

Respiratory Therapy I

8372 36 weeks

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Course Description

Suggested Grade Level: 11 or 12

Students acquire basic knowledge of the respiratory therapy field, with a focus on the role and importance of respiratory therapy in patient care. Instruction includes an introduction to the

healthcare field, as well as basic knowledge of human anatomy, physiology, and disease processes; equipment; safety; essentials of patient care; and legal, ethical, and professional responsibilities. The course also emphasizes critical thinking skills and career opportunities in the field of respiratory therapy.

Mastery of the material in this course would provide students with a strong background should they wish to pursue certification in areas such as first aid, CPR, or AED.

Task Essentials Table

- Tasks/competencies designated 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.

8372	Tasks/Competencies
Exploring the World of Respiratory Therapy	
(+)	Explain the roles and responsibilities of a respiratory therapist.
(+)	Describe the potential career paths for respiratory therapists.
(+)	Identify the types of healthcare facilities that may employ respiratory therapists.
(+)	List the functional requirements for employment as a respiratory therapist.
(+)	Describe professional organizations and credentialing in the field of respiratory therapy.
(+)	Trace the historical development of respiratory therapy, including the contributions of important figures in the field.
(+)	Identify the various modalities in respiratory care.
Providing Basic Patient Care	
(+)	Complete a nationally recognized certification for first aid.
(+)	Measure vital signs.
Evaluating Baseline Data	
(+)	Describe history taking.
(+)	List data in the patient record that pertains to a respiratory therapist's assessment of a patient.
(+)	Assess a patient's overall cardiopulmonary status by inspection.
(+)	Assess a patient's overall cardiopulmonary status by palpation.
(+)	Assess a patient's overall cardiopulmonary status by percussion.
(+)	Assess a patient's overall cardiopulmonary status by auscultation.
Understanding Respiratory Therapy Equipment and Safety	
(+)	Identify basic respiratory therapy equipment and the function of each.
(+)	Explain quality assurance and its importance in respiratory therapy.
Developing Effective Communication and Patient Care Skills	
(+)	Adapt communication and patient skill techniques for diverse populations.
(+)	Describe the essentials for patient/respiratory therapist interaction.
(+)	Describe the essentials for interactions among the multidisciplinary healthcare team.
(+)	Perform patient-related and administrative documentation.

8372	Tasks/Competencies
+	Demonstrate Standard Precautions and transmission-based precautions as prescribed by health and regulatory agencies.
+	Demonstrate proper body mechanics and patient transfer.
Using Medical Terminology	
+	Explain commonly used prefixes, roots, and suffixes in medical terminology.
+	Explain medical terminology commonly used in respiratory therapy.
+	Use medical terminology in communication with medical professionals.
Understanding Human Anatomy and Physiology	
+	Identify the basic structural levels of body organization, anatomical structure, and body cavities.
+	Identify chemical components of the body.
+	Identify structures and functions of the cell.
+	Identify structures and functions of tissues, membranes, and glands.
+	Identify structures and functions of the integumentary system.
+	Identify structures and functions of the skeletal system.
+	Identify structures and functions of the muscular system.
+	Identify structures and functions of the cardiovascular system.
+	Identify structures and functions of the respiratory system.
+	Identify structures and functions of the nervous system.
+	Identify structures and functions of the urinary system.
+	Identify structures and functions of the male and female reproductive systems.
+	Identify structures and functions of the lymphatic system, including the concept of immunity.
+	Identify structures and functions of the gastrointestinal system.
+	Identify structures and functions of the endocrine system.
+	Identify structures and functions of the sensory system.
Applying Critical Thinking and Problem-Solving in the Healthcare Setting	
+	Identify the qualities of a critical thinker.
+	Demonstrate basic critical thinking skills.
+	Apply critical-thinking skills to healthcare situations, with emphasis on respiratory therapy.
+	Identify the steps in the problem-solving process.
+	Apply the problem-solving process to the healthcare setting, with emphasis on respiratory therapy.
Applying Legal, Ethical, and Professional Responsibilities to Clinical Practice	
+	Describe the organization and operation of a respiratory therapy department.
+	Explain the importance of HIPAA.
+	Explain legalities governing respiratory therapy practice.
+	Explain ethical issues related to respiratory therapy practice.
+	Describe the influence of various government agencies on the delivery of health care.
+	Research career opportunities and the education, credentials, and responsibilities associated with each.

Legend: + Essential ○ Non-essential ⊖ Omitted

Curriculum Framework

Exploring the World of Respiratory Therapy

Task Number 39

Explain the roles and responsibilities of a respiratory therapist.

Definition

Explanation should include

- the role of a respiratory therapist (diagnosing lung and breathing disorders and recommending treatment in consultation with a healthcare team, managing ventilation for patients who cannot breathe on their own)
- the responsibilities of a respiratory therapist (interviewing patients to determine the appropriate treatment; responding to urgent calls for care; analyzing breath, tissue, and blood samples for levels of oxygen and other gases).

Process/Skill Questions

- What is the difference between a respiratory therapist and a nurse?
- Where do respiratory therapists work inside the hospital?
- What are considered alternate locations where respiratory therapists can work?

HOSA Competitive Events (High School)

Teamwork Events

- Health Career Display
-

Task Number 40

Describe the potential career paths for respiratory therapists.

Definition

Description should include potential career paths for respiratory therapists who pursue further education or training.

Many Web sites offer career exploration resources, including the Virginia Department of Education's [Career Planning Guide](#).

Process/Skill Questions

- What is the projected growth for respiratory therapists?
- What education is required for a career as a respiratory therapist?
- Where can a respiratory therapist work?

HOSA Competitive Events (High School)

Teamwork Events

- Health Career Display
-

Task Number 41

Identify the types of healthcare facilities that may employ respiratory therapists.

Definition

Identification should include

- private practice under the supervision of a physician
- private or public hospitals
- outpatient care facilities (e.g., urgent care, community clinics)
- military hospitals
- nonprofit medical services
- home health services
- rehabilitation centers
- assisted living facilities
- sleep laboratories.

Process/Skill Questions

- What are some of the different responsibilities of a respiratory therapist in the different healthcare settings?
- Do you need any additional credentials to work in private practice with a physician?
- Do you need any additional credentials to work in a sleep lab?
- Do you need any additional credentials to work as a rehabilitation therapist?

HOSA Competitive Events (High School)

Leadership Events

- Medical Photography
-

Task Number 42

List the functional requirements for employment as a respiratory therapist.

Definition

List should include:

- Sufficient eyesight (and color vision) to observe patients, perform and visualize patient assessments, manipulate equipment, read patient records, graphs, and test results.
- Sufficient hearing to communicate with the patient and with healthcare team members, monitor patients using electronic equipment, and hear sounds during the operation of equipment.
- Satisfactory English speaking, reading and writing skills.
- Sufficient gross and fine-motor coordination to be able to manipulate equipment, lift, stoop, or bend in the delivery of safe patient care.
- Satisfactory physical strength and endurance to be standing for extended periods and to move heavy equipment, patients, and supplies.
- Satisfactory intellectual, emotional, and psychological health and functioning to ensure patient safety and to exercise independent judgment and discretion in performing assigned tasks.

Process/Skill Questions

- Why does a respiratory therapist have to have these functional requirements?
- What would happen if a respiratory therapist had one of these problems?
- Why is it important for a respiratory therapist to have good vision?

- Why is it important for respiratory therapists to have sufficient hearing?

HOSA Competitive Events (High School)

Leadership Events

- Extemporaneous Writing
 - Job-Seeking Skills
 - Prepared Speaking
 - Speaking Skills
-

Task Number 43

Describe professional organizations and credentialing in the field of respiratory therapy.

Definition

Description should include

- American Thoracic Society
- American Association for Respiratory Care
- National Board for Respiratory Care
- Commission on Accreditation for Respiratory Care
- Virginia Department of Health Professions
- Virginia Department of Health Advisory
- Virginia Society for Respiratory Care
- National Asthma Educators Certification Board

Process/Skill Questions

- What is the benefit of membership and involvement in state and national professional organizations?
- How would you distinguish among certification, accreditation, registration, and licensure? What role(s) does each play in the field of respiratory therapy?
- What are the consequences of working as a respiratory therapist without the appropriate credentials?

Task Number 44

Trace the historical development of respiratory therapy, including the contributions of important figures in the field.

Definition

Tracing the historical development and important figures in the history of respiratory care should include

- evolution of the field, from inhalation therapy to respiratory therapy
- describing the evolution of standards and practices
- listing the pioneers in respiratory care (e.g., Julius Comroe, John B. West, Barry Shapiro, Ronald Harrison, Thomas Petty, Neil McIntyre, Robert Kaczmerek, Donald Egan, Chevalier Jackson, John Dalton, Joseph Priestley, Carl Paul von Linde) and describing the contributions of each to the field.

Process/Skill Questions

- What contribution did John Dalton make in the field of respiratory care?
- What is the significance of Donald Egan's work in the field of respiratory care?
- Who are the predecessors of the current respiratory therapist?
- Why is it important to know the history of respiratory therapy?

HOSA Competitive Events (High School)

Teamwork Events

- HOSA Bowl
-

Task Number 45

Identify the various modalities in respiratory care.

Definition

Identification should include the following modalities:

- Humidity
- Oxygen therapy
- Bronchial hygiene therapy
- Bronchodilator therapy
- CPR
- Airway management

- Rapid response team
- Hyperinflation therapy
- Ventilator management

Process/Skill Questions

- What is the benefit of adding humidity to oxygen therapy?
- Why do patients need oxygen?
- When do patients need oxygen?
- What is a ventilator?

HOSA Competitive Events (High School)

Health Science Events

- Medical Spelling
 - Medical Terminology
-

Providing Basic Patient Care

Task Number 46

Complete a nationally recognized certification for first aid.

Definition

The completion process should include successful fulfillment of the course requirements of a nationally recognized first-aid certifying organization, such as the American Heart Association.

Process/Skill Questions

- Why would imaging professionals need first-aid training?
- Why is the Good Samaritan Act important for those who perform first aid?
- How do you assess a patient's medical condition to determine if first aid is required?

HOSA Competitive Events (High School)

Emergency Preparedness Events

- CPR/First Aid

- Life Support Skills
-

Task Number 47

Measure vital signs.

Definition

Measurement requires correct use of equipment and the ability to read results for vital signs including pulse oximetry, thermometer, blood pressure, pulse, and respiration.

Process/Skill Questions

- Why would a respiratory therapist need to take vital signs?
- When are vital signs considered abnormal?
- What should be the response of the respiratory therapist in the case of abnormal vital signs?

HOSA Competitive Events (High School)

Health Science Events

- Medical Terminology
 - Medical Math
-

Evaluating Baseline Data

Task Number 48

Describe history taking.

Definition

Description should include

- explaining the purpose (to collect information from a patient, examine a patient, and understand a patient's problems)

- listing the components
 - present illness
 - admission notes
 - respiratory care orders
 - medication history
 - progress notes
 - diagnoses
 - DNR status
 - previous patient education.

Process/Skill Questions

- Why is gathering the history of a patient important?
- What skills do you need to do a good patient interview?
- What are a few key questions to ask patients during the interview?

HOSA Competitive Events (High School)

Health Science Events

- Medical Spelling
- Medical Terminology

Task Number 49

List data in the patient record that pertains to a respiratory therapist's assessment of a patient.

Definition

List should include

- environmental factors (e.g., smoking, workplace exposure, irritants)
- laboratory data (e.g., CBC, electrolytes)
- pulmonary function tests
- blood gas results
- imaging studies (e.g., radiograph, CT, MRI)
- monitoring data
- cardiac monitoring
- maternal and perinatal/neonatal history and data.

Process/Skill Questions

- What four items in the patient record pertain to a respiratory therapist's assessment?
- Why is it important to ask questions about the pulmonary patient's environment?
- Why do practitioners need to gather information from various parts of the chart?

HOSA Competitive Events (High School)

Health Science Events

- Medical Spelling
 - Medical Terminology
-

Task Number 50

Assess a patient's overall cardiopulmonary status by inspection.

Definition

Assessment should be made in order to determine

- general appearance (e.g., venous distention, edema, chest wall movement, clubbing, cyanosis)
- airway function (e.g., macroglossia, neck range of motion)
- cough, sputum amount, character.

Process/Skill Questions

- When do you begin the patient inspection?
- How do you know the patient is in distress?
- Why is it important to ask about a patient's sputum?

HOSA Competitive Events (High School)

Health Science Events

- Medical Terminology
 - Knowledge Test: Human Growth and Development
 - Knowledge Test: Pathophysiology
-

Task Number 51

Assess a patient's overall cardiopulmonary status by palpation.

Definition

Assessment should be made in order to determine

- pulse, rhythm, force
- asymmetrical chest movements
- tactile fremitus
- crepitus
- tenderness
- secretions in the airway
- tracheal deviation.

Process/Skill Questions

- Why is a patient assessment done?
- Who does the patient assessment?
- What can you see when you do a visual patient assessment?

HOSA Competitive Events (High School)

Health Science Events

- Medical Terminology
- Knowledge Test: Human Growth and Development
- Knowledge Test: Pathophysiology

Task Number 52

Assess a patient's overall cardiopulmonary status by percussion.

Definition

Assessment should be made to the anterior and posterior chest to determine audible pathophysiological changes in the lungs.

Process/Skill Questions

- Describe the technique for doing percussions for assessment?
- What is proper hand placement for performing percussions?
- What are sounds you can hear with normal findings?
- What are the sounds you would hear with abnormal findings?

HOSA Competitive Events (High School)

Health Science Events

- Medical Terminology
 - Knowledge Test: Human Growth and Development
 - Knowledge Test: Pathophysiology
-

Task Number 53

Assess a patient's overall cardiopulmonary status by auscultation.

Definition

Assessment should be made in order to determine

- breath sounds
- heart sounds and rhythm
- blood pressure.

Process/Skill Questions

- What are breath sounds?
- How should a patient be positioned during auscultation?
- How would you describe normal breath sounds through auscultation?

HOSA Competitive Events (High School)

Health Science Events

- Medical Terminology
 - Knowledge Test: Human Growth and Development
 - Knowledge Test: Pathophysiology
-

Understanding Respiratory Therapy Equipment and Safety

Task Number 54

Identify basic respiratory therapy equipment and the function of each.

Definition

Identification should include

- oxygen administration devices
- CPAP devices
- humidifiers
- nebulizers
- resuscitation devices (e.g., bag-valve mask)
- ventilators
- artificial airways
- suctioning devices
- oximetry monitoring devices
- metered dose inhalers
- dry powder inhalers
- bedside screening spirometers
- CO, He, O₂ and specialty gas inhalers
- gas delivery, metering, and clinical analyzing devices
- point-of-care analyzers (e.g., blood gas, electrolytes)
- patient breathing circuits
- environmental devices (e.g., aerosol tents, oxygen hoods)
- manometers
- respirometers
- ECG monitors/machines (12-lead)
- vacuum systems
- bronchoscopes.

Process/Skill Questions

- What are three devices used to deliver inhaled medications?
- What equipment is used to measure oxygen in the blood?
- What device is used to look inside a patient's airways and lungs?

HOSA Competitive Events (High School)

Health Science Events

- Medical Terminology

Health Professions Events

- Clinical Specialty

Teamwork Events

- HOSA Bowl
-

Task Number 55

Explain quality assurance and its importance in respiratory therapy.

Definition

Explanation should include

- a definition of quality assurance (QA)
- an explanation of the significance of a QA program from the perspectives of patient care, economics, and staff development
- a description of the roles of the respiratory therapist in a QA program
- an explanation of the role of the Joint Commission.

Process/Skill Questions

- How does having a quality assurance program affect the respiratory care department?
- Why are quality standards important within the respiratory care department?
- What is the relationship between recordkeeping and quality assurance?

HOSA Competitive Events (High School)

Teamwork Events

- Creative Problem Solving
-

Developing Effective Communication and Patient Care Skills

Task Number 56

Adapt communication and patient skill techniques for diverse populations.

Definition

Adaptation of communication and patient skill techniques should include sensitivity to and adaptation to the differences among diverse populations, including special needs, age, culture, religion, and gender.

Process/Skill Questions

- Why is it necessary to be sensitive to cultural differences among patients? Gender differences?
- How can communication be adapted to various patient age groups?
- Why is it necessary to assess, adjust, and execute differently with each patient?

HOSA Competitive Events (High School)

Health Science Events

- Knowledge Test: Transcultural Health Care
-

Task Number 57

Describe the essentials for patient/respiratory therapist interaction.

Definition

Description should incorporate concepts and techniques related to

- approaching the patient

- using empathic listening (i.e., giving undivided attention, nonjudgmental listening, being quiet, assuring understanding by asking clarifying questions or restating what was heard)
- identifying the patient by two verifications (e.g., birth date, spelling of last name)
- addressing and treating the patient appropriately and respectfully
- explaining a procedure to the patient
- providing patient education about the need for and outcome of a procedure
- applying effective verbal and nonverbal communication
- initiating rapid response of the designated healthcare team.

Process/Skill Questions

- Why is it vital to have two forms of identification when verifying patients? Why do patients sometimes misidentify themselves?
- Why is the initial greeting a vital part of patient care?
- What is the difference between the Rapid Response Team and the Code Blue Team?

HOSA Competitive Events (High School)

Health Science Events

- Knowledge Test: Transcultural Health Care

Task Number 58

Describe the essentials for interactions among the multidisciplinary healthcare team.

Definition

Description should include the essentials for interaction during standardized patient handover (i.e., situation-background-assessment-recommendation [SBAR]) and report (e.g., patient condition changes and status), including emergency situations, among the multidisciplinary healthcare team. The healthcare team typically may include

- patients and their families
- physicians
- nurses
- pharmacists
- dietitians
- radiologic technologists
- speech therapists
- physical therapists

- occupational therapists
- case managers
- patient advocates.

Process/Skill Questions

- Why is effective communication essential among members of the healthcare team?
- Why is it vital to communicate patient condition and status when turning a patient over to another modality, area, or shift?
- What principle overrides routine interaction with the healthcare team? Why?

HOSA Competitive Events (High School)

Health Science Events

- Knowledge Test: Medical Law and Ethics

Emergency Preparedness Events

- MRC Partnership

Task Number 59

Perform patient-related and administrative documentation.

Definition

Performance should include a demonstration and explanation that reflect a working understanding of the following:

- Medical writings are legal documents.
- All documentation should be accurate, complete, legible, timely, and recorded/stored according to the policies of the healthcare facility.
- Patient-related documentation may include medication, orders, progress notes, and patient history. Administrative documentation may include computerized integrated information systems and a picture archiving communication system (PACS).

Process/Skill Questions

- How does the principle of “the right procedure/right patient/right exam every time” influence medical documentation?
- Under what circumstances should a respiratory therapist question a patient order?
- What are the differences between computerized information systems and PACS?

HOSA Competitive Events (High School)

Health Science Events

- Knowledge Test: Medical Law and Ethics
-

Task Number 60

Demonstrate Standard Precautions and transmission-based precautions as prescribed by health and regulatory agencies.

Definition

Demonstration should include identification of the primary roles of the Occupational Safety and Health Administration (OSHA), the Centers for Disease Control and Prevention (CDC), and the Joint Commission regarding safety and health precautions for patients and employees in the healthcare environment.

Demonstration of Standard Precautions should include

- the use of protective barriers such as gloves, gowns, aprons, masks, or protective eyewear
- the implementation of precautions to prevent injuries caused by needles, scalpels, and other sharp instruments or devices.

Demonstration of transmission-based precautions should include the following precautions:

- To prevent airborne transmission
 - special air handling and ventilation systems
 - particulate respirators
- To prevent droplet transmission
 - single-patient room or curtained space for patient
 - mask for patient during transport
 - change of mask and other protective attire and performance of hand hygiene between contact with infected patient and contact with other patients
- To prevent contact transmission
 - hand hygiene
 - donning of personal protective equipment (PPE) before room entry and discarding before leaving the patient's room
 - cleaning and disinfection of patient-care devices and instruments and other sources of indirect transmission after patient contact.

Process/Skill Questions

- What is the difference between standard precautions and universal precautions?
- What is the role of the Centers for Disease Control and Prevention in protecting healthcare personnel and patients?
- What are examples of airborne infections? Of infections transmitted by droplets? How do the transmission precautions differ for these two types of infections?
- What is the difference between direct and indirect contact transmission of infection? What are examples of each? What precautions are necessary for each?

HOSA Competitive Events (High School)

Health Science Events

- Knowledge Test: Pathophysiology

Teamwork Events

- Health Education

Emergency Preparedness Events

- Epidemiology
- Public Health

Task Number 61

Demonstrate proper body mechanics and patient transfer.

Definition

Demonstration should reflect proper body mechanics in the handling of patients and equipment and in patient transfer (e.g., wheelchair to table, stretcher to table), to include the following back protection precautions:

- Keep feet shoulder-width apart.
- Keep knees properly bent.
- Use appropriate body mechanics per procedure.
- Use appropriate equipment (e.g., specialty lifts, draw sheets, transfer boards/sliders).
- Seek help when necessary.

Process/Skill Questions

- What can be the results of improper body mechanics?
- How can the respiratory therapist recognize that the physical task at hand is too much for one person to handle?
- How can the respiratory therapist assess which equipment is best for patient transfer?

HOSA Competitive Events (High School)

Health Science Events

- Medical Terminology
-

Using Medical Terminology

Task Number 62

Explain commonly used prefixes, roots, and suffixes in medical terminology.

Definition

Explanation should include dividing medical terms into prefix, root, and suffix to determine their meanings based on Greek, Latin, and other language origins.

Process/Skill Questions

- What is the difference between the prefixes hyper- and hypo-? What common medical terms illustrate each?
- What is the difference between the suffixes -itis and -algia? What common medical terms illustrate each?
- Why are Greek and Latin prefixes, roots, and suffixes the basis of medical terminology?
- Why is English the international language for health care?

HOSA Competitive Events (High School)

Health Science Events

- Medical Spelling
- Medical Terminology

Task Number 63

Explain medical terminology commonly used in respiratory therapy.

Definition

Explanation should include terminology associated with anatomy, physiology, biomechanics, disease processes, injuries, and respiratory care procedures and equipment.

Process/Skill Questions

- What abbreviations are commonly used in respiratory therapy?
- What acronyms are commonly used in respiratory therapy?
- Why is it essential to keep current with new medical terminology? What resources are available for maintaining current awareness?

HOSA Competitive Events (High School)

Health Science Events

- Medical Spelling
- Medical Terminology

Task Number 64

Use medical terminology in communication with medical professionals.

Definition

Use of medical terminology should be demonstrated in written and oral communication with physicians and allied health professionals.

Written communication should include recording medical history and reading prescriptions and orders, whether in handwritten or electronic format. Oral communication should include face-to-face conversations and telephone conversations.

Process/Skill Questions

- Why should respiratory therapists use medical terminology instead of lay terms when communicating with medical professionals?
- Why should respiratory therapists be careful to use descriptions and not diagnoses when communicating with other medical professionals?
- What are possible consequences of misspelling medical terms?

HOSA Competitive Events (High School)

Health Science Events

- Medical Spelling
- Medical Terminology
- Knowledge Test: Pathophysiology
- Knowledge Test: Medical Law and Ethics

Understanding Human Anatomy and Physiology

Task Number 65

Identify the basic structural levels of body organization, anatomical structure, and body cavities.

Definition

Identification includes

- chemical components
- each body system and its general function
- each major organ and its general function
- location of body cavities.

Process/Skill Questions

- What is the true anatomical position?
- Which organs are located in each body cavity?

- Why is a thorough knowledge of anatomy and physiology important for the respiratory therapist?

HOSA Competitive Events (High School)

Health Science Events

- Medical Spelling
- Medical Terminology

Teamwork Events

- HOSA Bowl
-

Task Number 66

Identify chemical components of the body.

Definition

Identification includes

- structures of an atom and a molecule
- explanation of ionic and covalent bonding
- elements, compounds, and mixtures
- chemical symbols for major electrolytes
- pH scale
- types of organic compounds
- composition and work of enzymes.

Process/Skill Questions

- Why is organic chemistry important in the study of human anatomy?
- What happens to the human body when the pH and electrolytes are out of balance?
- What is the difference between compounds and mixtures within the body? How are both important to body function?

HOSA Competitive Events (High School)

Health Science Events

- Medical Spelling
- Medical Terminology

Teamwork Events

- HOSA Bowl
-

Task Number 67

Identify structures and functions of the cell.

Definition

Identification includes

- composition, location, and function of DNA in the cell
- process of protein synthesis
- relationship among cells, tissues, organs, and systems.

Process/Skill Questions

- What is the relationship between cell shapes and cell functions?
- What are functions of the major organelles?
- How does DNA affect genetics?

HOSA Competitive Events (High School)

Health Science Events

- Medical Spelling
- Medical Terminology

Teamwork Events

- HOSA Bowl
-

Task Number 68

Identify structures and functions of tissues, membranes, and glands.

Definition

Identification includes

- the types of tissues, their locations, and their characteristics
- the types of epithelial tissue
- the types of muscle tissue
- the types of membranes
- the types of glands.

Process/Skill Questions

- What are the three types of muscle tissue? How do they differ in functionality?
- What type of muscle is used in swallowing food?
- What is the difference between mucous and serous membranes?

HOSA Competitive Events (High School)

Health Science Events

- Medical Spelling
- Medical Terminology

Teamwork Events

- HOSA Bowl

Task Number 69

Identify structures and functions of the integumentary system.

Definition

Identification includes

- names and descriptions of the layers of the skin
- functions of the skin
- location and functions of the appendages of the skin.

Process/Skill Questions

- What is the body's first line of defense?
- What are the layers of the skin? How are they similar or different?

- How is the sun harmful to the integumentary system?

HOSA Competitive Events (High School)

Health Science Events

- Medical Spelling
- Medical Terminology

Teamwork Events

- HOSA Bowl
-

Task Number 70

Identify structures and functions of the skeletal system.

Definition

Identification includes

- the two divisions of the skeleton
- types, structure, functions, and formations of bones
- bone marrow, cranial sinuses, cartilage
- the number of vertebrae in each segment of the vertebral column
- difference between the male and female pelvis
- changes in skeleton across the life span
- recognizing characteristics of the most common pathologies and how to compensate technical factors to accommodate.

Process/Skill Questions

- What is the function of the rib cage in respiration?
- What would happen if the human vertebrae were without discs?
- How are joints important in human movement?

HOSA Competitive Events (High School)

Health Science Events

- Medical Spelling
- Medical Terminology
- Knowledge Test: Pathophysiology

Teamwork Events

- HOSA Bowl
-

Task Number 71

Identify structures and functions of the muscular system.

Definition

Identification includes

- basic unit of muscle tissue
- three types of muscle tissue, their characteristics, and their functions
- physiology and types of muscle contractions
- effects of aging on muscles
- recognizing characteristics of the most common pathologies and how to compensate technical factors to accommodate.

Process/Skill Questions

- What is the difference between voluntary and involuntary muscle? Why is each important?
- How are muscles attached to bones?
- What muscles are used in respiration?

HOSA Competitive Events (High School)

Health Science Events

- Medical Spelling
- Medical Terminology
- Knowledge Test: Pathophysiology

Teamwork Events

- HOSA Bowl
-

Task Number 72

Identify structures and functions of the cardiovascular system.

Definition

Identification includes

- types of elements formed in blood
- formation of blood cells
- blood clotting
- compatibility of blood, including the Rh factor
- relationship of the autonomic nervous system and the heart
- types of vessels, structures, and functions
- oxygenated vs. unoxygenated blood
- factors influencing blood flow
- factors affecting pulse rate
- location, structures, and functions of the heart
- circulation of blood
- cardiac cycle
- electrical conduction system
- coronary circulation
- recognizing characteristics of the most common pathologies and how to compensate technical factors to accommodate.

Process/Skill Questions

- What are the purposes of red blood cells? White blood cells? Platelets?
- Where are oxygen and carbon dioxide exchanged in the lungs?
- How does chronic obstructive pulmonary disease affect lung function?

HOSA Competitive Events (High School)

Health Science Events

- Medical Spelling
- Medical Terminology
- Knowledge Test: Pathophysiology

Teamwork Events

- HOSA Bowl

Task Number 73

Identify structures and functions of the respiratory system.

Definition

Identification includes

- the process of pulmonary ventilation
- external and internal respiration
- the structure and function of organs of the respiratory system
- the pathway of gases
- the transportation of oxygen and carbon dioxide in blood
- a comparison of air pressures
- the production of carbonic acid
- recognizing characteristics of the most common pathologies and how to compensate technical factors to accommodate.

Process/Skill Questions

- What is the function of the diaphragm in the breathing process?
- What happens to oxygen when the hemoglobin is low? Why?
- How many alveoli are present in the lungs? How do the alveoli play a major role in emphysema?

HOSA Competitive Events (High School)

Health Science Events

- Medical Spelling
- Medical Terminology
- Knowledge Test: Pathophysiology

Teamwork Events

- HOSA Bowl
-

Task Number 74

Identify structures and functions of the nervous system.

Definition

Identification includes

- the central and peripheral systems
- neurons
- nerve impulses
- the role of myelin
- the role of the spinal cord
- the role of the brain
- recognizing characteristics of the most common pathologies and how to compensate technical factors to accommodate.

Process/Skill Questions

- Can the central nervous system cells regenerate after being damaged? Why is this important?
- Where are the respiratory centers located in the brain? How is this important in health care?
- What is meningitis? What test would be used to diagnose it?

HOSA Competitive Events (High School)

Health Science Events

- Medical Spelling
- Medical Terminology
- Knowledge Test: Pathophysiology

Teamwork Events

- HOSA Bowl

Task Number 75

Identify structures and functions of the urinary system.

Definition

Identification includes

- related organs
- male and female urinary systems
- the role of the kidneys
- constituents of urine

- recognizing characteristics of the most common pathologies and how to compensate technical factors to accommodate.

Process/Skill Questions

- What are nephrons? How many nephrons does each kidney contain?
- What makes up urine?
- What lab test describes kidney function? How is this test important in diagnosis?

HOSA Competitive Events (High School)

Health Science Events

- Medical Spelling
- Medical Terminology
- Knowledge Test: Pathophysiology

Teamwork Events

- HOSA Bowl
-

Task Number 76

Identify structures and functions of the male and female reproductive systems.

Definition

Identification includes

- male and female reproductive systems
- the process of fertilization
- recognizing characteristics of the most common pathologies and how to compensate technical factors to accommodate.

Process/Skill Questions

- How is herpes type II different from herpes type I?
- Where is the egg fertilized by the sperm in the fallopian tube?
- What is the importance of the human papillomavirus (HPV) vaccine?

HOSA Competitive Events (High School)

Health Science Events

- Medical Spelling
- Medical Terminology
- Knowledge Test: Pathophysiology

Teamwork Events

- HOSA Bowl
-

Task Number 77

Identify structures and functions of the lymphatic system, including the concept of immunity.

Definition

Identification includes

- functions of the lymphatic system
- structures of the lymphatic system
- location of lymph nodes
- blood and lymphatic capillaries
- circulation of lymphatic fluid
- various forms of immunity
- recognizing characteristics of the most common pathologies and how to compensate technical factors to accommodate.

Process/Skill Questions

- Where does lymph fluid come from?
- Why are lymph nodes strategically located in the axillary and femoral areas?
- What is the purpose of the lymphatic tissue in the throat?

HOSA Competitive Events (High School)

Health Science Events

- Medical Spelling
- Medical Terminology
- Knowledge Test: Pathophysiology

Teamwork Events

- HOSA Bowl
-

Task Number 78

Identify structures and functions of the gastrointestinal system.

Definition

Identification includes

- the organs, structures, and functions of the digestive tract
- a discussion of associated structures of digestion
- labeling of various ducts and their points of convergence
- essential mechanical and chemical steps in digestion
- factors of absorption
- the role of blood sugar in the gastrointestinal system
- the role of the hypothalamus in the gastrointestinal system
- defining *basal metabolic rate*
- recognizing characteristics of the most common pathologies and how to compensate technical factors to accommodate.

Process/Skill Questions

- Where in the gastrointestinal system are most nutrients absorbed? Why is this important?
- What are the roles of the liver in the gastrointestinal system?
- How does food progress through the digestive tract?

HOSA Competitive Events (High School)

Health Science Events

- Medical Spelling
- Medical Terminology
- Knowledge Test: Pathophysiology

Teamwork Events

- HOSA Bowl

Task Number 79

Identify structures and functions of the endocrine system.

Definition

Identification includes

- distinction between endocrine and exocrine gland
- functions of hormones
- recognizing characteristics of the most common pathologies and how to compensate technical factors to accommodate.

Process/Skill Questions

- What is the role of insulin after eating a meal?
- What are the signs of hypoglycemia?
- What is the function of a hormone?

HOSA Competitive Events (High School)

Health Science Events

- Medical Spelling
- Medical Terminology
- Knowledge Test: Pathophysiology

Teamwork Events

- HOSA Bowl

Task Number 80

Identify structures and functions of the sensory system.

Definition

Identification includes

- special and general senses

- protective sensory mechanisms
- the role of the eyes in sensation
- the role of the ears in sensation
- recognizing characteristics of the most common pathologies and how to compensate technical factors to accommodate.

Process/Skill Questions

- How many smells can the nose detect?
- How can the sense of smell be a defense mechanism for the body?
- How are taste and smell interconnected?
- Where are the receptors for hearing located?

HOSA Competitive Events (High School)

Health Science Events

- Medical Spelling
- Medical Terminology
- Knowledge Test: Pathophysiology

Teamwork Events

- HOSA Bowl

Applying Critical Thinking and Problem-Solving in the Healthcare Setting

Task Number 81

Identify the qualities of a critical thinker.

Definition

Identification should include the following qualities:

- Active listening skills
- The ability to express ideas clearly and concisely
- Intellectual curiosity

- Open-mindedness
- Logical thinking
- Objectivity
- Analytical thinking
- Willingness to examine ideas from others' perspectives
- Determination to see a problem or challenge to its resolution or solution
- Ability to accept multiple “correct” answers or solutions.

Process/Skill Questions

- What are the criteria for active listening?
- Why can there never be just one way to do any examination?

HOSA Competitive Events (High School)

Teamwork Events

- Creative Problem Solving

Task Number 82

Demonstrate basic critical thinking skills.

Definition

Demonstration should include the following:

- Identifying assumptions, ethics, and values in written works
- Discerning fallacies in arguments
- Controlling psychological impediments to sound reasoning (e.g., importance of remaining calm)
- Presenting valid facts, evidence, and statistics
- Reinforcing employer, customer, and patient satisfaction in treatment
- Evaluating statistics, rhetoric, and advertising claims

Process/Skill Questions

- Why is objectivity important to critical thinking?
- How can the respiratory therapist's psychological demeanor impede good patient care?
The patient's psychological demeanor?
- Why does cultural bias negatively affect good patient care?

HOSA Competitive Events (High School)

Teamwork Events

- Creative Problem Solving
-

Task Number 83

Apply critical-thinking skills to healthcare situations, with emphasis on respiratory therapy.

Definition

Application should include using critical-thinking skills in situations related to respiratory therapy, such as learning/revising a procedure or evaluating a new technology.

Process/Skill Questions

- How are critical thinking skills important in working with trauma patients?
- Why is it important not to make assumptions when approaching a patient? When working with a patient?
- How can cross-training improve critical thinking skills?

HOSA Competitive Events (High School)

Teamwork Events

- Creative Problem Solving
-

Task Number 84

Identify the steps in the problem-solving process.

Definition

Identification should include the following steps:

- Clarify the healthcare issue(s) involved.
- Identify adequate, reliable information and resources for problem solving.
- Create alternative choices for solving the problem.
- Evaluate potential consequences of alternative choices.

- Use standards to make decisions.
- Implement decisions.
- Evaluate outcomes.
- Revise solution if necessary.

Process/Skill Questions

- Why are assessing, adjusting, and executing all-important aspects of problem-solving as a respiratory therapist?
- What may be the consequences of not following protocol in problem solving?

HOSA Competitive Events (High School)

Teamwork Events

- Creative Problem Solving
-

Task Number 85

Apply the problem-solving process to the healthcare setting, with emphasis on respiratory therapy.

Definition

Application should include applying the steps of the problem-solving process to a healthcare situation such as

- a technological problem
- an ethical problem
- a diagnostic problem
- a communication problem.

Process/Skill Questions

- What types of technological problems may be encountered when working with a patient?
- What types of ethical problems may reveal themselves when working with a patient?
- What types of communication problems can occur because of language barriers? Because a patient is hearing-impaired?

HOSA Competitive Events (High School)

Teamwork Events

- Creative Problem Solving
-

Applying Legal, Ethical, and Professional Responsibilities to Clinical Practice

Task Number 86

Describe the organization and operation of a respiratory therapy department.

Definition

Description should include

- the role of the hospital administrator
- the role of the department manager
- the components of a respiratory therapy organizational chart
- the functions of a respiratory therapy manager in relation to the needs of the department
- the importance of the respiratory therapy cycle (i.e., tracking a patient from injury to treatment).

Process/Skill Questions

- What are the duties of the respiratory therapy administrator? Managers? Supervisors?
- What is respiratory therapy's role in overall health care? How does this role affect patient care?
- What is meant by *chain of command*? What is the typical chain of command in the respiratory therapy department?

Task Number 87

Explain the importance of HIPAA.

Definition

Explanation should include the following concepts related to the Health Insurance Portability and Accountability Act of 1996 (HIPAA):

- HIPAA refers to the federal privacy standards to protect patients' medical records and other health information provided to health plans, doctors, hospitals and other healthcare providers.
- HIPAA standards were developed by the Department of Health and Human Services (HHS) and may be accessed through their Web site at <http://www.hhs.gov/ocr/hipaa>.

Process/Skill Questions

- Why is it important to maintain patient confidentiality?
- What are the risks to patient confidentiality?
- How are medical records protected?

HOSA Competitive Events (High School)

Health Science Events

- Knowledge Test: Medical Law and Ethics

Teamwork Events

- HOSA Bowl

Task Number 88

Explain legalities governing respiratory therapy practice.

Definition

Explanation should include legal issues such as malpractice, professional liability, breaches in confidentiality, and professional negligence, as applied to the practice of respiratory therapy. Explanation also should include a review of the requirements, the law, and the regulations for licensing in Virginia, as well as the licensing requirements for preceptors.

Process/Skill Questions

- How has the high cost of medical malpractice affected the profession?
- What is the difference between slander and libel? Assault and battery? How might these legal issues relate to the work of a respiratory therapist?
- What are examples of professional negligence in respiratory therapy? What can be the consequences?

HOSA Competitive Events (High School)

Health Science Events

- Knowledge Test: Medical Law and Ethics
-

Task Number 89

Explain ethical issues related to respiratory therapy practice.

Definition

Explanation should be based on the ethical codes developed by professional associations, including the American Association for Respiratory Care (<http://www.aarc.org>) and the National Board for Respiratory Care (<https://www.nbrc.org/Pages/default.aspx>).

Process/Skill Questions

- What is a professional code of ethics? What are the consequences of violating the code of ethics?
- What are examples of ethical violations in diagnostic imaging?
- How can a respiratory therapist protect himself or herself from false accusations?

HOSA Competitive Events (High School)

Health Science Events

- Knowledge Test: Medical Law and Ethics
-

Task Number 90

Describe the influence of various government agencies on the delivery of health care.

Definition

Description should include agencies in state government (e.g., Virginia Department of Health, Joint Commission on Health Care, Virginia Department of Health Professions) and in national government (e.g., U.S. Department of Health and Human Services, U.S. Food and Drug Administration), and the Joint Commission.

Process/Skill Questions

- What is the importance of a healthcare facility being accredited?
- What is the role of the Department of Health and Human Services in ensuring patient rights and services?
- How does the Joint Commission serve the medical community?

Task Number 91

Research career opportunities and the education, credentials, and responsibilities associated with each.

Definition

Career opportunities may include respiratory therapy positions in one or more modalities, such as

- private physicians' offices
- hospitals
- clinics
- administration
- perfusionist
- physician assistant (separate licensure and degree)
- physician extenders
- education
- local travel technology (temporary placements)
- international placement
- sales and applications.

Research should include Web sites such as those of professional associations in the area of respiratory therapy and other healthcare organizations, as well as [Virginia Career VIEW](#).

Many Web sites offer career exploration resources, including the Virginia Department of Education's [Career Planning Guide](#), the AARC's [Job Bank](#), the [Virginia Health Workforce Development Authority](#), and the [Virginia Education Wizard](#).

Process/Skill Questions

- What is the benefit of multiple modality accreditation in career development?
- What are the differences between working in an outpatient setting vs. a hospital?
- What is meant by the statement, "Respiratory therapy is a portable career"?
- What career opportunities are available for respiratory therapists outside the traditional healthcare setting?

HOSA Competitive Events (High School)

Teamwork Events

- Health Career Display

Emergency Preparedness Events

- Epidemiology

SOL Correlation by Task

Explain the roles and responsibilities of a respiratory therapist.	
Describe the potential career paths for respiratory therapists.	
Identify the types of healthcare facilities that may employ respiratory therapists.	
List the functional requirements for employment as a respiratory therapist.	English: 11.6, 11.7, 12.6, 12.7
Describe professional organizations and credentialing in the field of respiratory therapy.	English: 11.5, 12.5
Trace the historical development of respiratory therapy, including the contributions of important figures in the field.	English: 11.8, 12.8
Identify the various modalities in respiratory care.	English: 11.5, 12.5
Complete a nationally recognized certification for first aid.	
Measure vital signs.	
Describe history taking.	
List data in the patient record that pertains to a respiratory therapist's assessment of a patient.	
Assess a patient's overall cardiopulmonary status by inspection.	
Assess a patient's overall cardiopulmonary status by palpation.	
Assess a patient's overall cardiopulmonary status by percussion.	
Assess a patient's overall cardiopulmonary status by auscultation.	
Identify basic respiratory therapy equipment and the function of each.	English: 11.5, 11.8, 12.5, 12.8
Explain quality assurance and its importance in respiratory therapy.	English: 11.3, 11.5, 12.3, 12.5 History and Social Science: GOVT.16

Adapt communication and patient skill techniques for diverse populations.	History and Social Science: GOVT.16
Describe the essentials for patient/respiratory therapist interaction.	History and Social Science: GOVT.3, GOVT.11, GOVT.16
Describe the essentials for interactions among the multidisciplinary healthcare team.	History and Social Science: GOVT.16
Perform patient-related and administrative documentation.	English: 11.6, 11.7, 12.6, 12.7
Demonstrate Standard Precautions and transmission-based precautions as prescribed by health and regulatory agencies.	
Demonstrate proper body mechanics and patient transfer.	
Explain commonly used prefixes, roots, and suffixes in medical terminology.	English: 11.3, 12.3
Explain medical terminology commonly used in respiratory therapy.	English: 11.3, 12.3
Use medical terminology in communication with medical professionals.	
Identify the basic structural levels of body organization, anatomical structure, and body cavities.	Science: BIO.4
Identify chemical components of the body.	Science: BIO.4, CH.4
Identify structures and functions of the cell.	Science: BIO.3, BIO.4
Identify structures and functions of tissues, membranes, and glands.	Science: BIO.4
Identify structures and functions of the integumentary system.	Science: BIO.4
Identify structures and functions of the skeletal system.	Science: BIO.4
Identify structures and functions of the muscular system.	Science: BIO.4
Identify structures and functions of the cardiovascular system.	Science: BIO.4
Identify structures and functions of the respiratory system.	Science: BIO.4
Identify structures and functions of the nervous system.	Science: BIO.4
Identify structures and functions of the urinary system.	Science: BIO.4
Identify structures and functions of the male and female reproductive systems.	Science: BIO.4
Identify structures and functions of the lymphatic system, including the concept of immunity.	Science: BIO.4
Identify structures and functions of the gastrointestinal system.	Science: BIO.4
Identify structures and functions of the endocrine system.	Science: BIO.4
Identify structures and functions of the sensory system.	Science: BIO.4
Identify the qualities of a critical thinker.	
Demonstrate basic critical thinking skills.	History and Social Science: GOVT.1
Apply critical-thinking skills to healthcare situations, with emphasis on respiratory therapy.	History and Social Science: GOVT.1
Identify the steps in the problem-solving process.	

Apply the problem-solving process to the healthcare setting, with emphasis on respiratory therapy.	History and Social Science: GOVT.1
Describe the organization and operation of a respiratory therapy department.	
Explain the importance of HIPAA.	English: 11.5, 12.5 History and Social Science: GOVT.9, GOVT.16
Explain legalities governing respiratory therapy practice.	English: 11.5, 12.5 History and Social Science: GOVT.11
Explain ethical issues related to respiratory therapy practice.	English: 11.5, 12.5 History and Social Science: GOVT.11, GOVT.16
Describe the influence of various government agencies on the delivery of health care.	
Research career opportunities and the education, credentials, and responsibilities associated with each.	English: 11.5, 11.8, 12.5, 12.8

Entrepreneurship Infusion Units

Entrepreneurship Infusion Units may be used to help students achieve additional, focused competencies and enhance the validated tasks/competencies related to identifying and starting a new business venture. Because the unit is a complement to certain designated courses and is not mandatory, all tasks/competencies are marked “optional.”

Appendix: Credentials, Course Sequences, and Career Cluster Information

Industry Credentials: Only apply to 36-week courses

- 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.*

- Introduction to Health and Medical Sciences (8302/36 weeks)
- Introduction to Health and Medical Sciences (8301/18 weeks)
- Respiratory Therapy II (8373/36 weeks)

Career Cluster: Health Science	
Pathway	Occupations
Therapeutic Services	Respiratory Therapist Respiratory Therapy Technician