

Neuro Science

1. Neurological Diagnosis and Evaluation

- **Neuroimaging:**
 - MRI, CT scans, PET scans for detailed brain and spinal imaging.
 - Functional MRI (fMRI) for brain activity assessment.
- **Electrodiagnostic Testing:**
 - **Electroencephalography (EEG):** Detects electrical activity in the brain.
 - **Electromyography (EMG):** Evaluates nerve and muscle function.
 - **Nerve Conduction Studies (NCS):** Measures nerve signal speed.
- **Cerebrospinal Fluid (CSF) Analysis:**
 - Lumbar puncture (spinal tap) to diagnose infections, multiple sclerosis (MS), or other conditions.
- **Neuropsychological Testing:**
 - Assesses cognitive function and memory in conditions like dementia or traumatic brain injury.

2. Stroke and Vascular Disorders

- **Acute Stroke Management:**
 - **Thrombolysis:** Administering clot-busting drugs like tPA (tissue plasminogen activator).
 - **Thrombectomy:** Surgical removal of a clot in ischemic stroke.
- **Carotid Endarterectomy:**
 - Surgery to remove plaque buildup in carotid arteries.
- **Endovascular Treatments:**
 - Stenting or coiling for aneurysms or vascular malformations.
- **Stroke Rehabilitation:**
 - Physical therapy, occupational therapy, and speech therapy.

3. Neurodegenerative Disorders

- **Parkinson's Disease:**
 - Medications like Levodopa, Dopamine agonists.
 - Deep Brain Stimulation (DBS) for advanced cases.
- **Alzheimer's Disease and Dementia:**

- Cholinesterase inhibitors (e.g., Donepezil) and NMDA receptor antagonists (e.g., Memantine).
- Cognitive rehabilitation therapies.
- **Amyotrophic Lateral Sclerosis (ALS):**
 - Medications like Riluzole and Edaravone.
 - Respiratory and mobility support.

4. Epilepsy

- **Antiepileptic Drugs (AEDs):**
 - Medications like Carbamazepine, Valproate, or Lamotrigine.
- **Surgical Interventions:**
 - Temporal lobectomy or lesionectomy to remove seizure-causing areas.
 - Vagus Nerve Stimulation (VNS) therapy.
- **Ketogenic Diet:**
 - High-fat, low-carbohydrate diet for drug-resistant epilepsy.

5. Brain and Spinal Tumors

- **Surgical Treatments:**
 - Craniotomy for tumor removal.
 - Stereotactic radiosurgery (e.g., Gamma Knife, CyberKnife).
- **Chemotherapy and Radiotherapy:**
 - Targeted treatments for malignant tumors.
- **Tumor Embolization:**
 - Pre-surgical procedure to reduce blood flow to tumors.

6. Spinal Cord Disorders

- **Degenerative Spine Diseases:**
 - Discectomy, Laminectomy, or Spinal Fusion for herniated discs or stenosis.
- **Spinal Tumors:**
 - Surgical removal and radiation therapy.
- **Trauma Management:**
 - Stabilization using surgical or non-surgical methods.
 - Rehabilitation for spinal cord injuries.

7. Peripheral Nervous System Disorders

- **Neuropathy Treatments:**
 - Medications like Gabapentin or Pregabalin for neuropathic pain.
 - Plasma exchange or IVIG for autoimmune neuropathies like Guillain-Barré syndrome.
- **Carpal Tunnel Syndrome:**
 - Splinting, corticosteroid injections, or surgical decompression.

8. Movement Disorders

- **Essential Tremor:**
 - Medications like Propranolol or Primidone.
 - Focused ultrasound therapy or Deep Brain Stimulation (DBS).
- **Dystonia:**
 - Botulinum toxin (Botox) injections.
 - Physical and occupational therapy.

9. Headaches and Migraines

- **Migraine Management:**
 - Preventive medications like Beta-blockers, Antidepressants, or CGRP inhibitors.
 - Acute treatments with triptans or NSAIDs.
- **Cluster Headaches:**
 - Oxygen therapy and Triptans.
 - Preventive treatments with Verapamil or Lithium.

10. Multiple Sclerosis (MS)

- **Disease-Modifying Therapies (DMTs):**
 - Interferons, Glatiramer acetate, or newer agents like Fingolimod.
- **Symptomatic Management:**
 - Muscle relaxants for spasticity.
 - Physical therapy for mobility improvement.

11. Pain and Nerve Disorders

- **Chronic Pain Management:**
 - Nerve blocks, spinal cord stimulators.
 - Medications for neuropathic pain.

- **Trigeminal Neuralgia:**
 - Anticonvulsants like Carbamazepine.
 - Surgical decompression or Gamma Knife radiosurgery.

12. Neuroinfectious Diseases

- **Meningitis and Encephalitis:**
 - Antiviral or antibiotic therapy.
- **Brain Abscesses:**
 - Surgical drainage and antibiotic treatment.

13. Sleep Disorders

- **Obstructive Sleep Apnea (OSA):**
 - CPAP (Continuous Positive Airway Pressure) therapy.
- **Narcolepsy:**
 - Stimulant medications like Modafinil.
- **Insomnia:**
 - Cognitive Behavioral Therapy for Insomnia (CBT-I) and sedative medications.

14. Pediatric Neurology

- **Developmental Disorders:**
 - Therapies for autism spectrum disorder (ASD), cerebral palsy, and epilepsy.
- **Congenital Disorders:**
 - Surgical and therapeutic interventions for hydrocephalus, spina bifida.

15. Advanced Therapies

- **Stem Cell Therapy:**
 - Experimental treatment for spinal cord injuries or neurodegenerative diseases.
- **Gene Therapy:**
 - Targeting genetic disorders like SMA (Spinal Muscular Atrophy).
- **Neurorehabilitation:**
 - Robotics and virtual reality for motor recovery.