

PRELIMINARY PROGRAM



2023 ANNUAL MEETING

IMAGINE
INNOVATE
INSPIRE

WASHINGTON, D.C. • SEPTEMBER 9-13, 2023

ADVANCE REGISTRATION DEADLINE: AUGUST 9, 2023

Save up to \$300 when you register for the meeting and secure housing by August 9!

REGISTER TODAY AT [CNS.ORG/2023](https://cns.org/2023)



JOIN US

in the District of Columbia at the 2023 CNS Annual Meeting: Imagine, Innovate, Inspire, where you'll experience the latest neurosurgical innovations and be inspired by speakers and your peers! Come for the science and stay for these city highlights:

- Breathtaking National Landmarks like the Lincoln Memorial, Washington Monument, and Martin Luther King, Jr. Memorial
- Fascinating and informative museums including the 19 free Smithsonian Museums
- Views of the Potomac River and National Harbor
- Diverse communities and world-class cuisine

NEW FOR 2023!

Luncheon Seminars:

- M04: Treatment Options and Approaches to Cavernomas
- M07: FDA Update
- M11: An Interdisciplinary Approach to Facial Pain
- T19: Telemedicine in Neurosurgery: The Future Beyond Covid
- W24: LITT: Data-driven Outcomes and Controversies
- W31: Demystifying National Quality Reports

Dinner Seminar:

- Managing and Preventing Intraoperative Vascular Complications

Section Sessions:

- Stereotactic and Functional Neurosurgery: Psychiatric Neurosurgery and Cognitive Neuroscience
- Tumor: Innovation Driven by Neurosurgeons in Glioma

Symposia:

- Special Symposium: The Hopkins Symposium
- Special Symposium: TNT: Transforming Neurosurgery through Technology—The Innovation Symposium
- Special Symposium: Practical Neurosurgery: Perspectives by and for General Practice Neurosurgeon Leaders
- Special Symposium: Meeting of the Americas
- SYM09: Quality in Neurosurgery Practice
- SYM05B: The Importance of Wellness and The Reality of Burnout in Neurosurgery
- SYM15B: Identifying and Addressing Disparity in Neurotrauma
- SYM19B: Leading the Pack

MEETING PURPOSE

The purpose of the 2023 Annual Meeting of the Congress of Neurological Surgeons is to provide continuing medical education for practicing neurosurgeons, neurosurgical residents in training, and postgraduate neurosurgical fellows, as well as advanced practice providers including nurses, physician assistants, and clinical specialists.

LETTER FROM THE 2023 CNS PRESIDENT



Dear Colleagues,

I am very excited to meet you all in Washington D.C., September 9-13. As neurosurgeons, we are constantly challenged to innovate new techniques and technologies to enhance our field of practice. I invite you to get inspired with your colleagues as you explore “The District” and join us in person for the most imaginative neurosurgical event of the year.

Famous for breathtaking monuments, world-class museums, diverse communities, and incredible cuisine, Washington D.C. boasts an unmatched cultural experience. Be sure to bring a guest or your family to enjoy all this city has to offer!

While at the CNS Annual Meeting, take opportunities to connect with our Featured Speakers and Honored Guests. Keep reading to learn about our speaker lineup, along with many other exciting highlights that await you. I look forward to seeing you in September!

Sincerely,

Elad I. Levy

Thank you to the faculty from our 2023 International Partner Societies



Brazilian Society
of Neurosurgery



The Japanese
Congress of
Neurological
Surgeons



Neurological
Society of India

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PROGRAM AT-A-GLANCE



SATURDAY, SEPTEMBER 9

8:00 am-4:15 pm	Symposia (SYM01-SYM10) Special Symposium: TNT:Transforming Neurosurgery through Technology—The Innovation Symposium Special Symposium: Meeting of The Americas
5:00-7:00 pm	CNS International, Resident, and Foundation Reception <i>Planet Word Museum</i>
6:30-8:30 pm	Dinner Seminar 1: Managing and Preventing Intraoperative Vascular Complications <i>Joe's Seafood, Prime Steak & Stone Crab</i>

SUNDAY, SEPTEMBER 10

8:00 am-4:15 pm	Symposia (SYM11-SYM19) Special Symposium: Sellar and Suprasellar Tumors Outside the Box <i>A high-yield CNS collaboration with the North American Skull Base Society (NASBS)</i> Special Symposium: The Hopkins Symposium Association of Neurosurgical Physician Associates (ANSPA) Fall 2023 CME Meeting <i>Presented in Collaboration with CNS</i>
1:00-3:00 pm	Resident SANS Challenge Preliminary Rounds*
4:30-6:30 pm	General Scientific Session I <i>Marriott Marquis Washington, D.C.</i>
6:30-8:00 pm	Opening Reception <i>Marriott Marquis Washington, D.C.</i>

MONDAY, SEPTEMBER 11

7:00-8:30 am	Guidelines Sessions Sunrise Session and Late-breaking Abstracts Sessions DEI Breakfast Seminar: Mentoring 101
8:15 am-4:00 pm	Exhibit Hall open*
8:40-9:40 am	General Scientific Session II
9:40-10:40 am	Beverage Break in the Exhibit Hall
10:00-10:30 am	Live Surgery in the Exhibit Hall*
10:40 am-12:10 pm	General Scientific Session II, continued
12:20-1:50 pm	Luncheon Seminars Industry Sponsored Lunch Symposia*
1:50-2:50 pm	Beverage Break in the Exhibit Hall
2:05-2:35 pm	Live Surgery in the Exhibit Hall*
2:50-4:20 pm	Section Sessions and Oral Presentations
4:30-6:00 pm	Operative Techniques and Case-based Discussion Sessions
6:00-7:30 pm	Medical Student Town Hall*
7:30-9:30 pm	Dinner Seminar 2: The Importance of Negotiating as a Neurosurgeon <i>Morton's The Steakhouse</i>

**Be sure to add a
symposium or luncheon
seminar to your
registration to maximize
your Annual Meeting
experience!**

TUESDAY, SEPTEMBER 12

7:00-8:30 am	Guidelines Sessions Sunrise Session and Late-breaking Abstracts Sessions
8:15 am-3:00 pm	Exhibit Hall open*
8:40-9:40 am	General Scientific Session III
9:40-10:40 am	Beverage Break in the Exhibit Hall
10:00-10:30 am	Live Surgery in the Exhibit Hall*
10:40 am-12:10 pm	General Scientific Session III, continued
12:20-1:50 pm	Luncheon Seminars Industry Sponsored Lunch Symposia*
1:50-2:50 pm	Resident SANS Challenge Championship Round* Beverage Break in the Exhibit Hall
2:00-2:45 pm	Annual Business Meeting*
2:05-2:35 pm	Live Surgery in the Exhibit Hall*
2:50-4:20 pm	Section Sessions and Oral Presentations
4:30-6:00 pm	Operative Techniques and Case-Based Discussion Sessions
6:00-7:30 pm	Interactive Poster Presentation Session with Wine and Cheese Reception

WEDNESDAY, SEPTEMBER 13

7:00-8:30 am	Guidelines Sessions Sunrise Session and Late-breaking Abstracts Sessions
8:15 am-1:30 pm	Exhibit Hall open*
8:40-9:40 am	General Scientific Session IV
9:40-10:40 am	Beverage Break in the Exhibit Hall
10:00-10:30 am	Live Surgery in the Exhibit Hall*
10:40 am-12:10 pm	General Scientific Session IV, continued
12:20-1:50 pm	Luncheon Seminars Industry Sponsored Lunch Symposia*
2:00-4:00 pm	Neurosurgical Medical Students Specialty Session 1 and 2

*Not eligible for CME credit.

SUBSPECIALTY SESSION HIGHLIGHTS

SUBSPECIALTY SESSION HIGHLIGHTS KEY

AP ADVANCED PRACTICE PROVIDER

CV CEREBROVASCULAR

GE GENERAL

MS MEDICAL STUDENTS

PA PAIN

PE PEDIATRIC

PN PERIPHERAL NERVES

RE RESIDENT

SE SOCIOECONOMIC

SF STEREOTACTIC AND FUNCTIONAL

SP SPINE

TR NEUROTRAUMA

TU TUMOR

WI WINS

AP ADVANCE PRACTICE PROVIDER

SUNDAY

- Association of Neurosurgical Physician Associates (ANSPA) Fall 2023 CME Meeting *Presented in Collaboration with the Congress of Neurological Surgeons*

MONDAY

- Guideline Session I: Perioperative Spine—Intraoperative
- Guideline Session II: Brain Mets Update—Emerging Therapies
- DEI Breakfast Seminar: Mentoring 101

TUESDAY

- Guideline Session III: Functioning Pituitary Adenoma
- Guideline Session IV: Occipital Neuralgia—Update
- Interactive Poster Presentation Session

WEDNESDAY

- Guideline Session V: Low Grade Glioma

CV CEREBROVASCULAR

SATURDAY

- SYM03: Aneurysms: Endovascular and Open Approaches to Complex Lesions
- SYM10: 2023 CNS Cerebrovascular Neurosurgery for Residents
- Dinner Seminar 1: Managing and Preventing Intraoperative Vascular Complications

SUNDAY

- Special Symposium: Hopkins Symposium
- SYM12B: Microvascular Decompression for Trigeminal Neuralgia and Beyond
- SYM14A: Frontiers in Management of Acute Stroke
- SYM14B: Minimally Invasive Management of Intracerebral Hemorrhage

MONDAY

- DEI Breakfast Seminar: Mentoring 101
- M01: Honored Guest Luncheon Seminar, L. Nelson “Nick” Hopkins: What We Can Learn From Failure
- M04: Treatment Options and Approaches to Cavernomas
- M13: Managing and Preventing Intraoperative Vascular Complications

- Section on Cerebrovascular Surgery 1: Pushing the Envelope for Cerebrovascular Disease
- Multimodal Management of Pediatric Vascular Lesions

TUESDAY

- T17: Keyhole Approaches for Treatment of Vascular Lesions
- Section on Cerebrovascular Surgery 2: Multimodal Treatment of Cerebrovascular Disease
- Evolving Technologies for Treatment of Cerebrovascular Lesions
- Interactive Poster Presentation Session

WEDNESDAY

- W33: Hematology and Coagulation for Neurosurgeons

GE GENERAL

SATURDAY

- Special Symposium: TNT: Transforming Neurosurgery through Technology—The Innovation Symposium
- Special Symposium: Meeting of the Americas
- SYM04A: Comprehensive Management of Spinal Trauma
- SYM07A: 2023 Coding and CPT Update
- SYM07B: The Importance of Wellness and the Reality of Burnout in Neurosurgery
- SYM09: Quality in Neurosurgery Practice
- SYM12: 2023 CNS Cerebrovascular Neurosurgery for Residents

SUNDAY

- Special Symposium: Practical Neurosurgery
- SYM13A: Brain Tumor Update: Management of Benign Brain Tumors
- SYM13B: Brain Tumor Update: Management of Malignant Brain Tumors
- SYM19A: Swimming with The Sharks: Thriving in the Neurosurgery Match and Residency
- SYM19B: Leading the Pack

MONDAY

- DEI Breakfast Seminar: Mentoring 101
- M07: FDA Update
- Dinner Seminar 2: The Importance of Negotiating as a Neurosurgeon

TUESDAY

- T14: Honored Guest Lunch, Douglas Kondziolka: Learning and Personal Growth through Organized Neurosurgery—How to Make a Difference
- Interactive Poster Presentation Session

WEDNESDAY

- W34: Neurosurgery Publications: “Getting Published”

MS MEDICAL STUDENTS

SATURDAY

- SYM12: 2023 CNS Cerebrovascular Neurosurgery for Residents

SUNDAY

- SYM19A: Swimming with The Sharks: Thriving in the Neurosurgery Match and Residency

MONDAY

- M12: Advancing Your Career: Steps to Keep You Climbing
- Medical Student Town Hall

TUESDAY

- Interactive Poster Presentation Session

WEDNESDAY

- W30: Building Your Brand: Using Social Media to Drive Your Reputation
- W34: Neurosurgery Publications: “Getting Published”
- Neurosurgical Medical Students Specialty Session 1 and 2

PA PAIN

SATURDAY

- SYM08: An Interdisciplinary Approach to Lumbar Spine Pain

SUNDAY

- SYM12B: Microvascular Decompression for Trigeminal Neuralgia and Beyond

MONDAY

- DEI Breakfast Seminar: Mentoring 101
- M11: An Interdisciplinary Approach to Facial Pain
- Section on Pain: The Translational Science of Pain
- Microvascular Decompression for Trigeminal Neuralgia and Beyond

TUESDAY

- Interactive Poster Presentation Session
- Guideline Session IV: Occipital Neuralgia- Update

WEDNESDAY

- W29: Spinal Cord Stimulators: What to Use and When?

PE PEDIATRIC

SATURDAY

- SYM04: Endoscopic Applications in Pediatric Neurosurgery

MONDAY

- DEI Breakfast Seminar: Mentoring 101
- M06: ABPNS Board Certification: Preparation and Requirements for Certification
- Section on Pediatric Neurological Surgery 1: Contemporary Management of Craniopharyngioma
- Emerging Techniques in Pediatric Functional Neurosurgery

TUESDAY

- Section on Pediatric Neurological Surgery 2: Fellowship Training in Pediatric Neurosurgery—Challenges and Opportunities
- Complications in Neurosurgery
- Interactive Poster Presentation Session

PN PERIPHERAL NERVES

SATURDAY

- SYM07: Stimulation for Peripheral Nerve Pain: Practical and Practice

SUNDAY

- SYM17A: Peripheral Nerve Surgery: Evaluation and Operative Techniques: Preparing for General Practice and the Oral Boards

MONDAY

- DEI Breakfast Seminar: Mentoring 101
- M09: Peripheral Nerve Entrapment Versus Radiculopathy
- Section on Peripheral Nerves 1: Latest Advances in Clinical Outcomes
- Schwannomas and Neurofibromas of the Spine and Peripheral Nerves

TUESDAY

- T20: Managing Peripheral Nerve Complications from Common Spine, Orthopedic, and Thoracic Surgeries
- Section on Peripheral Nerves 2: Expert Challenges in Peripheral Nerve Surgery—Fear and Loathing in Peripheral Nerve Surgery
- Complex Peripheral Nerve Reconstruction Cases
- Interactive Poster Presentation Session

WEDNESDAY

- W28: Controversies in Peripheral Nerve Surgery

SUBSPECIALTY SESSION HIGHLIGHTS

RE RESIDENT

SATURDAY

- SYM10: 2023 CNS Cerebrovascular Neurosurgery for Residents
- Special Symposium: TNT: Transforming Neurosurgery through Technology—The Innovation Symposium

SUNDAY

- SYM19A: Swimming with The Sharks: Thriving in the Neurosurgery Match & Residency
- SYM19B: Leading the Pack

MONDAY

- DEI Breakfast Seminar: Mentoring 101
- M01: Honored Guest Luncheon Seminar, L. Nelson “Nick” Hopkins: What We Can Learn From Failure

TUESDAY

- T14: Honored Guest Lunch: Douglas Kondziolka: Learning and Personal Growth through Organized Neurosurgery—How to Make a Difference
- Interactive Poster Presentation Session

WEDNESDAY

- W34: Neurosurgery Publications: “Getting Published”

SE SOCIOECONOMIC

SATURDAY

- SYM05A: 2023 Coding and CPT Update
- SYM05B: The Importance of Wellness and the Reality of Burnout in Neurosurgery

SUNDAY

- SYM18B: Identifying and Addressing Disparity in Neurotrauma
- SYM19A: Practical Neurosurgery
- SYM16: The Value of the Neurosurgeon

MONDAY

- DEI Breakfast Seminar: Mentoring 101
- M08: Finding Your Voice: Advocacy in Neurosurgery
- Council of State Neurosurgical Societies Session 1: Leadership In and Out of Neurosurgery
- Neurosurgical Contracts: How to Get What You Want

TUESDAY

- T19: Telemedicine in Neurosurgery: The Future Beyond Covid
- T22: The Socioeconomics of an Ambulatory Surgery Center
- Council of State Neurosurgical Societies Session 2: Contract Negotiation and Employment Opportunities
- Neurosurgeons as Authors

- Interactive Poster Presentation Session
- Dinner Seminar 2: The Importance of Negotiating as a Neurosurgeon

WEDNESDAY

- W27: Unwrapping Hospital Financials: How Neurosurgeons Can Be Affected
- W31: Demystifying National Quality Reports

SF STEREOTACTIC AND FUNCTIONAL

SATURDAY

- SYM06A: Epilepsy Surgery: Advanced Techniques for Network Identification, Modulation, and Resection
- SYM06B: Movement Disorder Surgery: Targeting, Execution, and Innovation

MONDAY

- DEI Breakfast Seminar: Mentoring 101
- M10: Connectomic Deep Brain Stimulation
- Section on Stereotactic and Functional Neurosurgery 1: Functional Neurosurgery—Psychiatric Neurosurgery and Cognitive Neuroscience
- Non-invasive Functional Neurosurgery

TUESDAY

- T21: Thalamic Sampling and Stimulation for Epilepsy
- Section on Stereotactic and Functional Neurosurgery 2: Functional Neuro-Oncology—Approaches to Cancer and Cancer Pain
- Innovation and Entrepreneurship in Neurosurgery
- Interactive Poster Presentation Session

SP SPINE

SATURDAY

- SYM04A: Comprehensive Management of Spinal Trauma
- SYM08: An interdisciplinary Approach to Lumbar Spine

SUNDAY

- SYM13A: Advanced Minimally Invasive Spine Surgery: Operative Nuances, Indications, and Complication Avoidance
- SYM13B: Lateral Approaches to the Spine
- SYM17B: Incorporating Spinal Endoscopy into Your Practice

MONDAY

- DEI Breakfast Seminar: Mentoring 101
- Guideline Session I: Perioperative Spine—Intraoperative
- M03: Surgical Management of Primary Spinal Tumors
- Section on Disorders of Spine and Peripheral Nerves 1: Latest Advances in Spine Surgery
- Case Based Debates: Lumbar

TUESDAY

- T16: Cervical Spondylotic Myelopathy: Anterior Versus Posterior
- T23: My Worst Spinal Complication: Lessons Learned
- Section on Disorders of Spine and Peripheral Nerves 2: Practice Optimization for The Spine Surgeon
- Case-based Debates: Cervical
- Interactive Poster Presentation Session

WEDNESDAY

- W25: SI Joint Fusion: Indications, Technique, and Outcomes
- W32: Authorization Headaches: Strategies to Avoid Denials and Win Appeals

TR NEUROTRAUMA

SATURDAY

- SYM02B: Cutting Edge Treatments in Neurotrauma

SUNDAY

- SYM15A: Neurotrauma and Neurocritical Care Case-based Review of Guidelines and Management Principles
- SYM15B: Identifying and Addressing Disparity in Neurotrauma

MONDAY

- DEI Breakfast Seminar: Mentoring 101
- M05: Lessons Learned from the Military: Managing Neurotrauma from the Field to the Future
- Section on Neurotrauma and Critical Care 1: Management of TBI—From Bench to Bedside
- Trial by Fire: The Cases from Which I Learned the Most

TUESDAY

- T18: Managing Head Trauma in the Elderly Population
- TR2: Emerging Treatments in Spinal Cord Injury
- Section on Neurotrauma and Critical Care 2: Neurotrauma as a Team Sport: Case Based Discussion in Complex Neurotrauma Patients
- Emerging Treatments in Spinal Cord Injury
- Interactive Poster Presentation Session

WEDNESDAY

- W26: Long-term Sequela for Head Injury Patients

TU TUMOR

SATURDAY

- SYM01A: Now What? Management of Intracranial Complications
- SYM01B: 3D Surgical Neuroanatomy

SUNDAY

- Special Symposium: Sellar and Suprasellar Tumors Outside the Box *A high-yield CNS collaboration with the North American Skull Base Society (NASBS)*
- SYM11A: Brain Tumor Update: Management of Benign Brain Tumors
- SYM11B: Brain Tumor Update: Management of Malignant Brain Tumors
- SYM12A: Immunotherapy for Brain Tumors: New Concepts

MONDAY

- DEI Breakfast Seminar: Mentoring 101
- Guideline Session II: Brain Mets Update—Emerging Therapies
- M02: New Concepts in Intra-operative Guidance
- M03: Surgical Management of Primary Tumors
- Section on Tumors 1: High Grade Glioma (HGG) Surgery—Challenges and New Frontiers
- Novel Perspectives in Low Grade Gliomas Management

TUESDAY

- Guideline Session III: Functioning Pituitary Adenoma
- T15: Complex Skull Base Approaches
- Section on Tumors 2: Innovation Driven by Neurosurgeons in Glioma
- New Frontiers for Recurrent Neuro-Endocrine Tumors
- Interactive Poster Presentation Session

WEDNESDAY

- Guideline Session V: Low Grade Glioma
- W24: LITT: Data Driven Outcomes and Controversies

WI WINS

SUNDAY

- SYM18A: Neurosurgeons as Trailblazers
- SYM18B: Maximizing Your Neurosurgical Employment Opportunities

MONDAY

- DEI Breakfast Seminar: Mentoring 101
- M12: Advancing Your Career: Steps to Keep You Climbing

TUESDAY

- Interactive Poster Presentation Session

WEDNESDAY

- W30: Building Your Brand: Using Social Media to Drive Your Reputation

Register today for the CNS Annual Meeting 5k! Join your peers in a 5k through Washington, D.C.! Sign up using the QR Code below and run the suggested route or your own during the CNS Annual Meeting. You can run solo or grab a few colleagues and run together. The fastest runners will be announced during the General Scientific Session on Wednesday!



CNS INTERNATIONAL, RESIDENT, AND FOUNDATION RECEPTION

Saturday, September 9 | 5:00-7:00 pm | Planet Word Museum

International meeting attendees, residents, and CNS Foundation awardees and donors, we welcome you to join your colleagues from around the world at this reception! Enjoy hors d'oeuvres and cocktails while chatting with some of the top international professionals in the field of neurological surgery. All registered CNS Foundation donors and awardees, residents, international attendees, and their registered guests are invited to attend. Complimentary transportation will depart from the Marriott Marquis D.C. at 4:45 pm.



OPENING RECEPTION

Sunday, September 10 | 6:30-8:00 pm | Marriott Marquis Washington D.C.

Kick off your CNS Annual Meeting experience with the Opening Reception! Enjoy live music, drinks, and delicious hors d'oeuvres. The opening reception is great for reconnecting with old friends and creating new and lasting connections with your peers!



MEDICAL STUDENT TOWN HALL

Monday | 6:00-7:30 pm

We invite all medical students to attend the Medical Student Town Hall! Take advantage of this opportunity to learn about navigating the match and developing a successful career in neurosurgery from a panel of Neurosurgery Residency Program Directors who will answer questions and discuss hot topics.



CNS RESIDENT SANS CHALLENGE CHAMPIONSHIP ROUND

Tuesday | 1:50-2:50 pm

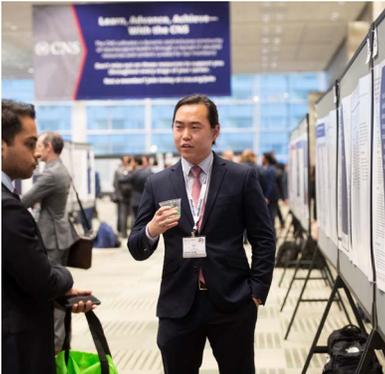
See the top 3 resident programs from around the country compete for undisputable SANS bragging rights, trophies, and cash prizes!



INTERACTIVE POSTER PRESENTATION SESSION

Tuesday | 6:00-7:30 pm

The interactive poster session aims to invigorate scientific presentation and discussion, complemented by wine and cheese. Selected presenters will showcase their research, highlighting key advances in each field.



DINNER SEMINAR 1

Saturday, September 9 | 6:30-8:30 pm | \$225
(includes three-course dinner and beverages)

- Joe's Seafood, Prime Steak & Stone Crab
- Advance Registration Recommended
- Complimentary shuttle service will depart the Marriott Marquis Washington, D.C. at 6:15 pm.



MANAGING AND PREVENTING INTRAOPERATIVE VASCULAR COMPLICATIONS

Moderators: *Nima Etminan, Christopher Ogilvy*

Faculty: *Clemens Schirmer, Stavropoula Tjoumakaris*

Seminar Description: In this seminar, details of open neurovascular procedures will be reviewed focusing on identifying potential complications preoperatively as well as managing complications intraoperatively and postoperatively. Anatomic features of vascular lesions as well as patient-specific factors will be reviewed. Specific case examples will be provided.

DINNER SEMINAR 2

Monday, September 11 | 7:30-9:30 pm | \$225
(includes three-course dinner and beverages)

- Morton's The Steakhouse
- Advance Registration Recommended
- Complimentary shuttle service will depart the Marriott Marquis Washington, D.C. at 7:15 pm.



THE IMPORTANCE OF NEGOTIATING AS A NEUROSURGEON

Moderators: *Joseph Cheng*

Faculty: *Maya Babu, Fredric Meyer, Troy Payner, Edie Zusman*

Seminar Description: Becoming a neurosurgeon does not rely on negotiation skills, with most decisions seemingly binary to either accept or reject, and out of your control. Understanding and applying techniques and strategies for meaningful negotiation is key to successfully address contract issues either for yourself or those you are recruiting. Our symposium will offer a glimpse into the needed skills to negotiate, along with the pitfalls such as loss of influence, bait and switch contracts, and metrics to understand your value.



LEARN MORE!

The Board of the CNS Foundation thanks supporters around the world who make our awards and programs possible. Please help us thank the following:

Medtronic



- The Congress of Neurological Surgeons
- Joint Cerebrovascular Section
- Joint Section on Disorders of the Spine and Peripheral Nerves
- Joint Pediatric Section
- American Society for Stereotactic and Functional Neurosurgery
- Joint Women in Neurosurgery Section
- Joint Neurotrauma and Critical Care Section
- Joint Tumor Section
- Trans-Atlantic Education Foundation
- The CNS community of neurosurgeons and individuals who generously donate and volunteer every year to the CNS Foundation.

The CNS Foundation is proud to offer the following awards in support of our four initiative pillars:

Diversity, Equity, and Inclusion

- Pathway to Neurosurgery for Washington, D.C. high school students
- Pathway to Neurosurgery Think Tank
- Future Women Leaders in Neurosurgery Scholarship
- Impact, Pilot and Scholar Awards in Diversity, Equity, and Inclusion

International Neurosurgery

- International Visitorship at UPMC Neurosurgery Pittsburgh
- Tumor Observership at University of Miami
- Brain Tumor Observership at Icahn School of Medicine at Mount Sinai
- Spine Observership at Duke University
- MGH Harvard Observership in Global Neurosurgery
- Stanford International Observership

CNS Guidelines

- CNSF Scholarship for CNS Guidelines and Quality

Clinical Scientist Career Development

- Joint Cerebrovascular Section/CNSF Young Investigator's Award
- NINDS/CNS Getch K12 Scholar Award

EXHIBIT HALL

The CNS Exhibit Hall is the best place to discover cutting-edge technology to enhance your practice. Check out in-booth demonstrations with subspecialty experts and gain hands-on experience with the latest devices - all brought to you by our industry partners. For a complete list of exhibitors, see page 47 or visit cns.org/2023.

EXHIBIT HALL HOURS

Monday:	8:15 am–4:00 pm
Tuesday:	8:15 am–3:00 pm
Wednesday:	8:15 am–1:30 pm

EXHIBIT HALL BEVERAGE BREAKS

Monday-Wednesday:	9:40–10:40 am
Monday & Tuesday:	1:50–2:50 pm

Admittance to the Exhibit Hall is by CNS name badge only. Children under the age of 18 are not allowed in the Exhibit Hall.

XPERIENCE LOUNGE

Located inside the Exhibit Hall, the Xperience Lounge offers many opportunities to connect with your peers, grab a complimentary cappuccino, ask questions of CNS staff, or simply give your feet a break in the lounge area with a copy of *Neurosurgery* from the **Neurosurgery Publications** team. Make sure to stop by and enter to win Apple product giveaways, get information about CNS services, and walk away with some CNS swag!

LIVE SURGERY PRESENTATIONS

Surgeons from top institutions will operate live via telemedicine and you will have the opportunity to observe and ask questions of the operating surgeon during each beverage break.

Sponsored by: MicroVention (2), Integra LifeSciences, and Longeviti Neuro Solutions



DEVICE INNOVATION SHOWCASE

These 10-minute sessions will feature an expert showcasing the latest technology from our Industry leaders. Learn more during your afternoon break on Tuesday.

Sponsored by: GammaTile, Imperative Care, and Elekta

DIGITAL POSTERS

Digital posters can be viewed Monday-Wednesday, and can be searched by author, topics, or keyword.

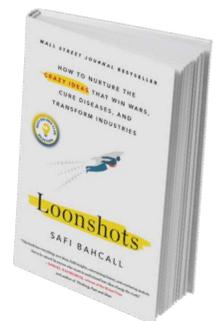
NOTEWORTHY EVENTS

■ **New! Neurosurgical Art Xperience:** Neurosurgeon artists will share their art and discuss how they have merged art with the practice of medicine, including the role of creativity in personal wellness to the use of art to learn or convey important anatomical concepts.

Two nationally known medical illustrators will be present on Monday to discuss the art of neurosurgical medical illustration.

■ **Honored Guest Meet & Greets:** L. Nelson “Nick” Hopkins, Monday
Douglas Kondziolka, Tuesday

■ **Book signing:** Have a copy of “Loonshots” signed by Safi Bahcall on Monday after the General Scientific Session





CONNECT WITH INDUSTRY OUTSIDE OF THE EXHIBIT HALL!

SPONSORED LUNCH SYMPOSIA WITH INDUSTRY LEADERS

Choose one of our three complimentary non-CME lunch-and-learn sessions covering important clinical topics during your lunch break from 12:20-1:50 pm in the convention center.

Sponsored by: Medtronic (2), Globus Medical, Penumbra, Merck & Co. Inc, and SI-BONE.

HANDS-ON CADAVERIC EXPERIENCE

These surgical cadaveric suites located in the convention center give you the opportunity to enhance your experience with the latest and greatest neurosurgical technology.



BREAKOUT & LUNCH SESSIONS DURING THE FULL-DAY SYMPOSIA

These 30-minute non-CME breakout sessions or 45-minute non-CME lunch sessions will be held during the full-day symposia on Saturday and Sunday. Take advantage of this opportunity to gain hands-on experience and see demonstrations of the most advanced equipment and techniques.



GENERAL SCIENTIFIC SESSION I

Sunday, September 10 | 4:30-6:30 pm

Presiding Officer: Alexander A. Khalessi

Moderators: Edjah K. Nduom, Laura A. Snyder



Welcome to the 2023 CNS Annual Meeting

Elad I. Levy

**CNS Resident Award
Presentation**

**Neurosurgery Top Paper of
the Year Presentation**



Honored Guest Presentation: The Future of Stroke is Multifaceted Innovation

L. Nelson "Nick" Hopkins

**Neurosurgery Futures
Lecture Series: The New
Vision—A Look into the
Future of Surgical Anatomy
Education**

Maria Peris-Celda

Brain Computer Interface

Tom Oxley



**Featured Speaker:
Keys to Assessing
Risk: Knowing When
to Push or Pivot**

Chris Cassidy

GENERAL SCIENTIFIC SESSION II

Monday, September 11 | 8:40 am-12:10 pm

Presiding Officer: Martina Stippler

Moderators: Akash Patel, Khoi Than



Distinguished Service Award Presentation to Russell R. Lonser

*Presented by Nicholas
C. Bambakidis*



Founder's Laurel Award Presentation to Volker K.H. Sonntag

*Presented by Nicholas
C. Bambakidis*

**Neurosurgery Publications
Update**

Douglas Kondziolka

Ukraine War: Lessons Learned

Rocco Armondo



2023 Presidential Address

Elad I. Levy

**Neurosurgery Futures
Lecture Series**

**The Value of the
Neurosurgeon**

Luis Tumialan

MMA Embolization Update

Howard Riina

History of African Americans in Neurosurgery

Damirez Fossett

Practical Neurosurgery: Spinal Cord Injury

David Langer

Society of Brazilian Neurosurgery Presidential Address

Wuilker Knoner Campos



**Featured Speaker:
Loonshots:
Imagining the
Impossible**

Safi Bahcall

GENERAL SCIENTIFIC SESSION III

Tuesday, September 12 | 8:40 am-12:10 pm

Presiding Officer: *Daniel J. Hoh*

Moderators: *Sharona Ben-Haim, Anand Veeravagu*

Washington Committee Update

Russell R. Lonser

White House Fellow Update

Sanjay Gupta, Jeremy Hosein, Jeffrey Nadel, Lindsey B. Ross, Anand Veeravagu



Featured Speaker: A Moderated Conversation with Martin Eberhard

Martin Eberhard

Industry Awards Acknowledgement

Ashok R. Asthagiri, Khoi D. Than

Neurosurgery Futures Lecture Series



Honored Guest Presentation: The Nature of Things

Douglas Kondziolka

CNS Education Committee Update and Educator of the Year Award Presentation

GENERAL SCIENTIFIC SESSION IV

Wednesday, September 13 | 8:40 am-12:10 pm

Presiding Officer: *Jennifer Sweet*

Moderators: *Tiffany Hodges, Peter Nakaji*

Announcement of Innovator of the Year

Announcement of SANS Challenge Winners, Top Posters, and Residency Program Abstract Competition Winners

JCNS Presidential Address

Hiroharu Kataoka

Neurosurgery Futures Lecture Series: CSF Liquid Biopsy

Ganesh Shankar

NSI Presidential Address

Yadram Yadav

SNS Update

Nathan Selden

In Memoriam

AANS Update

ASBN Update

Nnenna Mbabuikwe



Featured Speaker: More Than Your Hippocampus: Living Beyond Your Wildest Dreams

Justin Tuck

CNS Green Initiative

Practical Neurosurgery: Green OR Mentality - Reducing Waste While Improving Quality

Neil Martin



CNS Foundation Award Presentations

Martina Stippler

HIMS Paper Presentation

Folic Acid Deficiency Initiative

Yogi Pattisapu

Join Us in 2024!

Garni Barkhoudarian, Edjah K. Nduom



L. Nelson "Nick" Hopkins

SUNY Distinguished Professor
Distinguished Professor of Neurosurgery
Professor of Radiology
University at Buffalo,
State University of New York
Founder and Chief Scientific
Consultant, Jacobs Institute
Founder, Gates Vascular
Institute, Kaleida Heath

LOOK FOR DR. HOPKINS AT THE FOLLOWING SESSIONS:

Sunday, September 10

■ 5:01-5:31 pm

General Scientific Session I

Honored Guest Presentation:

The Future of Stroke is Multifaceted
Innovation

Monday, September 11

■ 12:20-1:50 pm

Honored Guest Luncheon Seminar: What
We Can Learn From Failure

Advance registration recommended

Dr. Nick Hopkins graduated cum laude from Albany Medical College and has been a pioneer in the catheter-based treatment of neurovascular disease and stroke and has developed one of the largest and most respected stroke treatment centers in the world. His work led to the creation of a new specialty in Neurosurgery – Endovascular Neurosurgery – and his trainees serve in leadership positions throughout the US. He served as chair of the Department of Neurosurgery at the University at Buffalo for nearly 25 years, authored more than 450 peer-reviewed publications, and received numerous awards for his contributions to Neurosurgery. In 2013, he was named SUNY Distinguished Professor, the highest academic award in the NY State University system; and in 2018, he was awarded the Norton Medal, the highest award at SUNY Buffalo. In 2021, he received the Business First business leadership hall of fame award.

He conceived and spearheaded the design and build of the unique \$300 million Gates Vascular Institute (GVI) and Jacobs Institute (JI) vascular innovation center, which opened in Buffalo in 2013.

Dr. Hopkins has been a leader in the Buffalo community through his service on the boards of the Albright Knox Art Gallery, the Buffalo Philharmonic Orchestra, The Gow School, and the YMCA. He enjoys golf, tennis, squash, hiking, and skiing with his family. Clubs include John's Island Club, Buffalo Tennis and Squash, Buffalo Club, Cherry Hill Club in Canada, Shooting Star and Snake River Sporting Club in Wyoming, and The Yale Club.

Dr. Hopkins and Bonnie, his wife of 57 years, are most excited and proud of their three wonderful children and eight grandchildren. They hail from Buffalo, New York, but have additional homes in Vero Beach, Florida, Jackson, Wyoming, and a cottage in Fort Erie, Ontario.

MAKE THE MOST OF YOUR TIME AT THE ANNUAL MEETING BY ADDING EXCITING SYMPOSIA AND LUNCHEON SEMINARS TO YOUR ANNUAL MEETING REGISTRATION. GRAB TICKETS BEFORE THESE SESSIONS SELL OUT!



Douglas Kondziolka

Gray Family Professor of
Neurosurgery, NYU Langone Health

Editor-in-Chief of **Neurosurgery
Publications**

LOOK FOR DR. KONDZIOLKA AT THE FOLLOWING SESSIONS:

Monday, September 11

■ 8:51-8:59 am

Neurosurgery Publications Update

Tuesday, September 12

■ 11:01-11:31 am

General Scientific Session III

Honored Guest Presentation:

The Nature of Things

■ 12:20-1:50 pm

Honored Guest Luncheon Seminar:

Learning and Personal Growth
through Organized Neurosurgery:
How to Make a Difference

Advance registration recommended

Wednesday, September 13

■ 12:20-1:50 pm

W34: Neurosurgery Publications:

"Getting Published"

Dr. Douglas Kondziolka received his medical degree from the University of Toronto and graduated from the Toronto neurosurgery residency program in 1991. From 1989 to 1991 at the University of Pittsburgh, he completed a master of science program in the Department of Behavioral Neuroscience and a fellowship in stereotactic surgery and radiosurgery. His thesis focused on brain radiobiology.

He joined the faculty of the Department of Neurological Surgery at the University of Pittsburgh in January 1992 and was later named Chief of Stereotactic and Functional Neurosurgery and Vice-Chair for Education. At the McGowan Institute for Regenerative Medicine, he served as principal investigator of the first two neuro transplantation trials for the care of stroke and completed a third to evaluate bone marrow-derived neuro progenitor cell line implants for stroke repair. A fourth trial was completed in 2018. He completed two clinical trials in neuromodulation for major depression as Director of the UPMC Center for Brain Function and Behavior.

In November 2012, Dr. Kondziolka joined the neurosurgery faculty at New York University as Professor and Vice-Chair for Clinical Research. He launched the first global registry platform for neurosurgery that focused initially on the broad array of radiosurgical indications. Current research is on the metabolic and vascular effects of brain tumor radiosurgery using novel neuroimaging techniques, brain tumor natural history studies, and clinical registry analytics. In 2022, he and colleague Dr. Eric Oermann launched the world's largest open-source brain tumor imaging dataset with longitudinal data, NYUMets.

Dr. Kondziolka has published 635 articles in refereed journals, 275 book chapters, and/or invited publications, and has edited 8 books.

He has completed four randomized controlled trials. He is a two-time recipient of the Stephen Mahaley Award for brain tumor clinical research from the Joint Section on Tumors of the AANS/CNS. He received the Lars Leksell Award from the World Federation of Neurosurgical Societies. In 2004, he was honored as the Penfield Lecturer of the Canadian Neurosurgical Society. In 2006 he received the Robert Florin Award of the American Association of Neurological Surgeons for socio-economic research, and in 2007, the AANS Integra Foundation Award. In 2007 he received the Jacob Fabrikant Award from the International Stereotactic Radiosurgery Society. In 2014 he received the Bernard Sanberg Award from the American Society for Neural Therapy and Repair. In 2022 he was an Honored Guest of the North American Skull Base Society. He is humbled to be selected as a 2023 Honored Guest of the Congress of Neurological Surgeons.

He is a Past-President of the American Society for Stereotactic and Functional Neurosurgery and the International Stereotactic Radiosurgery Society. In 2006-2007, he served as President of the Congress of Neurological Surgeons. He served as the neurosurgeon for the Pittsburgh Penguins of the National Hockey League from 2002-2012. He served as co-chair of the editorial board of the *Journal of Neurosurgery* (2008-2013) and Associate Editor (2013-2021). He was a Director of the American Board of Neurological Surgery from 2014-2020 and Chair of the Oral Examination. He was appointed to the Residency Review Committee of the ACGME in neurosurgery (2020). He is Past-President of the American Academy of Neurological Surgery.

With an impressive h-index of 108, Kondziolka is Editor-in-Chief of **Neurosurgery Publications** which is the Congress of Neurological Surgeons' suite of journals that includes *Neurosurgery*, *Operative Neurosurgery*, and *Neurosurgery Practice*. He has been a visiting professor at many of the top institutions in the United States and Canada and has lectured extensively across the world.

FEATURED SPEAKERS



Safi Bahcall

Award-winning entrepreneur and author of the international bestseller "Loonshots"

Walter E. Dandy Orator

Monday, September 11

■ 11:44 am-12:10 pm

General Scientific Session II

Loonshots: Imagining the Impossible



Chris Cassidy

NASA Astronaut, U.S. Navy Seal, and CEO of the National Medal of Honor Museum

Sunday, September 10

■ 6:01-6:30 pm

General Scientific Session I

Leadership Under Pressure: An Astro SEAL's Perspective



Amal Clooney

Lawyer and Human Rights Advocate

Dr. Dorothy Nash Lecture



Martin Eberhard

Founder, Original Chairman and CEO of Tesla

CNS Michael L.J. Apuzzo Lecturer on Creativity and Innovation

Tuesday, September 12

■ 9:15-9:40 am

General Scientific Session III

A Moderated Conversation with Martin Eberhard



Justin Tuck

Managing Director at Goldman Sachs, Two-time Super Bowl Champion

Wednesday, September 13

■ 11:03-11:23 am

General Scientific Session IV

More Than Your Hippocampus: Living Beyond Your Wildest Dreams

Scan QR code to read full speaker biographies





2023 PRESIDENT: Elad I. Levy

Elad I. Levy is SUNY Distinguished Professor and L. Nelson Hopkins Endowed Chair at the State University of New York at Buffalo. He has served on the CNS Executive Committee since 2007, was appointed as one of the National Directors to the American Board of Neurological Surgery (ABNS) in 2017, and is currently the Vice-Chair of the ABNS. He has led multiple major national and international clinical trials for strokes, leading one of the country's foremost endovascular training programs.



PRESIDENT-ELECT: Alexander A. Khalessi

Alexander A. Khalessi is the chair of the Department of Neurological Surgery and professor of Neurological Surgery, Radiology and Neurosciences at UC San Diego. In 2021, he was named the inaugural Don and Karen Cohn Chancellor's Endowed Chair in Neurosurgery, one of the highest academic honors conferred upon a faculty member in the University of California system. Since joining the Executive Committee in 2014, Dr. Khalessi has assumed progressive positional responsibilities within the CNS—including serving as Vice President, co-chair of the CNS Foundation, and Scientific Program and Annual Meeting Chair—and he looks forward to further serving the neurological community as President-elect.



2023 ANNUAL MEETING CHAIR: Lola B. Chambless

Lola B. Chambless is Associate Professor of Neurological Surgery and the Neurosurgery Residency Program Director at Vanderbilt University Medical Center. She has a busy clinical practice in brain tumor and skull base surgery and is the surgical director of the Vanderbilt Pituitary and Radiosurgery centers. She has led CNS efforts in the Education Division, Leadership Institute, and the development of the Data Science program. In 2023, she finishes her third and final year as a member of the meeting team by chairing the Annual Meeting Committee.



2023 SCIENTIFIC PROGRAM CHAIR: Garni Barkhoudarian

Garni Barkhoudarian is associate professor of neuroscience and neurosurgery at the Pacific Neuroscience Institute and Chief of Neurosurgery at Providence Saint John's Health Center. Dr. Barkhoudarian's research interests include evaluating outcomes of pituitary and brain tumor surgery, brain tumor epigenetics and biomarkers, and unique cadaveric models of skull-base approaches. He has served in numerous capacities within the Congress of Neurological Surgeons including Self-Assessment of Neurological Surgery (SANS) Chair, Education division Vice-chair, ACCME Chair.



2023 VICE SCIENTIFIC PROGRAM CHAIR: Edjah K. Nduom

Edjah K. Nduom, MD, FAANS, is an Associate Professor and the Daniel Louis Barrow Endowed Chair in Neurosurgery at Emory University School of Medicine. Dr. Nduom joined the Executive Committee of the Congress of Neurological Surgeons in 2021, and he now has the honor of serving as Vice Scientific Program Chair. A neurosurgeon-scientist, Dr. Nduom's clinical specialty is the resection of tumors located in eloquent regions of the brain, brain-stem, and spinal cord, and his laboratory studies novel immune therapeutics for brain tumors with the support of numerous foundations and the National Institutes of Health.

THANK YOU



Congress of Neurological Surgeons

The Congress of Neurological Surgeons gratefully acknowledges our Industry Allies Council Members for their continued support.

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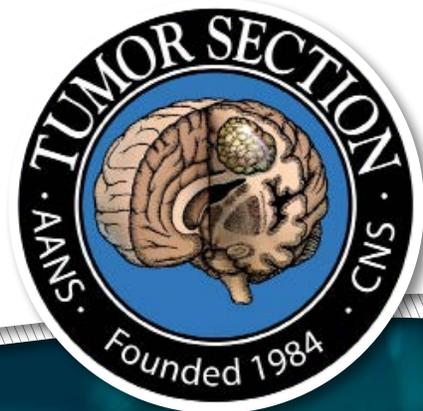
DEVELOPING NATION RATE

In an effort to make the best in neurosurgery more accessible to doctors and scientists around the world, the CNS is pleased to offer a discounted registration rate of \$150 to nonmember attendees from the following countries:

AFGHANISTAN, ANGOLA, BANGLADESH, BENIN, BHUTAN, BOLIVIA, BURKINA FASO, BURUNDI, CABO VERDE, CAMBODIA, CAMEROON, CENTRAL AFRICAN REPUBLIC, CHAD, COMOROS, CONGO, DEM. REP., CONGO, REP., CÔTE D'IVOIRE, DJIBOUTI, EGYPT, EL SALVADOR, ERITREA, ETHIOPIA, THE GAMBIA, GHANA, GUINEA, GUINEA-BISSAU, HAITI, HONDURAS, INDIA, INDONESIA, KENYA, KIRIBATI, KOREA, DEM. PEOPLE'S REP., KYRGYZ REPUBLIC, LAO PDR, LEBANON, LESOTHO, LIBERIA, MADAGASCAR, MALAWI, MALI, MAURITANIA, MICRONESIA, FED. STS., MOLDOVA, MONGOLIA, MOROCCO, MOZAMBIQUE, MYANMAR, NEPAL, NICARAGUA, NIGER, NIGERIA, PAKISTAN, PAPUA NEW GUINEA, PHILIPPINES, RWANDA, SÃO TOMÉ AND PRINCIPE, SENEGAL, SIERRA LEONE, SOLOMON ISLANDS, SOMALIA, SOUTH SUDAN, SRI LANKA, SUDAN, SWAZILAND, SYRIAN ARAB REPUBLIC, TAJIKISTAN, TANZANIA, TIMOR-LESTE, TOGO, TUNISIA, UGANDA, UKRAINE, UZBEKISTAN, VANUATU, VIETNAM, WEST BANK AND GAZA, YEMEN, ZAMBIA, ZIMBABWE

2023 TUMOR SECTION SYMPOSIUM

**BRAIN AND SPINE RECURRENT TUMORS:
THE NEUROSURGEON'S ROLE**



Don't forget to purchase a ticket to the Tumor Gala on Friday night with your registration!



Join us at the 2023 Tumor Section Symposium September 8-9, 2023, at the Walter E. Washington convention center and explore technological advances in neurosurgical neuro-oncology, including tumor microenvironment and spinal oncology. **Save up to \$200 when you add the Tumor Section Symposium to your Annual Meeting Registration!**

SUBSPECIALTY SESSION HIGHLIGHTS KEY

- AP** ADVANCED PRACTICE PROVIDER
- CV** CEREBROVASCULAR
- GE** GENERAL
- MS** MEDICAL STUDENTS
- PA** PAIN
- PE** PEDIATRIC
- PN** PERIPHERAL NERVES
- RE** RESIDENT
- SE** SOCIOECONOMIC
- SF** STEREOTACTIC AND FUNCTIONAL
- SP** SPINE
- TR** NEUROTRAUMA
- TU** TUMOR
- WI** WINS



Be sure to secure your seat for one or more of these ticketed sessions when you register!



Special Symposia

PRICING: Full Day Discounted Bundles (includes lunch): Physician \$600; Nurse/NP/PA \$300; Resident/Medical Student \$175

Half Day: Physician \$450; Nurse/NP/PA \$200; Resident/Medical Student \$125

GE 8:00 am-4:15 pm

TNT: Transforming Neurosurgery through Technology: The Innovation Symposium

Course Directors: Nicole Bentley, Adnan Siddiqui

Faculty: Vijay Agarwaul, Martin Dieck, Kevin Foley, Scott Friedman, David Gonda, Kimberly Hoang, Karl Heilman, Elad Levy, Eric Leuthardt, Adel Malek, Christoph Miethke, J Mocco, Carlos Penya, Eric Peterson, Leo Petrossian, Martin Pham, Sameer Sheth, Adnan Siddiqui, Michael Sughrue, Nicholas Theodore, Ray Turner, Juan Uribe

Course Description: Neurosurgeon-entrepreneurs, engineers, industrial partners, and investment professionals will discuss unique approaches to innovation that can lead to return on investment for our members and industry partners. Focus on Robotic platforms and emerging technologies. (Non-CME)

GE 8:00 am-4:15 pm

Meeting of the Americas

Course Directors: Peter Nakaji, Leonardo Rangel Castilla, Jose Valerio, Francisco Mery, Marimerce Toledo, Hector Sroiano, Samuel Kalb

Faculty: Alvaro Campero, Feres Chaddad Jean de Oliviera, Marco Barajas Romero, Fernando Hakinm, Pedro Lylyk, Gustavo Melo, Vitror Mendez Pereira, Boris Pabon, Barbra Nettel, Jose Valerio, Jaime Torres Vorzo, Andres Lozano, Fernando Vale, Virgilio Matheus, Felipe Rossel, Pedro Ramirez, Alfredo Quinones

Course Description: In conjunction with partner organizations, SLANC, BSN as well as including neurosurgeons from all of the Americas, this session will explore the variety of neurosurgical disciplines practiced throughout these countries. Special focus on regional challenges and differential outcomes. The Neurosurgery Paper of the Year in Global Neurosurgery will also be presented.

Symposia

PRICING: Full Day Discounted Bundles (includes lunch): Physician \$600; Nurse/NP/PA \$300; Resident/Medical Student \$175

Half Day: Physician \$450; Nurse/NP/PA \$200; Resident/Medical Student \$125

TU 8:00 am-4:15 pm

SYM01: Tumor Bundle

Composed of two sessions: SYM01A & SYM01B. Select this option to take both at a discounted rate.

TU 8:00 am-12:00 pm

SYM01A: Now What? Management of Intracranial Complications

Course Directors: Maryam Rahman, Brad E. Zacharia

Faculty: Jeffrey N. Bruce, Frederick F. Lang, Michael Link, Colin Watts, A. Samy Youssef, Gabriel Zada

Course Description: Complications of Intracranial tumor surgery, including cases by skull-base and intra-axial tumor experts focusing on surgical technique and technological maladies.

TU 12:45-4:15 pm

SYM01B: 3D Surgical Neuroanatomy



Course Director: Juan C. Fernandez-Miranda

Faculty: Mustafa K. Baskaya, Aaron A. Cohen-Gadol, Paul A. Gardner, Pablo A. Rubino, Jeffrey M. Sorenson, Necmettin Tanriover, Ugur Ture, A. Samy Youssef

Course Description: Relevant surgical neuroanatomy and operative cases by master surgeons using 3-D stereoscopic projection with a focus on skull-base and subcortical anatomy.



Look for this image for a SANS exam that accompanies this course and can be purchased on the Annual Meeting registration site.

SP TR 8:00 am-4:15 pm**SYM02: Spine/Trauma Bundle**

Composed of two sessions: SYM02A & SYM02B. Select this option to take both at a discounted rate.

SP TR 8:00 am-12:00 pm**SYM02A: Comprehensive Management of Spinal Trauma**

Course Directors: Paul Arnold, Charles Sansur

Faculty: Ken Crandall, Sanjay Dhall, Asdrubal Falavigna, Daniel J. Hoh, Diana Jho, Rajiv Saigal, Vincent Traynelis, Thomas Wilson

Course Description: Comprehensive spine trauma management, including operative and non-operative treatment options, with an emphasis on evidence-based practice guidelines.

SP TR 12:45-4:15 pm**SYM02B: Cutting Edge Treatments in Neurotrauma**

Course Directors: Anthony DiGiorgio, Patti Raksin

Faculty: Randy Bell, Jack Jallo, Brian Kwon, Geoff Manley, David Okonkwo, Ann Parr, Shelly Timmons

Course Description: Discussion on advancements in surgical techniques for traumatic brain injury and spinal cord injury: focus on targeted therapy and neurophysiologic principles.

CV 8:00 am-12:00 pm**SYM03: Aneurysms: Endovascular and Open Approaches to Complex Lesions**

Course Directors: Sepideh Amin-Hanjani, Jonathan Russin

Faculty: Nicholas C. Bambakidis, H. Huntington Batjer, Rohan Chitale, Amir Dehdashti

Course Description: Includes concentration on indications, planning, and execution of bypass for the management of complex cerebrovascular lesions, as well as a hands-on component with microscopes to practice bypass techniques with course faculty. Tumor, aneurysm, ischemic disease also included.

PE 8:00 am-4:15 pm**SYM04: Endoscopic Applications in Pediatric Neurosurgery**

Course Director: Carolina Sandoval-Garcia

Faculty: Jorge Gonzalez-Martinez, Caitlin Hoffman, AV Kulkarni, Hal Metzger, Catherine McClung-Smith,

Course Description: Practical clinic on endoscopic applications in management of pediatric hydrocephalus, craniosynostosis and intraventricular surgery.

SE 8:00 am-4:15 pm**SYM05: CSNS Bundle**

Composed of two sessions: SYM05A & SYM05B. Select this option to take both at a discounted rate.

SE 8:00 am-12:00 pm**SYM05A: 2023 Coding and CPT Update**

Course Director: Joseph Cheng

Faculty: Domagoj Coric, Kris Kimmell, Scott Meyer, Mark Oppenlander, Gregory Przybylski, John Ratliff, Teri Romano, Karin Swartz, Luis Tumialan, Anand Veeravagu

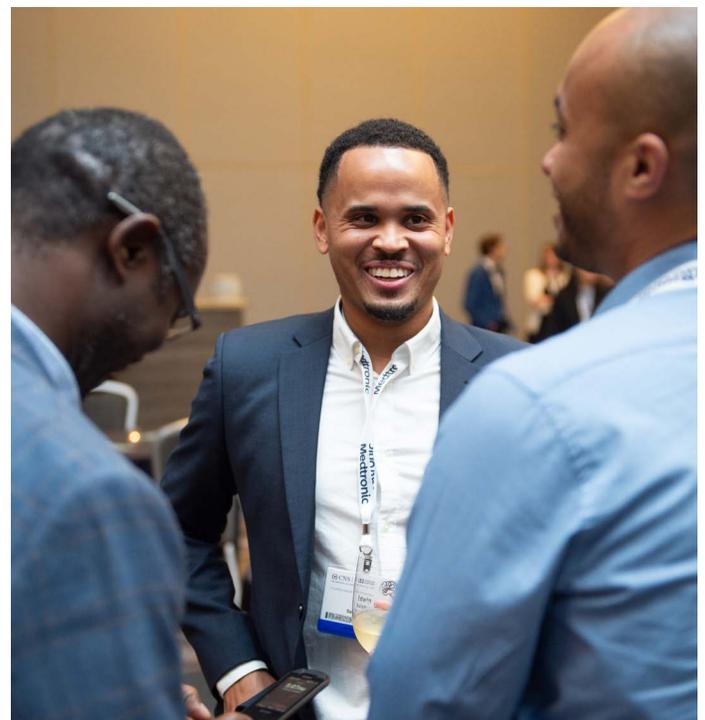
Course Description: Highlighting what is new in spinal, cranial and E&M coding including potential revenue leaks, maximizing coding for the work you are doing, and highlighting documentation pearls. An expert panel will provide information and have time to answer questions from the audience.

SE 12:45-4:15 pm**SYM05B: The Importance of Wellness and the Reality of Burnout in Neurosurgery**

Course Directors: Stacey Wolfe, Luis Tumialan

Faculty: Frank Attenello, Allan Hamilton, Paul Klimo, Debraj Mukherjee, Gregory Murad, Clemens M. Schirmer

Course Description: Burnout is prevalent throughout medicine and neurosurgery is no exception. Residents and practicing neurosurgeons are all susceptible to burnout. This is heightened in the era of increased documentation requirements, less pay for more work, and increased technological demands.



SF 8:00 am-4:15 pm

SYM06: Stereotactic and Functional Bundle

Composed of two sessions: SYM06A & SYM06B. Select this option to take both at a discounted rate.

SF 8:00 am-12:00 pm

SYM06A: Epilepsy Surgery: Advanced Techniques for Network Identification, Modulation, and Resection

Course Directors: Eyiymisi Damisah, John Rolston
Faculty: Kathleen Bandt, Nicole Bentley, Edward Chang, Alfonso Fasano, Robert Gross, Andrew Ko, Kai Miller, Carrie Muh, Vikram Rao, R. Mark Richardson, Steino Sarmento

Course Description: Epilepsy often requires surgery targeted to the involved network and targeting it with resection, ablation, or neuromodulation. This course will provide practice and insight in the use of neuroimaging for epilepsy, network-level monitoring, minimally invasive ablation, and cutting-edge neuromodulation strategies.

SF 12:45-4:15 pm

SYM06B: Movement Disorder Surgery: Targeting, Execution, and Innovation

Course Director: Shabbar Danish
Faculty: Aviva Abosch, Ellen Air, Sarah Bick, Vivek Buch, G. Rees Cosgrove, Cameron McIntyre, Shervin Rahimpour, Ashwin Viswanathan

Course Description: Through didactic and hands-on sessions, explore innovations in surgical targeting, novel methods of ablation such as focused ultrasound, and recent technological advances in brain stimulation, such as closed-loop systems.

PN 8:00 am-4:15 pm

SYM07: Stimulation for Peripheral Nerve Pain: Practical and Practice



Course Directors: Line G. Jacques, Konstantin Slavin
Faculty: Allan Belzberg, Mark Mahan, Jennifer Sweet, Christopher Winfree

Course Description: Focuses on the evaluation and management of peripheral nerve pain including multi-modal treatment of complex regional pain syndrome, peripheral nerve, dorsal ganglion, spinal cord and deep brain stimulation, as well as neurectomy and dorsal root entry zone lesioning.

PN SP 8:00 am-4:15 pm

SYM08: An Interdisciplinary Approach to Lumbar Spine Pain

Course Directors: Nandan Lad, Eric Potts
Faculty: Richard North, Eellan Sivanesan, Michael Staudt, Chengyuan Wu

Course Description: Features interdisciplinary approaches to lumbar pain, including Pain Neurosurgeons, Spine neurosurgeons, Orthopaedic surgeons, physiatrists and physical therapists. Cases will be discussed including surgical management as well as alternative approaches to spinal pain that have the potential to disrupt neurosurgical practices.

GE 8:00 am-4:15 pm

SYM09: Quality in Neurosurgery Practice



Course Directors: Sharona Ben-Haim, Faith Robertson
Faculty: Mohamad Bydon, Trevor Fetter, Stephen Haines, Michael Ivan, Won Kim, Neil Martin, Matthew Miller, Elizabeth Mort, James Moses, Sujatha Sankaran, Clemens M. Schirmer, Scott Simon, Jennifer Sweet, Laura Synder, Daniel Yoshor

Course Description: Empowers neurosurgeons to increase healthcare value by improving patient outcomes and experiences while reducing unnecessary costs. We aim to provide practical knowledge needed to develop, deploy, and sustain quality improvement and quality assurance initiatives.

GE 8:00 am-4:15 pm

SYM10: 2023 CNS Cerebrovascular Neurosurgery for Residents

Course Directors: Mandy Binning, Christopher Kellner, Justin Mascitelli

Faculty: Jeremiah Johnson, Michael Lang, Ning Lin, Nina Moore, Christopher Ogilvy, Joshua Osburn, Dimitri Sigounas, Phil Taussky

Course Description: Exposes trainees to the rapidly advancing field of Cerebrovascular Neurosurgery through close instruction by leaders in the field and hands-on training with the newest devices and training models.

5:00-7:00 pm

CNS International, Resident, and Foundation Reception

■ Planet Word Museum
 See pg. 8 for details

6:30-8:30 pm

SE DINNER SEMINAR: Managing and Preventing Intraoperative Vascular Complications

■ Joe's Seafood, Prime Steak & Stone Crab
 See pg. 10 for details



Be sure to secure your seat for one or more of these ticketed sessions when you register!



Special Symposia

PRICING: Full Day Discounted Bundles (includes lunch): Physician \$600; Nurse/NP/PA \$300; Resident/Medical Student \$175
Half Day: Physician \$450; Nurse/NP/PA \$200; Resident/Medical Student \$125

TU 8:00 am-4:15 pm

Sellar and Suprasellar Tumors Outside the Box A high-yield CNS collaboration with the North American Skull Base Society (NASBS)



Registration for the CNS Annual Meeting is not required to attend this Special Symposium.

Price: \$600

Register for this symposium and the CNS Annual Meeting and save \$150!

Course Directors: Siviero Agazzi, Maria Peris-Celda, Daniel Prevedello, Viviane Tabar

Faculty: Manish Aghi, Amjad Anaizi, Garni Barkhoudarian, Maria Peris Celda, Prashant Chittiboina, Brian Collins, Amir Dehdashti, James Evans, Juan Fernandez-Miranda, Paul Gardner, Jamie van Gompel, Luma Ghalib, Tim de Klotz, Michael Link, James Liu, Nyall London, Jose Matos, Jonathan Morris, Carlos Pinheiro Neto, Lynette Nieman, Joshua Palmer, Arjun Parasher, Marta Penas Prado, Luciano Prevedello, Marla Sevilla, Susmeeta Sharma, Jason Sheehan, Elizabeth Tyler-Kabara

Course Description: Offers a comprehensive series of lectures related to the most challenging and relevant aspects of the diagnosis, surgical and non-surgical management, and outcomes of sellar and suprasellar tumors. The lectures are organized in a TED-talk style format to provide a different learning experience and highlight the practical and clinically relevant concepts.

GE 8:00 am-4:15 pm

The Hopkins Symposium

Course Directors: Mandy Binning, Alexander A. Khalessi

Faculty: Jason Davies, Ricardo Hanel, Fred Khosravi, David Langer, Michael Lawton, Demetrius Lopes, Adel Malek, J Mocco, Christopher Ogilvy, Adnan Siddiqui, Robert Spetzler, Ajay Wakhloo, Peter Kan

Course Description: The Hopkins Symposium is a day to honor one of the pioneers of endovascular neurosurgery and discuss how his surgical innovations have shaped modern day neurosurgery across all subspecialties. We will highlight endovascular neurosurgery as it pertains to relationships with industry, and cutting edge treatments for vascular disorders as well as common neurosurgical problems such as hydrocephalus.

Sponsored by: Imperative Care and Q'Apel Medical, Inc.

SE 8:00 am-12:00 pm

Practical Neurosurgery: Perspectives by and for General Practice Neurosurgeon Leaders

Course Directors: Jason Ellis, Christian Sikorski

Faculty: Anthony Asher, Deborah Benzil, Mandy Binning, Andrew Fanous, James Fleming, Rupa Juthani, Daniel Kelly, David Langer, R. Loch Macdonald, Neil Martin, Jay McCracken, Raj Narayan, Troy Payner, Alan Scarrow, Gary Simonds, R. Morgan Stuart, Deborah Omar Zalattimo

Course Description: The scope and influence of neurosurgical practice in the community setting are expansive. Furthermore, community practices of all varieties remain the predominant practice setting in our field. This course explores the practical aspects of being a neurosurgical practitioner, leader, investigator, and innovator outside the traditional halls of academia.

Symposia

PRICING: Full Day Discounted Bundles (includes lunch): Physician \$600; Nurse/NP/PA \$300; Resident/Medical Student \$175
Half Day: Physician \$450; Nurse/NP/PA \$200; Resident/Medical Student \$125

TU 8:00 am-4:15 pm

SYM11: Tumor Bundle

Composed of two sessions: SYM11A & SYM11B. Select this option to take both at a discounted rate.

TU 8:00 am-12:00 pm

SYM11A: Brain Tumor Update: Management of Benign Brain Tumors

Course Directors: Jacques Morcos, Gelareh Zadeh

Faculty: Andrew S. Little, Russell R. Lonser, Akash J. Patel, Amir Samii, Olabisi Sanusi, Walavan Sivakumr

Course Description: Discusses surgical and radio surgical techniques for a variety of central nervous system tumors.

TU 12:45-4:15 pm

SYM11B: Brain Tumor Update: Management of Malignant Brain Tumors

Course Directors: Isabelle Germano, Michael Lim

Faculty: Kaisorn L. Chaichana, William Friedman, Jody Leonardo, Andrew Sloan

Course Description: Provides an update on malignant brain tumor management, including guidelines reviews and a focus on adjuvant surgical technologies with case-based discussions by expert faculty.

TU CV PA 8:00 am-4:15 pm

SYM12: Tumor/ Cerebrovascular/Pain Bundle

Composed of two sessions: SYM12A & SYM 12B. Select this option to take both at a discounted rate.

TU 8:00 am-12:00 pm

SYM12A: Immunotherapy for Brain Tumors: New Concepts

Course Director: E. Antonio Chiocca

Faculty: Nduka M. Amankulor, Bryan Choi, William T. Curry, Peter E. Fecci, Michael Lim, Hideho Okada, Ian F. Parney

Course Description: Provides an overview of immunological principles and defines discrete pathways regulating the initiation and progression of malignant brain tumors. Cutting-edge immunotherapeutic approaches for the treatment of CNS tumors will be discussed.

CV PA 12:45-4:15 pm

SYM12B: Microvascular Decompression for Trigeminal Neuralgia and Beyond

Course Director: Sharona Ben-Haim

Faculty: Andrew Grande, Christopher Honey, Raymond Sekula, Marc Sindou

Course Description: Focuses on diagnosis, management and operative technique in MVD for vascular compression syndromes including trigeminal neuralgia and other syndromes (hemifacial spasm, glossopharyngeal neuralgia, geniculate neuralgia, etc)

PN 8:00 am-4:15 pm

SYM13: Disorders of the Spine and Peripheral Nerves Bundle

Composed of two sessions: SYM13A & SYM13B. Select this option to take both at a discounted rate.

PN 8:00 am-12:00 pm

SYM13A: Advanced Minimally Invasive Spine Surgery: Operative Nuances, Indications, and Complication Avoidance

Course Director: Kai-Ming Fu

Faculty: Aaron Clark, Kurt Eichholz, Kevin Foley, Luis Tumialan, Langston Holly, Ibrahim Hussain, Catherine Miller-Simington, Saman Shabani

Course Description: Intended for surgeons with an interest and some experience in minimally invasive spine surgery. Experts in the field will discuss operative nuances, complication avoidance, and patient selection in the context of a case-based course.

SYM13: Non-CME Lunch Session Sponsored by Globus Medical

PN 12:45-4:15 pm

SYM13B: Lateral Approaches to the Spine

Course Directors: Adam Kanter, Juan Uribe

Faculty: Neel Anand, Paul Park, Luiz Pimenta, Bill Taylor, David Xu

Course Description: The lateral approach to the spine is a powerful tool for the modern spine surgeon for a variety of spinal conditions, including degenerative disc disease, deformity, spondylolisthesis, and tumors. This course is ideal for surgeons and APPs regardless of extent of experience who seek to update their knowledge and skill. Leading experts in the field will give a comprehensive overview of the latest advances in the indications, technique and management of complications of lateral approach to the spine.

CV 8:00 am-4:15 pm

SYM14: Cerebrovascular Bundle

Composed of two sessions: SYM14A & SYM14B. Select this option to take both at a discounted rate.

CV 8:00 am-12:00 pm

SYM14A: Frontiers in Management of Acute Stroke

Course Directors: Adam Arthur, Vernard Fennell

Faculty: Adam Arthur, Mandy Binning, Vernard Fennell, Richardo Hanel, Aditya Iyer, Alexander Paul

Course Description: Will look at the evolving landscape of stroke care, including acute thrombectomy trials looking to extend indications, as well as pre- and post-hospital care and innovations aimed to improve outcomes for stroke patients.

CV 12:45-4:15 pm

SYM14B: Minimally Invasive Management of Intracerebral Hemorrhage

Course Directors: Mark Bain, Christopher Kellner, Adnan Siddiqui

Faculty: Leonardo Rangel-Castilla

Course Description: Will review landmark trials in management of ICH, identifying areas of ongoing investigation. An update on recent trials will highlight ongoing efforts to evolve techniques. Demonstration of different minimally invasive techniques and technologies through case examples will be given.

SYM14: Non-CME Lunch Session sponsored by AstraZeneca

TR 8:00 am-4:15 pm

SYM15: Neurotrauma and Critical Care and CSNS Bundle

Composed of two sessions: SYM15A & SYM15B. Select this option to take both at a discounted rate.

TR 8:00 am-12:00 pm

SYM15A: Neurotrauma and Neurocritical Care Case-based Review of Guidelines and Management Principles

Course Directors: Lori Shutter, Emily Sieg

Faculty: Ramesh Grandhi, Greg Hawryluk, Ryan Kitagawa, Laura Ngwenya, Richard Rogers, Uzma Samadani, Berje Shammassian, Eve Tsai

Course Description: Case-based review of common but often challenging cases of brain and/or spinal cord injury. Ideal for young neurosurgeons planning on taking board examinations and older neurosurgeons wanting to refresh their knowledge base and discuss challenging cases. A review of current guidelines will also be included.

TR SE 12:45-4:15 pm

SYM15B: Identifying and Addressing Disparity in Neurotrauma

Course Director: Sarah Woodrow

Faculty: Michael Chicoine, Sonya Eden, Bharat Guthikonda, Laura Ngwenya, Kee Park, Andres Rubiano, Kibru Zewdie

Course Description: Disparities exist in neurotrauma across the globe. This symposium will bring together neurosurgeons from broad backgrounds to discuss some of the common challenges delivering comprehensive care both in our own backyards and in LMICs.

SE 12:45-4:15 pm

SYM16: The Value of the Neurosurgeon

Course Directors: Brian V. Nahed, Troy Payner, Ann Stroink

Faculty: Deb Benzil, Brian L. Hoh, Steven Kalkanis, Richard Menger, Stephen Papadopoulos

Course Description: In this era of decreasing reimbursement, increasing regulation, and increasing employed positions, it is crucial that neurosurgeons understand their own value. That value could be to their institution, their hospital, their group or their community. The panel will highlight maximizing revenue by not only volume but also cost containment, how to leverage your value in negotiations, and how to remain compliant with regulatory guidelines.

PN SP 8:00 am-4:15 pm

SYM17: Peripheral Nerve/ Spine Bundle

Composed of two sessions: SYM17A & SYM17B. Select this option to take both at a discounted rate.

PN 8:00 am-12:00 pm

SYM17A: Peripheral Nerve Surgery: Evaluation and Operative Techniques - Preparing for General Practice and the Oral Boards

Course Directors: Line G. Jacques, Thomas J. Wilson

Faculty: Ausaf Bari, Justin Brown, Amgad S. Hanna, Andrew Jack, Mark Mahan, Shaun T. O'Leary, Elias B. Rizk, Brandon Smith, Eric L. Zager

Course Description: Designed for surgeons at any experience level, uses a combination of didactic lectures, case discussion, and hands-on demonstrations. The faculty will provide learners with fundamental knowledge in peripheral nerve evaluation, surgical exposure and management of common surgical nerve conditions.

SP 12:45-4:15 pm

SYM17B: Incorporating Spinal Endoscopy into Your Practice

Course Directors: Christoph Hofstetter, Albert Telfeian

Faculty: Nathaniel Brooks, Meng Huang, Osama Kashlan, Sanjay Konakondla, Mark Mahan, John Ogunlade, Michael Wang

Course Description: Spinal endoscopy is a growing field of spine surgery with expanding applications. In this symposium, participants will learn from spinal endoscopy experts on strategies for incorporating endoscopy for a variety of different pathologies.



WI 8:00 am-4:15 pm

SYM18: WINS Bundle

Composed of two sessions: SYM18A & SYM18B. Select this option to take both at a discounted rate.

WI 8:00 am-12:00 pm

SYM18A: Neurosurgeons as Trailblazers

Course Directors: *Rushna Ali, Rupa Juthani*

Faculty: *Sonia Eden, Sanjay Gupta, Ray King, Kathryn Ko, Julie Pilitsis, Judy Rosman, Gail Rousseau, Shelly Timmons, Richard Wohns, Victor Yang*

Course Description: Intended to introduce medical students, neurosurgery trainees and junior faculty to the breadth of opportunities that exists as a neurosurgeon such as global outreach, business, innovation, community outreach and academics, with an emphasis on alternate and parallel career paths.

WI 12:45-4:15 pm

SYM18B: Maximizing Your Neurosurgical Employment Opportunities

Course Directors: *Jennifer Sweet, Kristin Weaver*

Faculty: *John A. Braca, Andrew R. Conger, Anand Germnawala, Michelle Johnson, Timothy H. Lucas, Joseph S. Neimat, Judy Rossman, Justin A. Singer, Anand Veeravagu, Matthew Vuckovich, Sharon Webb*

Course Description: Intended for senior neurosurgery residents and graduating fellows who are in the process of interviewing for employment. The faculty will discuss topics relevant to job applicants from the perspective of chairpersons, program directors, and recruiters. Job applicants will also have an opportunity to have their CVs reviewed and obtain interview tips from experts in this area.

GE 8:00 am-4:15 pm

SYM19: General Education Bundle

Composed of two sessions: SYM19A & SYM19B. Select this option to take both at a discounted rate.

GE 8:00 am-12:00 pm

SYM19A: Swimming with The Sharks: Thriving in the Neurosurgery Match and Residency

Course Directors: *Nitin Agarwal, David Kojo Hamilton*

Faculty: *Sepideh Amin-Hanjani, Vikram Chakravarthy, Lola B. Chambliss, Chirag Gandhi, Ezequiel Goldschmidt, Ramesh Grandhi, Michael*

Haglund, Michael Ivan, Randy Jensen, Bryan Lieber, Melissa Lukehart, James Markert, Joseph Maroon, Gregory Murad, Joshua Osbun, Akash Patel, Francisco Ponce, Ganesh Rao, Renee Reynolds, Ashwini Sharan, Michael Steinmetz, Martina Stippler, Krystal Tomei, Daniel Tonetti, Stacey Wolfe, Nathan Zwagerman

Course Description: Nobody wants to swim with sharks, but some must swim regardless. This course, intended for residents, medical students, and foreign medical graduates, highlights lessons of resilience learned through the experience of faculty and residents. Faculty include chairpersons, program directors, program coordinators, and recent graduates, discussing topics ranging from overcoming mistakes in training to creating a pathway for a successful career.

GE 12:45-4:15 pm

SYM19B: Leading the Pack

Presented by the CNS Leadership Institute



Course Director: *Ellen Air, Brian V. Nahed, Anand Veeravagu*

Faculty: *Joseph S. Neimat, Alan Scarrow*

Course Description: Designed for the neurosurgeon leader in conjunction with the CNS Leadership Institute. Leadership skills are necessary throughout all aspects of Neurosurgery including practice development, department management, navigating hospital administration, and organized neurosurgery. Topics will include leadership core competencies, as well as setting goals and establishing mentorship. The course will include didactic lectures as well as break-out sessions and small group exercises.

8:00 am-4:15 pm

Association of Neurosurgical Physician Assistants (ANSPA) Fall 2023 CMS Meeting

Presented in collaboration with the CNS

Complimentary to all Physician Assistants, Nurse Practitioners, Nurses, and Affiliate Members! A ticket to this session will automatically be added to your itinerary when you register.

Course Directors: *Jonas Konan, ANSPA President-elect*

Symposium Description: This course is specifically designed by the Association of Neurosurgical Physician Assistants for Physician Assistants and Nurse Practitioners that are practicing in, or interested in, neurosurgery. The faculty will be comprised of experts in the field of neurosurgery.

General Scientific Session I

4:30-6:30 pm

See page 14 for session details.

Opening Reception

6:30-8:00 pm

Join us at the Opening Reception at the Marriott Marquis Washington, D.C.

Guidelines Sessions

7:00-8:30 am

The CNS guidelines are evidence-based summaries of the scientific literature written by topic experts to provide neurosurgeons with the information they need to provide the best care to patients suffering from neurosurgical conditions. In the Guidelines Sunrise Sessions, authors discuss the key conclusions of the recent Guidelines projects to promote dissemination of this broadly applicable information around the field.

**SP Guideline Session I: Perioperative Spine—
Intraoperative**

Moderators: Sanjay Dhall, Daniel J. Hoh

Faculty: John Dimar, Basma Mohamed, Paul Park, Wilson Ray, Khoi D. Than, Luis Tumialan, Marjorie Wang

Session Description: This guidelines session will provide an overview of the current evidence and recommendations for intraoperative optimization for spine surgery. Clinically relevant topics include: intrawound antibiotic prophylaxis, antifibrinolytics for blood loss management, goal directed blood transfusion, management of durotomy, and neuromonitoring. Future directions and areas for further research will also be discussed.

**TU Guideline Session II: Brain Mets Update—
Emerging Therapies**

Moderator: J. Bradley Elder

Faculty: Ian Lee, Jeffrey Olson, Mark Linskey, Brian V. Nahed

Session Description: In this session, Guidelines authors discuss their conclusions regarding Emerging Therapies for treatment of Brain Metastases.

Sunrise Science Sessions

7:00-8:30 am

The Sunrise Science Abstract sessions will be composed of the top oral abstract presentations submitted in each of the subspecialties presenting the latest scientific research.

**GE Sunrise Session and Late Breaking Abstract
Session: Data Science**

Moderators: Eric Oermann, Daniel Orringer, Matthew Pease

**TR Sunrise Session and Late Breaking Abstract
Session: Neurotrauma and Critical Care**

Moderators: Tene Cage, John F. Morrison

**CV Sunrise Session and Late Breaking Abstract
Session: Cerebrovascular**

Moderators: Phil Taussky

**TU Sunrise Session and Late Breaking Abstract
Session: Tumor**

Moderators: Isaac Yang

**PE Sunrise Session and Late Breaking Abstract
Session: Pediatric**

Moderators: Sarah Jernigan, Laura Prolo

**SP Sunrise Session and Late Breaking Abstract
Session: Spine**

Moderators: Andrew Ryu, Corinna Zygourakis

7:00- 8:30 am

DEI Breakfast Seminar: Mentoring 101

Complimentary for all meeting attendees.
Advance registration is required.

Moderators: Sepidef-Amin Hajani, Maryam Rahman

Faculty: Sonia Eden, Kimberly Hoang, Kimberly Kicielinski, Karin Murasko, Analiz Rodriguez

Session Description: Mentoring is vital to everyone for their professional development. This session will focus on important topics including: how to find a good mentor, how to be a good mentor, the importance of sponsorship, highlighting successful local and national mentoring programs, mentorship in academics versus private practice, and identifying barriers to successful mentorship of underrepresented groups and those without a home program.

General Scientific Session II

8:40 am-12:10 pm

See page 14 for session details.

Luncheon Seminars *Be sure to secure your seat for a Luncheon Seminar when you register!*

12:20-1:50 pm

All Luncheon Seminars include a plated lunch served in the seminar room. Luncheon Seminar fee is \$150 each (\$100 for residents, fellows, medical students, and advance practice providers)

CV M01: Honored Guest Lunch: What We Can Learn From Failure

Complimentary to all residents—advance registration is recommended.

Speaker: L. Nelson Hopkins

Description: Recognizing, accepting, and working hard to learn from failure is a critical component to becoming successful. We will share some of the work we have done to learn from ours and others mistakes and failures.

TU M02: New Concepts in Intra-operative Guidance

Moderators: Veronica Chang, Geirmund Unsgard.

Faculty: Francesco Dimeco, Sherise Ferguson, Alexandra Golby, Peter Nakaji, Walter Stummer

Seminar Description: Practicing neurosurgeons will learn how to apply existing technology to improve extent of resection including fluorescence, ultrasound, virtual reality, MRI, and more.

SP TU M03: Surgical Management of Primary Spinal Tumors

Moderators: Paul M. Arnold, Rory Goodwin

Faculty: Ziya L. Gokaslan, Laurance D. Rhines, Daniel Scuibba, John Shin

Seminar Description: Review the latest treatment options for primary spinal column tumors from cervical to sacral. Advances in surgical techniques, pre-operative planning, and intra-operative application of enabling technologies for tumor resection will be highlighted. Current multi-modal management strategies for giant cell tumor, chordoma, and chondrosarcoma will be discussed with an emphasis on complication avoidance and management.

CV M04: Treatment Options and Approaches to Cavernomas

Moderator: Adib Abba

Faculty: Daniel Barrow, Jan-Karl Burkhardt, Douglas Kondziolka

Seminar Description: A case-based approach to selection and management of brainstem cavernous malformations. This will include the evolving landscape of medical and radio surgical care for these lesions.

TR M05: Lessons Learned from the Military: Managing Neurotrauma from the Field to the Future

Moderator: Bradley Dengler

Faculty: Rocco Armonda, Randy Bell, Cory Mossop, Ryan Morton

Seminar Description: With this year's meeting in our nation's capitol we highlight the insight developed in advancing the management of neurotrauma patients. This includes not only intense battlefield management and long-term recovery programs but also the innovation that has resulted in trying to treat often complex and severe injuries.

PE M06: ABPNS Board Certification: Preparation and Requirements for Certification

Moderators: Daniel Donoho, Peter Madsen

Faculty: Bruce Kaufman, Jodi Smith, Shenandoah Robinson

Seminar Description: Review the pathway to specialty certification in Pediatric Neurosurgery. Review common shortcomings in oral board performance and case submissions mistakes. Identify pitfalls associated with board failure.

GE M07: FDA Update

Moderator: Catherine Hill, Joshua Rosenow

Faculty: Christopher Loftus, Carlos Pena

Seminar Description: This session explores the current state of the FDA as it pertains to new product and medication approval processes, learning from current and former FDA administrators and innovators.

SE M08: Finding Your Voice: Advocacy in Neurosurgery

Moderator: Krystal Tomei

Faculty: Jeffrey Blount, Sonia Eden, Brian Miller, Adrienne Mortimer, Gail Rosseau, Ann Stroink

Seminar Description: Advocacy is an important role that we should all espouse regardless of our practice location. It can look differently to different people. This seminar explores the challenges we face being advocates for our patients and our profession and discusses opportunities to engage in this important area.

PN M09: Peripheral Nerve Entrapment Versus Radiculopathy**Moderators:** Aaron J. Clark, Line G. Jacques**Faculty:** Zarina Ali, Ausaf Bari, Amgad Hanna, Jason H. Huang, Jonathan Stone, Gabriel C. Tender, Eric Zager**Seminar Description:** Mistaking peripheral and spinal pathology can lead to unnecessary surgery and patient suffering. The purpose of this seminar is to refine diagnostic skills in differentiating radiculopathy from common peripheral nerve entrapment syndromes.**SF M10: Connectomic Deep Brain Stimulation****Moderator:** Brian Kopell**Faculty:** Andrew Horn, Kate Johnson, Nader Pouratian, Ben Shofly**Seminar Description:** Deep brain stimulation (DBS) uses modulation of key areas in the brain to affect larger networks. This lunch session will introduce you to key imaging technologies and recent advances in network identification and modulation for DBS, with the goal of using these techniques to improve patient outcomes.**PA M11: An Interdisciplinary Approach to Facial Pain****Moderators:** John Lee, Emily Levin, Nirit Weiss**Faculty:** Kim Burchiel, Christina Renee Graley, Joshua Rosenow, Tejas Sankar, Glenn Treisman, Robin Yang**Seminar Description:** Provides a comprehensive approach of the diagnosis and management of facial pain from the perspective of neurology, dentistry, and psychiatry.**WI M12: Advancing Your Career: Steps to Keep You Climbing****Moderator:** Rushna Ali**Faculty:** Aviva Abosch, Tony Asher, Richard Ellenbogen, Mark N. Hadley, Kimberly Kicielinski, Katie Orrico, Judy Rosman**Seminar Description:** Whether in private or academic practice there is always the possibility of advancing your career. This seminar is designed to help young and mid-level neurosurgeons plan their career trajectories.**CV M13: Managing and Preventing Intraoperative Vascular Complications****Moderator:** Nima Etminan**Faculty:** Clemens M. Schirmer**Seminar Description:** A case-based approach to prevention and management of complications for common vascular lesions. This will include a selection of techniques, devices, and bail out options.

Section Sessions

2:50-4:20 pm**CV Section on Cerebrovascular Surgery 1: Pushing the Envelope for Cerebrovascular Disease****Moderators:** Gursant Atwal, Stavropoula Tjoumakaris**Session Description:** Focusing on the evolving landscape of care in cerebrovascular neurosurgery. This will include talks by innovators and entrepreneurs in the field. The *Neurosurgery* Paper of the Year in Cerebrovascular will also be presented.**Hopkins Lecture***Giuseppe Lanzino***Oral Abstract Presentations****SE Council of State Neurosurgical Societies 1: Leadership In and Out of Neurosurgery****Moderators:** Bharat Guthikonda, Aditya Pandley**Session Description:** Designed to provide practicing neurosurgeons and neurosurgeons in training an opportunity to hear from and interact with neurosurgical leaders who have moved to leadership positions outside of neurosurgery. All of the speakers have obtained leadership positions within medical schools, health systems, and physician groups. The *Neurosurgery* Paper of the Year in Socioeconomics, Health Policy, and Law will also be presented.**Administrative Leadership Within a Medical School***Lawrence Chin***Overseeing a Health System***Steven Kalkanis***Attributes Needed to Become a Dean***Julie Pilitsis***Oral Abstract Presentations**

SP Section on Disorders of the Spine and Peripheral Nerves 1: Latest Advances in Spine Surgery

Moderators: John Chi, Robert Whitmore

Session Description: Covering the hottest technical topics in spine surgery, with a particular emphasis on minimally invasive techniques. The role of AI in spine surgery will also be discussed. The *Neurosurgery* Paper of the Year in Spine will also be presented.

Spinal Cord Injury in Athletes

David Okonkwo

Prone Lateral: When to do it and when to not

Juan Uribe

Virtual Reality in Spine Surgery

Daniel Sciubba

Latest Advances and Future Potential of Minimally Invasive Spine Surgery

Michael Wang

Artificial Intelligence and Spine Surgery

Mohammed Bydon

Oral Abstract Presentations

TR Section on Neurotrauma and Critical Care 1: Management of TBI: From Bench to Bedside

Moderators: Patrick Belton, Richard Rogers

Session Description: We will highlight our annual Miller lecturer and present best Abstract in neurotrauma and critical care research with more of a focus on TBI. There will be a short lecture on autoregulation in TBI with a rebuttal focusing on challenges putting these principals in practice. The *Neurosurgery* Paper of the Year in Neurotrauma & Critical Care will also be presented.

Miller Lecture: Long Term Outcomes in Military Traumatic Brain Injury

Louis French

Autoregulation in Severe TBI: Basic Principals and Management

Lori Shutter

Rebuttal/Commentary

Ryan Kitagawa

Oral Abstract Presentations

PA Section on Pain 1: The Translational Science of Pain

Moderators: Josue Avecillas- Chasin, Ashwin Viswanathan

Session Description: Presentation and discussion surrounding cerebral pain networks as a new frontier for the neuromodulation of pain pathways. The *Neurosurgery* Paper of the Year in Pain will also be presented.

Cerebral Networks for Pain

Michael Caterina, Yun Guan

Closed Loop Stimulation for Pain

Prasad Shirvalkar, Philip Starr

ACC Stimulation for Chronic Back Pain

Ausaf Bari

Novel Targets for Pain

Jeff Elias, Fred Lenz, Chang-Chia Jeff Liu, John Markman

Oral Abstract Presentations

PE Section on Pediatric Neurosurgery 1: Contemporary Management of Craniopharyngioma

Moderators: Katrina Ducis, David Hersh, Thomas Merchant

Session Description: A review of contemporary management of craniopharyngiomas in pediatric age group will take place. A discussion on the role of surgery, radiation and emerging application of targeted therapies will be held. The *Neurosurgery* Paper of the Year in Pediatrics will also be presented.

Contemporary Management- The Surgical Perspective

Phillip Storm

Pathway Directed Therapies in Craniopharyngioma

Todd Hankinson

Contemporary Management- Role of Radiation Therapy

Thomas Merchant

Oral Abstract Presentations

PN Section on Peripheral Nerves 1: Latest Advances in Clinical Outcomes

Moderators: Holly Gilmer, Brandon Smith, Kevin Swong

Session Description: This session will focus on the current techniques for treating peripheral nerve disease and potential future areas of peripheral nerve research. The *Neurosurgery* Paper of the Year in Peripheral Nerve will also be presented.

Top 10 papers in Neurosurgery

Outlook in Clinical Trials

Shelby Burks

Oral Abstract Presentations

SF Section on Stereotactic and Functional Neurosurgery 1: Functional Neurosurgery: Psychiatric Neurosurgery and Cognitive Neuroscience

Moderators: JP Langevin, Helen Mayberg, Sameer Sheth

Session Description: Functional neurosurgery sits at the crossroads of technologies that may be used to both study the mind and alleviate psychiatric disease. This session will feature talks by successful practitioners in human neuroscience research using neurosurgical tools, alongside presentations covering active research into psychiatric indications. The *Neurosurgery* Paper of the Year in Stereotactic & Functional will also be presented.

Neuromodulation for Obesity

Casey Halpern

Intracranial Recordings and Human Memory

Bradley Lega

Challenges in Bringing Psychiatric Neurosurgical Treatments to The Clinic

Andes Lozaon, Helen Mayberg

Oral Abstract Presentations

TU Section on Tumor 1: High Grade Glioma (HGG) Surgery: Challenges and New Frontiers

Moderators: Tiffany Hodges, Kimberly Hoang

Session Description: This session will focus on the challenges of surgical resection of deep seated high grade gliomas, pre-surgical optimization, maintaining quality of life and oncofunctional balance in this patient population. The *Neurosurgery* Paper of the Year in Tumor will also be presented.

Butterfly Gliomas/Genu of the CC- Should We Operate? When?

Sherise Ferguson

Strategies to Optimize Onco-functional Balance on Insular/ Thalamic HGG

HGG and Presurgical Optimization

Analiz Rodriguez

HGG and Quality of Life

Erin Dunbar

Oral Abstract Presentations

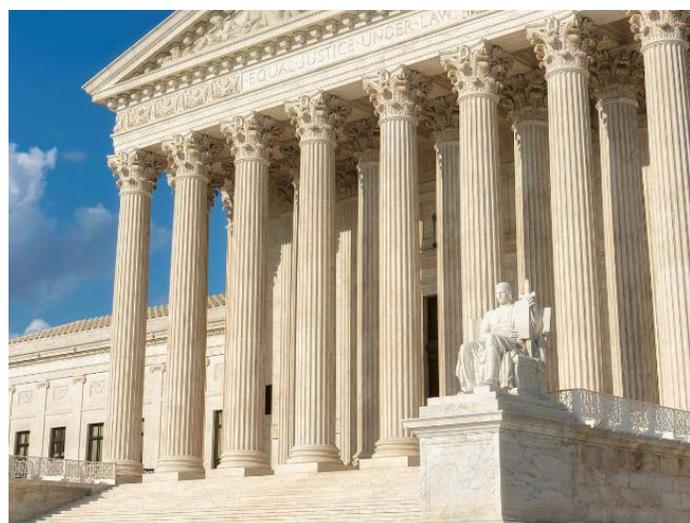
Afternoon Sessions

4:30-6:00 pm

PA Microvascular Decompression for Trigeminal Neuralgia and Beyond

Moderator: Sharona Ben-Haim

Session Description: An interactive case based session focused on diagnosis, management and operative technique in MVD for vascular compression syndromes including trigeminal neuralgia and other syndromes (hemifacial spasm, glossopharyngeal neuralgia, geniculate neuralgia, etc)



CV Multimodal Management of Pediatric Vascular Lesions

Moderator: Ed Smith

Session Description: This session will cover case-based treatment paradigms for pediatric vascular malformations including aneurysms, arteriovenous malformations, Vein-of-Galen Malformations, cavernous malformations, and spinal vascular pathology. Faculty will review comprehensive management of these complex disorders, including open and endovascular approaches.

Multimodal Treatment Strategies for Complex AVF

Aaron Dumont

Multimodal Treatment of Intracranial Aneurysm

Sandi Lam

Moyamoya Disease

Ed Smith

Vein of Galen Malformation

Jan Karl Burkhardt

SE Neurosurgical Contracts – How to Get What You Want

Moderators: *Todd Barnes, John Golfinos, Jeremy Phelps*

Session Description: This seminar will provide an overview of what to ask for, decide what your dealbreakers are, and how to get what you want without appearing greedy. The nuanced differences between a first and second contract will also be discussed.

SP Case Based Debates: Lumbar

Moderators: *Zack Ray, Anand Veeravagu*

Session Description: This case-based debate session will cover current controversies in the management of lumbar degenerative disorders commonly encountered in practice.

Debate: L5-S1 ALIF - Lateral Versus Supine ALIF

Sigurd Berven, Anand Veeravagu

Debate: L4-L5 LLIF - Single position versus Flip

Paul Park, Khoi D. Than

Debate: Lumbar Disc Arthroplasty

Faheem Sandhu, Christopher Shaffrey

Debate: Synovial Cyst with Radiculopathy. Endoscopy vs Tubular vs Interventional Percutaneous Aspiration

Wende Gibbs, Christoph Hofstetter

TR Trial by Fire: The Cases from Which I Learned the Most

Moderator: *Gregory Hawryluk, Emily Sieg*

Session Description: Despite the best intentions, complications occur in neurosurgery patients and patients often present with complex problems. In this session, speakers will provide a case-based discussion and will discuss their personal perspectives in caring for neurotrauma patients.

PE Emerging Techniques in Pediatric Functional Neurosurgery

Moderators: *Casey Madura, Smruti Patel, Terrence Sanger*

Course Description: Review emerging applications in pediatric functional neurosurgery. Review the role of thalamic intracranial recordings in treatment of dystonia, evolving techniques in rhizotomy and ultrasound therapies.

PN Schwannomas and Neurofibromas of the Spine and Peripheral Nerves

Moderators: *Line G. Jacques, Ian McCutcheon*

Session Description: This course will discuss management of benign peripheral nerve sheath tumors, with a particular focus on dumbbell nerve tumors.

SF Non-invasive Functional Neurosurgery

Moderator: *Nolan Williams*

Session Description: Functional neurosurgery has consistently been at the cutting edge of noninvasive and incisionless methods. This session will explore existing modalities, new modalities, and emerging indications.

TU Novel Prospectives in Low Grade Gliomas Management

Moderator: *Isaac Yang*

Session Description: This session will review and discuss updates in low grade glioma management at initial diagnosis and at recurrence. Surgical, radiotherapy, and systemic treatment considerations will be presented.

How to Manage Incidentally Found Low Grade Gliomas

Isaac Yang

Recurrent Low Grade Gliomas- Surgical Considerations

Hugues Duffau

Radiotherapy Considerations for Newly Diagnosed and Recurrent Low Grade Gliomas

Serah Choi

Systemic Treatment Considerations- Chemotherapy (Canton Trial)

John de Groot

7:30-9:30 pm

SP GE Dinner Seminar 2: The Importance of Negotiating as a Neurosurgeon

■ *Morton's The Steakhouse*

See pg. 10 for details

6:00-7:30 pm

MS Medical Student Town Hall

See pg. 9 for details

Guidelines Sessions

7:00-8:30 am

The CNS guidelines are evidence-based summaries of the scientific literature written by topic experts to provide neurosurgeons with the information they need to provide the best care to patients suffering from neurosurgical conditions. In the Guidelines Sunrise Sessions, authors discuss the key conclusions of the recent Guidelines projects to promote dissemination of this broadly applicable information around the field.

TU Guideline Session III: Pituitary Adenoma

Moderator: Isabelle Germano

Faculty: Manish Aghi, Kevin Lillehei, Gabriel Zada

Session Description: In this session expert tumor surgeon highlight the standard of care and latest advances in contemporary management of pituitary adenomas.

PA Guideline Session IV: Occipital Neuralgia—Update

Moderator: Mike Staudt

Faculty: Joshua Rosenow, Jennifer Sweet

Session Description: This session explores the latest literature in the management of occipital neuralgia using occipital nerve stimulation. We will begin with a retrospective review of the original guidelines and a primer on neurostimulation. The use of ONS as an off-label therapy will be discussed, as will the associated implications for patients, providers and insurers. Finally, we will assess the literature behind the new guidelines update, with an understanding of the challenge of developing guidelines with low quality evidence.

Sunrise Science Sessions

7:00-8:30 am

The Sunrise Science Abstract sessions will be composed of the top oral abstract presentations submitted in each of the subspecialties presenting the latest scientific research.

GE Sunrise Session and Late Breaking Abstract Session: Healthcare Disparities

Moderators: Theresa Williamson

TU Sunrise Session and Late Breaking Abstract Session: Tumor

Moderators: Marie Roguski, John Sherman

SP Sunrise Session and Late Breaking Abstract Session: Spine

Moderators: Andrew Yew

SE Sunrise Session and Late Breaking Abstract Session: CSNS

Moderators: Celene Mulholland



General Scientific Session III

8:40 am-12:10 pm

See page 15 for session details.

Luncheon Seminars *Be sure to secure your seat for a Luncheon Seminar when you register!*

12:20-1:50 pm

All Luncheon Seminars include a plated lunch served in the seminar room. Luncheon Seminar fee is \$150 each (\$100 for residents, fellows, medical students, and advance practice providers)

GE T14: Honored Guest Lunch, Douglas Kondziolka: Learning and Personal Growth through Organized Neurosurgery—How to Make a Difference Complimentary to all residents; advance registration is recommended.

Speaker: Douglas Kondziolka

Seminar Description: There are many ways that neurosurgeons at all levels can get involved in the conduct of their specialty, from conference planning and conduct, education, journal science, examinations, board preparation and certification, and other means. Such volunteer efforts can not only help clinicians and the public, but be personally rewarding. Dr. Kondziolka will discuss his personal path and the lessons he has learned from others along the way.

TU T15: Complex Skull Base Approaches

Moderators: Vijay Agarwal, Pamela S. Jones

Faculty: James K. Liu, Nelson Oyesiku, Daniel Prevedello, Laligam Sekhar, Shaan M. Raza, Georgios Zenonos, Mario Zuccarello

Seminar Description: Focusing on the management of intracranial lesions necessitating a combined approach, focusing on approach selection, technique, nuance, and complication avoidance. Combined approaches will not be limited solely to open approaches, but will include both endoscopic and keyhole techniques, as well as vascular approaches.

SP T16: Cervical Spondylotic Myelopathy- Anterior Versus Posterior

Moderators: Erica Bisson, Nader Dahdaleh

Faculty: Asdrubal Falavigna, Zoher Ghogawala, Mark N. Hadley, Iain Kalfas

Seminar Description: Explores current concepts regarding various surgical approaches for cervical spine disorders. Using a case-based format, faculty will discuss indications, techniques, and outcomes.

CV T17: Keyhole Approaches for Treatment of Vascular Lesions

Moderator: Peter Nakaji

Faculty: Dale Ding, Nikolai Hopf, Daniel Raper, Babu Welch

Seminar Description: Covering keyhole approaches to aneurysm clipping in a case-based format with a focus on key anatomic considerations of both the approach and cerebrovascular anatomy. Faculty will also discuss incorporating enhanced recovery after surgery (ERAS) protocols as a key component of a "minimally invasive" practice.

TR T18: Managing Head Trauma in the Elderly Population

Moderators: Liesl Close, Martina Stippler

Faculty: Gretchen Brophy, Gazanfar Rahmathulla, Jamie Ulman, James Wright

Seminar Description: With an ever-aging population there is a need to better understand issues that are unique to this population. A diverse set of topics will be covered including management of anticoagulation, understanding frailty and its implications in neurotrauma, and prognostication in the elderly.

SE T19: Telemedicine in Neurosurgery—The Future Beyond Covid

Moderator: Mick Perez Cruet, Ann Stroink

Faculty: Ellen Air, Richard G. Fessler, Katie Orrico

Seminar Description: Due to COVID, the use of telemedicine in neurosurgery has increased significantly. This course will describe patient selection, how to perform a physical exam, how to review imaging studies with the patient, coding and reimbursement and describe the current status of insurance coverage and regulatory issues pertaining to telemedicine.

PN T20: Managing Peripheral Nerve Complications from Common Spine, Orthopedic, and Thoracic Surgeries

Moderators: Line Jacques, Christopher Winfree

Faculty: Justin Brown, Andrew Dailey, Holly Gilmer, Amgad Hanna, Andrew Jack, Sidney Jacoby, Line G. Jacques, Mark Mahan

Seminar Description: Discussing management of postoperative pain, plexus, crush injuries from common spinal, orthopedic, thoracic procedures.

SF T21: Thalamic Sampling and Stimulation for Epilepsy

Moderator: John Rolston

Faculty: Saadi Ghatan, Kai Miller, Aaron Warren, Sameer Sheth

Seminar Description: The thalamus is a key node in epileptic networks, involved in seizure propagation and synchronization. This session will explore techniques for mapping thalamic involvement in epileptic networks and methods of modulating the thalamus and connected structures.

SE T22: The Socioeconomics of an Ambulatory Surgery Center

Moderators: Mick Perez Cruet, Richard Wohns

Faculty: Phil Arbit, William Tobler

Seminar Description: Ambulatory surgery centers are allowing practice autonomy at a time when reimbursements are trending downward. This course will teach participants some of the factors involved in producing a successful and productive ambulatory spine surgery center, including patient selection, minimally invasive spine procedures, complication avoidance, regulatory requirements, coding/reimbursement differences and how to start an ASC.

SP T23: My Worst Spinal Complication: Lessons Learned

Moderators: Michele Johnson, Larry Khoo

Faculty: Nitin Agarwal, Shekar Kurpad, Daniel Resnick, Gerald Rodts, Michael Steinmetz, Christopher Wolfia

Seminar Description: Sometimes the best lessons are learned the hard way. This symposium will see expert spine surgeons discuss some of their most challenging complications to provide insights into advanced clinical care of patients with spinal disorders.

1:50-2:50 pm

RE CNS Resident SANS Challenge Championship Round

See pg. 9 for details

Host: A. Samy Youssef

Facilitators: Domenico Gattozzi, Omaditya Khanna

2:00-2:45 pm

Annual Business Meeting

Plan to attend the Annual Business Meeting to hear an update on CNS business from the past year. CNS members will have the opportunity to vote on any proposed bylaws amendments.

Section Sessions

2:50-4:20 pm

CV Section on Cerebrovascular 2: Multimodal Treatment of Cerebrovascular Disease

Moderators: Stephan Munich, Kunal Vakharia

Session Description: Highlighting the interactions between radiosurgery, open, endovascular surgery, and neurocritical care in management of complex cerebrovascular conditions.

Drake Lecture

Neal Kassel

Oral Abstract Presentations

SE Council of State Neurosurgical Societies 2: Contract Negotiation and Employment Opportunities

Moderators: Daniel Fahim, John Golfinos

Session Description: Designed to provide the audience with expertise in the art of negotiating. Topics will include an overview of the employment demographics in neurosurgery and how to become confident negotiating for your value.

Negotiating within an Academic Medical Center

Joseph Cheng

Asking for What You Are Worth

Troy Payner

The Demographics of Neurosurgery

Todd Barnes

Oral Abstract Presentations

SP Section on Disorders of the Spine and Peripheral Nerves 2: Practice Optimization for The Spine Surgeon

Moderators: Scott Meyer, Cheerag Upadhyaya

Session Description: Covering practice-based issues pertinent to the spine surgeon, including material pertaining to reimbursement and quality. The impact of social media on practice building will also be discussed.

Social Media and The Spine Surgeon: The Good, The Bad, and The Ugly

John Shin

Socioeconomic Challenges Facing Spine Surgeons

Understanding the Measures of Quality by Which Spine Care Providers are Judged

John J. Knightly

Pros and Cons of MCID and Modeling: What Does This Mean to Spine Surgeons Trying to Collet Outcomes Data?

Joseph Cheng

Oral Abstract Presentations

TR Section on Neurotrauma and Critical Care 2: Emerging Treatments in Spinal Cord Injury

Moderators: Jonathan Jagid, Tara (Jayde) Nail

Session Description: In this section we will highlight our annual Tator lecturer and present best Abstract in neurotrauma and critical care research with more of a focus on SCI . There will be a short lecture on lumbar drainage in SCI with a rebuttal focusing on challenges putting these principles in practice.

Tator Lecture: Why are Interventional SCI Trials so Difficult? Lessons Learned

Peter Gorman

Spinal Cord Perfusion for SCI- Is it the Future?

Brian Kwon

Rebuttal

Eve Tsai

Oral Abstract Presentations

PE Section on Pediatric Neurosurgery 2: Fellowship Training in Pediatric Neurosurgery—Challenges and Opportunities

Moderators: Ariana Barkley, Whitney Parker

Session Description: Review current state of fellowship training in Pediatric Neurosurgery. Highlight emerging trends in training and career building opportunities in subspecialty niches.

Training the Next Generation of Pediatric Neurosurgeons- The CHOP Experience

Greg Heuer

Fellowship Training in Pediatric Neurosurgery- Challenges and Opportunities

Francesco Mangano

Developing a Research Career During Fellowship Training

Jared Roland

Oral Abstract Presentations

PN Section on Peripheral Nerves 2: Expert Challenges in Peripheral Nerve Surgery—Fear and Loathing in Peripheral Nerve Surgery

Moderators: Amgad Hanna, Eric Zager

Session Description: Focusing on presentations of complex peripheral nerve cases and complex reconstruction so that faculty and attendees may discuss tips and tricks for difficult cases.

Over a Decade of Allograft: What is the Clinical Utility

Thomas J. Wilson

Are We Making Progress with Novel Therapies

Mark Mahan

Disasters Cases – Are There Solutions?

Allan Belzberg, Justin Brown, Robert Spinner

Cases for Discussion

Zarina Ali, Andrew Jack, Megan Jack, Shaun O’Leary, Gabriel Tender

Oral Abstract Presentations

THANK YOU TO
ALL OF OUR
SCIENTIFIC
PROGRAM
COMMITTEE
CONTRIBUTORS!



Scan QR to view SPC contributors

MEMBERS SAVE ON
REGISTRATION

JOIN WHEN YOU
REGISTER TODAY!

SF Section on Stereotactic and Functional Neurosurgery 2: Functional Neuro-Oncology—Approaches to Cancer and Cancer Pain

Moderators: *Shabbar Danish, Ahmad Raslan*

Session Description: Concentrating on stereotactic and functional approaches to neuro-oncology, primary and secondary cancer as well as cancer pain.

Combining Treatment Modalities To Target Functional Vulnerabilities in Malignant Brain Tumors

Andrew Sloan

Expanding Functional Neurosurgeons' Role in Neuro-oncology Through MRgLITT and Stereotactic Radiosurgery

Adrian Laxton

Neurosurgical Approaches to Cancer Pain

Ahmed Raslan

Transcranial Magnetic Stimulation (TMS) Applications for Cancer Pain Modulation

Sarah Prinsloo

TU Section on Tumors 2: Innovation Driven by Neurosurgeons in Glioma

Moderators: *Wajd Al-Holou, Jennifer Moliterno*

Session Description: Focusing on opportunities/strategies for neurosurgeons to be involved in and lead early stage glioma clinical trials. Phase III, microdialysis and CSF biomarker studies will be discussed in this session.

Phase 0: Window of Opportunity for Neurosurgeon Involvement

Nader Sanai

Phase III Trials: Challenges and Opportunities for the Practicing Neurosurgeon

Tony Asher

Present and Future of CSF Biomarker in Trials

Carl Kocheman

Microdialysis Innovation of Clinical Trials

Edjah K. Nduom

Oral Abstract Presentations

Afternoon Sessions

4:30-6:00 pm

CV Evolving Technologies for Treatment of Cerebrovascular Lesions

Session Description: This breakout will focus on evolving treatment options for cerebrovascular lesions. This will highlight new devices and trials with case-based discussion.

The Evolution of Flow Diverters

Bobby Starke

Intrasaccular and Neck Devices

J Mocco

Embolization for Subdural Hematoma

Min Park

Carotid Disease Management

Kunal Vakharia

SE Neurosurgeons as Authors

Moderator: *Alan Scarrow*

Speakers: *Katrina Firlik, Mark Greenberg, Allen Hamilton, Richard Menger*

Session Description: Neurosurgeons often have great literary ideas but frequently lack the training and time to make these ideas come to life. This seminar will provide insight from neurosurgical authors on how to convert an idea into a finished book (including textbooks, fiction and non-fiction books), how to pitch your idea to a publishing company, how to obtain funding, how to protect your intellectual property, and how to write a successful op-ed.

SP Case-based Debates: Cervical

Moderators: *Zoher Ghogawala, Laura Snyder*

Session Description: This case-based debate session will cover current controversies in the management of cervical degenerative disorders commonly encountered in practice.

Debate: ACDF Versus Arthroplasty

Kristen Jones, Laura A. Snyder

Debate: Unilateral Foraminal Cervical Stenosis with Radiculopathy in Young Patient. Arthroplasty vs Posterior Tubular Decompression

Larry Khoo, Luis Tumialan

Debate: Multilevel Cervical Stenosis (3 levels) with Radiculopathy and Myelopathy NO OPLL in Elderly Population. Anterior vs Posterior

Langston Holly, Michael Steinmetz

Debate: Sick 85-Year-Old Multi-level Stenosis and Loss or Lordosis - Lami vs. Laminoplasty vs. Lami/Fusion

James Harrop, R. John Hulbert, Praveen Mummaneni

TR Neurotrauma as a Team Sport: Case-based Discussion in Complex Neurotrauma Patients

Moderator: Ramesh Grandhi

Speakers: Mark Mahan, Enyinna Nwachuku, Chris Zacko, Nathan Zwagerman

Session Description: The modern care of neurotrauma patients involves a multidisciplinary team, even within neurosurgery. The purpose of this lunch seminar is to bring together leading faculty to offer perspectives on managing these complicated patients from a peripheral nerve, cerebrovascular, skull base, and neurocritical care perspective.

PE Complications in Pediatric Neurosurgery

Moderators: Catherine McClung Smith, Lauren Smith

Speakers: Sarah Gaskil, Paul Grabb, Jonathan Martin, Joseph Piatt

Session Description: Review complications in a pediatric focused practice and highlight identification, management and areas of practice improvement.

PN Complex Peripheral Nerve Reconstruction Cases

Moderators: Justin Brown, Mark Mahan

Speakers: Allan Belzberg, Robert Spinner, Thomas J. Wilson

Session Description: Discusses management of complex peripheral nerve reconstruction techniques with interactive case presentations and discussion.

SF Innovation and Entrepreneurship in Neurosurgery

Moderators: Shabbar Danish, Joseph S. Neimat

Speakers: Pierre-Francois D'Haese, Shawn Glitner, Eller Kelilher, Eric Leuthardt, Nitin Tandon

Session Description: This session will help participants identify barriers to starting a company, approaches to build successful companies, and discuss key elements of bringing new technology to market.

TU New Frontiers for Recurrent Neuro-Endocrine Tumors

Moderator: Ian Dunn

Session Description: Review and discuss the multidisciplinary management in recurrent neuroendocrine tumors. Surgical, radiotherapy, medical, and novel treatment paradigms will be discussed.

Neuro-endocrine Medications

Ian McCutcheron

New Techniques for Combined Approaches

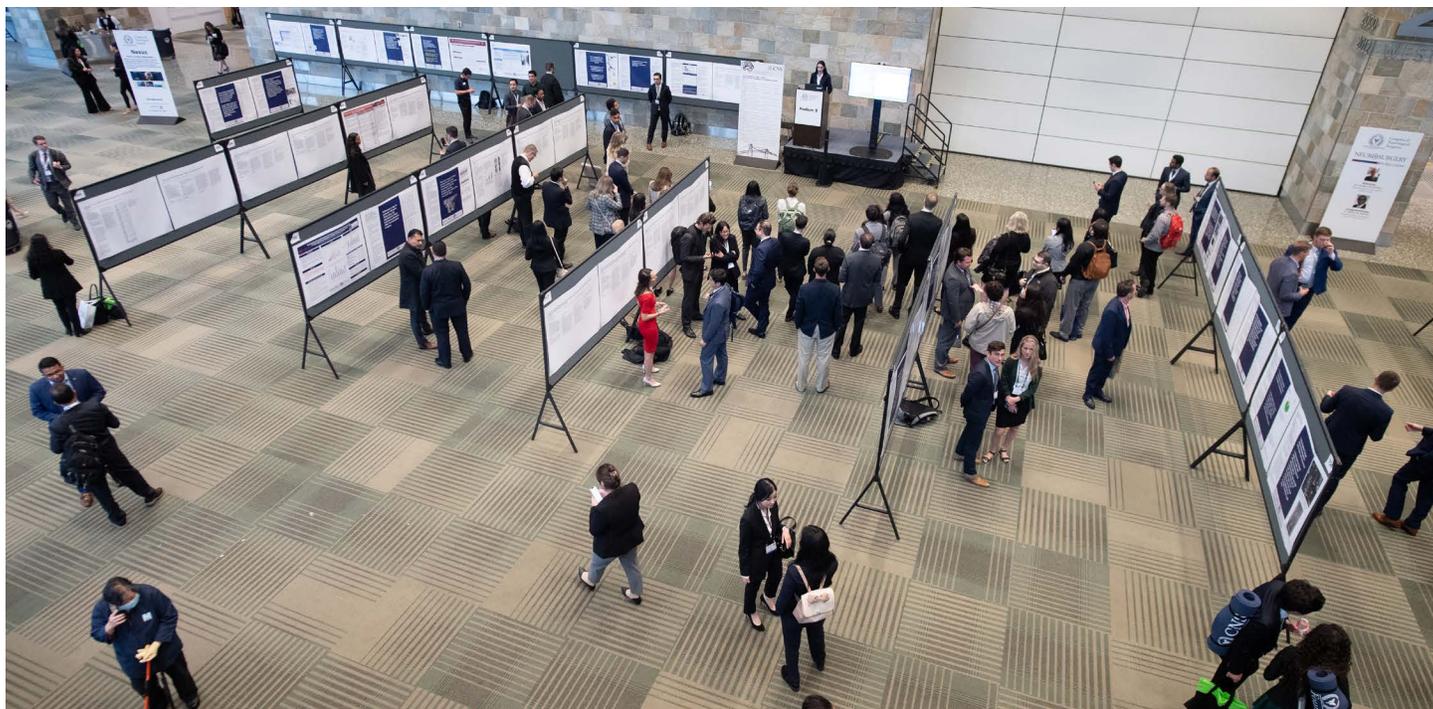
James Liu

New Frontiers in Radiosurgery and Proton Beam

John Kirkpatrick

Nanoparticles: Is There a Role?

6:00-7:30 pm
Interactive Poster Presentation Session
See pg. 9 for details



Guidelines Sessions

7:00-8:30 am

The CNS guidelines are evidence-based summaries of the scientific literature written by topic experts to provide neurosurgeons with the information they need to provide the best care to patients suffering from neurosurgical conditions. In the Guidelines Sunrise Sessions, authors discuss the key conclusions of the recent Guidelines projects to promote dissemination of this broadly applicable information around the field.

TU Guideline Session V: Low Grade Glioma

Moderator: David Ormond

Faculty: Daniel Orringer, Chaitra Badve, Jeffery Olson, Simon Lo, Mateo Ziu, Navid Redjal

Session Description: In this session, Guidelines authors discuss the standard of care and latest advances in the management of recurrent Low Grade Glioma.

Sunrise Science Sessions

7:00-8:30 am

The Sunrise Science Abstract sessions will be comprised of the top oral abstract presentations submitted in each of the subspecialties presenting the latest scientific research.

SP Sunrise Session and Late Breaking Abstract Session: Spine and Peripheral Nerve

Moderators: Griffin Baum

SF Sunrise Session and Late Breaking Abstract Session: Stereotactic and Functional

Moderators: Patrick Pezeshkian

CV Sunrise Session and Late Breaking Abstract Session: Cerebrovascular

Moderators: Emun Abdu, Cameron G. McDougall

MS Sunrise Session and Late Breaking Abstract Session: Medical Education Training

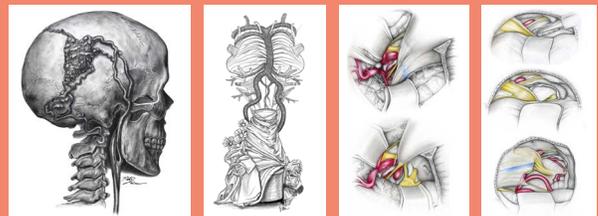
Moderators: Nitin Agarwal, Jason Heth, David Limbrick

CALLING ALL NEUROSURGEON ARTISTS!



Submit your artwork for
"The Art of Neurosurgery"

presentation in the Xperience Lounge on
Tuesday, September 12. All mediums are
welcome. Submission deadline: July 1, 2023



General Scientific Session IV

8:40 am-12:10 pm

See page 15 for session details.

Luncheon Seminars *Be sure to secure your seat for a Luncheon Seminar when you register!*

12:20-1:50 pm

All Luncheon Seminars include a plated lunch served in the seminar room. Luncheon Seminar fee is \$150 each (\$100 for residents, fellows, medical students, and advance practice providers)

TU W24: LITT: Data Driven Outcomes and Controversies

Moderators: *Melanie Hayden Gephart, Matthew Shepard*

Faculty: *Gene Barnett, Peter Fecci, Sujit Prabhu*

Seminar Description: This luncheon seminar will review and discuss emergent data on indications and outcome after LITT.

SP W25: SI Joint Fusion: Indications, Technique, and Outcomes

Moderators: *Joshua Heller, Paul Park*

Faculty: *Peter Grossi, Yi Lu, Yamaan Saadeh, Charles Sansur, Cara Sedney*

Seminar Description: Neurosurgeons are increasingly making the diagnosis of SI joint dysfunction, and the use of operative approaches to this pathology is on the rise. This seminar will offer a review of the approaches to SI dysfunction as well as the surgical indications, techniques, and outcomes.

TR W26: Long-term Sequela for Head Injury Patients

Moderators: *Allan Hoffer, Enyinna Nwachuku*

Faculty: *Uzma Samadani, Berje Shammassian*

Seminar Description: Traumatic brain injury and concussion can have significant impact on patients beyond their initial hospitalization including a variety of neuropsychological, cognitive and physical issues. A multidisciplinary panel will discuss the challenges faced by many of these patients and highlight programs and resources that patients and surgeons may be able to access as part of their treatment.

SE W27: Unwrapping Hospital Financials – How Neurosurgeons Can Be Affected

Moderators: *Joseph Cheng, Edward Vates*

Faculty: *Eric Eskioğlu, Matt Ewend, Michael Steinmetz*

Seminar Description: Hospital employed or health system supported neurosurgeons are being affected by facility finances, and increasingly expected to have a positive impact on these for their program. This session will provide expertise from health system leaders on how to keep neurosurgery on the forefront and highlight the importance of neurosurgery to a health systems' financial footprint.

PN W28: Controversies in Peripheral Nerve Surgery

Moderators: *Allan Belzberg, Holly Gilmer*

Faculty: *Zarina Ali, Aaron Filler, Megan Jack, Sidney Jacoby, Brandon Smith, Thomas J. Wilson, Chris Winfree, Eric Zager*

Seminar Description: Focusing on controversial topics in peripheral nerve surgery including end-to-side nerve transfers, nerve transfers in C5 palsy, management of Parsonage-Turner syndrome (hourglass constrictions, nerve transfers), and management of piriformis syndrome.

PA W29: Spinal Cord Stimulators: What to Use and When?

Moderator: *Owoicho Adogwa*

Faculty: *Ahmed Awad, Kevin Chen, Nandan Lad, Ahmed Raslan*

Seminar Description: Spinal cord stimulation has become a mainstay for the treatment of an expanding list of chronic pain disorders. Accordingly, the spinal cord stimulation market continues to evolve with significant advances in hardware and software technologies. This course will examine the intersection of approved indications and advancing technologies for tailored treatments.

WI W30: Building Your Brand: Using Social Media to Drive Your Reputation

Moderator: *Sheri Dewan*

Faculty: *Ali Baaj, Brian L. Hoh, Michele Johnson, Edjah K. Nduom, Analiz Rodriguez, Walavan Sivakumar, Anna Terry, Khoi D. Than*

Seminar Description: Using current social media platforms to promote your practice including time efficiency, posts that are guaranteed to have high engagement and how to manage patient protected information.

SE W31: Demystifying National Quality Reports

Moderator: *Mohammed Bydon*

Faculty: *Joseph Chang, Mark Linskey, Ann Stroink*

Seminar Description: Quality metrics have become an increasingly important part of neurosurgical practice. This seminar will highlight the role quality plays to the individual physician and hospital system.

SP W32: Authorization Headaches: Strategies to Avoid Denials and Win Appeals

Moderator: Kurt Eichholz

Faculty: Joseph Cheng, Christopher Holland, Richard Menger, Luis Tumialan, Anand Veeravagu

Seminar Description: A large part of modern-day practice is dealing with insurance authorizations, denials, and appeals. In this lunch seminar, participants will learn strategies to avoid denials and successfully manage peer-to-peer reviews and appeals.

CV W33: Hematology and Coagulation for Neurosurgeons

Moderator: Judy Huang

Faculty: David Hasan, R. Loch MacDonald, Shahid Nimjee, Faith Robertson

Seminar Description: This seminar will explain important coagulation mechanisms, parameters, and clinical pearls in the evaluation of the coagulopathic patient.

GE W34: Neurosurgery Publications: "Getting Published"

Moderator: Douglas Kondziolka

Faculty: Aviva Abosch, Michael Lawton, Praveen Mummaneni

Seminar Description: This session seeks to give an overview of some of the issues that residents and early career scholars may encounter in getting published. By addressing common experiences, pearls, and pitfalls in the writing and peer review process the audience will be able to calibrate their future submissions and potentially increase their chance of success.

2:00-4:00 pm

MS Neurosurgical Medical Students Specialty Session 1

Moderators: Nicole Bentley, Bennett Levy, Kenneth Snyder

Machine Learning in Neurosurgery: Best Practices and Future Frontiers

Timothy Dunn, Nandan Lad

Global Neurosurgery

Gail Rosseau

Data Driven Outcome Measures in Neurosurgery

Eric Oermann

Health Systems Science in Neurosurgery

Kenneth Snyder

Advancing Health Equity Through Neurosurgical Research

Kunal Patel

MS Neurosurgical Medical Students Specialty Session 2

Moderators: Damirez Fossett, Pritha Ghosh, Renee Reynolds

Integrating and Optimizing Scholarly Work with Clinical Responsibilities from Medical School to Residency

Albert H. Kim, Jennifer Strahle, Gregory Zipfel

Building Your Brand: Strategic Social Media Use for Medical Students

Jeffery P. Mullin

Crafting a Narrative

Nicole Bentley, Nina Yoh

Maximizing Your Chances of Matching Without a Home Neurosurgery Residency Program

Damirez Fossett

Creating Your Niche as a Diverse Applicant in Neurosurgery

Odette Harris, Anand Veeravagu

Learning in the Digital Age: Resources for Medical Education and Research

Lola B. Chambless, Daniel Donoho



2023 CONGRESS OF NEUROLOGICAL SURGEONS ANNUAL MEETING OBJECTIVES

The CNS enhances health and improves lives through innovative neurosurgical education, advancement of clinical practice & scientific exchange. The CNS Continuing Medical Education (CME) program provides participants various learning formats to keep current in their field, improve skills, and enhance professional performance to provide the best possible care for their patients.

The CNS CME program is designed, planned, and implemented to evaluate a comprehensive collection of activities within the subspecialty of neurosurgery. The CNS plans to yield results that contribute to lifelong learning and demonstrate change and improvement in competence.

At the conclusion of the 2023 CNS Annual Meeting, participants will be able to:

1. Alter their current practice patterns in accordance with the latest data.
2. Compare techniques based on findings discussed during case presentations.
3. Apply and/or perform new techniques based on best practices and current procedures.
4. Practice evidence-based, informed neurosurgical medicine.
5. Interpret newly found outcomes as a result of the abstract scientific presentations.
6. Demonstrate change in competence.

EDUCATIONAL FORMAT DESCRIPTIONS

The CNS offers sessions in formats to enhance your educational experience. Each session is open to all who have paid the general medical registration fee with the exception of optional Symposia, Luncheon Seminars, and Dinner Seminars, which are available for an additional fee.

SYMPOSIA

Didactic and hands-on courses with expert neurosurgical educators demonstrating clinical techniques and applications via technology, models and simulation. Hands-on Symposia provide an opportunity to improve surgical skills by applying and demonstrating learned techniques. Symposia also provide an opportunity to review case-based complex issues and discuss potential solutions.

- Symposia are offered Saturday, September 9, and Sunday, September 10.

GENERAL SCIENTIFIC SESSION, SECTION SESSIONS, GUIDELINE SESSIONS, LUNCHEON SEMINARS, INTERNATIONAL SESSIONS, OPERATIVE TECHNIQUE SESSIONS, POSTER PRESENTATION SESSIONS, AND DINNER SEMINARS

Expert lecturers present research, scientific evidence and associated outcomes and demonstrate clinical techniques and applications. The basics of translational development, clinical trials, guideline review, and updated changes and evaluation of clinical experience, followed by examples of successful application, are presented in various sessions. Basic skills and information that can be applied in daily practice and professional life are also presented.

- General Scientific Sessions, Section Sessions, Guidelines Session, International Sessions, Operative Technique Sessions, and Poster Presentation Sessions are offered Sunday, September 10 through Wednesday, September 13.
- Luncheon Seminars are offered Monday, September 11 through Wednesday, September 13.
- Dinner Seminars are offered on Saturday, September 9 and Monday, September 11.

Operative Techniques

During the Case-based Discussion Sessions, the faculty presents cases to be examined, discussed, and debated by both the audience and panel. Registered attendees will have the opportunity to submit their own cases prior to the meeting to be presented at these sessions. Don't miss these interactive sessions designed to encourage participation from everyone.

- Operative Technique Sessions will take place on Monday, September 11 and Tuesday, September 12.
- Live Surgery via telemedicine technology in the Exhibit Hall will take place Monday, September 11 through Wednesday September 13. **CME is not offered for these sessions.**

Original Science Program

Scientific abstract presentations offer original science, groundbreaking research, and the best clinical and basic neurosurgical science in the CNS Original Science Program, and allows for audience questions and moderated discussions.

- Oral Presentations by subspecialty will be presented on Monday, September 11, Tuesday, September 12, and Wednesday, September 13.
- Interactive Poster Session will take place on Tuesday, September 12 from 6:00-7:30 pm.
- Late-breaking Abstracts will be presented on Monday, September 11 through Wednesday, September 13.

ACCREDITATION



The Congress of Neurological Surgeons is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

CME CREDIT

The CNS designates this live activity for a maximum of 44 *AMA PRA Category 1 Credits™*. Physicians should only claim credit commensurate with the extent of their participation in the activity.

* A maximum of 21.50 *AMA PRA Category 1 Credits™* may be earned for general sessions only.

ADDITIONAL CME CREDITS CAN BE EARNED BY ATTENDING THE FOLLOWING:

SYMPOSIA (SATURDAY/SUNDAY)

Half Day Sessions

Attendees will receive a maximum of 3.75 *AMA PRA Category 1 Credits™* for each eligible half-day morning symposia (A) and a maximum of 3.25 *AMA PRA Category 1 Credits™* for each half-day afternoon symposia (B).

Full Day Sessions

Attendees will receive a maximum of 7 *AMA PRA Category 1 Credits™* for each full day symposia.

LUNCHEON SEMINARS

Attendees will receive a maximum of 1.5 *AMA PRA Category 1 Credits™* for all eligible luncheon seminars.

DINNER SEMINARS

Attendees will receive a maximum of 2.0 *AMA PRA Category 1 Credits™* for all eligible dinner seminars.

PREPARING POSTER PRESENTATION(S)

Physicians are eligible to claim up to **5 *AMA PRA Category 1 Credits™*** per poster directly from the AMA. Applicant must be listed as the first author included in the published abstracts for a conference or activity that is certified for *AMA PRA Category 1 Credit™*.

To claim the credit physicians must submit to the AMA the completed Direct Credit Application or Resident Credit Application, along with the required documentation and appropriate processing fee. Please visit the AMA web site for details at www.ama-assn.org.

Physicians may claim *AMA PRA Category 2 Credits™* for viewing scientific posters. Physicians should self-claim credit on their AMA PRA certificate application form. Please visit the AMA website for details at www.ama-assn.org.

CME CREDIT AND CERTIFICATE OF ATTENDANCE

CME credits can be claimed through the online system at www.cns.org. The CNS CME tracking system allows you to claim CME credit or Certificate of Attendance hours for the meeting. All attendees should only claim credit or hours of attendance commensurate with the extent of their participation in the activity.

Upon completion, your CME certificate will be immediately available to print from the convenience of your home or office.

DISCLOSURES

The Accreditation Council for Continuing Medical Education (ACCME) Standards for Integrity and Independence in Accredited Continuing Education requires that anyone in a position to control the content of the educational activity disclose all financial relationships with any ACCME-defined Ineligible Company*. Failure or refusal to disclose or the inability to satisfactorily resolve the identified conflict may result in the withdrawal of the invitation to participate in any of the CNS educational activities.

The ACCME defines an "Ineligible Company" as those whose primary business is producing, marketing, selling, re-selling, or distributing healthcare products used by or on patients.

FDA STATEMENT

Some drugs or medical devices demonstrated at the Annual Meeting have not been cleared by the FDA or have been cleared by the FDA for specific purposes only. The FDA has stated that it is the physician's responsibility to determine the FDA clearance status of each drug or medical device they wish to use in clinical practice. The CNS policy provides that "off-label" uses of a drug or medical device may be described at the Annual Meeting so long as the "off-label" use of the drug or medical device is also specifically disclosed.

Any drug or medical device is "off label" if the described use is not set forth on the product's approved label. It is also each speaker's responsibility to include the FDA clearance status of any device or drug requiring FDA approval discussed or described in their presentation or to describe the lack of FDA clearance for any "off-label" uses discussed. Speakers from the audience are also required, therefore, to indicate any relevant personal/professional relationships as they discuss a given topic.

AMERICANS WITH DISABILITIES ACT

Wheelchairs, scooters, information booths, designated parking, TDD telephones, and other services are available for visitors with disabilities. For wheelchair or electric scooter rental, please contact Scoot-Around at 888-441-7575.

It is suggested that you make your reservation in advance of your arrival. Please let us know if, under the ADA, you require special accommodations or services in order to attend the CNS Annual Meeting. We want to ensure that no individual with a disability is excluded because of the absence of auxiliary aids and services. Your requirements should be sent directly to the Annual Meeting Registration and Housing Center at: cns@mcievents.com or by calling 800-931-9543. Please provide any requests at least 30 days prior to the Annual Meeting to allow adequate time to accommodate your request.

COURSE AGENDAS AND FACULTY

Agendas are subject to change. As we strive to improve the quality of your educational experience, the CNS may substitute faculty with comparable expertise when necessary.

DISCLAIMER

The material presented at the 2023 CNS Annual Meeting has been made available by the Congress of Neurological Surgeons for educational purposes only. The material is not intended to represent the only, nor necessarily the best method, procedure, or technique appropriate for the medical situations discussed, but rather is intended to present an approach, view, statement, or opinion of the faculty which may be helpful to others who face similar situations. The material is not meant to replace independent judgement by a physician for any given issue. Neither the content (whether written or oral) of any course, seminar, or other presentation in the program, nor the use of a specific product in conjunction therewith, nor the exhibition of any materials by any parties coincident with the program, should be construed as indicating endorsement or approval by the CNS, or by its committees or affiliates of the views presented; methods, procedures and/or techniques described or discussed; the products used; or the materials exhibited. The CNS disclaims any and all liability for injury or other damages resulting to any individual attending the Annual Meeting, and for all claims which may arise out of the use of the material, methods, procedures, and/or techniques demonstrated therein by such individuals, whether these claims shall be asserted by physicians or any other person. No reproductions of any kind, including audiotapes and videotape, may be made of the presentations at the 2023 CNS Annual Meeting. The CNS reserves all of its rights to such material, and commercial reproduction is specifically prohibited.

FUTURE MEETINGS

2024: HOUSTON, TEXAS September 28–October 2

2025: LOS ANGELES, CALIFORNIA October 11–15

2026: WASHINGTON, D.C. October 31–November 4

HEALTH AND SAFETY

Walter E. Washington Convention follows the current orders issued by the city of Washington, D.C. with regards to Coronavirus (COVID-19). In addition, the CNS requires that all attendees, faculty, exhibitors, and vendors participating in live in-person events be fully vaccinated by the first date of the meeting. CNS will follow all local safety protocols and health mandates. The CNS will continue to monitor for changes to requirements.

PRESS ROOM

All media representatives and journalists attending the Annual Meeting are required to register in advance. Registration, Press Room guidelines, and media credentialing policies are available online at cns.org/2023 or by calling 847-240-2500. Once on site, media are required to check in at the CNS registration area to pick up their press badges, and then proceed to the Press Room to pick up their press kits.

VISA INFORMATION

The State Department of the United States encourages international participants to apply for their visas as early as possible—at least several months before the meeting. Some consulates may have backlogs in scheduling visa interviews, so applicants should first contact the consulate to find out how long the wait is for an interview. For information on the visa process, including wait times, please visit <https://travel.state.gov/content/travel/en/us-visas.html>.



The following exhibitors have confirmed their participation as of March 31, 2023

- Accurate Neuromonitoring
- Acumed/Osteomed
- Ad-Tech Medical Instrument Corp.
- Aesculap
- American Association of Neurological Surgeons
- American Society of Black Neurosurgeons
- Apex Medical, Inc.
- Baylor Scott & White Health
- Beijing Honghugaoxiang Science and Technology Development Co., Ltd
- Bioplate
- Bioventus
- BK Medical
- Black Forest Medical Group
- Boss Instruments Ltd
- Brain Aneurysm Foundation
- Brain Navi Biotechnology Co., Ltd.
- CarboFix Orthopedics, Inc.
- Carlsmed
- Cerapedics
- Clarus Medical, LLC
- ClearPoint Neuro, Inc.
- CMF Medicon Surgical
- Designs For Vision, Inc.
- DIXI Medical USA
- Elekta
- elliquence
- Elsevier, Inc.
- Emergent Clinical Consulting LLC
- evonos GmbH & Co. KG
- Fehling Surgical Instruments
- FujiFilm Healthcare of Americas
- Globus Medical
- GT Medical Technologies, Inc.
- Hyperfine
- icotec Medical, Inc.
- ImmersiveTouch, Inc.
- IMRIS, Deerfield Imaging
- Indiana University Kelley School of Business Physician MBA
- INSIGHTEC
- Integra LifeSciences
- i-PRO Americas
- IRRAS
- IZI Medical
- Johnson & Johnson Medical Devices
- joimax
- Journal of Neurosurgery
- JTS Surgical
- Karl Storz Endoscopy
- Kelyniam Global, Inc.
- Kirwan Surgical Products LLC
- KLS Martin
- Leica Microsystems
- Life Instrument Corporation
- Longevity Neuro Solutions
- Matrix Surgical USA
- Medexus Pharma
- Medical Education Research Institute (MERI)
- Mediflex
- Medivis Inc
- Medtronic
- Merck & Co., Inc.
- MicroVention
- Mitaka USA, Inc.
- Mizuho America, Inc.
- Monteris Medical
- Nadia International, Inc.
- Natus Neuro
- NeuroPace, Inc.
- NeuroPoint Alliance
- Nevro
- Nexstim
- NICO Corporation
- North American Neuromodulation Society (NANS)
- Northwell
- Novarad
- NSK America Corp.
- Olympus America Inc.
- OssDsign
- Osteocentric Technologies
- Penumbra, Inc.
- Peter Lasic US Inc.
- Phasor Health LLC
- PMT Corporation
- RapidAI
- Renishaw Inc.
- Rhaeos
- Ronin Surgical Corp.
- Rose Micro Solutions
- RosmanSearch, Inc.
- Scanlan International, Inc.
- SeaSpine
- Shukla Medical
- SI-BONE, Inc.
- Sophysa
- Spinal Elements, Inc.
- Spine Wave Inc.
- Spineology Inc.
- Stryker
- Surgeons Capital Management
- SurgeonsLab AG
- SurgiTel
- Sutter Medical Technologies USA
- Synaptive Medical
- Takayama Instrument, Inc.
- TeDan Surgical Innovations, LLC
- Thieme Publishers
- Thompson Surgical Instruments, Inc.
- Tobra Medical
- Varian, a Siemens Healthineers Co.
- Viz.ai
- VPIX Medical
- Wolters Kluwer Health
- Xoran Technologies
- ZAP Surgical Systems, Inc.
- ZEISS
- Zimmer Biomet
- ZimVie

REGISTRATION INFORMATION

ITEMS INCLUDED IN REGISTRATION FEE:

- General Scientific Sessions
- Scientific Program to include Section Sessions, Oral Abstract Presentations, Sunrise Science and Late Breaking Abstract Sessions, Guidelines Sessions, Operative Technique Sessions
- CNS Xperience Lounge
- Live Surgeries via Telemedicine
- Exhibit Hall
- Opening Reception Sunday

REGISTRATION METHODS

ONLINE

cns.org/2023

PHONE*

972-349-5539

7:00 am-5:00 pm CST

FAX*

972-349-7715

MAIL*

CNS Annual Meeting
CNS Registration and Housing Center
6100 West Plano Parkway
Suite 3500
Plano, TX 75093

*Allow five business days for registration and housing confirmation. The CNS Registration and Housing Center is not responsible for faxes not received due to mechanical failure or circumstances beyond our control.

CREDIT CARD PAYMENTS

U.S. dollars and drawn on a U.S. bank

- Visa
- Mastercard
- American Express

CHECK PAYMENTS

- U.S. dollars and drawn on a U.S. bank
- Please note that checks cannot be processed over the phone. Checks should be mailed to the following address and will be processed. Once the check has been cashed, a confirmation will be sent.

CNS ANNUAL MEETING

CNS Registration and Housing Center
6100 West Plano Parkway
Suite 3500
Plano, TX 75093

- Full payment must accompany your registration.
- Any checks received from an overseas bank will be returned.
- Any checks returned for insufficient funds are subject to additional charges.

IMPORTANT DATES TO REMEMBER

AUGUST 9 Advance Registration Discount

AUGUST 14 Housing Deadline

Last day to make any hotel changes or cancellations through the CNS Housing provider, MCI

Email: cns@mcievents.com

Phone: 972-349-5539

AUGUST 15 Any hotel changes or cancellations must be made directly with the hotel after August 15. Individual hotel cancellation policies can be found on your original housing confirmation.

AUGUST 16 Last day to cancel registration in order to receive a full refund, less a \$100 processing fee

REGISTRATION CHANGE/CANCELLATION INFORMATION

Full registration refunds, less a \$100 processing fee, will be granted if written requests for cancellation are received by 5:00 pm CT on August 16, 2023. Course and Seminar tickets will be refunded in full until August 16. No refunds of any kind will be given after this date, regardless of cause. Refunds will not be given for no-shows.

CANCELLATION REQUESTS ACCEPTED VIA:

E-mail: cns@mcievents.com

Fax: 972-349-7715

Mail: CNS Annual Meeting
CNS Registration and Housing Center
6100 West Plano Parkway
Suite 3500
Plano, TX 75093

NOT A CNS MEMBER? THERE'S NO BETTER TIME TO JOIN!

CNS Members have complimentary access to our world-class journals, discounts on valuable self-assessment tools, access to educational online resources, and so much more!

Plus, you'll see instant savings – select "Active Applicant Fee" when you register for the Annual Meeting and receive an immediate discount on your 2023 Annual Meeting registration fees! See our full list of member benefits and apply at cns.org/membership.

REGISTRATION RATES

REGISTRATION TYPE	Through August 9, 2023	After August 9, 2023
CNS MEMBER REGISTRANT		
Active (Domestic)	\$1,099	\$1,399
Active International	\$950	\$1,250
Associate (Non neurosurgeons with distinction in a neurosurgical-related discipline)	\$890	\$1,090
Active Duty Military	\$0	\$0
Armed Forces (Guard/Reserve/Retiree)	\$475	\$675
Resident (Domestic)	\$250	\$350
International Resident	\$250	\$450
Emeritus	\$500	\$800
Medical Student (Enrolled in an accredited medical school in US or Canada)	\$0	\$200
Affiliate (Allied healthcare professionals involved in neurosurgical-related patient care, teaching, or research)	\$450	\$650
NON-MEMBER MEDICAL REGISTRANT		
Neurosurgeon <i>Become a CNS member and save on Annual Meeting registration and enjoy all of the CNS member benefits!</i>	\$2,390	\$2,390
Physician (non-neurosurgeon)	\$1,500	\$1,700
Non-physician (Clinical Researcher/Scientist) **	\$1,400	\$1,700
Neurosurgeon (Faculty)	\$1,200	\$1,500
Resident	\$400	\$500
Fellow	\$500	\$750
Medical Student	\$250	\$450
PA/Physician Extender/Nurse/Nurse Practitioner	\$600	\$850
Corporate Representative †	\$3,500	\$3,500
Non-Member Graduate Student/Post-doctoral Scholar	\$200	\$300
ANSPA Member ††	\$500	\$600
Developing Nation Rate (See page X for a complete list of nations)	\$150	\$250
Program Coordinator	\$0	\$0
Spouse/Guest/Child 13 & Over	\$150	\$250
Spouse/Guest/Child 13 & Over (Resident/Fellow)	\$150	\$150
** Non-member/Non-physician category is limited to scientists, engineers, etc., involved in neurosurgical research and/or product development not affiliated with an exhibiting company.		
† Corporate representatives attend for education only. They must not conduct sales activities in the meeting space, nor influence content in any way. Solicitation of medical attendees is strictly prohibited.		
†† Includes one year of CNS Affiliate membership in 2023 for ANSPA Members only.		



AIRLINE DISCOUNTS

The CNS is pleased to offer discounts with the following airlines.

United Airlines:

www.united.com

Valid dates:

September 3–18, 2023

Enter code:

ZN6W999887

Delta Airlines:

www.delta.com

Valid dates:

September 1–20, 2023

Enter code:

NM2GW

AIRPORT

The 2023 CNS Annual Meeting hotels and the Walter E. Washington Convention Center are located approximately 5 miles from Ronald Reagan Washington National Airport (DCA). Taxicabs are located on the arrival (ground) level of the airport, outside the baggage claim areas. Uber and Lyft are both available in the Washington, D.C. area.

VISIT CNS.ORG/2023 TO MAKE YOUR RESERVATION TODAY! RESERVE YOUR ROOM BY AUGUST 14.

HOTEL RESERVATIONS

- Please contact MCI, the official CNS Annual Meeting Registration and Housing Center, to reserve your guest rooms.
- Hotels will not accept reservations from CNS meeting attendees directly.
- Reservations can be made online or via fax, phone, or mail.
- Be sure to complete the entire housing section on the reservation form.
- Hotel reservations are only available to registered CNS attendees. Rooms are subject to availability.

DEPOSIT

A deposit of one night's room and tax is due at the time your hotel reservation is made. This payment must be submitted with your registration fee and will be charged to the credit card provided. Please make checks payable to:

CNS Registration and Housing Center at 6100 W. Plano Parkway, Suite 3500, Plano, TX 75093.

All rooms are subject to applicable state and local taxes.

A small portion of your room rate will be used to help defray the cost of registration and housing services. Hotel reservations requested without a deposit will not be processed.

HOTEL CHANGE/CANCELLATION POLICY

The deadline for new reservations is August 14, 2023, based on availability. Please make any changes or cancellations through the CNS official housing bureau, MCI, through August 14, except for the Grand Hyatt Hotel. You may continue to make changes or cancellations for the Grand Hyatt hotel through the CNS official housing bureau, MCI, until August 30.

BEGINNING AUGUST 15, 2023

All changes, cancellations, or questions regarding your reservation must be made directly with the hotel starting August 15th, 2023, except for the Grand Hyatt Hotel. You may continue to make changes or cancellations for the Grand Hyatt hotel through the CNS official housing bureau, MCI, until August 30th. The deposit will be forfeited if a cancellation notice is not received according to the hotel policy. Your individual hotel's cancellation policy can be found in your emailed confirmation.

COMPLIMENTARY HOUSING FOR CNS RESIDENT MEMBERS AND INTERNATIONAL RESIDENT MEMBERS

Complimentary housing at the CNS Annual Meeting is available to a limited number of CNS Resident members and International Resident members on a first-come, first-served basis. To be considered for this program, members must register for the CNS Annual Meeting and complete and submit the Resident Member Housing Application by Friday, June 23, 2023.

Begin the application process at cns.org/2023/residents

HEADQUARTERS HOTEL MARRIOTT MARQUIS WASHINGTON, D.C.

901 Massachusetts Avenue NW,
Washington, DC 20001

Distance to Conv. Center: Connected via underground walkway (located on level M2)

Single/Double Rate per night (Excludes state/local tax and fees): \$330

Fitness Center: Complimentary

WiFi: Complimentary in-room service

Located within walking distance from historic local attractions, and exciting nightlife, uncover accommodations that are thoughtfully dynamic. Rest in guestrooms and suites with modern features and amenities. Marriott Marquis Washington, D.C., welcomes you with impeccable service and inimitable style.



GRAND HYATT WASHINGTON

1000 H Street NW,
Washington, DC 20001

Distance to Conv. Center: 0.6 Miles

Single/Double Rate per night (Excludes state/local tax and fees): \$304

Fitness Center: Complimentary

WiFi: Complimentary

Centrally located in the trendy Penn Quarter with convenient in-lobby Metro Center access, this downtown hotel is an ideal spot to explore the nation's capitol. The hotel is just steps from Washington Convention Center.



RENAISSANCE WASHINGTON, D.C. DOWNTOWN

999 9th Street NW,
Washington, DC 20001

Distance to Conv. Center: 0.3 Miles

Single/Double Rate per night (Excludes state/local tax and fees): \$325

Fitness Center: Complimentary

WiFi: Complimentary in-room service

Set in the heart of the city, this upscale hotel is steps from the Walter E. Washington Convention Center. Relax in spacious hotel rooms with plush bedding, downtown views, Aveda bath products and Wi-Fi, and suites with beautiful terraces.



THANK YOU FOR YOUR CONTINUED SUPPORT OF THE CNS!

The CNS thanks you for your support in reserving your guest room through the official CNS Housing and Registration Center. The CNS, in negotiating contracts with convention centers and hotels, must commit to a minimum number of guest rooms. This commitment helps guarantee the availability of meeting space and helps control the cost of the meeting. A history of high utilization of our room block enables the CNS to negotiate better room rates for future meetings.



CNS

2024 ANNUAL MEETING

SAVE THE DATE!

Houston, Texas

September 28–October 2, 2024

