

INTRODUCTION TO PATHOPHYSIOLOGY

OBJECTIVE/RATIONALE

The studies and tests performed in pathophysiology play an important role in diagnosing and treating disease. The student will gather information about careers in pathophysiology.

TEKS: 121.15 3D

TAKS ELA 1, 2, 3, 4, 6

National Science Education Standards A9-12; C9-12; E9-12; F9-12

National Health Care Skills Standards .01, .03, .04, .06, .07, .08

KEY POINTS

Pathophysiology PowerPoint Presentation

- I. Pathophysiology involves the study of function that results from disease processes.
 - A. What is pathology? - Pathology is the branch of medical sciences that treats the essential nature of disease, especially the changes of structure and function in tissues and organs of the body that cause or are caused by disease.
 - B. Why is pathophysiology studied? - In the clinical setting, pathologists, histotechnologists, and cytotechnologist study tissues and cells to establish the cause of a disease. Physicians use that information to form a treatment plan.
- II. Careers in Pathophysiology
 - A. What is a pathologist? - A pathologist is a physician who is specifically trained and experienced in anatomical and physiological pathology.
 - B. What is a histologic technician or histotechnologist?
 1. Histologic technicians and Histotechnologists prepare slides of body tissue for microscopic examination.
 2. Career opportunities for both are excellent in hospitals, research institutions, industrial labs, and government agencies
 3. A technician requires a 12-month, hospital-based on-the-job training program or an AAS degree.
 4. A histotechnologist requires a BS degree and one year of additional laboratory experience.
 - C. What type of studies are performed in the clinical pathology laboratory?
 1. Gross Exam
 - a. Tissue of all types are sent to the histology department for studies into the disease process.

- b. The pathologist studies the tissue by doing a gross examination.
 - c. Tissues are looked at closely and all observations are recorded.
 - d. The tissue is then prepared for microscopic studies by placing it in a tissue cassette.
2. Microscopic Exam
- a. Tissues are prepared by the histotechnologist
 - i. This is done by using the embedding center. The tissue is placed in paraffin wax in order to cut thin slices of the tissue.
 - ii. The histotechnologist pours paraffin wax over a tissue specimen.
 - iii. Once the tissue is embedded in paraffin, the block of wax is cooled. The histotechnologist then cuts ribbon-like sections for placement on slides. The instrument used is called a microtome.
 - iv. A water bath is used for spreading the paraffin ribbons and sections are placed on microscope slides to be stained.
 - v. Tissues are stained at the staining center. The basic stain for all tissues is the Hemotoxylin and Eosin (counterstain) stain.
 - vi. Special stains are used for particular details. They include:
 - AFB-Acid Fast Bacilli Stain
 - PAS-Periodic Acid Schiff Stain
 - Trichrome Stain
 - Iron Stain
 - b. The pathologist then studies the slide to determine pathological states within the tissues.
 - i. A written report is then given to physician to aid him/her in the diagnosis and treatment of the client.
 - ii. Pathologists also perform frozen sections for client's in surgery on the Cryostat.
- D. Exciting opportunities await students who want to explore the physiology of the tissues and cells under the microscope!

ACTIVITIES

- I. Research pathophysiology career information including where the programs are offered in the state, the admission requirements, and the occupational outlook. Present findings to the class.

MATERIALS

Pathophysiology PowerPoint Presentation

ASSESSMENT

Oral Presentation Rubric

ACCOMODATIONS

For reinforcement, the student will define the following terms: pathophysiology, pathologist, and histotechnologist.

For enrichment, the student will visit a local pathology laboratory and report on the technology used in the facility.

REFLECTIONS
