Mayo Clinic Electromyography (EMG), Electroencephalography (EEG), and Neurophysiology in Clinical Practice

Featuring an ABPN Approved Self-Assessment Activity

Westin Kierland Resort & Spa
Scottsdale, Arizona
Sunday–Saturday
January 29-February 4, 2012
COURSE HIGHLIGHTS
Topics include the fundamental basis for CNP tests including physiology, pathophysiology, clinical correlation and appropriate use of these techniques. Specific procedures include EEG, EMG/nerve conduction studies, evoked potentials, movement disorders studies, autonomic studies, polysomnography, and intraoperative monitoring. Clinical correlation with sleep and neurologic based diseases will be stressed. Newer techniques will be added to this year’s course such as vestibular testing. Also take away pearls on coding, billing and proposed quality metrics for managing the person with epilepsy.

COURSE LEARNING OBJECTIVES
Upon completion of this course, participants should be able to:
• Evaluate reading skills of the routine EEG recognizing potentially confounding normal variants, artifacts and normal waveforms versus epileptiform activity.
• Identify which tests are pertinent to specific clinical problems in EMG.
• Develop an approach to the use of the EMU (epilepsy monitoring unit).
• Identify common treatments using botulinumtoxin in neurophysiology.

INTENDED AUDIENCE
The audience for this course will be practitioners interested in the clinical practice of neurophysiology including both basic and advanced theory and practice. Practitioners looking for a comprehensive review of the CNP or wishing to advance their knowledge base in these areas are encouraged to attend.

DISCLAIMER
Attendance at this Mayo course does not indicate nor guarantee competence or proficiency in the performance of any procedures which may be discussed or taught in this course.

CREDIT
College of Medicine, Mayo Clinic, is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

College of Medicine, Mayo Clinic, designates this live activity for a maximum of 60 AMA PRA Category 1 Credits™ and self assessment 8 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

The American Board of Psychiatry and Neurology has reviewed the “Mayo Clinic Electromyography (EMG), Electroencephalography (EEG), and Neurophysiology in Clinical Practice” program, January 29 – February 4, 2012, (awarding 60 AMA PRA Category 1 credits™, and self assessment 8 AMA PRA category 1 credits™) and has approved this program as part of a comprehensive self assessment program, which is mandated by the ABMS as a necessary component of maintenance of certification.

A record of attendance will be provided to all registrants for requesting credits in accordance with state nursing boards, specialty societies, or other professional associations.

MEETING LOCATION & ACCOMMODATIONS
Westin Kierland Resort & Spa
6902 East Greenway Parkway
Scottsdale, Arizona 85254
(800) 354-5892 • www.kierlandresort.com
You are urged to make reservations early. A limited block of guest rooms have been reserved for attendees with a special course rate of $259 single or double occupancy per night at Westin Kierland Resort & Spa includes unlimited internet access in guest rooms. Group rates will be honored 3 days prior and 3 days following the course dates, based upon space availability. To make your reservation, call (800) 354-5892.

To receive the special rate, you must make reservations before the room block is filled by the expiration date of January 6, 2012. Reservations will be taken following this date based upon resort room availability, at the contracted meeting rate. Attendees are responsible for their own reservations. The standard hotel reservation cancellation policy will apply to individual reservations unless otherwise specified.
AMERICANS WITH DISABILITIES ACT
College of Medicine, Mayo Clinic fully intends to comply with the legal requirements of the Americans with Disabilities Act. If you need assistance, please notify us at least two weeks prior to the activity. E-mail address: mca.cme@mayo.edu

GRANTS & EXHIBITS
This course is supported in part by educational grants, in accordance with ACCME standards. As of this printing, a complete listing of commercial supporters was not available. Appropriate acknowledgment will be given to all supporters at the meeting. Exhibits will be available for viewing at all scheduled breaks.

RECREATION/LEISURE ACTIVITIES
Visit www.visitphoenix.com or www.scottsdalecvb.com for additional recreation and leisure activities.

TRANSPORTATION
Ground Transportation: Hertz is offering a reduced daily rate for participants attending the course. Call (800) 654-2240 and refer to CV Number #03NR0007 when making reservations.

Supershuttle vans offer airport transportation to and from the hotel. To make reservations, call (800) 258-3826 or (602) 244-9000.

Program (EMG / EEG)

Sunday, January 29, 2012 (EMG)

7:00 a.m. Registration & Continental Breakfast
7:50 Welcome and Introduction
Benn E. Smith, M.D.

CLINICAL CORRELATIONS
8:00 Physiology and Electrophysiologic Correlates of Nerve Pathology
P. James B. Dyck, M.D.

8:45 Physiology and Electrophysiologic Correlates of Muscle Pathology
Brian A. Crum, M.D.

9:30 Break

9:45 Electrophysiologic Correlates of Neuromuscular Junction Pathology
Brent P. Goodman, M.D.

10:30 Motor Unit Number Estimates
Jasper R. Daube, M.D.

11:30 Lunch (complimentary)

NERVE CONDUCTION STUDIES
12:30 p.m. Pitfalls of Nerve Conduction Studies (NCS)
Eric J. Sorenson, M.D.

1:00 Special Sensory NCS
Mark A. Ross, M.D.

1:30 Uncommon Motor NCS Including Proximal and Late Responses
Mark A. Ross, M.D.

2:15 NCS in the Pediatric Population
Randa Jarrar, M.D.

3:00 Break

3:15 Repetitive Stimulation: Physiology and Techniques
Brent P. Goodman, M.D.

4:00 Electrophysiologic Evaluation of Cranial Nerve Disorders
Alex Hlubocky, M.D.

5:00 Dinner

6:00 Case Presentations
Drs. E. Peter Bosch, P. James B. Dyck, Brent P. Goodman, and Ales Hlubocky

8:00 Adjourn
Monday, January 30, 2012 (EMG)

7:00 a.m.  Continental Breakfast

ELECTROMYOGRAPHY

7:45  Quiz & Discussion
8:15  Needle Examination Technique  
      Devon I. Rubin, M.D.
8:45  EMG Signal Analysis: Introduction with Video Examples I  
      Drs. Jasper R. Daube and Devon I. Rubin
9:45  Break
10:00  EMG Signal Analysis: Introduction with Video Examples II  
       Drs. Jasper R. Daube and Devon I. Rubin
11:00  Needle EMG of Unusual Muscles  
       Eric J. Sorenson, M.D.

Noon  Lunch

1:00 p.m.  Single Fiber EMG  
           Brian A. Crum, M.D.
2:00  Crafting the EMG Report  
      Benn E. Smith, M.D.
2:45  Break
3:00  Demonstrations: Nerve Conduction Studies  
     – Common and Uncommon Upper Limb Motor and Sensory NCS
     – Common and Uncommon Lower Limb Motor and Sensory NCS
     – Cranial Nerve Conduction Studies and Repetitive Stimulation Techniques
4:00  Demonstrations: Nerve Conduction Studies  
     – Common and Uncommon Upper Limb Motor and Sensory NCS
     – Common and Uncommon Lower Limb Motor and Sensory NCS
     – Motor Unit Number Estimates
5:00  Demonstrations: Nerve Conduction Studies  
     – Common and Uncommon Upper Limb Motor and Sensory NCS
     – Common and Uncommon Lower Limb Motor and Sensory NCS
     – Somatosensory Evoked Potentials
6:00  Dinner
7:00  EMG Signal Analysis: Demonstration  
      Drs. Jasper R. Daube and Devon I. Rubin
8:00  Adjourn

Tuesday, January 31, 2012 (EMG)

6:45 a.m.  Continental Breakfast

APPROACH TO SELECTED CLINICAL DISORDERS

7:15  Quiz
7:45  Carpal Tunnel Syndrome  
      James C. Watson, M.D.
8:30  Brachial Plexopathy  
      Alex Hlubocky, M.D.
9:00  Peripheral Neuropathy  
      Benn E. Smith, M.D.
9:30  Break
9:45  Ulnar Neuropathies  
      Mark A. Ross, M.D.
10:15  Lumbosacral Plexopathy  
       P. James B. Dyck, M.D.
10:45  Motor Neuron Disease  
       Eric J. Sorenson, M.D.
11:30  Neuromuscular Junction Disease  
       Devon I. Rubin, M.D.
12:30 p.m.  Lunch (complimentary)
### Program (EMG / EEG)

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<tr>
<th>Time</th>
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<tr>
<td>1:30</td>
<td>EMG Approaches to Pediatric Disorders</td>
<td>Randa Jarrar, M.D.</td>
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<td>2:15</td>
<td>Localization with EMG</td>
<td>Brent P. Goodman, M.D.</td>
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<td>3:00</td>
<td>Break</td>
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#### DEMONSTRATIONS

- **3:15** *Group Demonstrations: Needle Electrode Examinations*
  - Technique of the Needle Examination
  - Lower Limb Common and Uncommon Muscles
  - Quantitative Electromyography

- **4:15** *Group Demonstrations: Needle Electrode Examinations*
  - Upper Limb Common and Uncommon Muscles
  - Lower Limb Common and Uncommon Muscles
  - Single Fiber Electromyography

- **5:15** *Group Demonstrations: Needle Electrode Examinations*
  - Upper Limb Common and Uncommon Muscles
  - Lower Limb Common and Uncommon Muscles
  - Technique of the Needle Examination

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**Wednesday, February 1, 2012 (EMG/EEG)**

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<td>7:00</td>
<td>Registration &amp; Continental Breakfast</td>
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#### CNP FUNDAMENTALS

- **7:45** *Electricity, Filters and Circuit Analysis: Electrical Safety*
  | Gregory A. Worrell, M.D.                                               |
- **8:15** *Recent Developments in EEG for Seizures: Stimulation, Prediction and High Frequency Oscillations*
  | Gregory A. Worrell, M.D.                                               |
- **9:00** *Intraoperative Monitoring Spinal/Cranial/Peripheral*
  | Brian A. Crum, M.D.                                                    |
- **9:45** *Break*                                                        |                                             |
- **10:00** *Vestibular Testing*                                          | Michael J. Cevette, Ph.D.                                      |
- **11:00** *Essentials of Physiology of Muscle*                          | Benn E. Smith, M.D.                                               |
- **11:45** *Lunch (complimentary)*                                      |                                             |
- **12:45 p.m.** *Visual and Brainstem Evoked Potentials*                | Jonathan L. Carter, M.D.                                         |
- **1:30** *Routine Somatosensory Evoked Potentials*                     | James C. Watson, M.D.                                              |
- **2:15** *Essentials of Physiology of the Cerebral Cortex*             | Gregory D. Cascino, M.D.                                          |
- **3:00** *Break*                                                        |                                             |
- **3:15** *Long Latency Evoked Potentials*                              | Benn E. Smith, M.D.                                               |
- **3:45** *Epidermal Skin Biopsy in Small Fiber Neuropathy*             | Charlene Hoffman Snyder, DNP, NP-BC                                |
- **4:15** *Ultrasonography as a Compliment to Electrodiagonsis*         | James C. Watson, M.D.                                              |
- **5:15** *Ultrasonography Demonstration*                               | Drs. Eric J. Sorenson and James C. Watson                        |
- **6:15** *Adjourn*                                                      |                                             |

**Thursday, February 2, 2012 (EEG)**

#### CNP: MOVEMENT, SLEEP AND AUTONOMIC

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<td>7:30 a.m.</td>
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<td>8:00</td>
<td>Evaluation of Sleep Disorders</td>
<td>Michael H. Silber, M.B., Ch.B.</td>
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**Program (EMG / EEG)**

10:00  Break

10:15  **Autonomic Disorders**  
       Phillip A. Low, M.D.

12:15  **Lunch (complimentary)**

1:15  **Clinical Neurophysiology of Movement Disorders**  
     John N. Caviness, M.D.

2:15  **Neurologic Indications for Botulinum Toxin**  
     Charles H. Adler, M.D., Ph.D.

3:15  **Break**

3:30  **Deep Brain Stimulation for Movement Disorders**  
     Drs. Virgilio H. Evidente and Mark K. Lyons

4:30  **Rare Diseases Presenting with Seizures**  
     Jeffrey W. Britton, M.D.

5:15  Quiz  
     Session Faculty

6:00  Adjourn

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**Friday, February 3, 2012 (EEG Core Principles)**

7:30 a.m.  Continental Breakfast

8:00  **Normal Infant and Children’s EEGs**  
     Lily C. Wong-Kisiel, M.D.

8:45  **Abnormal Infant and Children’s EEGs**  
     Lily C. Wong-Kisiel, M.D.

9:30  **EEG Status Epilepticus Peds**  
     Raj D. Sheth, M.D.

10:15  **Break**

10:30  **Video Peds: EEG for Seizure Localization and Surgery Evaluations**  
     Raj D. Sheth, M.D.

11:30  **Normal Adult EEG with Benign Variants**  
     Matthew T. Hoerth, M.D.

12:15 p.m.  **Lunch (complimentary)**

1:15  **Adult Epileptiform Activity**  
     Katherine H. Noe, M.D., Ph.D.

1:45  **EEG in Status Epilepticus Adult**  
     Katherine H. Noe, M.D., Ph.D.

2:30  **Break**

2:45  **Pitfalls in EEG Interpretation**  
     William O. Tatum IV, D.O.

3:45  **Adult Video: EEG for Seizure Localization and Surgery Planning**  
     Gregory D. Cascino, M.D.

4:45  Adjourn

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**Saturday, February 4, 2012 (EEG Skills in the Hospital Setting)**

7:30 a.m.  Continental Breakfast

8:00  **EEG in the ICU**  
     Elson So, M.D.

9:00  **EMU: Peds**  
     Elaine C. Wirrell, M.D.

10:15  **Break**

10:30  **EEG in the OR**  
     Richard S. Zimmerman, M.D.

11:00  **EMU Adult**  
     Joseph F. Drazkowski, M.D.

12:15 p.m.  Quiz

1:00  Adjourn
### REGISTRATION FORM

**EMG, EEG and Clinical Neurophysiology in Clinical Practice**

**January 29 – February 4, 2012**

Registration at the standard fee may be completed using this form and faxing it to **(480) 301-9176**. Or you can mail it to: Mayo Clinic, Mayo School of CPD, 13400 East Shea Boulevard, Scottsdale, Arizona 85259.

An e-mail confirmation will be sent upon receipt of payment and completed registration. If you do not receive your confirmation, or if you have any questions, please e-mail us at mca.cme@mayo.edu or call **(480) 301-4580**.

No refund will be granted unless a written notice of cancellation is received. If registration must be canceled, tuition less a $75 administrative fee, will be refunded when notification is received on or before January 13, 2012. No refunds will be made after this date.

Although it is not Mayo Clinic’s policy to limit the number of registrants for a course, conference room facilities may necessitate closure of enrollment. Early registration is strongly recommended. Walk-in registrations cannot be guaranteed.

Mayo Clinic will not be responsible for expenses incurred by individuals who are not confirmed for courses with a closed registration status. Costs incurred by the registrant such as airline/hotel fees or penalties are the responsibility of the registrant.

### ON-LINE SYLLABUS:

Your registration fee includes access to an detailed on-line syllabus, e-mailed one week prior to the course. This allows you to view, save, or print the syllabus before attending the course. If you want to order a paper copy (additional fee), check the box at the bottom of this registration form.

### Registration** Please print. Use duplicate form for multiple registrations.**

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If you have special assistance needs or dietary restrictions, describe here:

**$75 DISCOUNT for online registration! Go to www.mayo.edu/cme (offer expires January 3, 2012)**

**Note: When registering on-line, please be sure to “check-out” after your profile is completed/updated.**

- **EMG + EEG** $1,475 $ __________
- **EMG only (Sunday – Wednesday)** $1,050 $ __________
- **EEG only (Wednesday – Saturday)** $950 $ __________
- **Paper copy of the EMG syllabus:** $45 $ __________
- **Paper copy of the EEG syllabus:** $30 $ __________

**Note: Due to printing deadlines, this option will not be available after January 13, 2012**

### Payment Information** (US Funds Only)**

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*Check is enclosed in the amount shown at right – make checks payable to Mayo Clinic CPD.*
FACULTY

MAYO CLINIC:
Charles H. Adler, M.D., Ph.D.
E. Peter Bosch, M.D.
Jeffrey W. Britton, M.D.
Jonathan L. Carter, M.D.
Gregory D. Cascino, M.D.
John N. Caviness, M.D.
Michael J. Cevette, Ph.D.
Brian A. Crum, M.D.
Jasper R. Daube, M.D.
Joseph F. Dratzkowsi, M.D. *
P. James B. Dyck, M.D.
Virgilio H. Evidente, M.D.
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Lily C. Wong-Kisiel, M.D.
Gregory A. Worrell, M.D.
Richard S. Zimmerman, M.D.

*Course Directors

VISITING FACULTY:
Randa Jarrar, M.D.
Child Neurology
Phoenix Children’s Hospital
Phoenix, Arizona

MAYO CLINIC:
Mayo School of CPD
13400 East Shea Boulevard
Scottsdale, Arizona 85259
USA

$75 DISCOUNT FOR ONLINE REGISTRATION!
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