
Blood supply: know major cerebral arterial systems the vertebral system and corresponding arteries, including areas they supply

- Vertebral versus carotid system
- Anatomy and circulation of Circle of Willis; its functional significance
- Identify distribution areas for posterior cerebral artery (PCA), middle cerebral artery (MCA), anterior cerebral artery (ACA)
- Apply distribution information to strokes in various areas of brain and understand the behavioral effects
- Concepts behind blood-brain barrier

Strokes: Ischemic, hemorrhagic, other

- Types of stroke (embolic, thrombotic, hemorrhagic)
 - *How to differentiate based on symptoms*
- TIA
- Core versus penumbra
- Thrombolytic therapy (tPA) – criteria
- Distinguish between aneurysm and a hemorrhage (pathology)
- Understand swelling after various kinds of strokes
- AVM
- Review scenarios – there will be at least one scenario on the exam

Auditory & vestibular system: Know/describe the peripheral nervous system and central pathways

- Receptor cells for each (hair cells)
- Primary neurons and ganglia
- How sensory information is converted to impulses
- Peripheral auditory and vestibular apparatus and physiology– scala, organ of corti, basilar membrane, tectorial membrane and other membranes
- From peripheral nerves to cortex (locations and function/lesions) – auditory pathway (cochlear nuclei, SON, lateral lemniscus, inferior colliculus, medial geniculate body of thalamus, Heschl's gyrus)
- Right and left primary auditory cortex – kinds of processing
- tonotopic representation in auditory system – from cochlea to cortex
- semicircular canals, utricle, saccule, ampullae and maculae, otolithic membrane and cupula
- where information goes after leaving vestibular nuclei, its integration with other systems (what those systems are and functionally, what they do) – medial longitudinal fasciculus (MLF), vestibulocerebellar and vestibulospinal tracts
- Vestibular lesion effects – especially when combined with other nerves at IAM

Visual system: Know/describe the peripheral nervous system and central pathway

- Type of receptor cells: rods, cones
- Neurons and optic nerve
- Know visual pathway from eye to primary visual cortex (optic nerve, optic tract, optic chiasm, lateral geniculate body (thalamus), superior colliculus (what kind of reflex), optic radiations, primary visual cortex in occipital lobe)
- Know visual fields – right, left; understand relationship between visual and retinal fields
- Know lesion effects at different points along and visual pathways (e.g., tunnel vision, visual field loss, blindness)