Sample NBDE Part I Question

Which of the following components of the extrapyramidal system primarily function to control skeletal muscle tone?

a) Cerebellar nuclei  
b) Cerebral nuclei  
c) Red nucleus  
d) Superior colliculi  
e) Vestibular nuclei
The answer is C.

The axons of the pyramidal cells of the motor cortex descend to synapse on lower motor neurons in the brain stem and the spinal cord. Since there are no intervening synapses, the pyramidal system is able to provide rapid commands to the skeletal muscles and various other organs. There are several other centers that can issue somatic motor commands as a result of processing performed at the unconscious, involuntary level. These centers and their associated tracts comprise the extrapyramidal system. The red nucleus, located in the mesencephalon, is the component of the extrapyramidal system primarily in control of skeletal muscle tissue.

The cerebellar nuclei (choice A), located in the cerebellum, primarily controls coordination of movements and integration of sensory feedback.

The cerebral nuclei (choice B), also located deep in the cerebrum, primarily controls coordination and preparation of limb movements.

The superior colliculi (choice D), located in the mesencephalon, processes visual information and the vestibular nuclei (choice E), located in the pons and medulla oblongata, processes equilibrium sensations.
Directions: Read the following question and select the best answer from the choices below.

Sample NBDE Part II Question

Which of the following analgesics are most likely to cause seizures in an individual with renal insufficiency?

A. Acetaminophen
B. Ibuprofen
C. Meperidine
D. Morphine
E. Propoxyphene
Answer & Explanation:

The answer is C.

Individuals with renal dysfunction are at a particularly high risk for developing toxicity secondary to the accumulation of compounds normally excreted through the kidneys. Meperidine is a narcotic analgesic used in the treatment of moderate to severe pain. In renally compromised individuals, its hepatic metabolite (normeperidine), which is normally excreted through the kidneys, can accumulate resulting in the development of myoclonic seizures. Although dosage adjustments of the other analgesics have to be made in patients with renal dysfunction, they are not associated with the development of seizures in patients.

Acetaminophen (choice A) is a non-narcotic analgesic indicated for the treatment of mild to moderate pain. It is commonly found in many narcotic analgesic combination products.

Ibuprofen (choice B) is a non-steroidal antinflammatory drug (NSAID) used in the treatment of mild to moderate pain caused by inflammation. The use of NSAID's in renally compromised individuals is not recommended since they can decrease renal blood flow.

Morphine (choice D) is a narcotic analgesic used in the treatment of moderate to severe pain. Morphine can accumulate in renal failure patients; however, the resulting toxicity is typically respiratory depression and sedation.

Propoxyphene (choice E) is mild narcotic analgesic used in the treatment of mild to moderate pain. It can also accumulate in renal failure patients resulting in sedation and respiratory depression.