

Neurology – Embryology

- Neural tube, primary and secondary vesicles, neural tube defects, posterior fossa malformations

Neurology – Anatomy and Physiology

- nerve cell, glia, myelin, BBB
- skin sensory receptors
- peripheral nerve structure
- neurotransmitters – Ach, GABA, DA, NE, 5-HT
- Hypothalamus – functions, nuclei
- Sleep – stages, EEG, circadian rhythm, disorders
- Thalamus – nuclei (VPL, VPM, LGN, MGN, VL)
- Limbic system – hippocampus, amygdala, memory
- Cerebellum – function, deep nuclei, lesions
- Basal Ganglia – function, direct/indirect circuits, movement disorders
- Cortical function – functional areas, homunculus, lesions
- Blood Supply – cortical territories, Circle of Willis, perfusion, effects of occlusion/stroke, aneurysms, angiograms
- Intracranial hemorrhage – types, neuroimaging
- Stroke – ischemic, hemorrhagic
- Dural venous sinuses
- Ventricular system – idiopathic intracranial hypertension, hydrocephalus
- Spinal cord – spinal nerves, anatomical features, tracts (location, function), lesions (locations, effects), dermatomes, reflexes, primitive reflexes
- Motor system – upper/lower motoneurons, lesion signs
- Brainstem – ventral/dorsal structures
- Cranial nerves – locations, nuclei, functions, reflexes, lesions, CN VII UMN/LMN lesions
- Cavernous sinus
- Auditory System – anatomy, physiology, types of hearing loss

Neurology – Ophthalmology

- Normal eye anatomy
- Aqueous humor – secretion, pathway
- Refractive errors
- Cataract
- Glaucoma – open/closed angle, causes
- Pathology – uveitis, AMD, diabetic retinopathy, retinal vein occlusion, retinal detachment, CRA occlusion, retinitis pigmentosa, retinitis, papilledema
- Pupillary reflexes
- Horner Syndrome
- Extraocular muscles – function, innervation
- CN III, IV, VI Palsies
- Visual Field Defects – names, locations, deficits
- Internuclear Ophthalmoplegia

Neurology – Pathology

- Central Pontine Myelinolysis
- Dementia – Alzheimer’s, FTD, Pick’s, Lewy Body Dementia, CJD
- Demyelinating Disorders:
 - MS – epidemiology, symptoms, causes, neuroimaging
 - Guillain-Barre’ Syndrome
 - Acute Postinfectious encephalomyelitis
 - Charcot-Marie-Tooth Disease
 - PML
 - Hereditary: Krabbe, metachromatic leukodystrophy
- Seizures – types, characteristics
- Headache – cluster, tension, migraine
- Vertigo
- Neurocutaneous Disorders – Sturge Weber, tuberous sclerosis, NF1, von Hippel-Lindau
- Tumors – glioblastoma/astrocytoma, meningioma, hemangioblastoma, schwannoma, oligodendroglioma, **pituitary adenoma**, medulloblastoma, ependymoma, **craniopharyngioma (covered in Endocrine module)**
- Herniation syndromes

In Microbiology Section

- Bacterial Meningitis/Infectious diseases – aspergillosis, cryptococcus, toxoplasmosis, naegleria fowleri, tabes
- Encephalitis – HSV, VSV, CMV, picornaviruses (polio), arboviruses (flavi- West Nile; toga- zika, equine; bunya- California encephalitis), HIV, rabies, prions

In Biochemistry Section

- Sphingolipidoses – Fabry, Gaucher, Niemann-Pick, Tay-Sachs, Krabbe, metachromatic leukodystrophy

Neurology – Pharmacology

- **Glaucoma Drugs** – α agonists (epinephrine, brimonidine), β -blockers (timolol, betaxolol, carteolol), diuretics (acetazolamide), cholinomimetics (pilocarpine, carbachol, physostigmine, echothiophate), prostaglandin (latanoprost)
- **Opioid Analgesics** – morphine, fentanyl, codeine, **loperamide**, methadone, meperidine, dextromethophan, **diphenoxylate**, pentazocine, butorphanol, **tramadol**
- **AEDs** – ethosuximide, diazepam/lorazepam, carbamazepine, valproic acid, gabapentin, phenobarbital, topiramate, lamotrigine, levetiracetam, tiagabine, vigabatrin
- **Barbiturates** – phenobarbital, pentobarbital, thiopental, **secobarbital**
- **Benzodiazepines** – diazepam, lorazepam, triazolam, temazepam, oxazepam, midazolam, chlordiazepoxide
- **Nonbenzodiazepines** – zolpidem, zaleplon, eszopiclone

- **Inhalation Anesthetics** – halothane, enflurane, isoflurane, sevoflurane, methoxyflurane, nitrous oxide
- **Intravenous Anesthetics** – thiopental, midazolam, ketamine, fentanyl, propofol
- **Local Anesthetics** – esters (procaine, cocaine, tetracaine), amides (lidocaine, mepivacaine, bupivacaine)
- **Neuromuscular blockers** – succinylcholine, tubocurarine, atracurium, miva-/pan-/ve-/ro- curonium
- **Spasticity drugs** – dantrolene, baclofen, cyclobenzaprine
- **Parkinson Drugs** – bromocriptine, amantadine, levodopa/carbidopa, selegiline, antimuscarinics
- **Alzheimer Drugs** – memantine, donepezil, galantamine, rivastigmine, tacrine
- **Huntington Disease Drugs** – **reserpine/tetrabenazine, haloperidol**
- **Triptans** – sumatriptan