



Mayo Clinic School of Continuous Professional Development

**SPACE IS
LIMITED.
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EARLY!**

2nd Annual Mayo Clinic
ADVANCES & INNOVATIONS
in Complex Neuroscience Patient Care:
BRAIN & SPINE

**Optional Device and Technology Showcase
with Hands-on Simulation**

Advanced Practice Provider Hands-on Workshop:
Neurosurgery Brain and Spine Concepts (Optional) on March 6, 2019

**THE ENCHANTMENT RESORT
SEDONA, ARIZONA
MARCH 7–9, 2019**

**\$75 DISCOUNT
IF YOU REGISTER
ON OR BEFORE
JAN 21, 2019**

CE.MAYO.EDU/NS2019

COURSE HIGHLIGHTS

- More than 200 case presentations and discussions
- Skull base, brain and spinal cord tumors
- Neurovascular diseases, neurosurgical emergencies, epilepsy and acute stroke
- Endoscopic techniques, proton beam and minimally invasive skull base surgery
- Scoliosis, spine oncology, and minimally invasive spine surgery
- Special “Innovations in Neuroscience” presentation

TARGET AUDIENCE

This course is designed for physicians practicing in neurology, neurosurgery, emergency medicine, medical oncology and primary care, as well as advanced practice nurse practitioners, physician assistants and other health care providers interested in the neurosciences.

LEARNING OBJECTIVES

Upon conclusion of this program, participants should be able to:

- Summarize the latest approaches pertaining to minimally invasive intracerebral hemorrhage treatment and acute ischemic stroke management.
- Review up-to-date multimodal management of brain arteriovenous malformations, dural fistulas and aneurysms.
- Identify modern indications for pediatric and adult scoliosis and minimally invasive spine surgery.
- Demonstrate modern multimodal management of skull base tumors and brain tumors.

PRE-COURSE ADVANCED PRACTICE PROVIDER (NP/PA) WORKSHOP

- Identify cranial, spinal and endovascular anatomy and associated disease processes.
- Practice performing minor invasive procedures common to neurosurgery.
- Identify the importance of Advanced Practice Provider as part of the Multidisciplinary Neurosurgical team.

DEVICE AND TECHNOLOGY SHOWCASE WITH HANDS-ON SIMULATION

- Showcasing the newest technology
- Experience cutting edge technology and devices first-hand through hands-on simulation

ONLINE REGISTRATION AND COMPLETE PROGRAM

CE.MAYO.EDU/NS2019

REGISTRATION

Register online at:

CE.MAYO.EDU/NS2019

Registration Fee (USD)	On or Before Jan 21	After Jan 21
Pre-course NP/PA Optional Workshop – March 6		
Advanced Practice Provider Optional Workshop	\$150	\$225
Neuroscience Course – March 7-9		
Physicians/Scientists	\$600	\$675
Nurse Practitioners/Physician Assistants	\$450	\$525
Device and Technology Showcase with Hands-on Simulation (same opportunity both days – March 7 or 8)		
Physicians/Scientists	\$50	\$75
Nurse Practitioners/Physician Assistant	\$25	\$50

Please visit ce.mayo.edu/cancellation for more information.

LOCATION AND ACCOMODATIONS

Enchantment Resort

525 Boynton Canyon Road | Sedona, AZ 86336 | Phone Reservations: (855) 421-1088

A run of house room block rate of \$325 (USD), plus applicable city/state taxes, and a \$25 resort fee (includes local/800 calls, morning newspaper, entry into Mii amo spa, resort parking use of all resort amenities and scheduled activities. Children under the age of 18 stay complimentary.) per room, per night, is available for course participants and guests. Mayo Clinic group rates apply three days prior to and three days post-course dates, based on availability. To ensure accommodations, please make your reservation before the room block quickly fills, or by February 6, 2019. To make your reservation, call (855) 421-1088. For more information and to make your reservations visit the course website. The standard hotel reservation cancellation policy will apply to individual reservations unless otherwise specified.

CREDIT



In support of improving patient care, Mayo Clinic College of Medicine and Science is jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME), and the American Nurses Credentialing Center (ANCC) to provide continuing education for the healthcare team.

Mayo Clinic College of Medicine and Science designates this live activity for a maximum of 21.0 *AMA PRA Category 1 Credits™* (General Session 16.0 NP/PA Workshop 5.0 *AMA PRA Category 1 Credits*). Physicians should claim only the credit commensurate with the extent of their participation in the activity.

- AANP:** This education activity will be submitted to the American Association of Nurse Practitioners for approval of up to 21 contact hours of accredited education.
- AAFP:** Application for CME credit has been filed with the American Academy of Family Physicians. Determination of credit is pending.

Other Healthcare Professionals: A certificate of attendance will be provided to other healthcare professionals for requesting credits in accordance with state nursing boards, specialty societies, or other professional associations.

PROGRAM – PRE-COURSE WORKSHOP

WEDNESDAY, MARCH 6, 2019

ADVANCED PRACTICE PROVIDER HANDS-ON WORKSHOP: NEUROSURGERY BRAIN AND SPINE CONCEPTS (LIMITED REGISTRATION)

- 11:30 a.m. Registration and Lite Lunch
- Noon Welcome and Course Overview
JoDee A. Winter, P.A.-C., MSPAS
- 12:10 p.m. The Growing Role of NP/PAs in Neurosurgical Care
Bernard R. Bendok, M.D.
- 12:20 Door to Decision
JoDee A. Winter, P.A.-C., MSPAS
- 12:30 Intensive Care Unit Management
Marjorie (Margie) E. Amity, M.S.N., ANP/ACNP-BC
- 12:40 External Ventricular Drain (EVD) Management and Care
Alexandra (Lexy) Richards, D.N.P.
- 12:50 Cerebrospinal Fluid Leaks, Shunts and Studies
Orland K. Boucher, P.A.-C.
- 1:00 Move to Workshop
- 1:10 Hands-on Workshop
1. External Ventricular Drain (EVD) Insertion
Pelagia E. Kouloumberis, M.D.
 2. Lumbar Puncture
Naresh Patel, M.D.
 3. Shunt Programming
Orland K. Boucher, P.A.-C.
- 2:50 Return to General Session
- 2:55 Spinal Anatomy and Pathology
Jamal McClendon, Jr., M.D.
- 3:05 Spinal Instrumentation
Matthew T. Neal, M.D.
- 3:15 Pain Management
Joseph B. Farnsworth, P.A.-C., MMSPAS
- 3:25 Move to Workshop
- 3:30 Hands-on Workshop
1. Facet and Trigger Point Injections; Occipital Nerve; and Carpal Tunnel Blocks
Chandan Krishna, M.D.
 2. Temporal Artery and Muscle Biopsies
JoDee A. Winter, P.A.-C., MSPAS
 3. Suturing
Devi P. Patra, M.B.B.S.
- 5:05 Move to General Session
- 5:10 Cranial Anatomy/Pathology
Richard S. Zimmerman, M.D.

5:20	Endovascular Anatomy, Pathology and Interventions <i>Chandan Krishna, M.D.</i>
5:30	Course Achievements <i>JoDee A. Winter, P.A.-C., MSPAS</i>
5:35	Adjournment

ADVANCES AND INNOVATIONS IN COMPLEX NEUROSCIENCE PATIENT CARE: BRAIN AND SPINE COURSE

6:00 p.m. – 7:30 p.m. Course Welcome Reception and Early Registration

FACULTY

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Course Co-Director

Alexandra (Lexy) E. Richards, D.N.P.

Mayo Clinic Faculty

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Richard S. Zimmerman, M.D.

PROGRAM

THURSDAY, MARCH 7, 2019

ADVANCES AND INNOVATIONS IN COMPLEX NEUROSCIENCE PATIENT CARE: BRAIN AND SPINE

- 6:15 a.m. Registration
Continental Breakfast and Exhibits
- 7:00 Welcome and Daily Course Overview
Bernard R. Bendok, M.D.

SESSION 1: PERIPHERAL NERVE TUMORS

Moderator: Pelagia E. Kouloumberis, M.D.

- 7:15 Medical Work-up of Patient with Peripheral Nerve Pathologies
Alejandro Zavala, M.D.
- 7:25 Peripheral Nerve Tumors: Diagnosis and Workup
Robert J. Spinner, M.D.
- 7:35 The Art of Case Selection Peripheral Nerve Surgery:
When to Operate and When to Observe
Pelagia E. Kouloumberis, M.D.
- 7:45 Technical Nuances of Peripheral Nerve Surgery
Shelley S. Noland, M.D.
- 7:55 Case Based Panel Discussion
Session Faculty and Naji Riachi, M.D.

SESSION 2: MINIMALLY INVASIVE SPINE INTERVENTIONS AND SPORTS NEUROSURGERY MANAGEMENT

Moderators: Chandan Krishna, M.D. and Matthew T. Neal, M.D.

- 8:15 Role of Physiatrist in Sports Spine
Arthur J. De Luigi, D.O., M.H.A.
- 8:25 Innovations and Endoscopy in MIS Surgery
Matthew T. Neal, M.D.
- 8:35 Minimally Invasive Cervical Spine Surgery and Arthroplasty
Jamal McClendon, Jr., M.D.
- 8:45 Anterior Approaches to Lumbar Spine
Pelagia E. Kouloumberis, M.D.
- 8:55 Minimally Invasive Lumbar Spine Surgery
Chandan Krishna, M.D.
- 9:05 Behavioral Chronic Pain Management
Cynthia O. Townsend, Ph.D., L.P.
- 9:15 Session Case Based Panel Discussion
- 9:35 Refreshment Break and Exhibits

SESSION 3: SCOLIOSIS AND SPINAL DEFORMITY

Moderator: Jamal McClendon, Jr., M.D.

- 10:05 Cervical Fixation in Pediatric Deformity
Jamal McClendon, Jr., M.D.
- 10:15 Pediatric Scoliosis: Selective Fusion for Congenital Scoliosis
Judson W. Karlen, M.D.

- 10:25 Revision of Adolescent Idiopathic Scoliosis Surgery
Gregory R. White, M.D.
- 10:35 Skeletal Dysplasia and Thoracolumbar Kyphosis
Mohan V. Belthur, M.D.
- 10:45 Growing Rod Constructs for Early Onset Scoliosis
Richard L. Shindell, M.D.
- 10:55 Proximal Fixation Distal Versus Proximal Thoracic Spine in
Adult Degenerative Scoliosis
Jeremy L. Fogelson, M.D.
- 11:05 Fusion of the Junctional Curve Only vs Treatment of
Entire Scoliosis for Adult Degenerative Scoliosis
Mark A. Pichelmann, M.D.
- 11:15 Session Case Based Panel Discussion
- 11:45 Break and Exhibits

SESSION 4: SPINE ONCOLOGY

Moderator: Sujay Vora, M.D.

- 12:15 p.m. Cord Compression Diagnosis and Differential Diagnosis
Marie F. Grill, M.D.
- 12:25 Cord Compression Surgery
Maziyar A. Kalani, M.D.
- 12:35 Radiation Cord Compression
Sujay Vora, M.D.
- 12:45 Benign Tumors
Maziyar A. Kalani, M.D.
- 12:55 Session Case Based Panel Discussion
Faculty, Jamal McClendon, Jr., M.D. and Ramiro Del Valle, M.D.
- 1:15 Course Overview and Achievements
- 1:30 Adjourn

DEVICE & TECHNOLOGY SHOWCASE WITH HANDS-ON SIMULATION

- 1:45 Showcase Starts
- 4:45 Showcase Ends

COURSE DINNER AND SPECIAL PRESENTATION

- 5:30 Reception
- 6:30 Dinner and Special Presentation: Art of Innovation
Nick Hopkins, M.D.

FRIDAY, MARCH 8, 2019

6:30 a.m. Continental Breakfast and Exhibits

7:00 Daily Course Overview
Bernard R. Bendok, M.D.

SESSION 5: ANEURYSMS: TREATING INTRACRANIAL ANEURYSMS

Moderator: Bernard R. Bendok, M.D.

7:10 Brain Aneurysm Overview: Diagnosis, Natural History and Screening
Chandan Krishna, M.D.

7:20 Subarachnoid Hemorrhage Management
Ayan Sen, M.D.

7:30 Management of Challenging Aneurysms
Bernard R. Bendok, M.D.

7:40 Session Case Based Panel Discussion
Session Faculty and Alejandro Zavala, M.D.

SESSION 6: ARTERIOVENOUS MALFORMATIONS (AVM)

Moderator: Chandan Krishna, M.D.

8:00 Intracerebral Hemorrhage (ICH) Initial Triage and Reversal Strategies
Ayan Sen, M.D.

8:10 Minimally ICH Evacuations
Devi P. Patra, M.B.B.S.

8:20 Management of Dural AV Fistulas
Chandan Krishna, M.D.

8:30 Brain AVM Management
Bernard R. Bendok, M.D.

8:40 Session Case Based Panel Discussion
Session Faculty, Nick Hopkins, M.D. and Ramiro Del Valle, M.D.

9:00 Refreshment Break and Exhibits

SESSION 7: ACUTE ISCHEMIC STROKE

Moderator: Bart M. Demaerschalk, M.D.

9:30 Advances and Innovations in the Management of
Neurovascular Diseases and Stroke
Nick Hopkins, M.D.

9:45 Acute Stroke Triage and Telehealth
Bart M. Demaerschalk, M.D.

9:55 IV TPA
Kara A. Sands, M.D.

10:05 Stroke Thrombectomy
Chandan Krishna, M.D.

10:15 Moyamoya Disease
Devi P. Patra, M.B.B.S.

10:25 Session Case Based Panel Discussion

10:45 Refreshment Break and Exhibits

SESSION 8: EPILEPSY

Moderator: Joseph I. Sirven, M.D

- 11:15 Epilepsy Surgery: Neurology Perspective
Katherine H. Noe, M.D., Ph.D.
- 11:30 New Technology in Epilepsy Management
Joseph I. Sirven, M.D.
- 11:45 Unique Cases Epilepsy
Naji Riachi, M.D.
- 11:50 Challenging Cases in Epilepsy
Alejandro Zavala, M.D.
- 12:15 Epilepsy Surgery: Adult Perspective
Richard S. Zimmerman, M.D.
- 12:30 Session Case Based Panel Discussion
- 12:55 Wrap-up, Achievements and Adjournment
Bernard R. Bendok, M.D.

DEVICE & TECHNOLOGY SHOWCASE WITH HANDS-ON SIMULATION

- 1:15 Showcase Starts
- 4:15 Showcase Ends

SATURDAY, MARCH 9, 2019

- 6:30 a.m. Continental Breakfast and Exhibits
- 7:00 Daily Course Overview
Bernard R. Bendok, M.D.

SESSION 9: PITUITARY TUMORS

Moderator: Bernard R. Bendok, M.D.

- 7:10 Pituitary Tumors Endocrinology Medical Work-up
Michael D. Whitaker, M.D.
- 7:20 Pituitary Tumor: Ophthalmology
Marie D. Acierno, M.D.
- 7:30 Advances in Endoscopic Skull Surgery
Michael J. Marino, M.D.
- 7:40 Surgery for Pituitary Tumors
Bernard R. Bendok, M.D.
- 7:50 Neurofibromatosis Type 2 (NF2) Genetics
Radhika Dhamija, M.B.B.S.
- 8:00 Acoustic Neuromas Otology Perspective
Peter A. Weisskopf, M.D.
- 8:10 Acoustic Neuromas Surgery
Bernard R. Bendok, M.D.
- 8:20 Radiosurgery for Acoustic Neuroma
Ramiro Del Valle, M.D.
- 8:30 Proton Beam for Skull Base Tumors
Sameer R. Keole, M.D.
- 8:40 Session Case Based Panel Discussion
Session Faculty and Maciej M. Mrugala, M.D., Ph.D.
- 9:00 Refreshment Break and Exhibits

SESSION 10: BRAIN GLIOMAS

Moderator: Maciej M. Mrugala, M.D., Ph.D.

- 9:20 Advances in Glioma Imaging
Leland S. Hu, M.D.
- 9:30 Innovations in the Medical Management of Gliomas
Maciej M. Mrugala, M.D., Ph.D.
- 9:40 Awake Surgery for Glioma
Bernard R. Bendok, M.D.
- 9:50 Radiotherapy and Proton Beam for Gliomas
Jonathan B. Ashman, M.D., Ph.D.
- 10:00 The Future of Glioma Therapy
Kaisorn Chaichana, M.D.
- 10:10 Scientific Advances in Gliomas
Kristin R. Swanson, Ph.D.
- 10:20 Session Case Based Panel Discussion
Session Faculty and Ramiro Del Valle, M.D.

SESSION 11: BRAIN METASTASES

Moderator: Alyx B. Porter, M.D.

- 10:40 Brain Metastases Medical Management
Alyx B. Porter, M.D.
- 10:55 Radiosurgery for Brain Metastases: Indications
Naresh Patel, M.D.
- 11:10 Brain Metastases Radiosurgery Techniques and Advances
Jonathan B. Ashman, M.D., Ph.D.
- 11:25 Brain Metastases Laser Ablation
Richard S. Zimmerman, M.D.
- 11:40 Brain Metastases Microsurgery
Chandan Krishna, M.D.
- 11:55 Leptomeningeal Disease
Maciej M. Mrugala, M.D., Ph.D.
- 12:10 p.m. Session Case Based Panel Discussion
Session Faculty and Alejandro Zavala, M.D.
- 12:40 Objectives Reviews, Closing Comments and Reflection
- 1:20 Course Adjourns

**2ND ANNUAL MAYO CLINIC ADVANCES AND
INNOVATIONS IN COMPLEX NEUROSCIENCE PATIENT CARE**

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Associate Director

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Course Co-Directors

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Maciej M. Mrugala, M.D., Ph.D.

Alyx B. Porter, M.D.

Special Guest Faculty

Ramiro Del Valle, M.D.

Medica Sur

Mexico City, Mexico

L. Nelson “Nick” Hopkins, M.D.

The Jacobs Institute

Buffalo, New York

Naji Riachi, M.D.

University Medical Center –

Rizk Hospital (UMC-RH)

Lebanon

Alejandro Zavala, M.D.

Medica Sur

Mexico City, Mexico

Phoenix Children’s Hospital Faculty

Phoenix, Arizona

Mohan V. Belthur, M.D.

Judson W. Karlen, M.D.

Richard L. Shindell, M.D.

Gregory R. White, M.D.

Mayo Clinic Faculty

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