

cnsq IS THE OFFICIAL NEWSMAGAZINE OF THE CONGRESS OF NEUROLOGICAL SURGEONS

# Congressquarterly

SUMMER 2023

# Neurosurgery in The Capitol



CNS

2023 ANNUAL MEETING

IMAGINE  
INNOVATE  
INSPIRE

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



Congress of  
Neurological  
Surgeons

9 Abstract Sessions – Expanded  
Formats and Unique Forums

20 The CNS Xperience Lounge  
Offers a Space to Relax, Learn,  
and Connect

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Congress of  
Neurological  
Surgeons

## EDITOR'S NOTE



Ellen L. Air  
2022-23 Co-Editor



Clemens M. Schirmer  
2022-23 Co-Editor

Welcome to the 2023 CNS Annual Meeting! We are thrilled to present a preview of what you can expect in Washington, D.C., from September 9-13, 2023. This year's meeting theme, **Imagine, Innovate, Inspire**, sets the stage for exploring the future of neurosurgery and pushing the boundaries of scientific understanding and patient outcomes.

The Annual Meeting Committee, led by Lola Chambless, Garni

Barkhoudarian, and Edjah Nduom, has curated an exceptional lineup of speakers and sessions that promise an authentic and immersive experience. From Safi Bahcall's talk on "Loonshots: Imagining the Impossible" to Chris Cassidy's insights on "Leadership Under Pressure: An Astro SEAL's Perspective," each General Scientific Session will feature next-generation physician-scientists and clinicians. Additional lectures by visionary innovators Martin Eberhard and Justin Tuck are not to be missed.

We are truly excited to introduce the Dorothy K. Nash Lectureship, honoring the first female neurosurgeon to practice in the United States. We cannot think of anyone more fitting than Amal Clooney to serve as the inaugural lecturer. An internationally renowned Human Rights lawyer, her trailblazing work fighting for international justice is a fitting tribute to Dr. Nash.

A record-breaking number of original scientific abstracts will be presented throughout the meeting, covering a wide range of topics. In addition, customize your experience with optional courses that delve into clinical and non-clinical subjects relevant to neurosurgery.

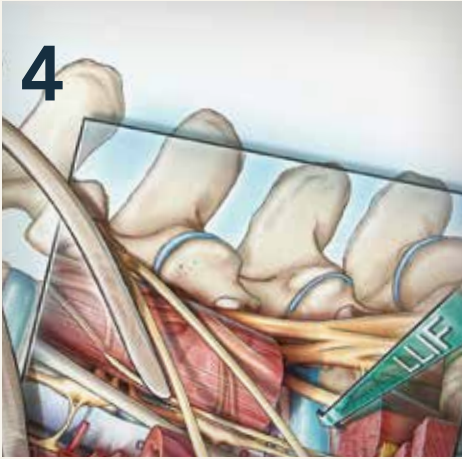
In addition to the scientific program, we are proud to introduce new offerings and collaborations that enhance your overall experience. For example, we have partnered with organizations such as the Society for Neurological Surgeons, the North American Skull Base Society, the American Society of Black Neurosurgeons, and Women in Neurosurgery to bring you diverse perspectives and address critical issues in our field. We are also excited about collaborating with the CNS Foundation for the Pathways to Neurosurgery program, which introduces local urban high school students to neuroscience and technologies.

This year, we are honored to welcome our esteemed Honored Guests, Nick Hopkins, and Doug Kondziolka. Dr. Hopkins, a pioneer in the catheter-based treatment of neurovascular disease and stroke, and Dr. Kondziolka, a renowned neurosurgeon and leader in neuro transplantation trials, will deliver lectures and host meet and greet sessions in the CNS Xperience Lounge.

Beyond the scientific program, we invite you to explore Washington, D.C.'s breathtaking monuments, world-class museums, diverse communities, and incredible cuisine. The CNS Annual Meeting provides opportunities to network, reconnect with colleagues, and enjoy social events like the CNS Virtual 5K and receptions in unique venues. Don't miss the chance to visit "The Art of Neurosurgery" feature in the CNS Xperience Lounge, where you can find inspiration from the beauty of the central nervous system.

We extend our gratitude to the Scientific Program Committee and all the volunteers who have imagined, innovated, and inspired this incredible program. We eagerly await your arrival in Washington, D.C., and look forward to an extraordinary meeting that will shape the future of neurosurgery.

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# PRESIDENT'S MESSAGE



Elad I. Levy, MD, MBA  
President, Congress of  
Neurological Surgeons

## Dear Colleagues,

It is an honor and a pleasure to invite you and your family to Washington, D.C. on September 9-13, for the 2023 CNS Annual Meeting to explore our theme, ***Imagine, Innovate, Inspire***. We hope that our interactions will challenge the way we perceive evolving neurosurgical care. Concomitantly, we aspire to augmenting and enhancing our lifelong training with the tools to drive neurosurgery to a future of imagination, innovation, and inspiration.

Working with Annual Meeting Chair, Lola Chambless; Scientific Program Chair, Garni Barkhoudarian; and Vice Chair, Edjah Nduom, we have built a robust scientific program that is authentic, immersive, and enjoyable. An outstanding lineup of next generation physician scientists and clinicians headline each general scientific session, from author, entrepreneur and physicist Safi Bahcall's talk on "Loonshots: Imagining the Impossible" to NASA astronaut and Navy SEAL, Chris Cassidy's talk about "Leadership Under Pressure: An Astro SEAL's Perspective." Our first ever Dorothy K. Nash Lectureship will feature a moderated discussion with lawyer and human rights advocate, Amal Clooney. We will also hear from the extraordinary visionary and innovator, Tesla founder, Martin Eberhard. We are excited to host an inspirational lecture from Justin Tuck, Managing Director at Goldman Sachs and two-time Super Bowl Champion.

We have received record abstracts and are building more speaking opportunities throughout the meeting in our sunrise sessions, section sessions and our Interactive Multimedia Research Presentation Session. We hope you customize your experience by selecting optional courses, creating immersive learning on clinical and non-clinical topics relevant to your practice of neurosurgery.

To deliver this unparalleled experience, we are proud to introduce several new offerings in Washington, D.C., as well as to bring back some perennial favorites by partnering with organizations throughout our specialty. We are also excited to continue our collaboration with the Senior Society for our Medical Education and Training abstract session, and with the North American Skull Base Society (NASBS) for our joint symposium, "Sellar and Suprasellar Tumors Outside the Box." And of course, as always we are pleased to partner with the Sections to bring you the most relevant and timely developments in each neurosurgical subspecialty. Be sure to check out Dr. Barkhoudarian's update on page 12.

We've also extended our partnership with the American Society of Black Neurosurgeons (ASBN) and Women in Neurosurgery (WINS) to bring important talks and courses to the program that address critical DEI issues in our field. The committee will also partner with the CNS Foundation (CNSF) to bring back the successful Pathways to Neurosurgery program that introduces local urban high school students to neuroscience and technologies at the CNS Annual Meeting. For details, see Tiffany Hodges and Edjah Nduom's update on page 17.

It is my great privilege to welcome our 2023 Honored Guests, Nick Hopkins and Doug Kondziolka. Dr. Hopkins is a pioneer in the catheter-based treatment of neurovascular disease and stroke, and has trained many endovascular neurosurgical leaders. Dr. Kondziolka is the Gray Family Professor of Neurosurgery, NYU Langone Health, a Past President of the CNS, and the current Editor in Chief of Neurosurgery Publications. His visionary efforts have helped create



Image courtesy of washington.org

a specialty of stereotactic radiosurgery, in turn cementing this technology as first-line treatment for many pathologies formerly treated with traditional open surgical approaches.

Dr. Hopkins will deliver a lecture titled “The Future of Stroke is Multifaceted Innovation,” while Dr. Kondziolka will give a talk titled “The Nature of Things.” Our honored guests will also host meet and greet sessions in the CNS Xperience Lounge, where you can also connect with your colleagues and corporate partner contacts.

With great anticipation, we are awaiting your arrival in Washington, D.C., famous for breathtaking monuments, world-class museums, diverse communities, and incredible cuisine. This is just a glimpse of all that is planned. Throughout this issue of *Congress Quarterly*, members of our Scientific Program Committee have shared more details about the sessions they are designing. On behalf of the CNS Executive Committee and the entire Annual Meeting Committee, I want to express our gratitude to these volunteers for their work in imagining, innovating, and inspiring this incredible program. We sincerely look forward to meeting you in D.C. 🇺🇸

Sincerely,

Elad I. Levy, MD, MBA



Image courtesy of washington.org

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<https://www.youtube.com/user/cnsvideolibrary>



# A Preview of the 2023 CNS Annual Meeting

The 2023 CNS Annual Meeting Committee is thrilled to share with you a preview of what you can expect to find in Washington, D.C., September 9-13, 2023. Our meeting theme directly reflects our goals for your experience. What do we imagine neurosurgery will become in the future? How will we guide innovation to achieve that vision? And most importantly, how do we inspire the neurosurgical community to reach new levels of scientific understanding, patient outcomes, and joy in our practice? You will find the thread of these concepts woven throughout the scientific program, social events, and other activities that fill the 2023 CNS Annual Meeting.

## Something for Everyone

The neurosurgical community is large and diverse. Meeting attendees include neurosurgeons from a wide variety of practice settings, each with specific educational needs. In addition, our meeting continues to be increasingly popular with trainees, medical

students, advanced practice practitioners (APPs), and other groups with unique perspectives. As we represent and educate the entire neurosurgical community, we have paid special attention to creating program tracts that serve the purposes of each of these groups to bring maximum value to every single attendee. For example, neurosurgeons in community-based practices will enjoy the new CME symposium "Practical Neurosurgery: Perspectives by and for General Practice Neurosurgeon Leaders" held on Sunday, September 10, from 8:00 AM - 12:00 PM. APPs will find premeeting courses and Guidelines-based sessions designed with their needs in mind. Medical students will benefit from historically popular events like the "Swimming with the Sharks" symposium and Medical Student Town Hall and will enjoy new offerings like the Neurosurgical Medical Students Specialty sessions on Wednesday afternoon, September 13, where selected teams have built their own curated scientific program for students.



*"Swimming with the Sharks" offers residents and medical students practical advice from department chairs, program directors and coordinators, and recent graduates on topics from overcoming mistakes in training to creating a pathway for a successful career*



Lola B. Chambless, MD

Garni Barkhoudarian,  
MD

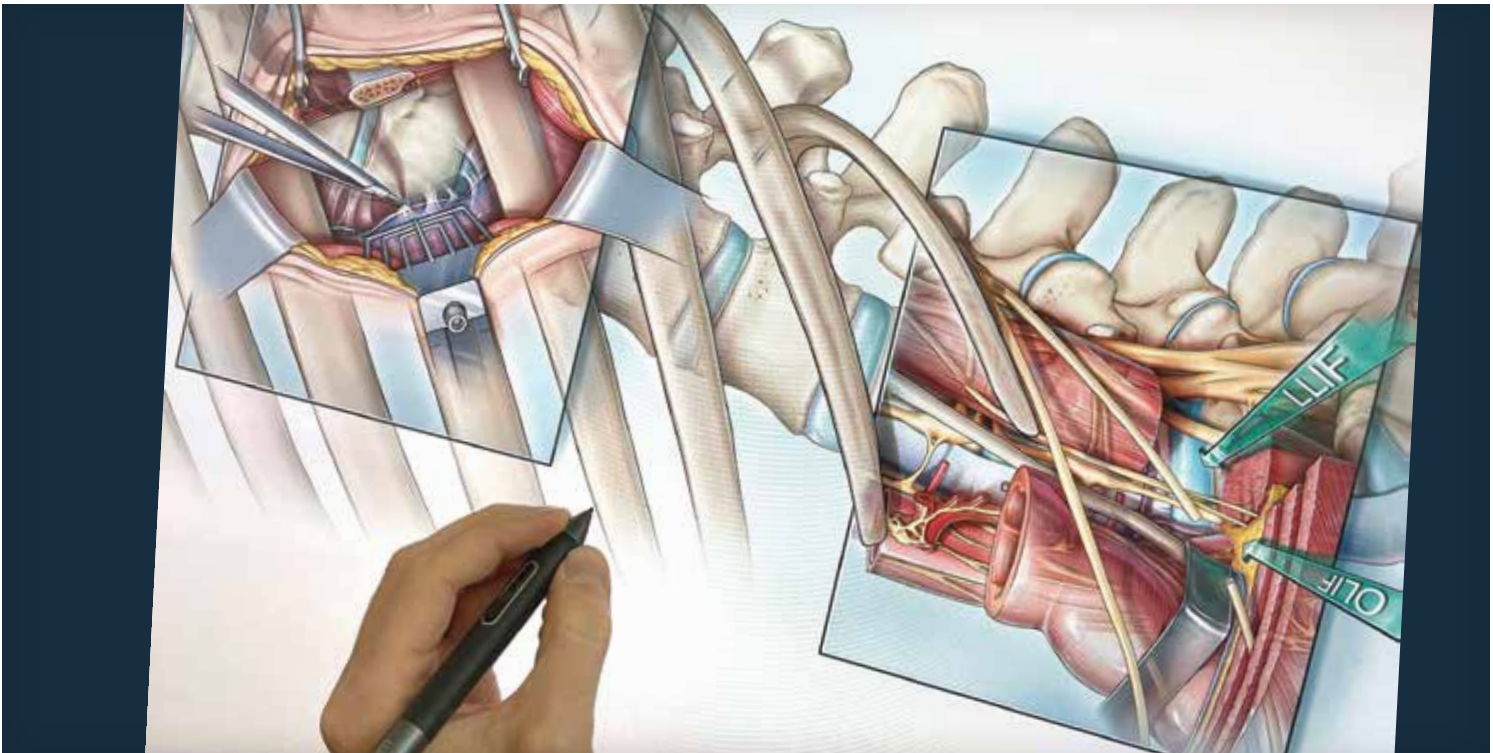
Edjah K. Nduom, MD



Elad I. Levy, MD, MBA



April Martin



## Break Free of Silos

Inspiring innovation means working outside of traditional boundaries. In 2023, we will continue to promote sessions that cross sub-specialty barriers and engage fresh perspectives. For example, our Saturday symposium “TNT – Transforming Neurosurgery through Technology: The Innovation Symposium” features industry experts serving as faculty alongside neurosurgeon innovators. Special abstract sessions focus on emerging multidisciplinary scientific frontiers like data science, medical education, and, new for 2023, healthcare disparities.

## Imagine a Healthier Planet

Running a successful conference means recognizing our environmental impact and maintaining focus on sustainability. From reductions in printed materials and single use plastics to partnerships with local organizations focused on reducing food waste, we have found ways to bring you the experience you expect from the CNS in a way that is conservation minded. We look forward to an exciting General Scientific Session presentation “Practical Neurosurgery: Green OR Mentality - Reducing Waste While Improving Quality” by Dr. Neil Martin about how to bring these best practices into our own institutions.

*The Art of Neurosurgery stage presentations in the CNS Xperience Lounge will feature premier neurosurgical medical illustrators highlighting the technology revolutionizing their field.”*

## Recharge and Reconnect

We recognize that one of the fundamental roles of the CNS Annual Meeting is to facilitate networking and connection between our members. Throughout the meeting you will find opportunities to enjoy time with your friends, mentors and partners. We look forward to hosting our first ever “CNS Virtual 5K” which will run throughout the meeting as a friendly competition and chance to get outside to enjoy the fall weather. Social events, including the Opening Reception and the International/Resident Reception at Planet Word, offer a chance to visit with colleagues in unique, convenient venues. “The Art of Neurosurgery” feature in the CNS Xperience Lounge provides an opportunity to take inspiration from the beauty of the central nervous system and the artists that explore it. We hope that you will consider bringing your family to the meeting as well, as the city of Washington, D.C. offers countless cultural experiences within walking distance of the convention center and our host hotels.



## Get Inspired by Our Speakers

Our speaker lineup is guaranteed to excite the crowd and spark our imaginations. We are proud to announce the Inaugural Dorothy Nash Lecture, honoring the first female neurosurgeon in the United States. Amal Clooney, International human rights advocate and Time Magazine Woman of the Year, will serve as the first Dorothy Nash Lecturer and is joined by a host of outstanding luminaries who will speak on topics that impact neurosurgeons from their own unique perspectives. They will be joined by our Honored Guests, L. Nelson “Nick” Hopkins and Doug Kondziolka who will round out a phenomenal series of lectures and discussions over the course of our time together.



### **L. Nelson “Nick” Hopkins** *2023 Honored Guest*

Dr. L. Nelson “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. Hopkins has served as chair of the Department of Neurosurgery at the University at Buffalo for nearly 25 years and authored more than 450 peer-reviewed publications. 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 and Jacobs Institute vascular innovation center.



### **Douglas Kondziolka** *2023 Honored Guest*

Dr. Douglas Kondziolka is a renowned neurosurgeon who completed medical residency and received his medical degree from the University of Toronto. He has a master’s degree in behavioral neuroscience from the University of Pittsburgh and

completed a fellowship in stereotactic surgery and radiosurgery at the same university. Kondziolka has made significant contributions to neurosurgery, particularly in neuro transplantation trials for treating stroke and clinical trials in neuromodulation for major depression. He has launched the first global registry platform for neurosurgery and

co-launched the world’s largest open-source brain tumor imaging dataset with longitudinal data, NYUMets. Kondziolka has published extensively, with 635 articles in refereed journals, 275 book chapters and invited publications, and has edited 8 books. He has held various leadership positions in neurosurgery societies, including serving as the President of the CNS. He has also been the neurosurgeon for the Pittsburgh Penguins of the National Hockey League from 2002 to 2012. Kondziolka has an impressive h-index of 108 and is currently the Editor-in-Chief of Neurosurgery Publications. He has also served as a visiting professor at many top institutions in the U.S. and Canada and lectured extensively worldwide.



### **Amal Clooney** *Dr. Dorothy Nash Lecturer*

Amal Clooney is a renowned barrister specializing in international law and human rights who represents clients before international courts such as the International Criminal Court, the International Court of Justice, and the European Court of Human Rights. She is ranked

by Chambers and Partners and Legal 500 as one of top lawyers in the UK in the fields of international human rights and international criminal law. Ms. Clooney represents victims of human rights abuse and has argued in many landmark cases throughout her career. She also represents political prisoners around the world and has received many honors for her work to secure the freedom of journalists arbitrarily detained across the globe. Ms. Clooney is an Adjunct Professor at Columbia Law School, where she teaches international law and human rights, and she is co-author of an academic textbook withtitled *The Right to a Fair Trial in International Law*, published by Oxford University Press. In 2016 she and her husband, George Clooney, established the Clooney Foundation for Justice, which advances justice through accountability for human rights abuses around the world and has several initiatives including TrialWatch, The Docket, and Waging Justice for Women.



### **Safi Bahcall**

*Walter E. Dandy Orator*

Safi Bahcall is a former CEO, physicist, entrepreneur, and author of the international bestseller "Loonshots". The book, which combines physics, business, and history, has been translated into 21 languages and was the most recommended book of the year

in Bloomberg's annual survey of CEOs and entrepreneurs. Bahcall received his BA from Harvard, completed his PhD in physics at Stanford, and founded a biotechnology company in 2001. He led the company's IPO and served as its CEO for 13 years. In addition to presenting at Fortune 500 companies, he has also presented to hypergrowth startups, investment funds, and government organizations, and has spoken at prestigious universities and medical institutions. Bahcall currently works with senior leadership teams on strategy and innovation and conducts research on novel applications of the science of phase transitions to economic and social systems.



### **Chris Cassidy**

*Featured Speaker*

Captain Chris Cassidy is a decorated veteran and former NASA astronaut who spent 11 years as a member of the US Navy SEALs, where he served in various leadership roles and made four deployments to Afghanistan and the Mediterranean. In 2004, he was selected

as an astronaut candidate by NASA and completed three space missions, accumulating 378 days in space and 54 hours of spacewalk time. Cassidy also served as NASA's Chief Astronaut from 2015-2017. Among his awards are the Bronze Star with combat "V," two NASA Exceptional Achievement Medals, and two honorary PhDs. In 2021, he announced his retirement from both NASA and the Navy and is now the CEO of the National Medal of Honor Museum.



### **Martin Eberhard**

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

Martin Eberhard co-founded Tesla Motors in 2002 with Marc Tarpenning, serving as the original Chairman and CEO until late 2007. Eberhard's innovations with Tesla have revolutionized the EV industry, including developing EVs that are better

than their gas-powered counterparts, using lithium-ion batteries for an improved driving range, and appealing to serious car enthusiasts with electric drive technology. Prior to Tesla, Eberhard founded NuvoMedia and developed the Rocket eBook. He also co-founded Network Computing Devices in 1987. Eberhard received a BS and MS in Electrical Engineering from the University of Illinois at Urbana-Champaign and was inducted into the University of Illinois Engineering Hall of Fame in 2015. After leaving Tesla, Eberhard worked at various companies and advised startups, and continues to lecture on reducing carbon fuels, the benefits of electric propulsion, and entrepreneurship.



### **Justin Tuck**

*Featured Speaker*

Justin Tuck is a managing director in Private Wealth Management at Goldman Sachs in New York, serving as an advisor on the Partners Coverage Team. He is also co-head of the PWM Inclusive Wealth Initiative which aims to grow Goldman Sachs' presence in the African

American community. Before joining Goldman Sachs, Tuck played as a Defensive Lineman in the NFL for 11 years, winning two Super Bowls as a member of the New York Giants and serving as Team Captain for eight seasons. He was inducted into the Giants Ring of Honor in 2016. He sits on the Leadership Council for the Robin Hood Foundation and serves on the boards of several organizations, including R.U.S.H for Literacy, Pure Edge Foundation, The Vera Institute of Justice, Points of Light, and The University of Notre Dame Wall Street Leadership Board. Tuck earned a bachelor's degree in management from the Mendoza College of Business at the University of Notre Dame and his MBA from the Wharton School at the University of Pennsylvania. 📖

## **REGISTER TODAY**

We are excited to welcome you to Washington, D.C. and hope you will enjoy all that the CNS has to offer. Register today at [www.cns.org/2023](http://www.cns.org/2023) to receive advanced registration rates. **See you in September!**



Deja Rush



Damirez Fossett, MD

# Welcome to Washington, D.C.: Local Host Perspective

In July of 1790, after much deliberation and debate by our forefathers, Washington, D.C. was founded as our newly-born Nation's capital. Swampland originally acquired from portions of Maryland and Virginia, and situated between the Anacostia and Potomac Rivers, it is physically small in size but large in stature. From the first writings in the Constitution that establish it as our capital, to the rebuilding of the city after the War of 1812, Washington, D.C. has an extremely rich and storied history. Renowned as the defacto capital of the free world, D.C. has served as a safe haven for newly emancipated slaves, been the site for some of the most beautiful architectural and artistic pieces in the world, and existed as an epicenter of international affairs. We invite you to explore all that this wonderful city has to offer and are happy to serve as your hosts.

The venue for the 2023 Congress of Neurological Surgeons (CNS) Annual Meeting is the Walter E. Washington Convention Center. Located in the heart of downtown, you will find many great attractions nearby. This includes official government entities such as the White House, United States Capitol Building, Supreme Court of the United States, and the largest library in the world, the Library of Congress. There are a plethora of museums to visit including the Smithsonian National Museum of Natural History, Smithsonian National Air and Space Museum, National Gallery of Art, National Museum of African American History and Culture, Holocaust Museum, International Spy Museum, National Portrait Gallery, the second floor of which was the site of Lincoln's second inaugural ball, and the Phillips Collection, America's first museum of Modern Art. The National Museum of Medical History is also located a mere 30-minute drive away in Silver Spring, Maryland. For outdoor sightseeing, when the weather permits, visit some of our historic treasures on the National Mall such as the Lincoln Memorial, Vietnam Veterans Memorial, Washington Monument, Martin Luther King, Jr. Memorial, Jefferson Memorial and World War I and II Memorials. Other interesting venues include the National Zoo, the United States Botanic Garden and the John F. Kennedy Center for the Performing Arts.

Outside of the primary tourist attractions, Washington, D.C. has a number of vibrant neighborhoods that provide insight into the true character of the city. For instance, the U Street Corridor is well known for its night life, particularly for jazz enthusiasts. The Navy Yard has great views of the water and is home to the Washington Nationals baseball stadium and the DC United soccer pitch. Georgetown has a lot of historic architecture and stately homes as well as a collection

of high-end shops. Finally, Gallery Place is home to Chinatown and Capital One Arena.

As the home to an extremely diverse population, the variety of food options and restaurants are a must-try. Immediately adjacent to convention center itself is the Unconventional Diner. Other excellent eateries are listed below.

- 
- |  |   |
|--|---|
| • Busboys and Poets – <a href="#">American</a> | • Carmine's Italian – <a href="#">Italian</a>   |
| • Founding Farmers – <a href="#">American</a>  | • Filomena Ristorante - <a href="#">Italian</a> |
| • The Hamilton – <a href="#">American</a>      | • RPM Italian – <a href="#">Italian</a>         |
| • Old Ebbitt Grill – <a href="#">American</a>  |   |
| • Ted's Bulletin – <a href="#">American</a>    | • Barcelona – <a href="#">Latin</a>             |
|  | • Pisco y Nazca – <a href="#">Latin</a>         |
| • Daikaya – <a href="#">Asian</a>              | • Cuba Libre – <a href="#">Latin</a>            |
| • Doi Moi – <a href="#">Asian</a>              |   |
| • Jinya Ramen – <a href="#">Asian</a>          | • Rumi's Kitchen – <a href="#">Persian</a>      |
|  |   |
| • Das – <a href="#">Ethiopian</a>              | • Ben's Chili Bowl – <a href="#">Soul food</a>  |
|  | • Georgia Brown's – <a href="#">Soul food</a>   |
- 



Image courtesy of washington.org

Washington, D.C. is the perfect place to host this year's CNS Annual Meeting. We are extremely pleased to welcome you to the Capital of the Free World and hope you enjoy your time here! 🇺🇸



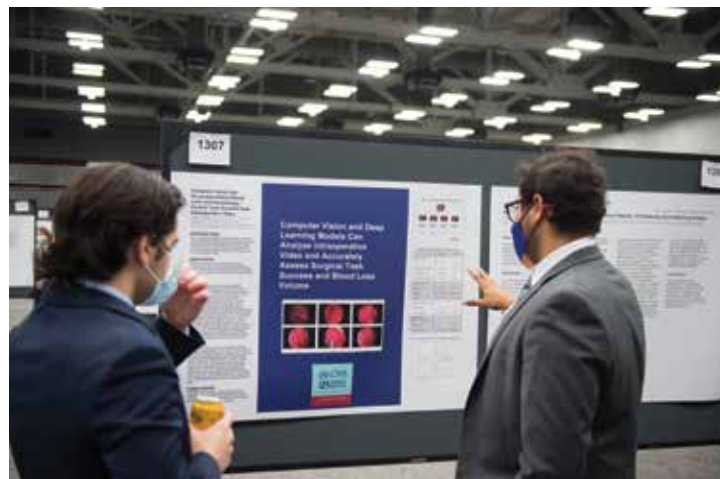
Garni Barkhoudarian, MD

# Abstract Sessions – Expanded Formats and Unique Forums

The foundation of an innovative and inspirational conference is the scientific content submitted by the neurosurgical membership. The Congress of Neurological Surgeons prides itself on providing diverse and ample podium presentation opportunities for the surgeon scientist. As has been popular over the years, the majority of oral presentations will be featured during the afternoon sub-specialty section sessions inter-mixed with invited lectures from experts worldwide. We have expanded the oral presentation sessions with our popular morning sessions for late-breaking and cutting-edge research. The 2023 CNS Annual Meeting in Washington D.C. will feature a diverse offering of abstracts formats and topics.

## Dedicated specialty-spanning morning sessions

There are certain topics that span sub-specialty disciplines that warrant dedicated sessions. These include the data science and medical education morning sessions that were quite popular in 2022, curated by experts in these disciplines. Invited lecturers set the stage for these topics, encouraging scientific discourse from the abstracts presented. New to this year is a healthcare disparities session, led and discussed by public health experts as it pertains to the various sub-section specialties.



## Dedicated poster sessions and awards

The poster abstracts will be featured throughout the meeting, with a dedicated poster viewing on Tuesday afternoon. This interactive poster session aims to invigorate scientific presentation and discussion, complemented by a wine and cheese. Podium presentations will also be offered with a rapid-fire format to facilitate discussion and exchange of ideas.

Abstracts will be judged during this event and the top three abstracts of each specialty will be announced during the general scientific session. There are numerous abstract awards from the various sub-sections that will also be awarded. These awards recognize young investigators and residents performing pioneering clinical and basic science research. With a number of these awards sponsored by industry and selected by Section leaders, awards will be presented in cerebrovascular, stereotactic and functional, neurotrauma and critical care, pediatric neurosurgery, peripheral nerve and Tumor, inclusive of skull-base surgery. The CNS will also grant awards on topics covering diversity, equity and inclusion (DEI) and medical education.

As always, the poster presentations will also be offered in a digital format and featured in the Digital Poster Center in the CNS Xperience Lounge, as well as in the CNS Annual Meeting App. We look forward to seeing the fascinating and inspiring scientific content at the CNS meeting this Fall. 🍷



## Interactive Poster Presentation Session with Wine and Cheese Reception

Tuesday, September 12 | 6:00-7:30 pm



Mandy Binning, MD



Jason A. Ellis, MD



Edjah K. Nduom, MD



Garni Barkhoudarian, MD

## Weekend Symposia and Seminar Highlights

The CNS weekend symposia and seminars are a fantastic way to customize your CNS Annual Meeting experience, tailored to your interests and subspecialties. Symposia are held on Saturday and Sunday, the majority of which are four hours that can be bundled together or attended separately. Some symposia are designed to span the eight hour session, with included lunch. Luncheon seminars bridge the General Scientific Session and the afternoon Subspecialty Sessions, offering a diverse cross-section of topics. Dinner seminars take a deep dive into critically relevant topics, held at fine dining establishments in Washington, D.C.

In the spirit of the Annual Meeting theme — ***Imagine, Innovate and Inspire*** — these sessions allow our members to expand their knowledge and skills in advanced areas of neurosurgery, to understand how to advance and grow their practice in any environment, to learn the concepts necessary to be a neurosurgeon-innovator, as well as to interact with leaders of the field inspiring all from trainees to experienced clinicians. Topics include updates on common maladies such as benign and malignant brain tumors as well as management of stroke and neurotrauma patients. For the skull-base oriented surgeons, the ever-popular 3D Surgical Neuroanatomy is a fantastic option! We are excited to continue our relationship with the North American Skull-Base Society (NASBS), hosting a joint, all-day symposium, “Sellar and Suprasellar Tumors Outside the Box.” Hands-on experience is also available to practice your skills, such as in the “Cerebrovascular Neurosurgery for Residents” and the “Spinal Endoscopy” symposia.

Career advancement is a major focus during this meeting, with many offerings in the pre-meeting and luncheon sessions for neurosurgeons at any stage of their career. This begins at the medical student and resident level, with the popular “Swimming with the Sharks” session. The CNS Leadership Institute is offering a new symposium this year, “Leading the Pack,” for young neurosurgeons to learn basic leadership skills to apply in their department or hospital system. This symposium will integrate with the Leadership Institute programming throughout the following year. The breakfast session, “Mentorship:101” which is co-sponsored by the Women in Neurosurgery Section (WINS) and the American Society of Black Neurosurgeons (ASBN) alongside the CNS Diversity, Equity and Inclusivity committee, will help engage our students, trainees and



young neurosurgeons within the neurosurgical establishment.

Quality in the Neurosciences is rapidly becoming a primary focus for Neurosurgical departments and healthcare systems. Many programs have quality officers, that are often led by neurosurgeons. The field of quality improvement requires unique skills that are not often taught in more traditional sessions. Hence, the CNS Quality committee is leading the “Quality in Neurosurgery Practice,” a full-day symposium on Saturday, September 9, 2023. This comprehensive session is ideal for Quality officers and department leads alike. Additionally, quality improvement luncheon sessions will be offered, such as “Demystifying National Quality Reports.”

### Hopkins’ Symposium

The Hopkins’ Symposium is a day to honor one of the pioneers of endovascular neurosurgery, Dr. L. Nelson Hopkins, 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, program building and entrepreneurship. In addition, we will discuss cutting edge treatments for vascular disorders as well as common neurosurgical problems such as hydrocephalus. The day will be filled with vignettes, anecdotes and

discussions by Dr. Hopkins' fellows, friends and colleagues. A must for any budding or experienced cerebrovascular neurosurgeon!

### Practical Neurosurgery Symposium

Community practices of all varieties remain the predominant setting for care delivery in our field. Furthermore, the scope and influence of neurosurgery outside the halls of traditional academic medical centers is expanding rapidly, including engaging in clinical and basic science research, resident and fellowship training as well as regional and national advocacy. A collaboration with the Council of State Neurosurgical Societies (CSNS), the Practical Neurosurgery Symposium will be held on the morning of Sunday, September 10, 2023, following the CSNS satellite meeting. This Symposium features neurosurgical leaders who will share their unique insights and experience in the delivery of care in community-based settings. Symposium topics will include clinical practice and program design, leadership and advocacy development, social media utilization and marketing, as well as research program development. The Practical Neurosurgery Symposium thus explores all facets of being a neurosurgical practitioner, leader, investigator, and innovator.

### Transforming Neurosurgery through Technology: The Innovation Symposium

We aim to provide a unique service to our members by providing unparalleled access at a national meeting to premier innovators in the neurosurgical space, representing Neurosurgeon-entrepreneurs, engineers, industrial partners, and investment professionals without the usual limitations of ticketed CME sessions. This non-CME setting will allow direct discussion of unique approaches to innovation that can lead to return on investment for our members and industry partners. The symposium is to be arranged in two major parts:

- *"How I did it: Neurosurgical Innovation, from concept to the OR."* The goal of the morning session will be to discuss how to take an idea from conception through design, trials and implementation into surgical practice.
- *"Robot Wars"* During this afternoon session, our neurosurgeon innovators working on various robotic platforms will try to outdo each other by demonstrating innovative uses of the technology within each platform. During the lunch and in a reception immediately following the afternoon session, attendees will have an opportunity to network, helping to build our community of innovators in our field. This session is well-complemented with the luncheon seminar, "FDA Update" where FDA leadership will discuss updates in the process of drug and device approval.



### International Engagement

The CNS Annual Meeting has always had a strong focus on international engagement. We partner with numerous international neurosurgical organizations and work together to feature content relevant to these regions. This year, in conjunction with a number of partner organizations, we will be holding "The Meeting of the Americas" on Saturday, September 9, 2023. During this session, led by Dr. Peter Nakaji, neurosurgeons representing countries from North, Central and South America will discuss the great work and research being conducted as well as some of the inherent challenges for healthcare delivery. This will be followed by our International Reception at the Planet Word Museum. We will also have international content throughout the meeting, including the Luncheon Seminar, "Lessons Learned from the Military: Managing neurotrauma from the field to the future" and "Global Neurosurgery" during the Medical Student run session on Wednesday, September 13, 2023.

The CNS Annual Meeting has been designed to have many interesting topics that would appeal to the broadest of audiences. The above is a mere sampling of the robust pre-meeting symposia and over thirty luncheon seminars that will certainly appeal to many neurosurgeons, delineated in the Annual Meeting preliminary program. We hope this will help each member tailor their experience to fit with their goals and find the most value from this meeting. 📌



Edjah K. Nduom, MD

# Section and Case-Based Sessions

With the leadership of Drs. Chambless, as Annual meeting Chair, and Barkhoudarian, as Scientific Program Committee Chair, our sections have doubled down on interactive content and case-based presentations to provide something for everyone on every afternoon of the meeting. Here, we will highlight some of the standouts from our Section and Case-Based sessions for Washington, D.C

## Cerebrovascular

The cerebrovascular case-based sessions will include interactive discussions on the multimodal management of pediatric vascular lesions and evolving technologies for treatment of cerebrovascular lesions. On Monday afternoon, they will have a session on "Pushing the Envelope for Cerebrovascular Disease," while Tuesday will cover multimodal treatment of cerebrovascular disease, highlighting collaborations between open and endovascular approaches, while including radiosurgery and neurocritical care in the management of complicated patients.

## CSNS

The Council of State Neurological Societies (CSNS) will start Monday afternoon with a session on "Leadership In and Out of Neurosurgery." Faculty will cover what it takes to take on positions from Medical School administrative leadership through leading an entire health system. On Tuesday, the practical education continues, as "Contract Negotiation and Employment Opportunities" will provide expertise on the art of negotiating. This topic will help neurosurgeons understand their worth in the negotiation process – and get compensated accordingly.

## Pain

Following up on the success of integrating Pain content throughout the sessions of its associated sections in neurosurgery, like the functional, pediatric and spine sections, you will be able to find Pain content throughout the meeting in Washington, D.C. On Monday afternoon, there will be a dedicated session on "The Translational Science of Pain," where presenters will cover the clinical application of scientific discoveries for pain, such as closed loop stimulation for pain and the study of cerebral networks for pain modulation.



## Pediatrics

On Monday, our pediatric colleagues will discuss our evolving "Contemporary Management of Craniopharyngioma," covering the surgical perspective, new targeted therapeutics and the role of radiation. On Tuesday, all trainees interested in pediatric neurosurgery



should be sure to attend the session on “Fellowship Training in Pediatric Neurosurgery – Challenges and Opportunities.” Case-based discussions include emerging techniques in pediatric functional neurosurgery, a growing subspecialty, and a frank discussion on complications in pediatric neurosurgery.

### **Spine and Peripheral Nerve**

For case-based discussions, the Section on Disorders of the Spine and Peripheral Nerves have decided to focus their debates this year on cervical and lumbar spine. They’ll cover conversation starters such as ACDF vs arthroplasty and endoscopic approach vs tubular approach vs interventional percutaneous aspiration for a synovial cyst with radiculopathy. In their Monday afternoon session, they’ll discuss the latest advances in spine surgery, while Tuesday will go over practice optimization for the spine surgeon, including topics like social media and the socioeconomic challenges facing spine surgeons.

### **Stereotactic and Functional**


A session on non-invasive functional neurosurgery will cover incisionless functional neurosurgery, like when to use stereotactic radiosurgery or focused ultrasound techniques, while the “Innovation and Entrepreneurship in Neurosurgery” session will complement Saturday’s Innovation Symposium by providing a roadmap on how to bring new technologies to market. On Monday afternoon, the

“Functional Neurosurgery: Psychiatric Neurosurgery and Cognitive Neuroscience” session will discuss our progress in treating psychiatric disorders with surgery, while “Functional Neuro-Oncology – Approaches to Cancer and Cancer Pain” will feature a multidisciplinary panel, attractive to any neurosurgeons interested in pain, functional neurosurgery, and/or tumor treatment.

### **Trauma**

The Trauma Section will spark debate, covering “Neurotrauma as a Team Sport: Case-based Discussion in Complex Neurotrauma Patients” and “Trial by Fire: The Cases From Which I Learned the Most.” On Monday and Tuesday’s afternoon sessions, the named Neurotrauma Miller Lecture and Tate Lecture will be featured alongside content on autoregulation in severe TBI on Monday, and spinal cord perfusion for spinal cord injury on Tuesday.

### **Tumor**

The Tumor section will keep the conversations going in D.C. with sessions on “Novel Perspectives in Low Grade Glioma Management” and “New Frontiers for Recurrent Neuro-Endocrine Tumors.” On Monday, they will cover “High Grade Glioma Surgery: Challenges and New Frontiers”, while Tuesday will focus on one of our core meeting themes with “Innovation Driven by Neurosurgeons in Glioma.” 



Khoi D. Than, MD

# Dinner Symposia at the CNS Annual Meeting



and postoperative stroke from distal emboli. This dinner seminar will interest all faculty, trainees, students, and advanced practice providers caring for neurosurgical patients with cerebrovascular pathologies. This program will be held at Joe's Seafood, Prime Steak & Stone Crab. The legendary Joe's Stone Crab first opened in Miami Beach in 1913 when Joseph Weiss, the "Joe" of Joe's Stone Crab, and his wife Jennie set up seven or eight tables on the front porch of the house they owned. One hundred years later, Joe's has become one of the most beloved and widely recognized restaurants in the world, famous for its stone crab, signature sides and Key lime pie.

The second dinner seminar will have a more socioeconomic slant. On Monday, September 11, 2023, Dr. Anthony Asher of Carolina Neurosurgery & Spine Associates and Dr. Joseph Cheng of the University of Cincinnati will co-moderate a dinner seminar on "The Importance of Negotiating as a Neurosurgeon." Also on the faculty are Drs. Maya Babu of Florida, Fredric Meyer of the Mayo Clinic, Troy Payner of Goodman Campbell, and Edie Zusman of Sutter Health in California. This seminar builds upon last year's well-attended and — reviewed dinner symposium on negotiation, compensation, and reimbursement. Attendees will learn essential strategies for pursuing negotiation, both during a job search and once in the throes of practicing neurosurgery. Topics may include negotiating compensation, negotiating for other resources (i.e., personnel, capital equipment, etc.), and steps to pursue if the negotiation is unsuccessful. There are speakers from academic, privademic, and private groups, so all facets important in the art of negotiation will be addressed. This seminar will be beneficial for neurosurgeons of all ages and experience spectrums. This event will be held at Morton's The Steakhouse. The patio at the Connecticut Avenue location overlooks Washington's infamous K Street Corridor, while the dining room caters to D.C.'s powerful elite. Join your colleagues for an engaging program, while indulging in Morton's legendary USDA prime-aged steak, fresh seafood, hand-picked produce, delicious appetizers and decadent desserts.

Transportation will be provided from the CNS Headquarters Hotel, the Marriott Marquis, to each dinner symposium venue. Please consider registering for one or both seminars to make the most out of your trip to D.C. Please note that the tickets to the Dinner Symposia must be purchased in advance, and they often sell out quickly. Therefore, early bird registration is the best time to book these tickets. You will not be disappointed! 🍷

There is never a shortage of educational opportunities at the Congress of Neurological Surgeons (CNS) Annual Meeting. From the pre-course symposia on Saturday and Sunday to the general scientific sessions on Sunday through Wednesday—not to mention a variety of interactive breakouts and section-specific sessions—the CNS Annual Meeting is the best resource for live learning in all of neurosurgery. The dinner symposia at the 2023 CNS Annual Meeting in Washington, D.C., will provide an additional avenue for attendees to pursue education and camaraderie in what is already a jam-packed week of the latest neurosurgical science and knowledge. For this year, two exciting dinner seminars are currently on the schedule.

On Saturday, September 9, 2023, the first dinner seminar is "Managing and Preventing Intraoperative Vascular Complications." This is a new offering! Co-moderated by Dr. Nima Etminan of the University of Mannheim and Dr. Christopher Ogilvy of Beth Israel Deaconess Medical Center, this session will consist of a dynamic faculty discussing some of the most dreaded complications encountered in cerebrovascular neurosurgery. Topics of interest for open vascular surgeons might include intraoperative aneurysm rupture, intraoperative AVM rupture, and postoperative stroke. On the endovascular side, complications discussed may include intraoperative aneurysm rupture, intraoperative vessel rupture during angioplasty,



Tiffany R. Hodges, MD



Edjah K. Nduom, MD



Maryam Rahman, MD

# Diversity, Equity, and Inclusion at the CNS Annual Meeting



The CNS DEI committee has been committed to working with several committees to ensure a diverse speaker list for courses, webinars, and CNS-sponsored content for the Annual Meeting. Such diversity includes gender, ethnicity, programs, geography, and career stage. Our goal is to ensure that we as organization are a reflection of the diversity within our field, and continue to improve upon that. We as a committee review all courses and provide feedback and recommendations to the planning groups on diversity of invited faculty.

Moreover, the 2023 CNS Annual Meeting will hold a cosponsored course with CNS DEI, WINS, and ASBN titled “Mentoring 101.” This free course will feature a diverse faculty with different viewpoints to explore: finding and being a good mentor, the importance of sponsorship, identifying barriers to successful mentorship of underrepresented groups and those without a home program, and models of success. In addition, the CNS Annual Meeting will hold its inaugural Healthcare Disparities Session, featuring new research and discussions addressing health disparities in neurosurgery. Importantly during this session, DEI Abstract, Innovation Pilot, Scholar, and Impact Awards will be recognized and awarded through the CNS Foundation. Please be sure to check the Annual Meeting program for more information

regarding additional WINS and ASBN programming scheduled throughout the meeting.

Our ultimate goal is to continue to inspire and mentor the next generation of neurosurgeons with the 3rd annual Pathway to Neurosurgery event held at the 2023 CNS Annual Meeting in Washington, D.C. Now led by the CNS Foundation, Pathway to Neurosurgery welcomes local high school students from backgrounds underrepresented in STEM fields to the CNS Annual Meeting. A day-long symposium, designed exclusively for them, will take place near the general sessions, as the students spend the day surrounded by neurosurgeons, and get an introduction to considering a medical career, or possibly even a career in neurosurgery. We excitedly welcome volunteers who can stop by, meet the students, and participate in mentorship. Please be sure to look out for volunteer sign-up through the CNS Foundation website: <https://foundation.cns.org/Default.aspx>

CNS DEI is actively working to impart necessary changes to improve diversity within our programming and within neurosurgery. We appreciate our members who have volunteered time and effort to continue our mission. If you are interested in joining this effort, we would be thrilled to have you on board. We look forward to seeing all of you at the Annual Meeting! 🍷



Bennett Levy



Deja Rush



Damirez Fossett, MD



Martina Stippler, MD

# Medical Student Programming

Participation in academic conferences has been a longstanding tradition across many industries and professions. Numerous advantages of these events include the ability to network, present ideas and works to a group of peers, and expand one's knowledge base. Conferences offer some of the best spaces to promote creativity and problem-solving. As such, regularly bringing together a wide array of great minds for enriching meetings and sessions is one of the largest contributing factors to the advancement of any field. Neurosurgery is no exception to this fact. The Congress of Neurological Surgeons (CNS) Annual Meeting has always been an exciting opportunity for young neurosurgeons to congregate and collaborate. Keeping in mind the "Imagine. Innovate. Inspire." theme of this year's conference, the CNS has developed a diverse set of programs that feature original discussions and activities. One example is the introduction of designated exercises for one very important audience: medical students. As the next generation of neurosurgeons, it is critical that we be engaged and serve as active participants in all neurosurgical conferences. Therefore, the CNS has committed to investing in the growth and development of medical students to ensure that the future of our field remains bright.

As medical students, we are excited and grateful for the opportunity to contribute to programming at the 2023 CNS Annual Meeting in Washington, D.C. This is the first time the CNS has incorporated a medical student-centered and medical student-



planned program in its annual meeting. This novel approach, spearheaded by Drs. Martina Stippler (CNS Secretary), Damirez Fossett (Neurosurgery Chair, Howard University), Lola Chambless (Annual Program Chair), Garni Barkhoudarian (Scientific Program Chair), and Edjah Nduom (Vice Scientific Program Chair) has engaged students interested in neurosurgery, and has made us accountable for content creation.

Starting with a call for session proposals, the CNS tasked medical students nationwide to build our own curriculum for the upcoming meeting. The objectives for the sessions were clear yet broad: facilitate knowledge acquisition, explore barriers faced by applicants from diverse

backgrounds, provide content relevant for any stage of training and incorporate a balanced mixture of presentation styles. With these goals in mind, medical students were given the freedom to cultivate our own programming based on what we truly wanted and needed. We delivered expeditiously and abundantly.

Nearly 50 unique and relevant submissions from medical schools across the United States and Canada were received for the medical student sessions. The topics were fascinating and germane for students hoping to pursue careers in neurosurgery, either as clinicians or researchers. Content included understanding the concept of data science, maintenance of mental health and

wellness, diversity, equity and inclusion, how to become involved in research, global neurosurgery initiatives, mentorship and leadership, and navigating the challenges of the residency match. Other content suggestions included topics that ranged from neuromodulation, to best practices, and skull base anatomy.

It has been stated that medical school curricula are changing due to internal and external pressures such as the competitive nature of matching into subspecialties, and increased awareness of outcomes disparities in healthcare. As the medical student population becomes more diverse, schools must be mindful and adapt to the evolving needs and desires of their student bodies. Similarly, the field of neurosurgery continues to become more diverse, and must address the challenges posed by this new reality. To that extent, some of the suggested topics for the CNS medical student sessions address salient issues such as matching

into neurosurgery without a home program, and applying into neurosurgery as an underrepresented minority.

Understanding the research that has been done regarding the value of academic experiences such as conferences, and wanting to construct an agenda that aligns with the aims previously outlined, each submission underwent a fair and rigorous review process. The strategy for evaluation was centered on choosing submissions that were the most pertinent, feasible, and possessed quality teaching methods. Narrowing down the nearly 50 submissions to a small number of sessions was extremely challenging due to the sheer wealth of excellent ideas and topics. Ultimately, wanting to maintain a balance between informational and applied learning forums, two tracks were generated with these respective focal points in mind. Two simultaneous rooms will be run based on each track and offer a total of four to five 20-minute sessions. This will be a truly

enriching experience and the hope is that the medical students that attend will leave the CNS Annual Meeting feeling inspired to both imagine and innovate the new frontiers of neurosurgery.

The content curated for the medical student sessions at the 2023 Annual Meeting will comprise information that students are not traditionally taught in our medical school curricula. Pre-clinical years in medical school are generally focused on learning the anatomy, physiology and pathology of the various organ systems. The clinical curriculum is typically focused on mastering foundational skills in non-neurosurgical specialties. Because of the pandemic, these fundamental elements of medical student training were done virtually. This online experience, though necessary, further magnified the lack of representation of neurosurgery in the medical school curriculum. Attending the CNS Annual Meeting may therefore be the first and only exposure medical students have to the nuances of neurosurgery.

Attendance at neurosurgical conferences can encourage selection of the specialty by medical students when the content is relevant to our education. At this point in our academic journey, we are focused on the immediate next steps of our training which will hopefully culminate in matching into a neurosurgical residency program. The CNS has fostered a medical student friendly environment by making the annual meeting free of charge to medical students who are members of the CNS. Furthermore, they have entrusted students to cultivate content, fostering the potential for deeper learning through meaningful engagement. It is the hope of CNS leadership that this session will spearhead future efforts to engage medical students at this early stage of our careers. The impact will surely engender a passion to learn more about, and contribute to the growth and development of our wonderful discipline of neurological surgery. ■





Peter Nakaji, MD

# International Highlights at the CNS Annual Meeting and our New Meeting of the Americas




The CNS Annual Meeting in Washington, D.C. this September will again feature a strong international component, including delegates representing ongoing partnerships with the Japanese Congress of Neurological Surgeons (JCNS), the Neurological Society of India (NSI), and the Brazilian society, Sociedade Brasileira de Neurocirurgia (SBN).

An additional highlight this year is the Meeting of the Americas, a full-day symposium on Saturday before the main meeting, which will focus on the neurosurgical contributions of nations of the North and South American continents, including Mexico and Central America, and especially the Spanish-speaking community, as well as Canada. The Meeting of the Americas will include sessions in English, Spanish, and Brazilian Portuguese, with simultaneous translation into English available. The format will feature short presentations covering a wide range of neurosurgical topics.

The main meeting will feature many international participants including Presidents of the Japanese, Indian, and Brazilian societies, as well as many other experts from around the globe.

This year's CNS International Reception will be held at the Planet Word Museum from 5-7 PM, also on Saturday, September 9, 2023.

Come see all of your international colleagues and friends, as you explore the world's first voice-activated museum. Planet Word is an immersive language experience located at the historic Franklin School in Washington, D.C. Ideal for all ages, and our interactive galleries and exhibits bring words and language to life in all sorts of fun ways. All registered CNS Foundation donors and awardees, residents, international attendees, and their registered guests are invited to attend. Last year's reception had tremendous energy – come be a part of it. 

## CNS International Reception

**Saturday, September 9, 2023**

**5-7 PM**

**Planet Word Museum**

All international attendees and their registered guests are welcome.



Theresa Williamson, MD

# Take a Break, See the Sights, and Enjoy Friendly Competition

The Congress of Neurological Surgeons and the CNS Wellness Committee are dedicated to fostering community and health amongst neurosurgeons. Recognizing that we have spent years missing togetherness as teams in neurosurgery, the CNS designed a virtual 5K at their upcoming annual meeting. Race design is a collaboration from CNS Leadership, President Dr. Elad Levy, CNS Wellness Committee lead by Chair, Dr. Theresa Williamson and the Annual Meeting Leadership Team, Drs. Lola B. Chambless, Garni Barkhourdarian, and Edjah K. Nduom. The team is partnering with leading running brands to make it a spectacular event.



## What is a virtual 5K?

Many may wonder, what is a virtual 5K and why would I want to participate? Virtual 5k's as you might imagine became popular during the COVID-19 pandemic. It was a time when it was too difficult to run in a large pack and so many took to apps like Strava to create a route, run on their own schedules, and still compete. This did not eliminate community however. Virtual 5ks are an opportunity to run with smaller teams at your own pace. For example, you can run or walk while catching up with friends or family in D.C., with friends from your Joint Section, other alumni from your residency program, your practice or department. The best part is that you don't have to drag yourself to the starting line at 5am. If you're a 5am person, great! Run at 5 am. If not, go ahead and run during a session break or in the evening.

## How does it work?

Virtual 5k's work using a combination of technology and the honor system. The CNS will use an app called Strava. The CNS will provide a planned race route circling the famous monuments in D.C. The CNS is mindful that our meeting and race will take place in our nation's Capital over 9/11 and therefore has planned a commemorative route surrounding the National Monuments and planned a philanthropic mission of the race with donations going to Wounded Warriors of D.C. Run the race any time during the meeting and record your time at our registration site. You can register as an individual or a team. The leaderboard will be displayed in the convention center and prizes will go to winners in many standard and creative categories.

## What are neurosurgeons saying about it?

As you can imagine, competition and talk are brewing surrounding the CNS 5k. Hear from President Elad Levy, Vice-Scientific Program Chair, and CNS Wellness Committee Members linked below. Tell us how you're training @CNS\_Update

<https://twitter.com/EKNduom/status/1662525705115119616>

[https://twitter.com/CNS\\_Update/status/1659289615340040193](https://twitter.com/CNS_Update/status/1659289615340040193)

<https://twitter.com/babybrainmd>

## Where can I register?

Online registration is available at the link below and will also be linked to the Annual Meeting Registration. Please come join us and get ready to see your name on the leaderboard! 🏆

<https://zippy-reg.com/register/cns5k>



Lola B. Chambless, MD

# The CNS Xperience Lounge Offers a Space to Relax, Learn, and Connect

Centrally located within the Exhibit Hall sits the CNS Xperience Lounge, open during all Exhibit Hall hours and offering a unique venue for networking and education. Two stages are arranged to offer live programming throughout the meeting. Between them you will find the CNS Baristas hard at work at our Espresso Bar providing complementary caffeine boosts to those looking for a place to meet with a colleague, continue a conversation with an industry representative, or just relax and charge a phone.

Live Surgery has always been a marquis event at the CNS Annual Meeting, and 2023 will be no different with four unique operations broadcast live to our audience. Expert surgeons will describe their movements in real time as they perform these operations from their own centers around the country, and moderators in the meeting hall will answer questions and facilitate discussion. This is your chance to be exposed to new technology and return to your practice inspired to try what you have seen on the Live Surgery stage.

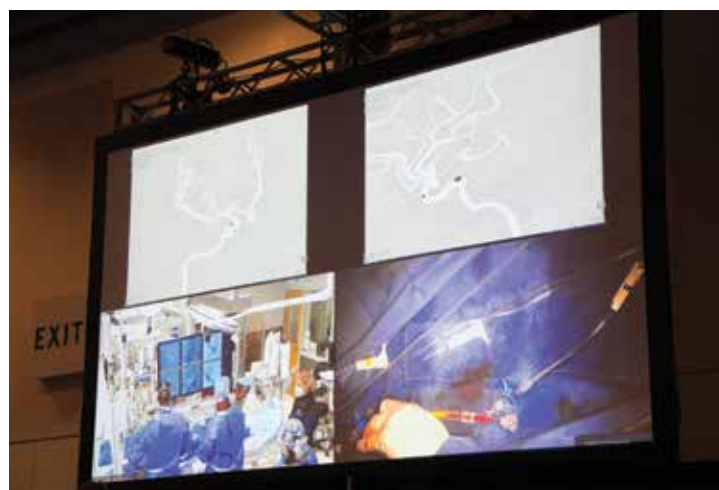
The Xperience Lounge is also a place to focus on creative endeavors and to take a more holistic view of our experiences as neurosurgeons. This year, The Art of Neurosurgery will be the theme of our second stage live offerings. On Monday, premier neurosurgical medical illustrators will provide a showcase of the technology revolutionizing their field and provide guidance to those looking

to work with illustrators in their own research or practice. They will even demonstrate creation of an illustration in real time, mirroring the work on the Live Surgery stage. On Tuesday, selected neurosurgeon artists will present their own visual art and discuss how the artistic process impacts them as surgeons. These can't-miss sessions will help you admire the beauty of the central nervous system in a new light. If you are interested in submitting your artwork for consideration, please visit [www.cns.org/2023](http://www.cns.org/2023).

Finally, don't forget that the Xperience Lounge is the place to connect with our Honored Guests, attend the book signing by Safi Bahcall, and meet with the leaders of the **Neurosurgery Publications** office. Plan to bring your friends, grab a Latte, and recharge before the next scientific sessions. 📖



*"The Art of Neurosurgery stage presentations in the CNS Xperience Lounge will feature premier neurosurgical medical illustrators highlighting the technology revolutionizing their field."*



## 2023 CNS Xperience Lounge Happenings

	MONDAY, 9/11	TUESDAY, 9/12	WEDNESDAY, 9/13
<b>DAILY EXHIBIT HALL BREAKS</b>			
	9:40 -10:40 am 1:50 - 2:50 pm	9:40 -10:40 am 1:50 - 2:50 pm	9:40 -10:40 am
<b>MEET AND GREETs</b>			
9:40-10:10 am	<b>Dr. L. Nelson "Nick" Hopkins</b>	<b>Dr. Douglas Kondziolka</b>	
<b>BOOK SIGNINGS</b>			
12:15-12:45 pm	<b>Safi Bahcall</b>		
<b>LIVE SURGERY PRESENTATION STAGE</b>			
10:00 - 10:30 am	<b>Complex bifurcation aneurysm treated with the Woven EndoBridge (WEB) Device</b>  Operating Surgeon: Adnan Siddiqui, MD Moderator: Elad I. Levy, MD <i>Sponsored by: Microvention</i>	<b>Case: ICA aneurysm treatment with a novel surface modified flow diverter - FRED X</b>  Operating Surgeon: Jan-Karl Burkhardt Moderator: Visish Srinivasan <i>Sponsored by: Microvention</i>	<b>Topic TBD</b>  Operating Surgeon: Moderator: <i>Sponsored by: Longeviti™</i>
2:05 - 2:35 pm	<b>Topic TBD</b>  Operating Surgeon: Moderator: <i>Sponsored by: Synaptive</i>	<b>Topic TBD</b>  Operating Surgeon: Moderator: <i>Sponsored by: Integra Life Sciences</i>	
<b>PRESENTATION STAGE 2</b>			
9:40-10:40 am	<b>Innovation in Medical Illustration</b> Josh Emerson, Peter Lawrence	<b>The Art of Neurosurgery</b>	
1:50-2:50 pm	<b>Top 3 Innovator of the Year Finalist Presentations</b>	<b>Device Innovation Showcase</b>	
<b>TABLETOP DEMONSTRATION NEAR PRESENTATION STAGE 2</b>			
Various times during the day	<b>Live Demonstration of Real-time Medical Illustration</b> Josh Emerson, Peter Lawrence		
<b>LATTE &amp; CAPPUCINO BAR, DIGITAL POSTER BROWSING</b>			
	8:15 am-4:00 pm	8:15 am-3:00 pm	8:15 am-1:30 pm
<b>BEER AND WINE SOCIAL</b>			
	1:50-2:50 pm		



Ashok R. Asthagiri, MD



Clemens M. Schirmer, MD



Khoi D. Than, MD



Laura A. Snyder, MD

# The CNS Exhibit Hall: The Hub for Innovation

The Congress of Neurological Surgeons Annual Meeting is the place to be for those who want to Imagine, Innovate, and Inspire. It's where groundbreaking scientific ideas are exchanged, neurosurgical professionals network and learn from each other, and cutting-edge technology is showcased in one integrated and multipurpose venue.

Gone are the days of the exhibit hall being just a sales and trade show. The CNS has transformed it into an experience that offers so much more. The CNS Xperience Lounge is the hub where you can grab a coffee, relax on comfortable seating, and connect with colleagues. It's also where you can meet with staff from the Congress of Neurological Surgeons and **Neurosurgery Publications** and learn about their products and services that help serve the neurosurgical community.

But that's not all. The CNS Annual Meeting offers a rare opportunity to witness live surgeries in a large amphitheater as part of the CNS Xperience lounge. This platform was introduced in 2017 and has inspired neurosurgical professionals to imagine how cutting-edge technology and strategies can be implemented to improve patient outcomes. This year, the pace of innovation in neurosurgery brings novel live surgery showcases to us more than ever.



As we move into the era of artificial intelligence, it's more important than ever for neurosurgeons and the industry to collaborate to develop tools that can genuinely transform lives and clinical practice. That's why the CNS has created innovative ways to encourage partnerships and put them on display within the exhibit hall space. The innovation showcase provides a platform for industry partners and their clinical ambassadors to spotlight technological breakthroughs. In addition, the Innovator of the Year presentations will take place in the Experience Lounge, or you can join us for a coffee.

The exhibit hall teems with energy and offers hands-on experience with neurosurgical instruments and equipment. And to help participants synthesize this information and witness smaller-scale demonstrations relevant to specific neurosurgical subspecialties, the CNS is introducing a new service called "Crossroads of Innovation." This free service will help ensure that industry presenters and medical attendees can coordinate in-booth presentations according to their schedules. Sign up for these to participate in a focused experience through the exhibit hall.

The 2023 CNS Annual Meeting promises to be a thought-provoking, motivational, and exciting experience. With every step you take in the exhibit hall, an opportunity awaits you. So, don't miss this fantastic opportunity to Imagine, Innovate, and Inspire! 🍷





CNS

# Thank You

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

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Douglas Kondziolka,  
MD, MSc



Brandon J. Fiedor, MA

# Neurosurgery Publications at the 2023 CNS Annual Meeting

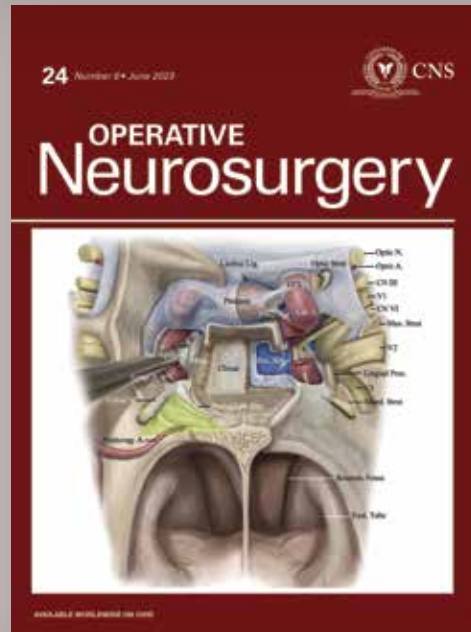
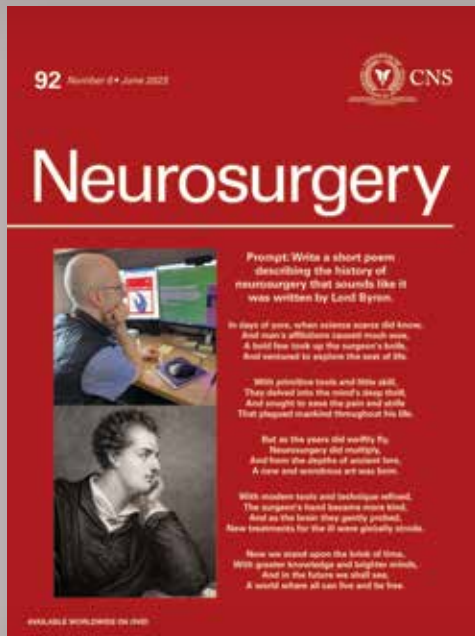
The 2023 CNS Annual Meeting coincides with the conclusion of my initial year as Editor-in-Chief of **Neurosurgery Publications** and I, along with the Editorial Office staff, could not be more excited to share what we've accomplished in that time with CNS members and attendees at the 2023 CNS Annual Meeting in Washington, D.C., September 9-13.

As many of you will have noticed, there have been major changes to **Neurosurgery Publications** since I wrote to you in these pages last year. In mid-December 2022 the entire suite received a redesign which I hope you have found compelling. Given *Neurosurgery's* unofficial title as the "red journal," we chose red as the foundational color for the redesign of each title. The font was updated for a fresh and clean appearance to ease navigation of issue content particularly in the print table of contents. Our Instructions for Authors were updated with revised article types and expanded word limits across all three titles and improved for clarity and ease of navigation as well. *Neurosurgery Open*, the official open access journal of CNS, became *Neurosurgery Practice*, publishing content representing the spectrum of neurosurgical practice with a clear and useful message for readers important for patient care. The journal remains online-only and fully open access with low and competitive article processing charges and generous discounts on those charges for CNS members. Regular readers of the journals will have also noticed new features including the Editors Messages which are dedicated spaces for myself and Associate Editors to share thoughts and opinions on journal priorities and initiatives and timely topics relevant to our practice. Members of the Editorial Office staff will be available in the CNS Xperience Lounge to answer all of your specific journal related questions on topics big and small, and share the latest news on journal features and calls for papers. We encourage all attendees to stop by while they are in the Exhibit Hall and look forward to celebrating with you all in Washington, D.C.!

## CNS Xperience Lounge Highlights


- Gratis copies of *Neurosurgery* and *Operative Neurosurgery* will be available while supplies last.
- Gratis *Neurosurgery* branded lanyards will be available while supplies last.
- Digital features including *Neurosurgery Speaks!*, *Operative Neurosurgery Speaks!*, CNS Journal Club Podcast, and *Neurosurgery On The Go* Video Abstracts will be on display.





With permission from Juan Carlos Fernandez-Miranda, MD, and The Neurosurgical Atlas by Aaron Cohen-Gadol, MD

## Session Highlights

- **Monday, September 11: Neurosurgery Publications** Editor-in-Chief, Dr. Douglas Kondziolka, will provide the annual Editor-in-Chief Update during the General Scientific Session.
- **Tuesday, September 12: Neurosurgery Publications** Editor-in-Chief and 2023 Honored Guest, Dr. Douglas Kondziolka, will give the Honored Guest Presentation, "The Nature of Things", during the General Scientific Session.
- **Tuesday, September 12:** Dr. Kondziolka will be available for a "meet and greet" during the morning beverage break.
- **Tuesday, September 12:** Dr. Kondziolka will host the Honored Guest Luncheon Seminar "Learning and Personal Growth through Organized Neurosurgery: How to Make a Difference".
- **Wednesday, September 13: Neurosurgery Publications** Editor-in-Chief Dr. Kondziolka, together with Associate Editors Dr. Abosch, Dr. Lawton, and Dr. Mummaneni, will host the Luncheon Seminar, "**Neurosurgery Publications**: 'Getting Published'". This seminar will provide an overview of some of the issues that residents and early career scholars may encounter in getting published. Faculty will include Editorial Board representatives. Don't miss this unique opportunity to engage with **Neurosurgery Publications** leadership!
- **The Seventh Annual Neurosurgery Paper of the Year Awards** will honor the most impactful papers published in *Neurosurgery* from June 2022 to May 2023. Awards will be given for Top Paper of the Year as well as in the following categories: Cerebrovascular, Neurotrauma and Critical Care, Pain, Pediatrics, Socioeconomics, Health Policy, and Law, Spine, Peripheral Nerve, Stereotactic and Functional, Tumor, and new for 2023, Global Neurosurgery. Join us as we celebrate the exploration and expansion of scientific knowledge by attending a Paper of the Year session! 

# INSIDE THE CNS



## Washington Committee Report



Katie O. Orrico, Esq

### Neurosurgery Endorses Legislation to Improve Medicare Payment System

On April 3, 2023, bipartisan legislation to improve the Medicare physician payment system was introduced. Sponsored by **Raul Ruiz**, MD, (D-Calif.); **Larry Bucshon**, MD, (R-Ind.); **Ami Bera**, MD, (D-Calif.) and **Mariannette Miller-Meeks**, MD, (R-Iowa), the Strengthening Medicare for Patients and Providers Act ([H.R. 2474](#)) would put in place an annual physician payment update starting in 2024 based on the Medicare economic index (MEI). The MEI reflects increases in physician practice costs and would reverse a downward spiral of Medicare physician payments, which have [failed to keep pace](#) with inflation, jeopardizing the viability of physician practices and patients' timely access to care.

Upon introduction, the CNS and AANS [endorsed](#) the legislation. In a press release, **Russell R. Lonser**, MD, chair of the Washington Committee, stated, "Medicare physician payments have failed to keep pace with inflation, jeopardizing the viability of physician practices and patients' timely

access to care. While we are grateful that Congress has stepped in to mitigate steep Medicare cuts over the past few years, comprehensive reform of the physician payment system must be a priority for Congress this year.

Several media outlets picked up the press release, including [Becker's Spine](#) and [MedPage Today](#), which reiterated Dr. Lonser's statement that neurosurgery agrees "with the Medicare trustees that access to Medicare-participating physicians will become a significant issue in the long term unless Congress takes steps to fix the payment system today."

The CNS and the AANS also joined several coalition letters endorsing the bill, including the [American Medical Association](#), [Alliance of Specialty Medicine](#) and a [coalition](#) of more than one million physician and allied health professional groups.

### CNS Endorses Safe Step Act

Once again, the CNS and AANS endorsed the Safe Step Act ([S. 652/H.R. 2630](#)). Health insurers often use step therapy — also called "fail first" — to control costs.

Step therapy occurs when insurers require patients to fail the first step of treatment — typically a generic or low-cost drug — before moving on to the second step. This legislation — sponsored by Sens. **Lisa Murkowski** (R-Alaska) and **Maggie Hassan** (D-N.H.) in the Senate and Reps. **Brad Wenstrup**, DPM, (R-Ohio) and **Raul Ruiz**, MD, (D-Calif) in the House — would require health plans to establish specific exceptions to medication step-therapy protocols.

Click [here](#) to read the House coalition letter and [here](#) and [here](#) for letters to the Senate bill sponsors.

### Alliance Comments on Health Care Workforce Shortages

On March 20, the CNS and AANS joined the Alliance of Specialty Medicine in responding to the Senate Committee on Health, Education, Labor and Pensions request for information about health care workforce shortages. The Association of American Medical Colleges [estimates](#) that the U.S. will face a shortage of specialty care physicians between 21,000 and 77,100

by 2034. The coalition urged Congress to take additional steps now to ensure there are enough practitioners to support an aging population, outlining several recommendations to address the shortages, including:

- Authorizing a loan repayment program to reduce specialty physician shortages;
- Reauthorizing the Children's Hospital Graduate Medical Education Payment Program; and
- Increasing the number of Medicare-funded residency training slots.

Click [here](#) to read the Alliance of Specialty Medicine letter.

### Neurosurgery Supports Bill to Fund Brain Aneurysm Research

The CNS and AANS have endorsed Ellie's Law ([S. 895/H.R. 902](#)), legislation that would authorize \$10 million in funding for the National Institute of Neurological Disorders and Stroke to further knowledge and understanding of brain aneurysms and how to manage and treat this condition effectively. The legislation is sponsored by Sen. **Richard Blumenthal** (D-Conn.) and Rep. **Yvette Clarke** (D-N.Y.). In letters to the bill's sponsors, the neurosurgical groups noted that an estimated 6.6 million people in the U.S. have an unruptured brain aneurysm, and an estimated 30,000 people suffer a rupture, 50 percent of which are fatal. Of those who survive, about 66 percent suffer some permanent neurological deficit. Notwithstanding its widespread prevalence, federal funding for brain aneurysm research is almost non-existent.

Click [here](#) to read the Senate letter and here for the House letter.

### CNS Calls for Increased Funding for NIH

The CNS and AANS joined the Ad Hoc Group for Medical Research Funding and more than 370 organizations [requesting](#) increased funding for the National Institutes of Health (NIH) in Fiscal Year 2024. The \$50.924 billion request is a nearly 5% increase over current funding levels and would allow continued vital investment in the NIH to improve our nation's health.

### Neurosurgery Asks Congress to Fund Pediatric Device Consortium

On April 4, the CNS and AANS signed a letter urging Congressional appropriators to fund the Food and Drug Administration's Pediatric Device Consortia (PDC) Grant Program. Medical devices for children often lag five to ten years behind those for adults. To address the need for improved pediatric medical devices, Congress created the PDC program and has renewed it since its inception in 2007. Funding for the PDC program is necessary to continue improving device availability for children.

Click [here](#) to read the letter.

### CNS Requests Funding for Gun Violence Prevention Research

On April 19, the CNS, AANS, the Section on Neurotrauma & Critical Care, the Section on Pediatric Neurological Surgery and the American Society of Pediatric Neurosurgeons joined more than 400 organizations in a [letter](#) to Congressional appropriators urging them to allocate \$61 million to conduct public health research into forearm morbidity and mortality prevention. These investments are focused on applying a public health approach to increase gun safety and reduce firearm-related injuries and deaths.

### CNS Urges Congress to Fund MISSION ZERO Program

On March 24, the CNS and AANS joined the Trauma Coalition in sending a [letter](#) to the House Committee on Appropriations Labor, Health and Human Services, Education Subcommittee asking for \$11.5 million to fund the Military and Civilian Partnership for the Trauma Readiness Grant (MISSION ZERO) Program for Fiscal Year 2024. The MISSION ZERO program was signed into law in 2019 as a part of the [Pandemic and All-Hazards Preparedness and Advancing Innovation Act](#) provides funding for civilian trauma centers to train and incorporate military trauma care providers and teams into care centers. The CNS and AANS also submitted a [statement](#) to the subcommittee supporting funding for this program.

### Neurosurgery Endorses Good Samaritan Health Professionals Act

On April 25, Reps. **Raul Ruiz**, MD, (D-Calif.) and **Larry Bucshon**, MD, (R-Ind.) introduced the [H.R. 2819](#), the Good Samaritan Health Professionals Act. This legislation offers health professionals providing voluntary care in response to a federally declared disaster with medical liability protections. While federal and state laws are intended to protect volunteer health professionals from unwarranted lawsuits, many inconsistencies may leave physicians vulnerable.

Click [here](#) to read the CNS and AANS letter and [here](#) to read the Health Coalition on Liability and Access letter.

### CNS Urges Congress to Reauthorize Pandemic Preparedness Programs

On March 21, the CNS and AANS submitted [comments](#) to the House Committee on Energy and Commerce supporting the reauthorization of the Pandemic and All-Hazards Preparedness Act (PAHPA). Initially passed in 2006, PAHPA has continued to improve the nation's public and medical preparedness and response capabilities during public health emergencies and disasters. Reauthorizing these essential health programs will continue to foster opportunities for these ongoing successful public-private collaborations. The CNS and AANS also submitted similar [comments](#) to the Senate Committee on Health, Education, Labor and Pensions. PAHPA programs will expire on Sept. 30.

One specific recommendation from the neurosurgery groups is for Congress to include the Good Samaritan Health Professionals Act in the PAHPA reauthorization legislation, providing liability protections for health care professionals who volunteer their services during a federally declared disaster or emergency. The CNS and AANS also joined the [Alliance of Specialty Medicine](#) and [Health Coalition on Liability and Access](#) in making this same recommendation.

## Neurosurgery Comments on FTC Proposal to Ban Non-compete Agreements

On April 19, the CNS and AANS sent a letter to the Federal Trade Commission (FTC) supporting, in part, its [proposed ban](#) on non-compete clauses. The letter agreed with the FTC that non-competes can be anti-competitive and unduly restrict physicians' ability to choose their employer or practice setting, stifling competition and impeding patient access to the physician of their choice. Nevertheless, the neurosurgical groups did not support a blanket prohibition on non-competes, which fails to recognize reasonable contracts to protect certain business owners' legitimate competitive interests, notably smaller independent neurosurgical practices.

Click [here](#) to read the letter.

## Washington Committee Leads Amicus Brief in Surprise Medical Billing Case

Under the [No Surprises Act](#) (NSA), physicians and insurers can use an independent dispute resolution process to determine the payment amount for services. The process was intended to keep patients out of the middle of these billing disputes. Unfortunately, the [final rule](#) implementing the law unfairly favors insurers when settling out-of-network payment disputes. Last year, the CNS and AANS spearheaded an [amicus brief](#) supporting a [lawsuit](#) filed in Texas challenging these rules. Earlier this year, the Texas [court ruled](#) in favor of physicians, and the Biden Administration has notified the court it intends to appeal this decision.

Another lawsuit challenging the NSA is also making its way through the courts, and the CNS and AANS are leading another amicus brief. In *Haller v. U.S. Dep't of Health & Human Servs.*, Dr. Haller argued that the NSA violates the U.S. Constitution's Seventh Amendment (right to trial by jury in federal court for certain civil disputes). The U.S. District Court for the Eastern District of New York disagreed, determining that providers could only resolve out-of-network billing disputes through the NSA's process.

The AANS and the CNS disagree with this interpretation of the law and filed an amicus brief asking the court to affirm that the NSA does not interfere with a physician's right to pursue all available legal remedies, including litigation, to obtain fair reimbursement from insurers. Simply put, the NSA "does not replace providers' common-law claims and merely offers a voluntary alternative to civil litigation."

Insurers are weaponizing the NSA to slash both in-network and out-of-network physician reimbursement. The AANS and the CNS will continue to advocate that neurosurgeons are fairly compensated, including advocacy efforts to implement the NSA as Congress intended.

Click [here](#) to read the amicus brief in the Haller case.

## CNS Urges Cigna to Rescind Modifier 25 Policy

On April 18, the AANS and the CNS joined more than 100 state and national medical organizations in a letter urging Cigna to immediately rescind its policy requiring the submission of office notes with all claims that include CPT® codes 99212, 99213, 99214 and 99215 and modifier 25 when a minor procedure is billed. The groups asked Cigna to reconsider this policy due to its practice burdens and increased administrative costs associated with compliance.

Click [here](#) to read the letter.

## AMA Analyses: Medical Liability Premiums Surge; One in Three Physicians Sued

According to a recent American Medical Association (AMA) [analysis](#), a surge in medical liability premiums has extended into a fourth consecutive year. It suggests a "hard" insurance market has spread across many states, making it difficult for physicians to find affordable coverage. Fifteen states reported double-digit percentage increases in premiums in 2022, and the analysis also found striking differences in premiums by geography.

Another AMA [report](#) found that nearly one third (31.2%) of U.S. physicians in

2022 reported they had previously been sued. While the study did not include neurosurgery, previous studies have found that as many as [80% of all neurosurgeons](#) have been sued at least once in their career.

For information on neurosurgery-supported solutions to reshape the current medical liability system to better serve both physicians and patients, read the AMA's [Medical Liability Reform– Now!](#)


## Follow the Washington Committee on Social Media

We invite you to visit Neurosurgery Blog, subscribe and connect with us on our various social media platforms. This will allow you to keep up with the many health policy activities happening in the nation's capital and beyond the Beltway. The mission of Neurosurgery Blog is to investigate and report on how health care policy affects patients, physicians and medical practice and to illustrate how the art and science of neurosurgery encompass much more than brain surgery. Through this and other platforms, the Washington Committee promotes the specialty and its advocacy activities. Check us out on:

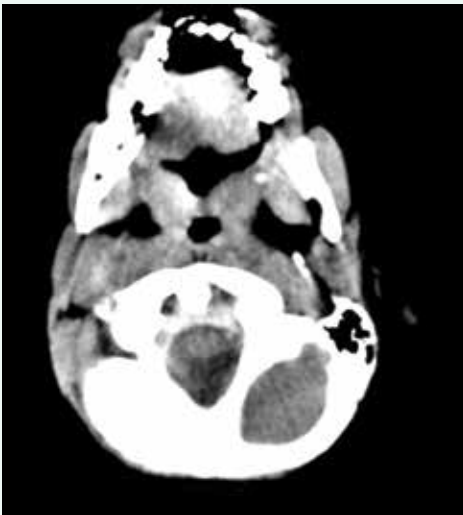
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# IMAGES IN NEUROSURGERY

## Atlanto-occipital dislocation in a 5 year old with "Normal CT"

A 5-year-old male presented to the emergency room as a transfer from an outside hospital with severe frostbite and bilateral clavicular fractures following a high-velocity motor vehicle accident with prolonged extrication. The patient had undergone CT of the cervical spine before transfer which was interpreted as normal and cervical collar had been cleared by the outside facility. Upon presentation to our hospital, the patient was noted to have severely restricted range of motion of the neck, along with severe neck pain and midline tenderness to palpation. A cervical collar was placed immediately. Review of the outside CT demonstrated a significant amount of retro-clival/retro-dental hemorrhage (**Figure 1**). MRI of the cervical spine was subsequently completed and revealed extensive capsular and ligamentous injury at the craniocervical junction and upper cervical spine, along with T2/STIR hyperintense fluid signal in the retro-clival region with elevation of the tectorial membrane (**Figures 2 & 3**). Due to his symptoms and the radiologic findings demonstrating atlanto-occipital instability, the patient underwent occiput-C2 arthrodesis (**Figure 4**). He did well and was able to discharge home on Post-op day 3. The patient was noted to be doing well from a clinical standpoint at his 3 month postoperative visit, and X-rays completed at that time demonstrated intact hardware with appropriate craniocervical alignment (**Figure 5**). This case exemplifies the importance of performing a thorough clinical examination, particularly in patients with high velocity mechanisms of injury. Also, young children are at risk for purely ligamentous injuries and CT alone can sometimes be misleading and result in serious injuries being missed. Finally, the presence of retro-clival/retro-dental hemorrhage on CT can be a sign of severe craniocervical injury and must not be overlooked. 

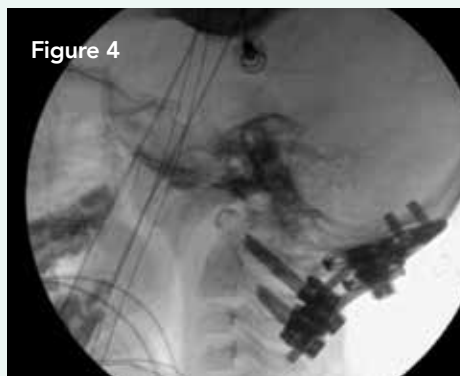
**Figure 1:** Preoperative axial CT scan demonstrating retro-dental hemorrhage concerning for ligamentous injury and craniocervical instability.



**Figure 2 & 3:** Midsagittal and lateral sagittal T2-weighted MRI C spine images reveal extensive capsular and ligamentous injury at the craniocervical junction and upper cervical spine, along with T2/STIR hyperintense fluid signal in the retroclival region with elevation of the tectorial membrane.



**Figure 4:** Intraoperative fluoroscopic imaging demonstrates occiput-C2 instrumentation.



**Figure 5:** Three-month postoperative standing X-ray demonstrating intact hardware with appropriate craniocervical alignment.



James Dragonette M.D.\*, Ascher Kaufmann M.D.\*,  
Ros Whelan MB BCH BAO\*\*

\* Division of Neurosurgery, Michigan State University

\*\* Department of Neurosurgery, Children's Hospital of Michigan, Detroit, MI



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Congress Quarterly, 10 N. Martingale Road, Suite 190, Schaumburg, IL 60173.



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