
71	Describe how dental decay occurs.	English: 11.5
72	Identify risk factors for caries.	English: 11.5
73	Identify the methods of detecting decay.	English: 11.5
74	Describe systemic conditions associated with periodontal disease.	English: 11.1, 11.5 Science: BIO.4
75	Identify risk factors for periodontal disease.	English: 11.5
76	Demonstrate the components of preventive dentistry.	English: 11.1
77	Describe the roles of systemic and topical fluorides.	English: 11.5
78	Identify key nutrients.	English: 11.5
79	Establish a diet for dental health maintenance.	English: 11.1
80	Describe the major groups of microorganisms that cause disease.	English: 11.5, 11.6, 11.7 Science: BIO.4
81	Describe the types of diseases caused by microorganisms.	English: 11.5 Science: BIO.4
82	Describe ways diseases are transmitted in the dental treatment environment.	English: 11.3, 11.5 Science: BIO.4
83	Explain maintenance of aseptic chain in the dental treatment environment.	English: 11.5, 11.6 History: Govt 9, 15
84	Demonstrate compliance with governmental regulations and guidelines.	English: 11.3, 11.5, 11.8 History: Govt

		9, 15
85	Disinfect and/or sterilize dental instruments.	
86	Demonstrate maintenance and sterilization of dental handpieces.	English: 11.5, 11.8
87	Demonstrate maintenance of the evacuation system.	
88	Demonstrate maintenance of dental disinfecting/sterilizing equipment, including the renewal of solutions.	
89	Explain maintenance of the dental unit waterline (DUWL).	English: 11.5, 11.6, 11.7
90	Identify methods of protection against exposure to hazardous chemicals.	English: 11.5
91	Comply with the OSHA Hazard Communications Standard.	English: 11.5, 11, 6, 11.7, 11.8  Science: CH.1
92	Describe the classification of waste.	English: 11.5
93	Demonstrate compliance with governmental regulations regarding the management of hazardous chemicals and waste.	Science: CH.1
94	Explain pharmacology terms.	English: 11.5
95	Explain the types of anesthesia used in dentistry.	English: 11.5
96	Identify special-needs and medically-compromised patients.	English: 11.5
97	Describe the management and treatment considerations of special-needs and medically-compromised patients as they relate to dental procedures.	English: 11.5
98	Determine fearful patients' physical and emotional needs in order to alleviate anxiety.	English: 11.5
99	Greet patients.	
100	Manage records.	English: 11.5, 11.6, 11.7
101	Seat and position patients.	
102	Demonstrate ergonomics in the dental setting.	English: 11.5
103	Demonstrate maintenance of a clear field.	
104	Perform oral evacuation.	
105	Prepare dental dam equipment and materials for use.	
106	Prepare basic operatory setup.	
107	Pass and retrieve instruments at chairside.	
108	Perform a preventive dentistry treatment.	English: 11.1
109	Dismiss patients.	English: 11.1  History: Govt 8, 9, 15
110	Describe the history and current state of the opioid crisis in the United States.	English: 11.5, 12.5
111	Describe the history and current state of the opioid crisis in Virginia.	English: 11.5, 11.8, 12.5, 12.8
112	Define the pharmacological components and common uses of opioids.	English: 11.3, 11.8, 12.3, 12.8
113	Examine the science of addiction.	English: 11.5, 12.5
114	Explain prevention and early intervention strategies.	English: 11.5, 11.8, 12.5, 12.8
115	Identify addiction and its behavioral elements, as defined by the Diagnostic and Statistical Manual of Mental Disorders (DSM-5).	English: 11.5, 12.5
116	Describe the treatment models of addiction therapy.	English: 11.5, 12.5
117	Describe the medication management antidote used to prevent fatal opioid overdoses.	English: 11.5, 11.8, 12.5, 12.8
118	Explain the science of physiological and mental pain.	English: 11.3, 11.5, 12.3, 12.5
119	Describe the diagnostic tools used in developing pain management	English: 11.5,



	plans.	12.5
120	Describe pain treatment options available to various populations of patients.	English: 11.5, 11.8, 12.5, 12.8
121	Describe the effects of opioid dependency on the human body systems.	English: 11.5, 12.5
122	Explain the mechanism and physical effects of opioids on the human body.	English: 11.5, 12.5
123	Explain the use of opioids in practice settings, the role of opioids in pain management, and risk factors associated with the use of the medication.	English: 11.5, 12.5
124	Describe the withdrawal and tapering side effects of opioid use.	English: 11.5, 12.5
125	Describe storage and disposal options for opioids.	English: 11.5, 11.8, 12.5, 12.8
126	Explain community resources for education about opioid use.	English: 11.5, 12.5
127	Describe key communication topics involving opioids for patients.	English: 11.5, 12.5
128	Describe communication topics for caregivers and family members.	English: 11.5, 12.5

# Appendix: Credentials, Course Sequences, and Career Cluster Information

Industry Credentials (Only apply to 36-week courses)

- College and Work Readiness Assessment (CWRA+)
- Dental Support Technician Certification (DSTC) Examination
- National Career Readiness Certificate Assessment
- Workplace Readiness Skills for the Commonwealth Examination

Concentration sequences: *A combination of this course and those below, equivalent to two 36-week courses, is a concentration sequence. Students wishing to complete a specialization may take additional courses based on their career pathways. A program completer is a student who has met the requirements for a CTE concentration sequence and all other requirements for high school graduation or an approved alternative education program.*

- Dental Careers II (8329/36 weeks, 280 hours)
- Health Assisting Careers (8331/36 weeks)
- Introduction to Health and Medical Sciences (8302/36 weeks)

Career Cluster: Health Science	
Pathway	Occupations
Diagnostics Services	Radiologic Technologist, Radiographer
Support Services	Records Processing Assistant
Therapeutic Services	Dental Assistant Dentist Medical Assistant Surgical Technologist Veterinary Assistant