

**NEUROLOGY RESIDENCY PROGRAM**  
**Didactic Lecture Series**  
**University of North Dakota School of Medicine & Health Sciences (UNDSMHS)**  
**REVISED: 6/21/2023**

The Didactic Lecture Series will occur every Thursday from 12:00 p.m. - 5:00 p.m. Resident Forums with the Program Director will be scheduled after didactics from 5:00 p.m. - 6:00 p.m. once every 4 months.

<b>Time</b>	<b>Thursday PM</b>	
<b>12:00 to 12:50</b>	<b>Grand rounds which include:</b> 1. Quarterly morbidity/mortality 2. Quarterly resident lead case presentations 3. Annual quality improvement conferences 4. Invited lectures	<b>Responsible: Dr. Harlow</b>
<b>12:50 to 1:00</b>	<b>Q &amp; A, Break</b>	
<b>1:00 to 1:50</b>	<b>Case Conferences and Multidiscipline Conferences</b>	<b>Responsible: Dr. Breker</b>
<b>1:50 to 2:00</b>	<b>Q &amp; A, Break</b>	
<b>2:00 to 2:50</b>	<b>Journal Club, AAN Case-Based Curriculum -Practical Ethics in Clinical Neurology (PECN) interactive sessions, and Simulations</b>	<b>Responsible: Dr. Mohl</b>
<b>2:50 to 3:00</b>	<b>Q &amp; A, Exercise Break</b>	
<b>3:00 to 3:50</b>	<b>Neurodiagnostic and Basic Science Lectures (48 lectures)</b>	<b>Responsible: Dr. Lou</b>
<b>3:50 to 4:00</b>	<b>Q &amp; A, Exercise Break</b>	
<b>4:00 to 4:50</b>	<b>Clinical Lecture Series (52 lectures)</b>	<b>Responsible: Dr. Belliston</b>
<b>4:50 to 5:00</b>	<b>Q &amp; A, Break</b>	
<b>5:00 to 6:00</b>	<b>Quarterly resident/faculty socials</b>	

## **American Academy of Neurology (AAN)-Practical Ethics in Clinical Neurology (PECN).**

**Case-Based Curriculum: \*\*Rotating fashion (10 per year) so that an individual resident will be exposed to the topics at least once by the end of their training.**

### Section I: The Approach

1. Approaches to Ethical Problem Solving

### Section II: Professionalism

2. Medical Student Relationships with Patients, Peers, and Teachers
3. Truth Telling and Deception
4. Confidentiality
5. Responding to Medical Errors
6. Gifts from Industry
7. Gifts from Patients
8. Termination of the Physician-Patient Relationship
9. The Impaired Physician
10. Sexual Misconduct by Physicians

### Section III: Informed Consent

11. Informed Consent and Refusal
12. Assent and Refusal by Children and Adolescents

### Section IV: Cognitive Impairment

13. Intellectually Disability
14. Dementia
15. Principled Approach to Neurologically Impaired Drivers
16. Requests for Enhanced Function in Healthy Individuals

### Section V: Issues in Death and Dying

17. Neonate with a Severe Neurologic Disorder
18. Advanced Directives
19. Withholding and Withdrawing Life-Sustaining Treatments in Patients with Decision-Making Capacity
20. Withholding and Withdrawing Life-Sustaining Treatments in Patients Without Decision-Making Capacity
21. Persistent Vegetative State
22. End-of-life Care for the Neurologically Impaired Child
23. Palliative Care
24. Physician-Assisted Suicide
25. Brain Death
26. Organ Donation

### Section VI: Other Topics

27. Genetic Testing in Huntington Disease
28. Opiate Treatment of Chronic Nonmalignant Pain
29. The Clinical Investigator and Involvement in Clinical Research

## American Medical Association | Graduate Medical Education Competency Education Program

**\*\*UND enrolls all incoming PGY-1 residents in the AMA Competencies, and they are issued during June's orientation week. Completion records are housed by the UND GMEC office.**

(AMA) On-Line Educational Modules Include:

### PGY-1 Residents

1. Creating an Effective and Respectful Learning Environment
2. Cultural Competency
3. Patient Hand offs
4. Patient Safety
5. Physician Health: Physician Caring for Ourselves
6. Privacy and Confidentiality
7. Quality Improvement Practices
8. Residents as Teachers
9. Resident Intimidation
10. Sleep Deprivation: Your Life and Your Work
11. Thriving Through Residency: The Resilient Resident
12. Working Effectively within an Interprofessional Team

### Neurodiagnostic and Basic Neuroscience Lecture Series (48 lectures)

#### Electroencephalography (10 lectures) (Diamond, Samaraweera, and Lee)

1. Electricity and Electronics in clinical neurophysiology, EEG equipment and electrodes [Rowan chapter 1] (Diamond)
2. Electrophysiology of EEG and waveforms, montages and multichannel recordings [Rowan chapter 1] (Samaraweera)
3. Normal adult EEG, including sleep [Rowan chapter 2] (Diamond)
4. Normal EEG from neonate to adolescents [Rowan chapter 3] (Samaraweera)
5. Abnormal EEG [Rowan chapter 4] (Samaraweera)
6. EEG and epilepsy [Rowan chapter 5] (Lee)
7. Special epileptiform patterns/EEG in other neurologic and medical conditions [Rowan chapter 6] (Lee)
8. Status epilepticus [Rowan chapter 6] (Lee)
9. EEG: tips on indications/EMU, reading and reporting [Rowan chapter 7] (Samaraweera)
10. Practicum on EEG: review using live/recent examples of normal and abnormal EEG [Review of knowledge gained from above lectures] (Lee)

#### Electromyography (10 lectures) (Lou, Scarberry, Diamond, Muntean)

1. Approach to NCV/EMG and anatomy and Neurophysiology for electrodiagnostic study [Preston's Chapters 1 and 2] (Lou)

2. Fundamentals of Nerve Conduction studies [Preston's Chapters 3,4,5, and 6] (Diamond)
3. Electrodiagnostic sources of errors: anomalies, artifacts, technical factors, and Statistics [Preston's Chapters 7, 8, and 9] (Lou)
4. Detailed nerve conduction studies [Preston's Chapters 10 and 11] (Scarberry)
5. Fundamentals of needle electromyography [Preston's Chapters 12, 13, 14 and 15] (Diamond)
6. Clinical -electrophysiologic correlation [Preston's Chapter 16] (Lou)
7. Common Mononeuropathies [Preston's Chapters 20, 21, 22, 23, 24, 25, 26, 27 and 28] (Muntean)
8. Motor Neuron diseases [Preston's Chapters 30 and 31] (Scarberry)
9. Radiculopathies, plexopathies, and proximal neuropathies [Preston's Chapters 32, 33, 34, 35, and 36] (Muntean)
10. Disorders of neuromuscular junction and Muscle [Preston's Chapters 37, 38 and 39] (Lou)

### Neuroradiology (14 lectures)

Neuroradiology Website Login Credentials	
<a href="https://radiopaedia.org/">https://radiopaedia.org/</a>	
Username:	<a href="mailto:NeuroResFargo@gmail.com">NeuroResFargo@gmail.com</a>
Password:	Sanford#1!

1. Brain CT scan (Facilitator)  
Introduction to CT head: approach and principles.  
<https://www.youtube.com/watch?v=fEPVXmRuR70> (62 min)
2. Brain MRI (Facilitator)
  - a. MRI sequences (13:30)  
<https://www.youtube.com/watch?v=DYXEGY-X1n8&t=91s>
  - b. How to read Brain MRI (42:00)  
<https://www.youtube.com/watch?v=ODNvqoAYkgw>
3. Imaging of the Spine: Part 1 (Lou, AAN Course C1 2023; Saturday April 22)
  - a. Spine anatomy and degenerative disease (40:38)  
<https://learning.aan.com/diweb/catalog/launch/package/4/eid/11546244>
4. Imaging of the spine: Part 2 (Lou, AAN Course C1 2023; Saturday April 22)
  - a. Spine trauma and Infection (32:51)  
<https://learning.aan.com/diweb/catalog/launch/package/4/eid/11546244>
  - b. Spine Tumors and demyelinating diseases (20:08)  
<https://learning.aan.com/diweb/catalog/launch/package/4/eid/11546244>
5. Imaging of Epilepsy (Lou, AAN Course C140 2023; Tuesday, April 25) (63:30)  
<https://learning.aan.com/diweb/catalog/launch/package/4/sid/160969817>

6. Imaging of stroke (Mohl, AAN Course C140 2023; Tuesday April 25)(62:19)  
<https://learning.aan.com/diweb/catalog/launch/package/4/sid/160969817>
7. Imaging of skull base tumors (Breker)
8. Imaging of brain tumors (Breker)
9. Imaging in Movement disorders (Harlow)
10. Imaging in Dementia (Harlow)
11. Imaging of CNS autoimmune, paraneoplastic, and neuro-rheumatologic disorders (Belliston)
12. Imaging of CNS demyelinating disorders (Belliston)
13. Diagnostic ultrasonography in neurology (Mutgi)
14. Safety considerations in MRI and CT (Mohl)

#### Basic Neuroscience (14 lectures)

1. Neurotransmitters & cell and molecular biology of the neuron: Ion channels, transmembrane potentials, and the action potentials (Mohl)
2. Synaptic Transmission: Nerve-nerve and nerve-muscle synaptic transmissions (Lou)
3. Movement (I): the motor units and muscle action; spinal reflexes, voluntary movement (Lou)
4. Movement (II): involuntary movement and the basal ganglia (Harlow)
5. The cerebellum (Harlow)
6. Genetic mechanisms in degenerative diseases of the nervous system (Harlow)
7. Brainstem Anatomy (1) (Breker)
8. Brainstem anatomy (2) (Breker)
9. The autonomic nerve system (Lou)
10. The control of Gaze (Extraocular eye movement) (Breker)
11. Neuropathology of myelin and oligodendrocytes (Belliston)
12. The blood-brain barrier, choroid plexus, and cerebral spinal fluid (Belliston)
13. Neuropharmacology of neuroimmunologic medications (Belliston)
14. Neuropharmacology of anti-epileptics (Mohl)

## **Clinical Neurology Lecture Series (52 lectures)**

### Neurology Emergency Lectures (9 lectures)

1. Neurological Examination (Breker)
2. Status Epilepticus (Diamond)
3. Acute Ischemic Stroke (Mutgi)
4. Acute Hemorrhagic Stroke/SAH/Herniation (Durrani)
5. Acute myelopathy (Belliston)
6. Neuromuscular Emergencies (Lou)
7. Meningitis/Encephalitis (Scarberry)
8. Metabolic encephalopathy (Mohi)
9. Malignant Hyperthermia/Neuroleptic Malignant Syndrome (Harlow)

### Cerebral Vascular Diseases (4 lectures) (Manchak and Mutgi)

1. Stroke in the young (Mutgi)
2. Cerebral sinus thrombosis (Manchak)
3. CNS vasculitis (Mutgi)
4. Primary and secondary stroke prevention (Manchak)

### Headache/Pain (2 lectures) (Muntean)

1. Primary headache syndromes (Muntean)
2. Secondary headache syndromes and intractable headache (Muntean)

### Behavior Neurology (4 lectures) (Caillier and Harlow)

1. Alzheimer dementia (Caillier)
2. Frontotemporal dementia (Caillier)
3. Vascular Dementia (Caillier)
4. Lewy body Dementia (Harlow)

### Movement Disorders (9 lectures) (Harlow)

1. Parkinson's disease (Harlow)
2. Atypical Parkinsonism (Part 1) (Harlow)
3. Atypical Parkinsonism (Part 2) (Harlow)
4. Hyperkinetic disorders: Myoclonus, tremors, chorea, dystonia (Harlow)
5. Huntington's disease (Harlow)
6. Tourette's syndrome (Harlow)
7. Tardive syndromes (Harlow)
8. Functional movement disorders (Harlow)
9. Ataxia Syndrome (Harlow)

### Neuromuscular Diseases (7 lectures) (Scarberry and Lou)

1. Amyotrophic lateral sclerosis and motor neuron diseases (Scarberry)
2. Autoimmune peripheral neuropathies, including AIDP and CIDP (Lou)
3. Pattern recognition in neuropathies (Lou)
4. Myasthenia gravis and other neuromuscular transmission disorders (Lou)
5. Dystrophic disorders (myotonic dystrophy and muscular dystrophies) (Lou)

6. Periodic paralysis and other channelopathies (Lou)
7. Pattern recognition in myopathies (Lou)

Demyelinating and inflammatory CNS diseases (3 lectures) (Scarberry and Belliston)

1. Multiple sclerosis and allied demyelinating diseases (Belliston)
2. Pontine and extrapontine myelinolysis/Neurosarcoidosis (Belliston)
3. Autoimmune encephalitis and reversible/rapidly progressive dementias (Belliston)

Epilepsy and other episodic disorders (4 lectures) (Diamond, Samaraweera, Lee)

1. Epidemiology and natural history of seizure (Samaraweera)
2. Terminology for seizures and epilepsies (Diamond)
3. Focal and generalized seizures (Lee)
4. Psychogenic nonepileptic seizure (Diamond)

Neuro-ophthalmology (3 lectures) (Breker)

1. Functional visual loss (Breker)
2. Ophthalmoscopy Workshop (Breker)
3. Orbital Inflammatory Disorders (Breker)

Pediatric Neurology (4 lectures) (Dsouza and Saifeddine)

1. The floppy infant (Dsouza)
2. Disorders of the motor and mental development (Saifeddine)
3. Autism spectrum disorders (Dsouza)
4. Mitochondrial encephalomyopathies (Saifeddine)

Psychiatry and neurology (3 lectures) (Olson)

1. Psychosis (Dr. Tiffany Doyle)
2. Mood Disorders (Dr. Amer Ibrahim)
3. Basic Psychopharmacology (Dr. Amer Ibrahim)