### Advanced Practice Provider Hands-On Workshop:
**Neurosurgery Brain & Spine Concepts**

#### Program Schedule

**Wednesday, March 6, 2019**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tr>
<td>11:30 a.m.</td>
<td>Registration and Lite Lunch – Meeting Village</td>
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<tr>
<td>Noon</td>
<td><strong>Welcome and Course Overview</strong>&lt;br&gt;JoDee A. Winter, P.A.-C.  MSPAS</td>
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<tr>
<td>12:10 p.m.</td>
<td><strong>The Growing Role of NP/PAs in Neurosurgical Care</strong>&lt;br&gt;Bernard R. Bendok, M.D.</td>
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<td>12:20</td>
<td><strong>Door to Decision</strong>&lt;br&gt;JoDee A. Winter, P.A.-C.  MSPAS</td>
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<td>12:30</td>
<td><strong>Intensive Care Unit Management</strong>&lt;br&gt;Marjorie (Margie) E. Amity, M.S.N., ANP/ACNP-BC</td>
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<td>12:40</td>
<td><strong>External Ventricular Drain (EVD) Management and Care</strong>&lt;br&gt;Alexandra (Lexy) Richards, D.N.P.</td>
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<td>12:50</td>
<td><strong>Cerebrospinal Fluid Leaks, Shunts and Studies</strong>&lt;br&gt;Orland K. Boucher, P.A.-C.</td>
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<td>1:00</td>
<td><strong>Move to Workshop</strong></td>
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<tr>
<td>1:10</td>
<td><strong>Hands-on Workshop</strong> (30 minutes per station and total of 5 minutes for rotation between stations)</td>
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<tr>
<td></td>
<td>1. <strong>External Ventricular Drain (EVD) Insertion</strong>&lt;br&gt;Pelagia E. Kouloumeris, M.D.</td>
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<td></td>
<td>2. <strong>Lumbar Puncture</strong>&lt;br&gt;Naresh P. Patel, M.D.</td>
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<td>3. <strong>Shunt Programming</strong>&lt;br&gt;Orland K. Boucher, P.A.-C.</td>
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2:50 p.m. 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 (30 minutes per station and total of 5 minutes for rotation between stations)

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
Chandan Krishna, M.D.

5:30 Course Achievements
JoDee A. Winter, P.A.-C., MSPAS

5:35 Adjournment

Advances and Innovations in Complex Neuroscience Patient Care: Brain and Spine Course

6:00 - 7:30 p.m. Course Welcome Reception and Early Registration – Meeting Village
2nd Annual Mayo Clinic
Advances & Innovations in Complex Neuroscience
Patient Care: Brain & Spine

Thursday, March 7, 2019

Program Schedule

6:15 a.m.  Registration – Meeting Village
Continental Breakfast and Exhibits

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

Session 1: Peripheral Nerve Tumors

Moderator: Pelagia E. Kouloumeris, M.D.

7:15 a.m.  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. Kouloumeris, M.D.

7:45  Technical Nuances of Peripheral Nerve Surgery
Shelley S. Noland, M.D.

7:55  Case Based Panel Discussion
Session Faculty, Naji Riachi, M.D. and Patrick B. Bolton, 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 a.m.  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.
Thursday, March 7, 2019 (continued)

8:45 a.m.  Anterior Approaches to Lumbar Spine
           Pelagia E. Kouloumeris, 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
           Session Faculty and Patrick B. Bolton, M.D.

9:35      Refreshment Break and Exhibits

Session 3: Scoliosis and Spinal Deformity

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

10:05 a.m. 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
           Session Faculty and Patrick B. Bolton, M.D.

11:45      Break and Exhibits
Thursday, March 7, 2019 (continued)

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., Ramiro del Valle, M.D. and Patrick B. Bolton, M.D.

1:15 Course Overview and Achievements

1:30 Adjourn

DEVICE & TECHNOLOGY SHOWCASE with HANDS-ON SIMULATION

1:45 p.m. Showcase Starts

4:45 Showcase Ends

COURSE DINNER AND SPECIAL PRESENTATION

6:00 p.m. 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 a.m.  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, Alejandro Zavala, M.D. and Patrick B. Bolton, M.D.

Session 6: Arteriovenous Malformations (AVM)

Moderator:  Chandan Krishna, M.D.

8:00 a.m.  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., Ramiro del Valle, M.D. and Patrick B. Bolton, M.D.

9:00  Refreshment Break and Exhibits
Session 7: Acute Ischemic Stroke

Moderator: Bart M. Demaerschalk, M.D.

9:30 a.m. 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
Session Faculty and Patrick B. Bolton, M.D.

10:45 Refreshment Break and Exhibits

Session 8: Epilepsy

Moderator: Joseph I. Sirven, M.D

11:15 a.m. 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 p.m. Epilepsy Surgery: Adult Perspective
Richard S. Zimmerman, M.D.

12:30 Session Case Based Panel Discussion
Session Faculty and Patrick B. Bolton, M.D.

12:55 Wrap-up, Achievements and Adjournment
Bernard R. Bendok, M.D.
**Friday, March 8, 2019 (continued)**

DEVICE & TECHNOLOGY SHOWCASE with HANDS-ON SIMULATION

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<td>1:15 p.m.</td>
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<td>4:15</td>
<td>Showcase Ends</td>
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### Session 9: Pituitary Tumors

**Moderator:** Bernard R. Bendok, M.D.

- **7:10 a.m.** 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, Maciej M. Mrugala, M.D., Ph.D. and Patrick B. Bolton, M.D.

- **9:00** Refreshment Break and Exhibits

### Session 10: Brain Gliomas

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

- **9:20 a.m.** Advances in Glioma Imaging  
  Leland S. Hu, M.D.
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<thead>
<tr>
<th>Time</th>
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<th>Presenter</th>
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<tbody>
<tr>
<td>9:30 a.m.</td>
<td>Innovations in the Medical Management of Gliomas</td>
<td>Maciej M. Mrugala, M.D., Ph.D.</td>
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<td>9:40</td>
<td>Awake Surgery for Glioma</td>
<td>Bernard R. Bendok, M.D.</td>
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<td>9:50</td>
<td>Radiotherapy and Proton Beam for Gliomas</td>
<td>Jonathan B. Ashman, M.D., Ph.D.</td>
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<td>10:00</td>
<td>The Future of Glioma Therapy</td>
<td>Alfredo Quinones-Hinojosa, M.D.</td>
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<td>10:10</td>
<td>Scientific Advances in Gliomas</td>
<td>Kristin R. Swanson, Ph.D.</td>
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<td>10:20</td>
<td>Session Case Based Panel Discussion</td>
<td>Session Faculty, Ramiro del Valle, M.D. and</td>
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<td>Patrick B. Bolton, M.D.</td>
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<td>10:40 a.m.</td>
<td>Session 11: Brain Metastases</td>
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<td>Moderator:</td>
<td>Alyx B. Porter, M.D.</td>
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<td>10:40 a.m.</td>
<td>Brain Metastases Medical Management</td>
<td>Alyx B. Porter, M.D.</td>
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<td>10:55</td>
<td>Radiosurgery for Brain Metastases: Indications</td>
<td>Naresh P. Patel, M.D.</td>
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<td>11:10</td>
<td>Brain Metastases Radiosurgery Techniques and Advances</td>
<td>Jonathan B. Ashman, M.D., Ph.D.</td>
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<td>11:25</td>
<td>Brain Metastases Laser Ablation</td>
<td>Richard S. Zimmerman, M.D.</td>
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<td>11:40</td>
<td>Brain Metastases Microsurgery</td>
<td>Chandan Krishna, M.D.</td>
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<td>11:55</td>
<td>Leptomeningeal Disease</td>
<td>Maciej M. Mrugala, M.D., Ph.D.</td>
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<td>12:10 p.m.</td>
<td>Session Case Based Panel Discussion</td>
<td>Session Faculty, Alejandro Zavala, M.D. and</td>
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<td>Patrick B. Bolton, M.D.</td>
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<td>12:40</td>
<td>Objectives Reviews, Closing Comments and Reflection</td>
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<td>1:20</td>
<td>Course Adjourns</td>
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