2017 ASNM ANNUAL MEETING

Honoring the Pioneers: 40 Years of IOM

MAY 5 - 7, 2017

INTERCONTINENTAL CLEVELAND
CLEVELAND, OHIO
Meeting Objectives

Attendees should come away with:
1. A clearer understanding of state of the art methodologies and practice of IONM from the neurophysiologists and surgeon's perspective.
2. A clearer understanding of how IONM data can be used to advance the field of IONM.
3. A clearer understanding of the various practice models of IONM.
4. A clearer understanding of the evidence for IONM.

Session Description

Sessions will be covering information on electrical safety in the operating room, billing and coding, neuromonitoring during different procedures, evidence based discussions and much more. On Friday and Saturday, the course has been split into two tracks taking place simultaneously.

Track I will focus on the methodology for the practice of IONM from both the neurophysiologist as well as the surgeon. The track is designed to have paired lectures by a surgeon discussing the surgical procedures and their perspective on IONM and then having a neurophysiologist discuss the application of state of the art methods for IONM.

Track II will focus on these areas of IONM: (1) Optimization of signal acquisition, interpretation and communication; (2) Practice guideline; (3) Technical notes on lateral spread and cranial nerve monitoring; (4) IONM moving from injury to prediction.

Target Audience

Beginner and advanced IOM practitioners including technologists, neurophysiologists, physicians, and individuals involved in the business aspect of intraoperative neuromonitoring.

Planning Committee

Antoun Koht, MD
Matthew Eccher, MD, MS, FAAN, FACNS
Jay Shils, PhD, DABNM, FASNM, FACNS
Carol Ingmanson, MBA, Executive Director, ASNM
Jennifer Fininis, Meeting Coordinator, ASNM
Continuing Education

**ASNM Continuing Education Credit**

ASNM is an ABRET approved provider of continuing education for their IONM related credentials. ABRET is the credentialing board for Electroencephalographic (EEG) Technologists, Evoked Potential (EP) Technologists, and Neurophysiologic Intraoperative Monitoring (CNIM) Technologists, Long Term Monitoring (CLTM) Technologists, and Autonomic Testing Professionals (CAP). Such crediting, however, should not be construed by program participants as endorsement of any type of instruments or supplies mentioned or involved in these presentations. Please be advised that for continuing education hours to apply towards the EEG test, they must be ASET CEUs; however, ASNM CEUs are eligible for the recertification of the EEG credential as well as towards CNIM and EP credentials and recertification. For more information about ASNM Continuing Education credits, please visit: www.ASNM.org/ASNMCEUs

**Continuing Medical Education Credit (CME)**

The American Society of Neurophysiological Monitoring (“ASNM”) designates this live activity for a maximum of 16.5 AMA PRA Category 1 Credit(s)™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

**American Academy of Audiology Continuing Education Credit**

The American Society of Neurophysiological Monitoring (“ASNM”) is pending approval by the American Academy of Audiology to offer Academy CEUs for this activity. The program is worth a maximum of 1.65 CEUs. Academy approval of this continuing education activity is based on course content only and does not imply endorsement of course content, specific products, or clinical procedure, or adherence of the event to the Academy’s Code of Ethics. Any views that are presented are those of the presenter/CE Provider and not necessarily of the American Academy of Audiology.
## Thursday, May 4, 2017

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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</thead>
</table>
| 8:00 AM - 5:00 PM | ASNM Board of Directors Meeting  
*Six Continents Room* |
| 6:00 PM - 8:00 PM | Registration Open  
*2nd Floor Foyer* |
| 6:00 PM - 8:00 PM | ABNM Board Prep (additional charge)  
Jeffrey R. Balzer, PhD, FASNM, DABNM  
*Room 202* |
| 6:00 PM - 8:30 PM | CNIM Board Prep (additional charge)  
James Watt, CNIM  
*Room 203* |

## Friday, May 5, 2017

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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| 7:00 AM - 7:45 AM | Breakfast with Exhibitors  
*The Founder’s Ballroom* |
| 7:45 AM - 8:00 AM | Welcome and Introductions  
**Track I**  
*Amphitheater A*  
Moderator  
Gene Balzer, PhD  
**Track II**  
*Amphitheater B*  
Moderator  
Matthew Eccher, MD, MS, FAAN, FACNS |
| 8:00 AM - 8:30 AM | Surgical Updates for Spine Surgery  
Michael Steinmetz, MD |
| 8:00 AM - 8:30 AM | Optimization of Neuroelectric Recordings in a Patient under Anesthesia  
Aage Møller, PhD, D. Med. Sci |
| 8:30 AM - 9:00 AM | Monitoring During Intradural Spine Procedures  
Richard Vogel, PhD, DABNM |
| 8:30 AM - 9:00 AM | Optimization of Signal Interpretations  
John McAuliffe, III, MD, MBA, DABNM, FAAP |
| 9:00 AM - 9:30 AM | Monitoring During Interventional Procedures  
Anthony K. Sestokas, PhD, DABNM, FASNM |
| 9:00 AM - 9:30 AM | Warning Criteria for Evoked Potentials, Revisited  
Matthew Chan, MD |
| 9:30 AM - 10:00 AM | Reflections on the History and Guarded Future of IONM  
Jack Kartush, MD, FASNM |
| 9:30 AM - 10:00 AM | Electrical Interference and IOM  
Brett Netherton, MS, CNIM, FASNM, FASET |
| 10:00 AM - 10:30 AM | Break with Exhibitors  
*The Founder’s Ballroom* |
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Track I</th>
<th>Track II</th>
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<tr>
<td>10:30 AM - 11:00 AM</td>
<td>Cochrane - Evidence Based, ASNM I</td>
<td>Robert Holdefer, PhD</td>
<td>Monitoring Jugular Oximetry</td>
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<td>Deepak Sharma, MBBS, MD, DM</td>
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<tr>
<td>11:00 AM - 11:30 AM</td>
<td>Cochrane - Evidence Based ASNM II</td>
<td>Christoph Seubert, MD, PhD, DABNM</td>
<td>ASNM Professional Practice Guidelines Presentation to the Membership</td>
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<tr>
<td>11:30 AM - 12:00 PM</td>
<td>IONM as Surrogate Markers: The Locus of Focus</td>
<td>Robert Holdefer, PhD</td>
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<td>12:00 PM - 12:30 PM</td>
<td>Anesthesia for IOM</td>
<td>Tod Sloan, MD, PhD</td>
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<td>12:30 PM - 2:00 PM</td>
<td>Lunch on Own</td>
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<td>2:00 PM - 2:30 PM</td>
<td>Monitoring During Functional Neurosurgery</td>
<td>Jay Shils, PhD, DABNM, FASNM, FACNS</td>
<td>Evidence in IONM: Moving from Injury Prediction to Injury Prevention</td>
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<tr>
<td>2:30 PM - 3:00 PM</td>
<td>Monitoring and Surgical Positions, Technical Pearls</td>
<td>Antoun Koht, MD</td>
<td>Technical Notes for MEP Monitoring</td>
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<tr>
<td>3:00 PM - 3:30 PM</td>
<td>Growing Pains - The Adolescence of IONM in Australia</td>
<td>Adam Hastings, CNIM</td>
<td>Intraoperative Use of Nerve Action Potentials and Direct Nerve Evoked Potentials</td>
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<tr>
<td>3:30 PM - 4:00 PM</td>
<td>Break with Exhibitors</td>
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<td>The Founder’s Ballroom</td>
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Friday, May 5, 2017

**Track I**
Amphitheater A

**Moderator**
Joseph J. Moreira, MD

**4:00 PM - 4:30 PM**
Intradural Spine Surgery: A Team Approach to Techniques and Strategies

Edward Benzel, MD

**4:30 PM - 5:00 PM**
IOM During Major Spine Instrumentation Procedures

Eva Katharina Ritzl, MD

**5:00 PM - 5:30 PM**
Monitoring During Minimally Invasive Spine Surgery

Faisal Riaz Jahangiri, MD, CNIM, DABNM, FASNM

**5:30 PM - 6:00 PM**
The Predictive Value of IOM During Spine Surgery

Jeffrey Balzer, PhD, FASNM, DABNM

**Track II**
Amphitheater B

**Moderator**
George R. “Trey” Lee, III, MD, MS

**4:00 PM - 4:30 PM**
Technical Notes for Cauda Equina Procedures

Stanley Skinner, MD, FASNM

**4:30 PM - 5:00 PM**
Technical Notes for Cranial Nerve EMG

George R. “Trey” Lee, III, MD, MS

**5:00 PM - 5:30 PM**
Transcranial Doppler Ultrasonography

Deepak Sharma, MBBS, MD, DM

**6:00 PM - 8:00 PM**
Networking Reception with Exhibitors

*The Founder's Ballroom*

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*Sponsored by:*
7:00 AM - 7:45 AM
Breakfast with Exhibitors
The Founder's Ballroom

7:45 AM - 8:00 AM
Welcome and Introductions

Joint Session - History of IOM
Amphitheater A
Moderator
Antoun Koht, MD

7:30 AM - 8:00 AM
Governmental Regulations
Gene Balzer, PhD

8:00 AM - 8:30 AM
Early Establishment of SEP Landmarks
Marc Nuwer, MD, PhD

8:30 AM - 9:00 AM
Outcomes and Cost-Effectiveness Research in Intraoperative Neurophysiologic Monitoring
John Ney, MD, MPH

9:00 AM - 9:30 AM
How is IOM Funded in Canada?
David Houlden, PhD

9:30 AM - 10:00 AM
Break with Exhibitors
The Founder’s Ballroom

10:00 AM - 10:30 AM
Reflections on the German Neurosurgical Experience in Developing IOM
Johannes Schramm, MD

10:30 AM - 11:00 AM
Reflections on the Origin of S.C.E.P. Monitoring
Clyde Nash, MD

11:00 AM - 11:45 AM
Presidential Speaker - Reflections on the History of IOM / Japanese Experience
Tetsuya Tamaki, MD, PhD

12:00 PM - 2:00 PM
Business Lunch (ASNM Members Only)
Saturday, May 6, 2017

**Track I**  
_Amphitheater A_  
**Moderator**  
Laura Hemmer, MD

2:00 PM - 2:30 PM  
Monitoring During Awake Craniotomy  
Matthew Eccher, MD, MS, FAAN, FACNS

2:30 PM - 3:00 PM  
Monitoring During Vascular Procedures  
Christoph Seubert, PhD

3:00 PM - 3:30 PM  
Monitoring During Microvascular Decompression  
Joseph J. Moreira, MD

3:30 PM - 4:00 PM  
Break with Exhibitors  
The Founder’s Ballroom

4:00 PM - 4:30 PM  
Posterior Fossa Surgery  
Varun Kshettry, MD

4:30 PM - 5:00 PM  
Monitoring Cranial Nerves III Through VIII  
Jeffrey Balzer, PhD, FASNM, DABNM

5:00 PM - 5:30 PM  
Monitoring Lower Cranial Nerves VIII - XII  
Lanjun Guo, MD, MSc, DABNM

**Track II**  
_Amphitheater B_  
**Moderator**  
Michael McCaffrey, PhD

2:00 PM - 2:30 PM  
Visual Evoked Potentials  
David Houlden, PhD

2:30 PM - 3:00 PM  
Cortical and Spine Mapping  
Charles Yingling, PhD, CNIM, DABNM, FASNM, FACNS

3:00 PM - 3:30 PM  
Communications During Monitoring  
Clare Gale, CNIM, R.EEG/EPT, FASNM, FASET

3:30 PM - 4:00 PM  
Break with Exhibitors  
The Founder’s Ballroom

4:00 PM - 4:30 PM  
Pedicle Wall Integrity  
Neil Holland, MD

4:30 PM - 5:00 PM  
Technical Notes for Lateral Spread  
Matt Cotton, MS, CNIM, FASNM

5:00 PM - 5:30 PM  
Simulation Education in Neurophysiological Monitoring: Needs Assessment  
Ljuba Stojiljkovic, MD, PhD

7:00 PM - 10:00 PM  
40th Anniversary Gala Dinner Honoring the Pioneers  
(Additional fee)  
_Cleveland Botanical Garden_  
Join us to honor the pioneers whose research, clinical expertise, and leadership have made great strides for the field of intraoperative neuromonitoring and the Society.  
_Cocktail Attire Preferred_  
Thank you to our Anniversary Dinner Sponsors!
7:00 AM - 8:00 AM
Breakfast
Amphitheater 3rd Floor Foyer

Joint Session
Amphitheater A
Moderator
W. Bryan Wilent, PhD, DABNM

8:00 AM - 8:30 AM
Monitoring of Pelvic Procedures
Stanley Skinner, MD, FASNM

8:30 AM - 9:00 AM
Monitoring During Spinal Cord Stimulation, Collision Test
Matthew Eccher, MD, MS, FAAN, FACNS

9:00 AM - 9:30 AM
Complications of Intraoperative Monitoring
Jeff Gertsch, MD

9:30 AM - 10:00 AM
Break

10:00 AM - 1:00 PM
Abstracts and E-Posters

1:00 PM - 1:30 PM
Awards Presentations and Closing Remarks
Gene Balzer, PhD  
Chief Executive Officer  
Allied Managed Process, LLC

Jeffrey R. Balzer, PhD, FASNM, DABNM  
Associate Professor  
Neurosurgery, Neuroscience and Acute and Tertiary Care Nursing  
University of Pittsburgh Medical Center

Edward Benzel, MD  
Emeritus Chairman  
Cleveland Clinic Department of Neurosurgery

Matthew Chan, MD  
Professor  
The Chinese University of Hong Kong

Matt Cotton, MS, CNIM, FASNM  
Senior Technologist  
Northwestern Medicine

Matthew Eccher, MD, MS, FAAN, FACNS  
Neurophysiologist, SpecialtyCare, and,  
Assistant Professor, Neurology and Neurosurgery  
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Robert Holdefer, PhD  
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Neil Holland, MD  
Chair of Neurology  
Geisinger Health System

David Houlden, PhD  
Neurophysiologist  
The Ottawa Hospital - Canada

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Jahangiri Consulting LLC

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Emeritus Professor  
Michigan Ear Institute, Wayne State University

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Northwestern University

Varun Kshettry, MD  
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Cleveland Clinic

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President  
Real Time Neuromonitoring Associates

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Anesthesiologist-in-Chief  
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UCLA Department of Neurology

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Anthony K. Sestokas, PhD, DABNM, FASNM  
Chief Clinical Officer, IONM  
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Professor of Anesthesiology and Neurosurgery  
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Jay Shils, PhD, DABNM, FASNM, FACNS  
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has disclosed income from SignalGear as a Clinical Consultant

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has disclosed income Advisory board income from Corticare, Inc.

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Marc Nuwer, MD, PhD
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Johannes Schramm, MD
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Anthony K. Sestokas, PhD, DABNM, FASNM
has disclosed income from Inomed Co., consultant and research income in the field of neuromonitoring

Christoph Seubert, MD, PhD, DABNM
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Deepak Sharma, MBBS, MD, DM
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Jay Shils, PhD, DABNM, FASNM, FACNS
has disclosed income from Globus, Inc., advisory board, and Intellihat, Inc. and Engineurix, Inc., ownership interest

Stanley Skinner, MD, FASNM
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has disclosed consultant income from Biomet Spine, Intellirod, Elsevier and Globus Spine; and Speaker Bureau income from Stryker Spine

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Andrea Szelenyi, MD, PhD
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Tetsuya Tamaki, MD, PhD
has disclosed no relevant financial relationships

Richard Vogel, PhD, DABNM
has disclosed Research income from Medtronic, consultant and speaker income

Charles Yingling, PhD, CNIM, DABNM, FASNM, FACNS
has disclosed no relevant financial relationships

Reviewer Disclosure Statements

John D. Hastings, MD, DABNM, FASNM
has disclosed no relevant financial relationships

J. Richard Toleikis, PhD, DABNM, FASNM
has disclosed no relevant financial relationships

Planning Committee / Administration Disclosure Statements

Antoun Koht, MD
has disclosed no relevant financial relationships

Jay Shils, PhD, DABNM, FASNM
has disclosed income from Globus, Inc., advisory board, and Intellihat, Inc. and Engineurix, Inc., ownership interest

Jennifer Fininis, Meeting Coordinator, ASNM
has disclosed no relevant financial relationships

Matthew Eccher, MD, MS, FAAN, FACNS
has disclosed no relevant financial relationships

Carol Ingmanson, MBA, Executive Director, ASNM
has disclosed no relevant financial relationships
Benefit of Intraoperative Neurophysiological Monitoring (IONM) in a Pediatric Patient With Spinal Dysmorphysim, Split Cord and Scoliosis
Faisal R. Jahangiri, MD, CNIM, D.ABNM, FASNM1,2; Samir Al Sayegh, MD3; Moutasem Azzubi, MD4; Abdulrahman M. Alrajhi5; Monerah M. Aannami6; Shmoukh A. M. Al-Sharif6; Tanweer Aziz, MD7; Sami Al Eissa, MD3

Elastomeric Artificial Joints and Intervertebral Prosthesis Systems
Ervin Caballes, CNIM

Intraoperative Monitoring (IONM) Alerts in a Pediatric Deformity Center
Zuccaro M., Zuccaro J.; Samdani A.; Hwang S.; Pahys J.

Intraoperative SSEPs Detecting Midline Shift due to Malpositioned Mayfield Pins and the Benefits of an MRI-OR
Taylor Mazurek, CNIM; Nicholas Chulski CNIM

Intraoperative SSEPs and TcMEPs Lost During a Last Distraction in a Scoliosis Case
Shuiping Dai PhD, CNIM

Intravenous Catheter Infiltration Causing Intraoperative Neurophysiologic Alerts: A Case Report
Zuccaro M.; Zuccaro J.; Samdani A.; Hwang S.; Pahys J.

IONM SSEP and LQP-TcMEP: Technical Advancement with Navigation
Ernesto Lima, MD1; Srikant S. Chakravarthi, MD, MSc2; Bernard A. Cohen, PhD1; Amin B. Kassam MD2; Lisa J. Mueller, DPT1

Linked Quadri-Polar TcMEP (LQP-TcMEP) Technique During a Scoliosis Procedure: A Case Report
Ernesto Lima MD, DABNM, CNIM; Lisa Mueller DPT; Bernard Cohen, PhD, FASNM, FACNS

Loss of Bilateral Erbs Responses without the Reduction of Cortical and or Cervical Responses During a Posterior Lumbar Spine Fusion Procedure: A Unique Case of Brachial Plexus Compression
Anand Immaneni, PhD, CNIM

Low Threshold Linked Quadri-Polar (LQP) TcMEP During Left Middle Cerebral Artery Aneurysm Clipping: A Case Report
Ernesto Lima MD, DABNM, CNIM; Lisa Mueller DPT; Bernard Cohen, PhD, FASNM, FACNS

Muscle Evoked Potentials after Spinal Cord Stimulation Can Monitor Motor Tract
Muneharu Ando1 MD, PhD and Tetsuya Tamaki2 MD,PhD

Neuromonitoring in Pediatric Deformity Surgery: Comparison of Two Practice Models
Zuccaro J.; Zuccaro M.; Samdani A.; Hwang S.; Pahys J.

Neuromonitoring During Surgical Treatment of Thoracic Outlet Syndrome
Jeremy S. McCallister, AuD, CNIM, DABNM; Ralph Ierardi, MD, FACS, ARDMS; Sonya Tuerff, MD, FACS, ARDMS
Pattern of Corticospinal Projections Defined by Brain Mapping During Resective Epilepsy Surgery in a Patient with Congenital Hemiparesis and Intractable Epilepsy
Tsui-Fen Yang; Hsin-Hung Chen; Chien Chen; Jan-Wei Chiu

The First Clinical Trial of a Cortical Visual Prosthesis
Vernon L. Towle, PhD; Marty Bak, BSEE; Stuart Cogan, PhD; Gislin Dagnelie, PhD; Glenn DeMichele, MSEE; John Maunsell, PhD; Doug McCreery, PhD; Janet Szlyk, PhD; Philip Troyk, PhD, PI

Using a Subdural Strip to Define the Lowest Functional Conus Medullaris During Detethering Surgery of Tethered Cord Syndrome
Tsui-Fen Yang; Muh-Lii Liang; Jan-Wei Chiu

Utilization of Multimodality Monitoring During Cerebrovascular Procedures: Relative Sensitivity, Specificity, and Odds Ratios for Motor Deficits
W. Bryan Wilent, PhD, DABNM; Eric A. Tesdahl, PhD; Tony Sestokas, PhD, DABNM, FASNM
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Nihon Kohden is the leading manufacturer, developer and distributor of medical electronic equipment, with subsidiaries in the U.S., Europe and Asia. The company is a trusted source for patient monitoring, sleep assessment, neurology and cardiology instrumentation solutions, and has been recognized for the highest customer satisfaction among U.S. hospitals and health systems for 40 consecutive quarters (MD Buyline). [http://us.nihonkohden.com/](http://us.nihonkohden.com/)

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Rhythmlink International is a medical device manufacturing company specializing in devices that help connect patients to machines to record or elicit physiologic information. Rhythmlink designs, manufactures and distributes a variety of medical devices for intraoperative neuromonitoring, electroencephalography, evoked potentials, polysomnography, long-term monitoring epilepsy and critical care units. Founded by neurodiagnostic technicians and engineers in 2002, Rhythmlink enhances patient care worldwide by transforming medical device technology that links patients to equipment. Rhythmlink also offers custom packaging, custom products, private labeling and contract manufacturing services. [www.rhythmlink.com](http://www.rhythmlink.com)

Rochester Electro-Medical, Inc.

For over 50 years, Rochester has been your source for affordable, high quality Neurodiagnostic Products, and Customer Service with a personal touch. Featured products include customizable lines of Single, Paired, and Ribbon Horizon™ Subdermal Needle Electrodes that combine excellent performance and value. Contact Rochester for information on their full range of Disposable Products, Probes, Electrodes, Needles, Sensors and Accessories. [www.rochestermed.com](http://www.rochestermed.com)

Signal Gear®

Signal Gear® is a medical device company focused on designing neurodiagnostic accessories. Founded on the premise that passionate, thoughtful study is key to innovation and creativity, we study the scientific literature, the patient and clinical practice. All Signal Gear® products will be the best or we won't sell them. [www.signalgear.com](http://www.signalgear.com)

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Physicians and hospitals should always have the best possible means to ensure the most positive patient outcomes, while being able to maintain their own financial health and success. To help our customers achieve this, we are committed to delivering exceptional care outcomes, patient safety, and financial results in over 1,000 hospitals and health systems, supporting 13,000 physicians during 350,000+ procedures annually. [www.specialtycare.net](http://www.specialtycare.net)
Trusted Neurodiagnostics Academy

Trusted Neurodiagnostics Academy is dedicated to bringing the technologist in the electroneurodiagnostic field to the highest level. We offer online courses that meet ABRET’s education requirements and the essentials that a technologist will need to sit for the board. Experienced technologists can choose any of our ASET approved courses for their CEU needs as well. The courses are completed on the technologist’s time without the cost of travel or loss of case coverage for their training. Reports are available for supervisors to check the status of their employees progress during their membership.


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Established. Focused. Global. At Cadwell®, we are passionate about enabling quality, informed outcomes for your patient care. Our neurodiagnostic and neuromonitoring solutions are designed to deliver efficient workflow, quality data, reliable performance and easy reporting wherever and whenever you need it. Our brands include Arc EEG, LTM and ICU cEEG; Sierra® EMG and EP with integrated ultrasound; Cascade® IONM; Easy® PSG and CadLink™ data management. Our global sales and support teams serve physicians and medical centers worldwide. We take pride in combining customer input with our employees’ expertise and USA-made components to provide the best solutions in the industry.

www.cadwell.com

Consolidated Neuro Supply

Located in the heart of the technology district in Milford, OH, Consolidated Neuro Supply, Inc. is a leading provider of healthcare products used to monitor critical neurological structures during high-risk surgical procedures. With nearly $5 million in annual sales, product offerings include subdermal needle electrodes, pedicle screw and direct nerve stimulators, laryngeal electrodes, surface electrodes, and other IONM accessories. Our line includes our own brands as well as those from other industry leaders. The company has been in business since June 2003.

www.neurosupply.com

Max Neuro Supply

Max Neuro Supply Inc. is a provider of health-care products used to diagnose neurological disorders, and monitor critical neurological structures during high-risk surgical procedures. The product line includes sub-dermal needles, surface electrodes, disposable bipolar, mono-polar, and concentric direct nerve probes.

www.maxneurosupplyinc.com
Medtronic

Medtronic is the world’s largest medical technology company, offering an unprecedented breadth and depth of innovative therapies to alleviate pain, restore health, and extend life. Surgical Technologies business comprises our Ear, Nose, and Throat (ENT); Neurosurgery; & Advanced Energy organizations. Our products and procedural solutions encompass a broad variety of surgical applications, including neurosurgical spine, cranial, and orthopaedics; ENT; and surgical oncology – more than any other Medtronic business. Our core products include advanced surgical navigation and imaging solutions, powered surgical tools and systems, intraoperative nerve monitoring devices, advanced energy-based tools for hemostatic sealing & tissue dissection, and implantable hydrocephalus management products. www.medtronic.com

SafePassage Neuromonitoring

Safe Passage Neuromonitoring is a professional Medical Services firm specialized in Pre, Peri and Intraoperative Monitoring (IOM) services. With headquarters in New York, NY, Safe Passage places a local approach to service, striving to maintain continuity of care by keeping familiar faces in the operating room. Through an experienced and highly certified team of IOM professionals, Safe Passage aims to provide the highest quality in IOM services with patient safety and surgeon satisfaction as the highest priorities. www.safepassagenm.com

Knowledge Plus, Inc.

Knowledge Plus is the PREMIER neurodiagnostic & polysomnographic continuing education provider whose mission is to design and implement programs that enhance the effectiveness of health-care professionals and companies. Knowledge Plus helps companies and people in health-care achieve their organizational and personal continuing education goals through training and health-care education programs and products.

Natus Medical Incorporated

Natus is a provider of healthcare products used for the screening, detection, treatment, monitoring and tracking of common medical ailments in newborn care, hearing impairment, neurological dysfunction, epilepsy, sleep disorders, and balance and mobility disorders. The product line includes neurodiagnostic systems for audiology, neurology, polysomnography, and neonatology, as well as newborn care products such as hearing screening systems, phototherapy devices for the treatment of newborn jaundice, head-cooling products for the treatment of brain injury in newborns, incubators to control the newborn's environment, and software systems for managing and tracking disorders and diseases for public health laboratories. www.natus.com
Ad-Tech Medical Instrument Corporation

Since 1983, Ad-Tech Medical has provided the finest devices for the surgical treatment of epilepsy as well as devices for neurosurgery. Ad-Tech’s epilepsy monitoring products have become known as the “gold standard”. Today, Ad-Tech’s devices are registered and approved for use in over 60 countries. As Ad-Tech Medical enters its 32nd year serving the neurological/neurosurgical market, it continues its commitment to develop the next level of technology for neuro-monitoring devices. www.adtechmedical.com

Ambu, Inc.

Ambu Inc. in Glen Burnie, MD is a private company established in 1983. Leading the way in the design and development of high quality single-use electrodes for accurate monitoring, Ambu offers a complete range of electrodes for different applications to meet your needs: Blue Sensor electrodes for Cardiology (ECG): 12-lead ECG, Holter, Stress, Neonatal, Monitoring; Neuroline electrodes and needles for Neurophysiology: EMG, EEG, Evoked Potentials, Nerve Conduction Studies, Intraoperative Monitoring and Polysomnography; Sleepmate sensors for Polysomnography (Sleep Studies). www.ambuusa.com

Apex IONM Solutions

Apex IONM Solutions is committed to helping your intraoperative neuromonitoring company succeed. Years of experience in running a successful IOM company have given this braintrust the knowledge, skills and abilities to help support your IONM business. Apex offers turn-key solutions that can help enhance your time and profitability, including best-in-class, billing services; ABRET CEU-approved educational offerings; technology solutions; and administrative leadership such as credentialing, contracts, and more. www.apexionmsolutions.com

Encompass Healthcare Billing

Encompass Healthcare Billing offers full service medical billing for your practice, specializing in Intraoperative Monitoring (IOM) billing and collections. With over 30 years experience in medical billing, our staff excels in our goal to maximize reimbursements for all healthcare practices for both in and out of network billing. We have developed a proprietary system to link our clients to our billing professionals. This allows for quicker and more efficient processing and collections. We look forward to working with you. http://encompasshb.com

Ideal Health Careers, Inc.

Ideal Health Careers is a specialty recruitment firm focused exclusively on the field of Neurophysiology. Our mission is to assist both technologists and neurologists in fulfilling career objectives in IOM by providing a unique approach that is confidential, discreet, and individually tailored to meet your career needs. We have placed over 100 neurophysiology professionals since 2005 in meaningful positions, from entry-level technologists to experienced reading physicians. Whether you are a job candidate seeking a more meaningful career or an employer seeking top talent, please stop by our booth and see how we can help. You have nothing to lose and everything to gain. www.idealhealthcareers.com
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We strive to improve the quality of life for every patient we serve by safeguarding their neural pathways. IntraNerve is patient driven, cost-attentive, focused on the continuing medical education of our clinical staff, and dedicated to distinction in the field of neurophysiological monitoring.  
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Medtronic is the world’s largest medical technology company, offering an unprecedented breadth and depth of innovative therapies to alleviate pain, restore health, and extend life. Surgical Technologies business comprises our Ear, Nose, and Throat (ENT); Neurosurgery; & Advanced Energy organizations. Our products and procedural solutions encompass a broad variety of surgical applications, including neurosurgical spine, cranial, and orthopaedics; ENT; and surgical oncology — more than any other Medtronic business. Our core products include advanced surgical navigation and imaging solutions, powered surgical tools and systems, intraoperative nerve monitoring devices, advanced energy-based tools for hemostatic sealing & tissue dissection, and implantable hydrocephalus management products.  
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**US Monitoring, Inc (USMON)**

USMON (U.S. Monitoring, Inc.) is the ultimate HIPAA compliant, ONC Certified EHR, work-flow solution for companies who need to manage medical data. USMON features a simple, user-customizable interface, along with a comprehensive, high performing, robust workflow system that dynamically links users with the resources and applications necessary to do their jobs. With our consistent, automated processes and integrated insurance billing software, USMON provides all the services you need at an affordable price, saving you time and money.  
www.usmon.com

**Not-for-Profit Associations**

**ABRET**

ABRET Neurodiagnostic Credentialing & Accreditation offers five credentials (R. EEG T.®️, R. EP T.®, CNIM®, CLTM®, CAP®️) the CMEG certificate program, and three laboratory accreditation programs (LAB-EEG, LAB-NIOM, and LAB-LTM.) Learn more about credentialing, laboratory accreditation, view resources and receive assistance in recruiting neurodiagnostic technologists.  
www.abret.org

**ASET**

The American Society of Electroneurodiagnostic Technologists is the largest national professional association for individuals involved in the study and recording of electrical activity in the brain and nervous system. Organized in 1959, ASET’s mission is to provide leadership, advocacy and professional excellence for our members, creating greater awareness of the profession and establishing standards and best practices to ensure quality patient care.  
www.aset.org
### UPCOMING EVENTS

#### 2017 Fall Symposium
- **September 9-10, 2017**
- Hilton Baltimore
- Baltimore, Maryland

#### 2018 Annual Conference
- **February 23-25, 2018**
- Walt Disney World Swan and Dolphin
- Lake Buena Vista, Florida

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#### Neuromonitoring in the Interventional Radiology Suite
- **Wednesday, May 24, 2017**
- 7:00 PM EST
- James A. Watt, Jr.
  - VP of Neuromonitoring Services - Comprehensive Neuromonitoring Services

#### Monitoring in Pediatric Neurosurgery
- **Wednesday, August 30, 2017**
- 7:00 PM EST
- George Jallo, MD
  - Director - Johns Hopkins All Children’s Institute for Brain Protection Sciences
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