

Neuromuscular Medicine Fellowship Curriculum

General

- Review Goals and Objectives
- Attend weekly EMG sessions as assigned
- Take a Directed History and Exam of each EMG patient
- Attend every other week Muscle Disease Clinic (Tues AM)
- Attend every Wed AM Neuromuscular Clinic
- Attend weekly neuropathology session (Wed PM)
- Attend Weekly neuromuscular/EMG didactic lecture (Friday AM)
- Follow Inpatient Neuromuscular admissions and consults with attendings
- Attend monthly nerve and muscle biopsy Conference with NM Faculty
- Attend and participate actively Friday Noon NM Conference
- Prepare and present recent papers in weekly NM Journal Club (Wed Noon)
- Prepare and present at the biweekly NM disorder didactic conference (Tues AM)
- Present at Neurology Grand Rounds (third quarter)

Lectures

- Wednesday PM Journal club
- Friday Noon neuromuscular/EMG didactic lecture
- Friday AM Neurology Grand Rounds
- Tuesday AM NM disorder didactic
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Assigned Readings:

- Katirji et al. Neuromuscular Disorders in Clinical Practice, B-H, 2002 (NMDCP)
- Preston and Shapiro. EMG and Neuromuscular Disorders, Elsevier, 2005 (P&S)
- Katirji B. Electromyography in Clinical Practice, Elsevier, 2007 (BK)
- Aids to the Examination of the Peripheral Nervous System (ATEPNS)

Month 1-3

- Read BK Chapters 1-4
 - Introduction to clinical EMG
 - Routine Clinical EMG
 - Specialized EDX studies
 - EDX findings in neuromuscular diseases
- Read P&S Chapters 1-4, 7, 8
 - Approach to NCS and EMG
 - Anatomy and Physiology
 - Basic Nerve Conduction Studies
 - Late Responses
 - Anomalous Innervations
 - Artifacts and Technical Factors
- Read ATEPNS pages 1-61
 - Anatomy of the Median and Ulnar Nerves
 - Anatomy of other Upper Extremity Nerves
 - Anatomy of the Lower Extremity Nerves
 - Motor testing
 - Dermatomes and Myotomes
- Read NMDCP Chapters 1, 2, 7
 - Clinical Assessment of NM Disorders

Basic Concepts
Clinical EMG

- Attend 6-7 EMG Sessions
 - Attend neuromuscular clinic
 - Attend muscle clinic
 - Attend neuropathology session
- Practice Upper Extremity NCSs including F waves
 - Practice Lower Extremity NCSs including F waves and H reflexes
 - Practice writing the Summary and Impression for all EMG reports
 - Observe and interpret needle EMG
 - Review with supervision nerve and muscle biopsies
- Interactive Session with Dr. Katirji: NCS basics
 - Interactive Session with Dr. Preston: NCS patterns
 - Interactive Session with Dr. Alshekhlee: Late responses
 - Interactive Session with Dr. Katirji: Anomalous Innervations
 - Interactive Session with Dr. Preston: Artifacts
- **Quiz: NCS/EMG Basics & Peripheral Anatomy**

Month 4-6

- Read P&S Chapters 12-16, 17-24, 26, 27, 29, 33
 - Basic Overview of EMG
 - Anatomy for needle EMG
 - Analysis of Spontaneous Activity
 - Analysis of Voluntary Activity
 - Median Neuropathy
 - Ulnar Neuropathy
 - Radial Neuropathy
 - Peroneal Neuropathy
 - Femoral Neuropathy
 - Tarsal tunnel syndrome
 - Sciatic neuropathy
 - Polyneuropathy
 - ALS
 - Radiculopathy
- Read BK Cases 1-16
 - Case 1 nerve injury, p. 61
 - Case 2 lumbosacral radiculopathy, p. 81
 - Case 3 sciatic neuropathy, p. 99
 - Case 4 femoral neuropathy, p. 109
 - Case 5 lumbosacral plexopathy, p. 117
 - Case 6 tarsal tunnel syndrome, p. 125
 - Case 7 diabetic amyotrophy, p. 133
 - Case 8 peroneal neuropathy, p. 143
 - Case 9 ulnar neuropathy at the wrist, p. 157
 - Case 10 axillary neuropathy, p. 167
 - Case 11 cervical radiculopathy, p. 175
 - Case 12 radial neuropathy, p. 189
 - Case 13 thoracic outlet syndrome, p. 199
 - Case 14 carpal tunnel syndrome, p. 209
 - Case 15 ulnar neuropathy at the elbow, p. 223
 - Case 16 brachial plexitis (neuralgic amyotrophy), p. 239
- Read NMDCP Chapters 3-6, 11, 13-17, 27
 - Muscle enzymes

Autoantibodies and Immune Polyneuropathies
Autoantibodies in NMJ and Muscle Disorders
Ischemic exercise testing
Autonomic Testing
Imaging of peripheral nerve
Imaging of Muscle
Imaging of Spine
Molecular and Genetic Analysis
Nerve and Muscle Biopsy
Approach to peripheral neuropathies

- Attend 6-7 EMG Sessions
- Attend neuromuscular clinic
- Attend muscle clinic
- Attend neuropathology session
- Write the Summary and Impressions for all performed EMG studies
- Write the summary and findings of all nerve and muscle biopsies interpreted
- Teach rotating neurology residents
- Teach rotating medical students

- Perform and interpret with supervision upper extremity NCS including F waves
- Perform and interpret with supervision Lower Extremity NCS including F waves & H reflexes
- Perform and interpret with supervision needle EMG
- Interpret and discuss the findings of EDX studies
- Write and discuss the Summary and Impressions for all EMG reports
- Observe and interpret repetitive nerve stimulation
- Observe, perform and interpret Forearm exercise testing
- Observe and interpret autonomic studies
- Review and interpret with supervision nerve and muscle biopsies

- Interactive Session with Dr. Preston: Spontaneous Activity
- Interactive Session with Dr. Katirji: Repetitive nerve stimulation
- Interactive Session with Dr. Preston: Voluntary Activity
- Interactive Session with Dr. Katirji: Approach to Peripheral Neuropathies
- Interactive Session with Dr. Chelimsky: Autonomic Testing
- Interactive Session with Dr. Alshekhlee: Safety and complications of EDX studies
- Interactive Session with Dr. Preston: Imaging of the Spine

- **MOCK exam; Video and written Mock exam**

Month 7-9

- Read BK Cases 1-16
 - Case 17 myasthenia gravis, p. 253
 - Case 18 chronic acquired demyelinating neuropathy, p. 275
 - Case 19 amyotrophic lateral sclerosis, p. 291
 - Case 20 polymyositis, p. 305
 - Case 21 Lambert-Eaton myasthenic syndrome, p. 321
 - Case 22 Charcot-Marie-Tooth disease, p. 333
 - Case 23 Guillain-Barré syndrome, p. 345
 - Case 24 botulism, p. 363
 - Case 25 multifocal motor neuropathy, p. 373
 - Case 26 alcoholic peripheral polyneuropathy, p. 387
 - Case 27 vasculitic neuropathy, p. 397
- Read P&S Chapters 28, 30, 32, 34-36
 - Atypical motor neuron disease
 - Plexopathies
 - NM junction disorders

- Myopathy
- Myotonic disorders
- Read NMDCP Chapters 9, 10, 12, 22-26, 33, 41-43, 46-49, 82, 84
- Somatosensory evoked potentials
- Quantitative EMG
- Quantitative Sensory testing
- Poliomyelitis and postpolio syndrome
- ALS
- Spinal Muscular Atrophy
- Atypical motor neuron disorders
- Dorsal Root Ganglion Disorders
- Diabetic Neuropathies
- Peripheral Nerve Injury
- UE compressive/entrapment neuropathies
- LE compressive/entrapment neuropathies
- Cervical Radiculopathy
- Lumbosacral Radiculopathy
- Brachial plexopathy
- Lumbosacral plexopathy
- Neuropathic pain
- Restless leg syndrome

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- Teach rotating neurology residents
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- Perform and interpret with supervision Lower Extremity NCS including F waves and H reflexes
- Perform and interpret with supervision needle EMG
- Perform and interpret repetitive nerve stimulation
- Observe and interpret facial studies and blink reflexes
- Observe and interpret phrenic nerve studies
- Observe and interpret single Fiber EMG studies
- Interpret and discuss the findings of EDX studies
- Write and discuss the Summary and Impressions for all EMG reports
- Perform and interpret Forearm exercise testing
- Observe and interpret autonomic studies
- Review and interpret with supervision nerve and muscle biopsies

- Interactive Session with Dr. Preston: UE Neuropathies
- Interactive Session with Dr. Katirji: LE Neuropathies
- Interactive Session with Dr. Katirji: Peripheral nerve injury
- Interactive Session with Dr. Miller: Diabetic Neuropathies
- Interactive Session with Dr. Katirji: ALS and other MNDs

- **MOCK exam; Video and written Mock exam**

Month 10-12

- Read P&S Chapters 59, 37, 38
- Blink reflex
- EDX in ICU

- Pediatric EMG
- Read NMDCP Chapters 8, 30, 31, 50-54, 57-64, 67, 69, 70, 73-78
- Single Fiber EMG
- GBS
- CIDP
- Myasthenia gravis
- Lambert-Eaton myasthenic syndrome
- Botulism
- Congenital myasthenia
- Drug induced NM junction disorders
- Dystrophinopathies and other muscular dystrophies
- Inflammatory Myopathies
- Toxic myopathies
- Endocrine myopathies
- Rhabdomyolysis and myoglobinuria
- Cramps and fasciculation syndrome
- Stiff man syndrome
- Tetanus
- Neuroleptic malignant syndrome
- Fascitis syndromes
- Chronic fatigue syndrome
- Fibromyalgia
- Spinocerebellar atrophies
- Familial spastic paraplegias

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- Present at Neurology Grand Rounds

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- Perform and interpret with supervision Lower Extremity NCS including F waves & H reflexes
- Perform and interpret with supervision needle EMG
- Perform and interpret repetitive nerve stimulation
- Perform and interpret with supervision Single fiber EMG studies
- Perform and interpret facial studies and blink reflexes
- Perform and interpret phrenic nerve studies
- Perform and interpret single Fiber EMG studies
- Write and discuss the Summary and Impressions for all EMG reports
- Observe and interpret autonomic studies
- Review and interpret with supervision nerve and muscle biopsies

- Interactive Session with Dr. Preston: Radiculopathy
- Interactive Session with Dr. Katirji: GBS and CIDP
- Interactive Session with Dr. Katirji: Inherited Muscle Diseases
- Interactive Session with Dr. Katirji: Therapy in NM Disorders

- **EXAM; National ANNEM TPSAE & NUROMUSCULAR exam**