



PRINCIPLES AND PRACTICE OF
**INTRAOPERATIVE
NEUROMONITORING**

NOVEMBER 6-8, 2020

UPMC
LIFE CHANGING MEDICINE

Course Objectives

Principles and Practice of Intraoperative Neuromonitoring is designed for advanced professionals who perform or support intraoperative neuromonitoring (IONM) procedures. This includes but is not limited to:

- Neurologists
- Surgical Neurophysiologists
- PM&R physicians
- Neurological Surgeons
- Anesthesiologists
- Orthopedic Surgeons
- Board Certified Neurophysiologists
- Vascular Surgeons
- Senior Neurophysiology Technologists
- ENT Surgeons
- Cardiac surgeons

The course will highlight practice specifications, multimodality protocols, recent advances in the field, pre-/post-operative neurological evaluation and management, and telemedicine. Presentations will make reference to current literature, technical developments, methodologies and clinical efficacy. The faculty includes University of Pittsburgh Medical Center physicians and neurophysiologists with extensive clinical and academic expertise in IONM. The course is designed to expose the participants to material that will allow them to acquire a comprehensive understanding of IONM and how it relates to a wide variety of relevant topics such as:

- Advanced principles for neurophysiological monitoring, including instrumentation, neuromonitoring protocols, alarm criteria and clinical efficacy
- Minimally invasive spine surgery, including transposas approaches
- Pre-, peri- and post-operative evaluation of neurological complications including stroke, cognitive deficits, seizure and spinal cord injury
- Multimodality monitoring techniques for a broad array of procedures including spine and vascular
- Cranial nerve monitoring during skull base procedures
- Interpretation and communication with surgical team
- Development of a Policy & Procedure manual; documentation and communication with the technologist; development of quality assurance metrics; and staff training
- Problem based learning with real-time data analysis and formulation of differential diagnoses

Interactive Workshop Stations

- Instruction and the opportunity to practice placing cranial nerve EMG electrodes on a cadaver (including the extra-ocular muscles)
- Case study review session where participants will work through differential diagnoses
- Cerebrovascular anatomy and the role of IONM in Neurointerventional procedures
- Explore technical problems in IONM and how to develop algorithms for troubleshooting

Course Directors

Katherine Anetakis, MD

University of Pittsburgh Department of Neurological Surgery

Jeffrey R. Balzer, PhD,

FASNM, DABNM

Associate Professor of Neurological Surgery, Neuroscience and Acute and Tertiary Care Nursing

Director, Clinical Operations, Center for Clinical Neurophysiology

*Director, Cerebral Blood Flow Laboratory
University of Pittsburgh Medical Center*

Partha Thirumala, MD,

FACNS, FAAN

Associate Professor of Neurological Surgery and Neurology

Medical Director, Center for Clinical Neurophysiology University of Pittsburgh Medical Center

Course Coordinator

R. Joshua Sunderlin, M.S., CNIM

Education Specialist – Procirca Center for Clinical Neurophysiology

Faculty

Jeffrey Balzer, PhD

University of Pittsburgh Department of Neurological Surgery

James Castellano, MD, PhD

University of Pittsburgh Department of Neurological Surgery

Rabih Chaer, MD

University of Pittsburgh Department of Vascular Surgery

Mindy Corridoni, CNIM

Procirca Center for Clinical Neurophysiology

Donald Crammond, PhD

University of Pittsburgh Department of Neurological Surgery

Ryan Dzadony, M.Ed, CCP, LP

Procirca School of Perfusion

Stephen Esper, MD

University of Pittsburgh Department of Anesthesiology

Wendy Fellows-Mayle, PhD

University of Pittsburgh Department of Neurological Surgery

Bradley Gross, MD

University of Pittsburgh Department of Neurological Surgery

Adam Kanter, MD

University of Pittsburgh Department of Neurological Surgery

Carly Kleynen, CNIM

Procirca Center for Clinical Neurophysiology

Joseph Maroon, MD

University of Pittsburgh Department of Neurological Surgery

Rachel Mihal, CNIM

Procirca Center for Clinical Neurophysiology

Andrew Moyer, CNIM

Procirca Center for Clinical Neurophysiology

Ryan Quallich, CNIM

Procirca Center for Clinical Neurophysiology

Jeremy Shaw, MD

University of Pittsburgh Department of Orthopedic Surgery

R. Joshua Sunderlin, MS, CNIM

Procirca Center for Clinical Neurophysiology

Partha Thirumala, MD

University of Pittsburgh Department of Neurological Surgery

Shyam Visweswaran, MD, PhD

University of Pittsburgh

George Zenonos, MD

University of Pittsburgh Department of Neurological Surgery

Pascal Zinn, MD

University of Pittsburgh Department of Neurological Surgery

Rich Vogel, PhD

President of American Society of Neurophysiological Monitoring

Jaime López, MD

*Stanford University School of Medicine
Department of Neurology*

Keynote Speaker

Kathleen Seidel, MD, PhD

Department of Neurosurgery, Inselspital University Hospital, Bern Switzerland

DAY 1: FRIDAY, NOV. 6th

7:00A-7:30A	Continental Breakfast	
7:30A - 7:45A	Welcome address	Jeff Balzer PhD/Josh Sunderlin MS, CNIM
Principles of Intraoperative Neuromonitoring:		
7:45A-8:15A	IONM: The History and Physiological Basis	Partha Thirumala MD
8:15A-8:45A	Principles of EEG Monitoring during surgery	Katherine Anetakis, MD
8:45A - 9:15A	Principles of SSEP Monitoring During Surgery	Donald Crammond, PhD
9:15A - 9:30A	BREAK (15 min)	
9:30A - 10:00A	Principles of TcMEP Monitoring During Surgery	Jeffrey Balzer, PhD
10:00A - 10:30A	Principles of BAER Monitoring During Surgery	James Castellano, MD, PhD
Deep Brain Stimulator:		
10:30A - 11:00A	Microelectrode Recording for DBS	Donald Crammond, PhD
11:00-11:45A	LUNCH BREAK - 45 minutes	
IONM For Spinal Surgery:		
11:45A-12:15P	Spinal Cord Stimulator	Jeff Balzer, Ph.D
12:15 - 12:45P	Minimally Invasive Spine Procedures	Adam Kanter, MD
12:45P - 1:15P	Spinal fusion Procedures	Jeremy Shaw, MD
1:15P - 1:45P	Lumbar Nerve Root Monitoring	Rich Vogel, Ph.D
1:45P - 2:00P	BREAK (15 min)	
Supratentorial Mapping:		
2:00P - 2:30P	IONM for Epilepsy Surgery	James Castellano, MD, Ph.D
2:30P - 3:00P	Awake craniotomy procedures with language mapping	Pascal Zinn, MD
Keynote Speech:		
3:00P - 3:45P	Cortical and Subcortical Motor Mapping in Neurooncological Surgery	Kathleen Seidel, MD, PhD
Skull base Procedures:		
3:45P-4:30PM	Skull base procedures	George Zenonos, MD
4:30P - 5:30P	Break - change of venues	
Evening Session Meet and Greet:		
5:30P - 7:30P	Meet and Greet with Faculty & Exhibitors, Hilton Garden Inn	
6:00P - 7:00P	“From Icarus to Aequanimitas - Overcoming Adversity and Acquiring Resilience”	Joseph Maroon, MD
7:30P	Adjournment	

DAY 2: SATURDAY, NOV. 7th

7:00A-7:30A	Continental Breakfast	
7:30A - 7:45A	Day 2 Announcements	Jeffrey Balzer PhD/ Josh Sunderlin MS
IONM for Stroke Prevention:		
7:45A-8:15A	IONM and Stroke Prevention/Management	Partha Thirumala, MD
8:15A-8:45A	Neurointerventional Procedures	Bradley Gross MD
8:45A - 9:15A	Carotid Endarterectomy & TCAR	Rabih Chaer, MD
9:15A - 9:30A	BREAK (15 min)	Exhibitor area
9:30A - 10:00A	Cardiopulmonary Bypass Aortic Arch Repair	Ryan Dzadony, M.Ed, CCP, LP
10:00A - 10:30A	Preoperative Screening for Stroke: Who gets IONM?	Stephen Esper, MD
10:30A - 11:15A	Advanced IONM for Open Cerebrovascular Procedures	Jaime Lopez, MD
11:15A - 12:15P	Lunch in Exhibitor area (1 hour)	
Workshops:		
12:15P - 12:45P	Bloodborne Pathogens lecture and exam	Josh Sunderlin, MS
12:45P - 5:15P	Interactive Workshop Stations	
	Station 1: Placing cranial nerve EMG electrodes on cadavers	Wendy Fellows-Mayle PhD/ Ryan Quallich, CNIM
	Station 2: Interactive Case Study Review Session	Partha Thirumala, MD/ Josh Sunderlin, MS, CNIM
	Station 3: Cerebrovascular Anatomy and Interactive Case Studies	Jeffrey Balzer, PhD/ Carly Brog, CNIM
	Station 4: Troubleshooting Technical Problems with IONM Equipment	Katherine Anetakis, MD/ Andrew Moyer, CNIM
5:15P	Adjournment	

DAY 3: SUNDAY, NOV. 8th

7:00A - 7:30A	Continental Breakfast	
7:30A - 7:45A	Day 3 Announcements	Jeffrey Balzer PhD/Josh Sunderlin MS
Controversies in IONM:		
7:45A - 8:15A	Defining Significance in IONM Alerts	Partha Thirumala, MD
AI in Clinical Neurophysiology:		
8:15A - 8:45A	Artificial Intelligence in IONM	Shyam Visweswaran, MD, PhD
Review submitted Data:		
8:45A - 9:45A	Attendees submit data in advance to be reviewed and discussed collaboratively	Josh Sunderlin, MS, CNIM
9:45A - 10:00A	BREAK (15min)	

DAY 3: SUNDAY, NOV. 8th (cont.)

Improving IONM Practice:

10:00A – 10:30A	Managing IONM practice	Ryan Quallich, CNIM
10:30A – 11:00A	Teaching Troubleshooting	Josh Sunderlin, MS, CNIM
11:00A – 11:30A	Quality Assurance	Katherine Anetakis, MD/ Mindy Corridoni, CNIM
11:30A – 12:00P	Communication and Documentation (Medico-legal implications)	Jeffrey Balzer, PhD
12:00P	Conference Adjournment	

Sponsored by Procirca and University of Pittsburgh School of Medicine Center for Continuing Education in the Health Sciences

Tuition

\$700 for physicians and other attendees seeking CME credits
\$550 for all other healthcare professionals seeking CEU credits

Registration and Payment

Please register and pay directly from our website:
<http://www.procirca.com/intraoperative-neuromonitoring/Pages/neuromonitoring-workshop.aspx>.

On-site registration will not be permitted.

CME Accreditation and Designation

In support of improving patient care, the University of Pittsburgh is jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC), to provide continuing education for the healthcare team.

Physician (CME)

The University of Pittsburgh designates this live activity for a maximum of 21.25 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Other Healthcare Professionals:

Other health care professionals will receive a certificate of attendance confirming the number of contact hours commensurate with the extent of participation in this activity.

ASET – The Neurodiagnostic Society has granted 21 Continuing Education Units [ASET-CEUs] for this program. Such crediting, however, should not be construed by program participants as an endorsement of any type of instruments or supplies mentioned or involved in these presentations.

Faculty Disclosure

All individuals in a position to control the content of this education activity are required to disclose all relevant financial relationships with any proprietary entity producing, marketing, re-selling, or distributing health care goods or services, used on, or consumed by, patients.

Special Needs

Participation by all individuals is encouraged. Advance notification of any special needs will help us provide better service. Please notify us of your needs at least two weeks in advance of the program by calling 412-647-1453.

Cancellation Policy

- Registration fee is 100% refundable up until October 6, 2020.
- Registration fee is 50% refundable up to 15 days prior to the start date of the course.
- If you cancel within 15 days of the start of the course, NO REFUNDS will be granted.

Cancellation requests should be sent to:

Josh Sunderlin, Course Coordinator
Procirca Center for Clinical Neurophysiology

Phone: 412-647-1453

Email: sunderlinj@procirca.com

Course location and hotel accommodations

Location:

UPMC Presbyterian Hospital

Biomedical Science Tower
Room S120
Pittsburgh, PA 15213

Hotels within walking distance of campus:

Hilton Garden Inn Pittsburgh University Place

454 Forbes Avenue
Pittsburgh, PA 15213

Phone: (412) 683-2040

Distance from campus is 0.3 miles;
travel time on foot is five minutes.

A block of rooms is being held at the Hilton Garden Inn University Place at a rate of \$144.00/Night.

<https://hiltongardeninn.hilton.com/en/gi/groups/personalized/P/PITUCGI-PAPN-20201105/index.jhtml>

Wyndham Pittsburgh University Center

100 Lytton Avenue
Pittsburgh (Oakland), PA 15213

Phone: (412) 682-6200

Distance from campus is 0.7 miles;
travel time on foot is 10 minutes.

Wyndham nightly parking charge: \$10.00

The University of Pittsburgh is an affirmative action, equal opportunity institution.

Procirca Center for Clinical Neurophysiology

Phone: **412-647-1453**

procirca.com



Katherine Anetakis, MD



Jeffrey Balzer, PhD



R. Joshua Sunderlin



Partha Thirumala, MD

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Space is very limited. Register today at
[procirca.com/intraoperative-neuromonitoring/
Pages/neuromonitoring-workshop.aspx](http://procirca.com/intraoperative-neuromonitoring/Pages/neuromonitoring-workshop.aspx)