The I-MOCT Program prepares students for work in health care settings where they will perform multiple patient care practices, including taking blood, administering electrocardiograms (EKG), and measuring glucose levels. Students who enroll in the program read at the 7th grade level and above.

Our Approach

While attending the technical training, I-MOCT students participate in an integrated academic support course to strengthen basic skills and preview and review technical training content. Technical training content includes infection control practices, basic anatomy and physiology and a variety of technical skills development to obtain licensure and secure employment as a Medical Office Clinical Technician.

Lesson Preview

Graphing and Labeling an EKG is an integrated academic support lesson designed to deepen students’ understanding of the components of an EKG reading and what information it provides, while practicing close reading and visual literacy and numeracy skills required to apply vocabulary and concepts from the I-MOCT training materials.

Students read and apply information from their training text to create a graph of a single normal heartbeat for the EKG.
Graphing and Labeling an EKG

**Essential Question:** What are the different times and amplitudes of an EKG of a single heartbeat?

**Lesson Description:** Students work in groups of two to three and are asked to graph and label an EKG of a single normal heartbeat on large graph paper. In this lesson students synthesize various EKG content including the specific values of time and amplitude of each part of a normal heart beat as well as the phases of the heartbeat. Prior to this lesson students should have covered the basic characteristics of an EKG as well as have some understanding of the mechanical and electrical process associated with each part of a heart beat. Since students are bringing together and practicing a range of technical content, this lesson can serve as a review as well as an assessment of their understanding of the content. The last part of this activity asks students to answer reflection questions.

**Learning Objectives:**
- Follow established internal and external guidelines in order to provide high-quality, effective support services in the healthcare facility.
- Maximize available resources for proper care and use of healthcare equipment and materials.
- Utilize processes for assessing, monitoring and reporting patient’s/clients’ health status to the treatment team within protocol and scope of practice.
- Solve problems involving measurement and estimation of intervals of time
- Label diagrams based on the information from the text
- Calculate and graph time and amplitude values of the specific components of a normal heartbeat
- Identify and label components of an EKG wave
- Describe the electrical and mechanical process of a heartbeat

**Lesson Materials:**
- Instructions handout
- Reflection question handout
- Large graph paper, markers, rulers, tape
Learning Plan:

Small Group Work: 40 minutes

1) Have students get in groups of two or three and hand out the instructions to each student. Once students have had a chance to read the instructions go over them and answer any questions.

2) Have each group come up one at a time and cut their own length of graph paper from the roll. In order to have the right amount of graph paper, groups will need to estimate how many squares will be in one heart beat.

3) As students are working, the teacher should circulate around the classroom to answer questions and assess how students are doing. Students can and should use their notes as well as their text books to verify the length of each part of an EKG line.

4) Once students are finished with their enlarged EKG lines, have them hang them up and ask everyone to circulate around the room to take a look at them.

5) Once students have had a chance to look at everyone’s EKG, hand out the reflection questions and give students 5-10 minutes to write.

6) When students have finished writing, have a brief discussion where students share out their answers to the reflection questions.

7) Optional: For review on the board for everyone’s reference create a chart that lists the different wave and segment forms of an EKG and their corresponding time and amplitude values.

Assessment:

- The instructor can collect posters to assess students’ understanding of the topic.
- The instructor can observe how students work in groups and how they present to assess their understanding of the topic.
Draw and Label a Normal EKG for a Single Heart Beat

With your partner, graph and label an EKG that represents one normal heart beat. Make sure the waves, segments, intervals, and complex are all the normal size, shape, length and height. Please label all the different parts of the electrocardiogram and include labels and descriptions for ventricular depolarization, repolarization, polarization, the absolute refractory period, and the relative refractory period. Let one square on the chart paper equal one small square on the EKG paper. Please begin your graph by tracing it in pencil and then use marker, pen, or crayon.

Example of EKG for reference
Reflection Questions

1. What did you notice about all the EKG graphs (similarities, differences, or patterns)?

2. What was the most difficult part of this activity and why?

3. What did you learn from completing this activity?