

# Year II Neuroscience Block 2008-2009

## OVERVIEW

Neuroscience represents the final organ system covered during the 2nd year medical curriculum. This 3 week course begins the afternoon of Monday, April 6th and culminates with the block exam on the morning of April 27th, 2009. Neuroscience is unique among the blocks of year II in that it focuses on one organ system, the brain / spinal cord, from two traditionally distinct clinical perspectives (e.g., neurological or brain disorders and psychiatric or mental disorders) while looking to an exciting future where Clinical Neuroscience merges current concepts of mind and brain. The block begins with an introduction to Clinical Neurology. Students are introduced to systematic procedures for first identifying, then localizing and finally evaluating the significance of lesions in the central and/or peripheral nervous system of patients. First year curriculum knowledge of normal nervous system anatomy, function and classic injury (e.g., stroke, trauma, neurodegeneration) forms the foundation for the comprehensive overview of brain injury and disease presented in the Neuroscience block. Brain pathology caused by diverse agents such as microbial agents, toxins, trauma, congenital defects, metabolic or immune disorders and tumors are defined and neurological consequences characterized. Early in the block, the concept of mental health, its relationship to neuroanatomy and the substantial impact of mental illness across medical practice are introduced. Hallmark characteristics of prominent mental illnesses such as depression, schizophrenia, dementia and psychosis as well as disorders involving post traumatic stress, anxiety, personality and substance abuse are explained. Across the entire Neuroscience Block, central nervous system active drugs are introduced in close association with the prominent clinical disorders for which they are prescribed. The goal is to integrate current knowledge of mechanism of action, dose-response and prominent side effects with primary indications for use in specific clinical disorders such as epilepsy, Parkinson's, depression, alcohol abuse or certain clinical interventions like anesthesia and pain management. Successful completion of the Neuroscience Block should provide you with an integrated basic knowledge of the vulnerability of the brain / spinal cord to injury and disease, the resulting dysfunctional consequences and the array of CNS pharmacotherapies currently available to clinicians.

## GOALS

To correlate the pathophysiology and/or psychopathology of central nervous system disease and dysfunction with the clinical presentation of common neurological or psychiatric medical problems.

To provide a solid base of knowledge about psychiatric disorders including central aspects of diagnosis and treatment.

To identify mechanisms of action, therapeutic efficacy and adverse effects of drugs used clinically to treat central nervous system dysfunction or to block consciousness and pain.

## OBJECTIVES

Introduce basic concepts of clinical neurology and a reliable method for solving common clinical neurological problems by understanding signs and symptoms as they relate to the neuro-axis anatomically and physiologically.

Describe the nosology, gross and microscopic appearance, and pathophysiology of the following conditions that affect the central and peripheral nervous systems: demyelinating diseases, degenerative diseases, vascular disorders, malformations of the nervous system, perinatal injury, tumors, metabolic disorders, toxins, trauma, genetic diseases, and viral and non-viral infectious diseases.

Describe the nosology, gross and microscopic appearance, and pathophysiology of diseases of the eye.

Provide fundamental aspects of psychiatric examination and a framework for assessing psychiatric disorders, making specific diagnoses and instituting initial treatment plans for patients with psychiatric disorders including alcohol and drug dependence.

Characterize molecular mechanisms of drug classes used to treat anxiety, cognitive decline, depression, epilepsy, insomnia, migraine, movement disorders, schizophrenia, and severe pain or to induce local / general anesthesia.

Discuss prominent drug side effect and overdose risks for therapeutic agents used to treat neurological or psychiatric illness. Introduce toxicological concerns resulting from non-medical drug and alcohol use including common neurological and psychiatric processes associated with drug abuse. Provide an overview of the process of drug development and federal approval of prescription / over-the-counter agents, including the impact of the placebo effect and risks of non-FDA approved alternative medications.

## GRADING

For the Yr II Neuroscience Block the following formula will be used to determine the final grade:

- 90% = score on Neuroscience Block content on the block examination given 4/27/09
- 5% = score on review material from previous blocks on the examination give 4/27/09
- 2% = score on the Pharmacology Self-Study quiz
- 2% = score on the Pathology Laboratory Session quiz
- 1% = score on the Humanities Exercise