

Electricity and Waves in Medical Technologies

AMSTI Lesson 11

Essential Question: How are electricity and waves used to diagnose and treat medical conditions?

Diagnostic Protocol - a plan to help medical professionals decide which imaging technology to use for different patients.

Materials: EWIT book, Student Sheet 11.1a and 11.1b (one per group)

Objective - In this activity, you will work with your group to complete a diagnostic protocol. In this case, your protocol will provide guidelines for the types of medical imaging technology that should be used based on their benefits, risks, and costs. You will then make a recommendation to a health clinic about which equipment they should purchase.

Scenario: In this investigation, your group's task is to prepare a diagnostic protocol. The local health clinic is being updated and will provide imaging services for primary care doctors, specialists, and emergency physicians who treat non-life-threatening injuries and sudden illnesses. Primary care physicians are the doctors who patients see regularly for check-ups and general health concerns, and specialists are doctors who treat specific diseases or disorders such as cancer or heart disease. You and your group members are doctors at the clinic. The new clinic director wishes to purchase imaging equipment that will serve the needs of as many patients of the clinic as possible. The budget for the new equipment is \$175,000. You and your fellow doctors have been asked to recommend to the director which imaging technology devices you think would be the best to purchase in terms of their costs, benefits, and health risks to patients. To do this, you must first prepare a diagnostic protocol.

Read - Building your Knowledge - Considering the Risks (pg. 204)

Read - *Extending Your Knowledge: "Waves, Rays, and Medicine,"* (pgs. 208 - 213) in order to fill out student sheet 11.1a. You may also use the internet to fill out the form.

- Once this form is complete, read over and fill out student sheet 11.1b

Task 1 - Read the scenario

Task 2 - Read the readings from the book and complete student sheet 11.1a

Task 3 - Complete student sheet 11.1b

Task 4 - Write a formal recommendation to the clinic giving evidence from your research and readings to support your recommendation.

Task 5 - Turn in both student sheets and your recommendation.

(staple all together and include everyone's name who was in your group for credit)