GEORGIA | PEACH STATE PATHWAYS

Career, Technical, & Agricultural Education

HEALTHCARE SCIENCE

COURSE: 25.562 General Medicine

UNIT: 6.1 Cardiovascular and Medical Laboratory Services

INTRODUCTION

Annotation:

This unit will review prerequisite knowledge and skills related to the Cardiovascular System and expand knowledge to include clinical concepts of observation, reporting, medical interventions, advanced skills, and patient teaching. Students will have the opportunity to examine through a case study and role play the involvement of the healthcare team in the care of a patient who has cardiovascular disease with cultural and other health factors.

Grade(s):

	9th
	10th
X	11th
X	12th

Time: Recommended Ten 50 minute periods. Time will vary according to supplies and resources in your school and local health facilities and needed class review over previous knowledge related to the cardiovascular system.

Author: Rhonda S. Dunn, M.Ed., R.N.

Additional Author(s):

Phyllis Dumas, RN
Teresa L. Lass, M.Ed., Special Education
Dwanette Pullings, Math

Students with Disabilities:

For students with disabilities, the instructor should refer to the student's IEP to be sure that the accommodations specified are being provided. Instructors should also familiarize themselves with the provisions of Behavior Intervention Plans that may be part of a student's IEP. Frequent consultation with a student's special education instructor will be beneficial in providing appropriate differentiation.

FOCUS STANDARDS

GPS Focus Standards:

HS-TGM-15: Students will demonstrate understanding of and perform advanced technical skills in cardiovascular care – Medical Laboratory and Cardiology.

a. Describe the difference between a normal and abnormal EKG.

b. Set up client and apply leads for EKG or cardiac monitoring correctly.

c. Demonstrate proper procedure for capillary blood tests.

d. Identify and demonstrate techniques for venipuncture procedures based on school and facility protocol.

MEDICAL TERMINOLOGY

HS-TGM-8: Students will understand and utilize terminology related to the human anatomy.

c. Utilize diagnostic, surgical, and procedural terms and abbreviations related to the cardiovascular system.

HS-TGM-9: Students will acquire skills according to career interest and apply those skills in a clinical setting

a. Demonstrate understanding of knowledge and skills for career focus.

b. Perform objectives and complete assigned tasks in assigned clinical area

DATA COLLECTION

HS-TGM-5: Students will understand the importance of and demonstrate data collection as it relates to the goals, objectives, and implementation of the treatment plan according to their scope of practice.

a. Observe, record, and report client behavior.

b. Assist treatment team in observing, reporting, and recording client healthcare needs, strengths, and problems.

c. Follow policies and protocols of the facility.

d. Understand and demonstrate all necessary interventions of the patient treatment plan as it relates to their scope of practice.

e. Examine and demonstrate the importance of client collaboration and acceptance in identifying and implementing appropriate interventions in the treatment plan.

f. Assist in identifying potential educational needs

ACADEMIC Foundations

HS-TGM-1: Students will demonstrate knowledge and understanding of the academic subject matter required for proficiency within their area. Academic standards are integrated throughout the standard statements within their applicable discipline areas and documented immediately following the standard statement.

PROFESSIONALISM

HS-TGM-2: Students will demonstrate professional demeanor at all times, both in the classroom and within the healthcare facilities.

COMMUNICATION AND CUSTOMER SERVICE

HS-TGM-3: Students will demonstrate communication and appropriate customer service skills. (a-f see above)

ETHICAL AND LEGAL RESPONSIBILITIES

HS-TGM- 4: Students will demonstrate an understanding of professional ethics and legal responsibilities.

a. Demonstrate techniques for maintaining confidentiality and privacy to include HIPAA regulations.

DATA COLLECTION

HS-TGM-5: Students will understand the importance of and demonstrate data collection as it relates to the goals, objectives, and implementation of the treatment plan according to their scope of practice.

MEDICAL TERMINOLOGY

HS-TGM-8: Students will understand and utilize terminology related to the human anatomy.

GPS Academic Standards:

SCSh3: Students will identify and investigate problems scientifically.

SCHSh4: Students use tools and instruments for observing, measuring and manipulating scientific equipment and materials

SCSh5: Students will demonstrate the computation and estimation skills necessary for analyzing data and developing reasonable scientific explanations

MM4P3: Students will communicate mathematically.

MM4P: Students will make connections among mathematical ideas and to other disciplines.

MM4P: Students will represent mathematics in multiple ways.

SAP: Students will analyze the physical, chemical and biological properties of process systems as they relate to transportation, absorption and excretion including the cardiovascular, system.

National / Local Standards / Industry / ISTE/ Cross references to HS GPS:

HS-ATS-8:

The student will analyze the anatomy, physiology and basic pathophysiology of each of the body's systems and apply knowledge in performance of evaluating, monitoring, and treatment of client(s) and/or simulations.

HS-NE-14:

The student will analyze and demonstrate (may simulate as necessary) nursing assistant skills which may be performed in an acute care setting.

c. Explain the nursing assistant's responsibilities when caring for a resident/patient/client with special medical equipment and devices included but not limited to intravenous pumps and portable oxygen.

UNDERSTANDINGS & GOALS

Enduring Understandings:

- A healthy and well functioning cardiovascular system is important to the quality of life of patients.
- It is important for students to understand how the system works normally and what kind of common diseases and disorders can alter proper functioning.
- Students will understand, how these diseases and disorders are diagnosed, treated and how, if possible, each can be prevented.
- Students will also build upon prior knowledge as they learn advanced diagnostic and monitoring skills in caring for clients/patients with cardiovascular disorders or diseases in an acute care/hospital setting.

Essential Questions:

- How are patients/clients with cardiovascular disorders or diseases managed in an acute/hospital setting?
- What advanced technical skills are important to know in order to provide care for patient with cardiovascular problems?
- How do I perform advanced technical skills in cardiovascular care?

Knowledge from this Unit:

This list includes prerequisite knowledge and skills and NEW knowledge and skills

- The independent functioning of the cardiovascular system.

- Identify anatomical structures of the cardiovascular system and describe components of blood and the pathway of its circulation.
- Explain how the system works and relates to other body systems
- Explain the relationship of blood flow to major organs of the body
- The dependence of the cardiovascular system has on other systems.
- The common disease processes within the cardiovascular system. (Include the body's response to stress), Identify common diseases/disorders within the system (peripheral vascular problems included)
- The common goal of treatment/prevention for disease processes.
- Beginning and ending procedures for all nursing assistant care
- The range of normal values for pulse and blood pressure
- The guidelines for taking pulse and respirations
- The guidelines for taking blood pressure using manual and electronic equipment
- Understand difference between a normal and abnormal EKG
- Expanded knowledge to include IV catheters and pumps, oxygen therapy, artificial airways, pulse oximetry, chest tubes, mechanical ventilation, telemetry and alternative feeding methods.

Skills from this Unit:

Prerequisite Skills

- Monitor vital signs
- Recognize normal and abnormal vital signs measurements
- Apply/remove elasticized stockings (Add to equipment list if you will review this skill)
- Check capillary refill
- Demonstrate the technique for dressing/undressing a patient/client/resident with an IV catheter

New Skills

- Demonstrate the use of a pulse oximeter (this might be a prerequisite skill for some schools)
- Explain function of Doppler ultrasonography
- Set up client and apply leads for EKG or cardiac monitoring
- Puncture the skin to obtain capillary blood (based on school policy)
- Basic care and reporting guidelines for: IV catheters and pumps, oxygen therapy, artificial airways, pulse oximetry, chest tubes, mechanical ventilation, telemetry and alternative feeding methods.
- Explain use of Intermittent Pneumatic Compression Devices
- Identify and demonstrate techniques for venipuncture procedures based on school and facility protocol.
- Perform removal of basic IV needle/catheter

ASSESSMENT(S)

Assessment Method Type: Select one or more of the following. Please consider the type(s) of differentiated instruction you will be using in the classroom.

_____ Pre-test
_____ Objective assessment - multiple-choice, true- false, etc.
X __ Quizzes/Tests
__ Unit test
_____ Group project
X Individual project
X Self-assessment - May include practice quizzes, games, simulations, checklists, etc.
_x_ Self-check rubrics
__ Self-check during writing/planning process
_x_ Journal reflections on concepts, personal experiences and impact on one's life
_x_ Reflect on evaluations of work from teachers, business partners, and competition judges
_x_ Academic prompts
__ Practice quizzes/tests
X Subjective assessment/Informal observations
__ Essay tests
_x_ Observe students working with partners
_x_ Observe students role playing
X Peer-assessment
__ Peer editing & commentary of products/projects/presentations using rubrics
__ Peer editing and/or critiquing
X Dialogue and Discussion
_x_ Student/teacher conferences
_x_ Partner and small group discussions
_x_ Whole group discussions
_x_ Interaction with/feedback from community members/speakers and business partners
X Constructed Responses
__ Chart good reading/writing/listening/speaking habits
__ Application of skills to real-life situations/scenarios
_____ Post-test

Assessment(s) Title:

- Reflective Essay

Assessment(s) Description/Directions:

Have students write a two page reflective essay on how this lesson has impacted what they know about care of a patient with a cardiovascular disorder and what aspects will they be able to apply in a clinical setting. They should also identify areas where they feel they need more information.

Attachments for Assessment(s):

- Cardiovascular Test – General Medicine with answer sheet and key

LEARNING EXPERIENCES

Instructional planning: Include lessons, activities and other learning experiences in this section with a brief description of the activities to ensure student acquisition of the knowledge and skills addressed in the standards. Complete the sequence of instruction for each lesson/task in the unit.

Sequence of Instruction

1. **Identify the Standards. (Standards should be posted in the classroom for each lesson.)**

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   SAP: Students will analyze the physical, chemical and biological properties of process systems as they relate to transportation, absorption and excretion including the cardiovascular, system.

2. **Review Essential Questions.**

   - How are patients/clients with cardiovascular disorders or diseases managed in an acute/hospital setting?
   - What advanced technical skills are important to know in order to provide care for patient with cardiovascular problems?
   - How do I perform advanced technical skills in cardiovascular care?

3. **Identify and review the unit vocabulary.** (Words Walls may be used)

4. Assessment Activity. Review *Prerequisite* Knowledge and Skills related to the Cardiovascular system

- **a.** Concepts of communication and patient education
- **b.** Professionalism used with all clients/patients/staff/ and family
- **c.** Medical Terminology related to CV system
- **d.** Response to Stress and risks factors related to the Cardiovascular system
- **e.** CPR and AED knowledge and course completion
- **f.** Concepts of comfort and pain related to CV System
- **g.** Obtaining vital signs and special observations requiring measurements in V/S
- **h.** Data Collection including V/S, related to CV system

Cardiovascular Diseases and Disorders *to include clinical observations, patient teaching, and interventions by medical ,nursing and other personnel/staff*

- Use the case study found at http://www.diabetes.org/for-health-professionals-and-scientists/rodriguez-case-study.jsp. Focus on cardiovascular diseases in a patient with diabetes. The teacher can use the case study for discussion before students complete their disease or disorder research to illustrate how many personnel can be involved in a patient's care both pre-hospital, during hospitalization and after discharge. It could be used to develop a role-play with emphasis on the impact of diseases of other body systems on the cardiovascular system, such as Diabetes in this case. Cultural elements are also part of this study as well as other hospital services. It could start out as an emergency room experience and progress to admission to CCU to ICCU and further through to discharge. You could also include a cardiac arrest emergency while the patient in the hospital. You will find a great deal of information and questions you can have the students answer. These questions can also be used as a post test in multiple choice form. This case study could be expanded to last for at least a week in which the groups of students could rotate to different roles and perform the skills to be learned for this unit in an applied type of setting. Other groups could be researching the other disorders or research and report on the Cardiology Procedures from the list provided in which the emphasis should be placed on pre and post procedure care provided. Different procedures could be added to the patient's orders each day and the assigned group would present on the procedure of the day including pre and post care with patient teaching. A skills lab could be included with some of the procedures.
- An alternative would be to consider inviting a guest speaker from Cardiology to discuss the procedures, potential complications, and pre and post procedure care.
- A second approach would be to have students go through the case study and identify the different members of the healthcare team and departments. Each group could research and give a detailed description of procedures performed by each and describe their scope of practice- such as PCT, ER

Technician, Cardiologist, Endocrinologist, RN, Unit Secretary, Admissions Clerk, EKG Technician, Medical Laboratory Technician, Radiology, Organ Imaging, and Dietary Department. Then, they could develop a detailed role-play of the patient from admission to ER as indicated above including transport, admission to the unit, and communication with family. It would be good to include an incident in which an incident report would need to be completed.

a. Epidemiology of CV Disease
b. Classification of Heart (congenital and acquired)
c. Arrhythmias and the effects on the system
d. Coronary Artery disease
e. Angina Pectoris
f. Myocardial Infarction
g. Congestive Heart Failure
h. Inflammatory Heart Disease
i. Valvular Heart Disease
j. Aortic Aneurysms
k. Peripheral Vascular Disease
l. Hematological Disorders
    a. Anemias
    b. Disorder Associated with Platelets and Coagulation
    c. Disorders Associated with WBC's
m. Blood Transfusions
n. Discuss types of vascular access and PCT's role in removing peripheral IV.
o. Discuss diagnostic test for cardiovascular system and the role of the PCT in caring for patients such as transport to other departments, monitoring vital signs post procedure, checking puncture sites, positioning of patients after femoral artery procedures,

- Summary and Written Test

Attachments for Learning Experiences:

- Prerequisite Terminology and Key Terms for General Medicine-Cardiovascular System- to be defined by student
- Pulse Oximetry Assignment
- Cardiovascular Case study
- Cardiovascular Procedures list

Notes & Reflections:

- Students should have a seamless and progressive learning experience but some review of prerequisite knowledge and skills might be necessary. GPS from prerequisite courses have been listed
- When this unit is completed, students should have a good idea of what they might expect to see going on with cardiovascular patients in a clinical setting.

CULMINATING PERFORMANCE TASK (Optional)

Culminating Unit Performance Task Title:

- EKG on patient if possible (One reference may be: Diversified H.O. by Simmers- unit on Recording and mounting an electrocardiogram)

Culminating Unit Performance Task Description/Directions/Differentiated Instruction:

Attachments for Culminating Performance Task:

UNIT RESOURCES

Web Resources:

- WebAnatomy **Cardiovascular**

Attachment(s):

Materials & Equipment:

- Vital Signs Equipment- stethoscopes, B/P cuffs of different sizes
- Alcohol preps to clean equipment
- Watch with second hand
- Pulse oximeter or access to one/ Assignment sheet attached
- EKG equipment or access to EKG Machine or Simulate

- Equipment for Capillary blood (Lancet, alcohol preps, sterile gauze pads, gloves, Sharps container, Hemoglobinometer, photometer, glucose meter, etc according to access and school policy) One reference may be: "Puncturing the skin to Obtain Capillary Blood in Diversified H.O. by Simmers
- VCR/TV/DVD or other 21st Century Technology as available
- Skill Checks rubrics- per text book's teacher resources or teacher-made rubrics
- ADAM software have animations on the cardiovascular system

What 21st Century Technology was used in this unit:

	Slide Show Software		Graphing Software		Audio File(s)
	Interactive Whiteboard		Calculator	x	Graphic Organizer
	Student Response System		Desktop Publishing		Image File(s)
	Web Design Software		Blog	X	Video
	Animation Software		Wiki		Electronic Game or Puzzle Maker
	Email	X	Website		

Graphic Organizer suggestion… available from websites or texts: