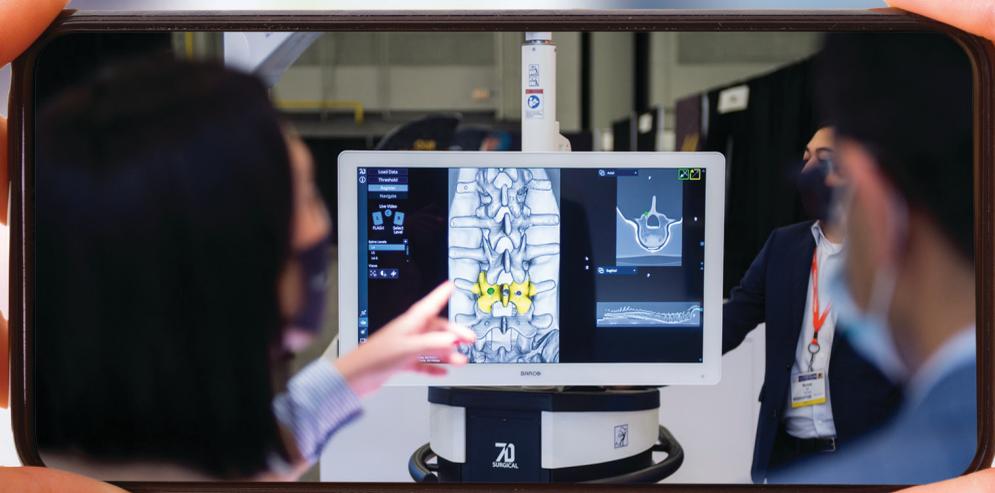




CONGRESS OF NEUROLOGICAL SURGEONS



RE - CONNECTING



Congress of  
Neurological  
Surgeons

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Congress of  
Neurological  
Surgeons

## — 2021 PRESIDENT'S MESSAGE —



**Brian L. Hoh, MD**  
2021 President,  
Congress of Neurological Surgeons

Last fall, I accepted the gavel from Dr. Steve Kalkanis virtually, during our organization's first online Annual Business Meeting, just as a second wave of COVID took hold. None of us could have known quite what to expect of the coming year, but I started my Presidential term with a sense of great pride for all the CNS had accomplished even in the face of a global pandemic, and with absolute confidence that we would continue to innovate and create great value for our members, no matter what lie ahead.

The past two years have tested us all. We struggled through peaks and valleys of the pandemic, challenging almost every aspect of our practices, careers and families. Just a few years ago, the level of uncertainty that we now live with every day would have been unimaginable. However, because of your perseverance, we are influencing our future. We have stretched our boundaries and tested new health care strategies, while continuing to meet the most important needs of our patients.

COVID-19 has been a challenge, but at the same time, it has reminded me why I chose neurosurgery as a vocation: helping patients through difficult times and improving their lives and futures.

I committed myself to leading our organization through a year of healing and growth, and working with Past President Kalkanis, set a clear vision to bring our members back together in person for an epic Annual Meeting in Austin. Though the path was anything but linear, and the pandemic continued to throw a number of obstacles and twists our way, I am tremendously proud of the CNS volunteers, staff and members for coming together to make that vision a reality.

We are by no means through it, and while there is more to do, it's important to recognize our achievements and contributions in the most challenging of times. I am tremendously proud of and greatly appreciative of the CNS volunteers, staff and members for coming together during my tenure as president to help shape and transform the organizational vision into reality.

One of our key achievements last year was our annual meeting, "Vision for the Future," where we looked 25 years ahead at care in each neurosurgical subspecialty. We also celebrated the careers of three Honored Guests — Drs. William Friedman, Bob S. Carter and Mark L. Rosenblum — and we heard from outstanding keynote speakers about innovative topics, such as Augmented Intelligence and Catalysts for Changing Human Behavior. Our colleagues throughout neurosurgery presented more than 1,700 abstracts, sharing their discoveries in person for the first time in more than a year. None of this would have been possible without the tireless work of our CNS staff, which spent countless hours researching and implementing the safety measures and mitigation strategies necessary to host this live event. I am truly grateful for their work. The discourse and engagement in Austin, Texas, made it all worthwhile.

The Annual Meeting was the culmination of an amazing year for the CNS. Our dedicated volunteers and staff hosted five virtual courses throughout the year, delivering essential content to more than 300 neurosurgeon and resident members. Then in May, we hosted the first in-person course with the return of the CNS Leadership Institute, which brought together 36 of the most promising young leaders in our specialty for two days of unique, interactive content, gaining essential

# — 2021 PRESIDENT'S MESSAGE —

*continued*



skills and making critical connections that will bolster their leadership growth, both in organized neurosurgery and their home institutions.

Turning obstacles into opportunities presented by the pandemic, we continued to grow our online learning platform with new content, expanded accessibility to that content and added a new online learning subscription option that gives members access to our extensive catalog of live and archived webinars. We added more online content, for example, the new Quarterly Virtual Tumor Board developed in conjunction with the Tumor Section and the Society for Neurooncology, as well as improving the accessibility of that content through the launch of the new CNS+ app, which provides easy, one-stop access to many of CNS' most valuable educational resources. In addition, we rolled out a new online learning subscription option that gives members access to our extensive catalog of live and archived webinars, including more than 75 new offerings developed over the past two years.

NEUROSURGERY Publications, under the leadership of editor Nelson Oyesiku, continued its tradition of excellence, publishing outstanding content across all four titles, as well as three new supplements. All the while, the journals team worked to begin transitioning to our new publisher and underwent an extensive and time-consuming search for our next Editor in Chief.

The CNS Foundation (CNSF) celebrated another record year of growth, raising more than \$716,000 under the leadership of Chair Elad Levy

and Vice Chair Alex Khalessi. The Foundation has been essential in supporting some of the new educational programs launched this year, and I encourage you to continue to support one of its three initiatives while there are still funds remaining in the CNS Leadership gift to have your donation matched.

This past year has been a lesson in toughness and perseverance, and we have all stepped up and proven CNS will not only get through it, but will shine even in the most painful of times.

I am tremendously proud of how the CNS has flourished this past year and proved itself to be an essential resource for members' education and career growth, even amidst all of the uncertainty. I am honored to have served alongside this dedicated group of CNS Executive Committee members and excited to see how we build on these successes in the year ahead. So it is with great pride and confidence, that I pass the torch along to Dr. Nick Bambakidis. I wish you all the best and look forward to seeing you again in San Francisco this fall.

Sincerely,

**Brian L. Hoh, MD, MBA**

*Past-President, Congress of Neurological Surgeons*

## — MEMBERSHIP —

In 2021, the CNS Membership Committee, Resident Committee, Education Division and International Division collaborated on several initiatives to create deeper value and provide unparalleled service to our members. In an unprecedented move and an effort to show our support for all our members have been through over the past year or more, the leadership of the CNS extended complimentary Annual Meeting registration to any member registering by the advance cut off, and created a new “Curated for You” section of the Member Dashboard, designed to facilitate deeper engagement with CNS’ other educational offerings. These efforts, in part, contributed to continued member growth across key CNS membership categories. With a record membership of 10,120, including 7,024 domestic members and an international membership of 1,127, the CNS has grown its domestic membership year-over-year for 11 consecutive years.

### CNS MEMBER GROWTH



*\*Excludes Honorary, Emeritus, and Inactive members*



# MEMBERSHIP

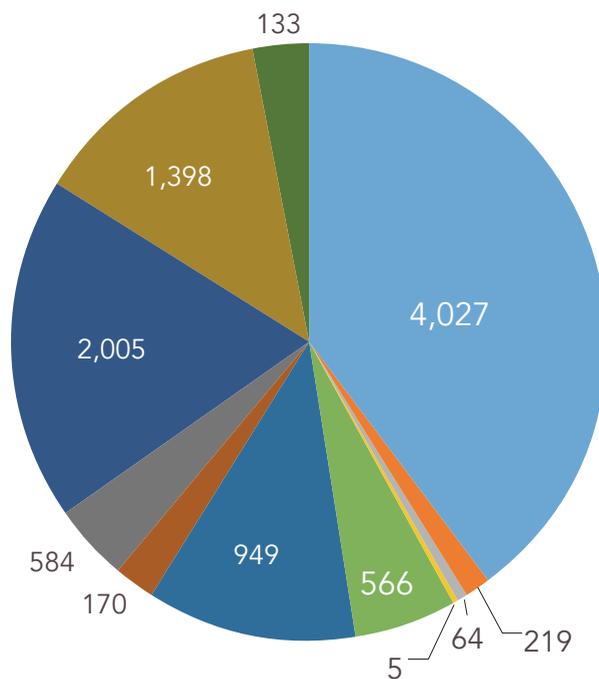
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*"I joined the CNS to engage with the greater neurosurgical community. Membership allows me to serve in various roles within the CNS to further its educational objectives. Organizational activities, including the annual meeting, provide me the fantastic opportunity to share my research, learn from leaders in our field, and network with other neurosurgeons."*

– Andrew Chan, Complex Spine Fellow, Duke University



## CNS 2021 MEMBERSHIP



- Active
- Honorary
- International Vista Resident
- Emeritus
- Affiliate
- Inactive
- Medical Student
- Transitional
- Associate
- International
- Resident

# MEMBERSHIP

continued



## Membership benefits:

- Complimentary or discounted subscriptions to CNS portfolio of top-rated journals, including [Neurosurgery](#), [Operative Neurosurgery](#), and [Congress Quarterly](#), covering the latest advances in neurosurgical research and technology, practice management, socioeconomic developments, and more.
- Extensive educational resources, including our online [education catalog](#) of over 350 CME hours accessible at your convenience, anytime and anywhere, including [CNS Spotlight](#); [Case of the Month](#); [Neurosurgery Watch](#); [SANS Lifelong Learning](#); [Journal Club Podcasts](#); and [Nexus](#) with 500+ cases in all 27 subspecialties.
- Exclusive member rates at in-person events, like our expert-led [courses](#) and the [2022 CNS Annual Meeting](#)—join us in San Francisco, October 8-12, 2022, for unparalleled scientific discovery
- Member discount on [Open Access Article Processing Charge \(APC\)](#) for [Neurosurgery Open](#).
- The all new [CNS+ app](#) providing you information when you need it most, like CNS Guidelines, CNS Neurosurgery Survival Guide, and CNS Education, all in the palm of your hand.
- The convenient [Member Dashboard](#) which includes content curated especially for you through tailored recommendations of articles, courses, and guidelines, based on your selected subspecialties, as well as the ability to track your activities such as meeting participation, donations, and even CME tracking (for certain member types).
- [CNS Online Education Subscription](#), a resource opportunity that is only available to CNS Members which provides unlimited access to some of CNS's best educational resources, including webinars, SANS Indication, SANS Leadership, Podcast CME and the Neurosurgery Survival Guide App. That's more than \$7,500 worth of online education and more than 150 hours of CME across all clinical and non-clinical areas of neurosurgical practice, for only \$14.99/monthly or \$119/annually!
- [Committee](#) opportunities, where you can make an impact in neurosurgery through your expertise and skills by becoming a leader in the field, an opportunity only available to CNS members.
- Your voice will defend and protect the ability of neurosurgeons to practice medicine freely through neurosurgery [advocacy and policy development](#). Your dues support the investment of \$1 million annually towards advocating the best interest of our members and the neurosurgical community in Washington DC.



Mohamad Bydon, MD  
2021 Membership Committee Chair

# — NEUROSURGERY PUBLICATIONS —



*Neurosurgery* and *Operative Neurosurgery* finished 2020 with a record number of submissions. This submission volume was in part attributed to the COVID-19 pandemic<sup>1-2</sup>. As the world has transitioned back into some sense of normality, submission volume has corrected and is now more in line with historical trends.

Wolters Kluwer was selected as the next publisher of NEUROSURGERY Publications with their term beginning January 2022. Wolters Kluwer published *Neurosurgery* and *Operative Neurosurgery* prior to 2017. CNS members should continue to monitor their e-mail inboxes and social media feeds for important publisher transition updates through early 2022. I thank everyone for their patience and understanding as we work through this transition.

In October 2021 CNS [announced](#) the selection of NEUROSURGERY Publications' next Editor-in-Chief, [Douglas Kondziolka](#), MD, MSc, FRCSC, FACS. Currently the Gray Family Professor of Neurosurgery at NYU Langone Medical Center, Dr. Kondziolka

has served on the *Neurosurgery* Editorial Advisory Board since 2008 and comes to NEUROSURGERY Publications from the *Journal of Neurosurgery* Publishing Group where he has served as Associate Editor since 2013. In early 2022, a formal transition process will begin with myself continuing as Editor-in-Chief through August 2022 and Dr. Kondziolka acting as Editor-in-Chief Elect. Dr. Kondziolka will assume full duties as Editor-in-Chief on September 1, 2022.

For the first time since 2019, NEUROSURGERY Publications was able to engage with the membership in person at the 2021 CNS Annual Meeting in Austin, Texas. Staff were on site in the Xperience Lounge to answer attendee questions and provide them with important updates from the Editorial Office. The Editorial Roundtable returned for the 2021 meeting, this time with a focus on subspecialty journals. Dr. Felipe C. Albuquerque of the *Journal of NeuroInterventional Surgery* and Dr. Jason P. Sheehan of the *Journal of Neuro-Oncology* joined me for a fascinating conversation on several hot topics in scholarly publishing including Open Access and



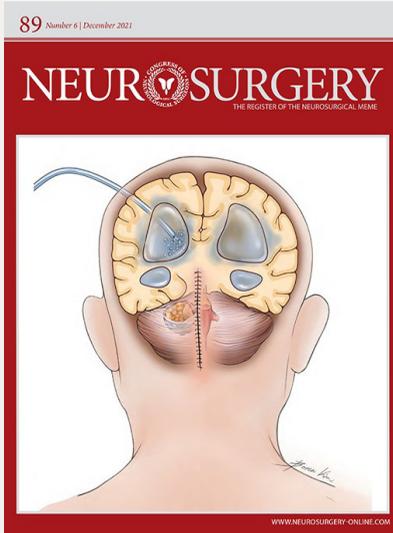
*NEUROSURGERY Publications' next Editor-in-Chief, Douglas Kondziolka, MD, MSc, FRCSC, FAC*

Plan S, multimedia functions and novel content delivery, preprint archives, and predatory publishing. Dr. Kondziolka also made a guest appearance and the Q&A portion with attendees was incredibly engaging. I thank all attendees who took the time to visit our space in the Xperience Lounge or attend the Editorial Roundtable.

Due to the timing of the Editor-in-Chief transition, this year's *Congress Quarterly* Annual Report will be my last as Editor-in-Chief. It has been a privilege to serve as Editor-in-Chief since 2009 and to guide NEUROSURGERY Publications through its

# — NEUROSURGERY PUBLICATIONS —

*continued*



## Neurosurgery

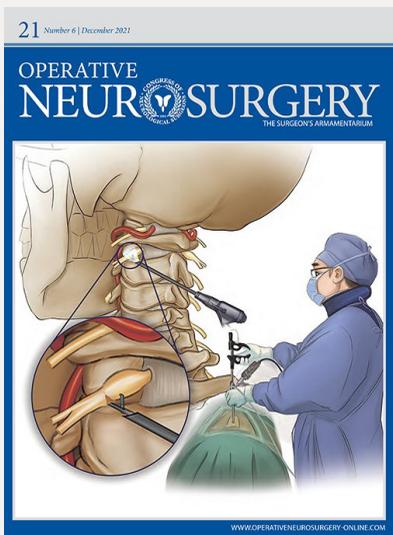
Impact Factor: 4.654

### Guidelines Publications

- "Congress of Neurological Surgeons Systematic Review and Evidence-Based Guidelines on the Treatment of Pediatric Hydrocephalus: Update of the 2014 Guidelines"; published in the December 2020 issue
- "Congress of Neurological Surgeons Systematic Review and Evidence-Based Guideline on Neuroablative Procedures for Patients With Cancer Pain"; published in the March 2021 issue

### Supplements

- "Congress of Neurological Surgeons Systematic Review and Evidence-Based Guidelines for Perioperative Spine: Preoperative"; supplement to the November 2021 issue
- "Neurosurgery 20/20: Visual Abstracts—Concise, Clear Content"; supplement to the December 2021 issue



## Operative Neurosurgery

Impact Factor: 2.703

### Recurring Series

- "The Al-Mefty Collection"; the second in our Masters in Neurosurgery video series this collection debuted in the May 2021 issue.
- "Surgical Robotics in Neurosurgery Review Series"; this inaugural review series in *Operative Neurosurgery* debuted in the June 2021 issue.

### Supplements

- "Emerging Technologies in Spinal Surgery"; supplement to the July 2021 issue.

Operative Neurosurgery's highest Impact Factor to date!

evolution and growth. The tireless efforts of the Editorial Board, reviewers, and staff along with the sustained interest of our authors and readers, have contributed to the success of NEUROSURGERY Publications over my tenure and for that I am eternally grateful. I look forward to a strong year ahead and to assisting Dr. Kondziolka with his transition.

## References

- 1 Bambakidis, Nicholas C. & Oyesiku, Nelson M. NEUROSURGERY Publications. Congress of Neurological Surgeons Annual Report 2020. <https://www.cns.org/about/annual-report>. Accessed December 1, 2021.
- 2 Christos Petrou. Guest Post – Scientific output in the year of COVID. The Scholarly Kitchen. <https://scholarlykitchen.sspnet.org/2020/11/19/guest-post-scientificoutput-in-the-year-of-covid/?informz=1>. Accessed November 23, 2020.



Nelson M. Oyesiku, MD, MSc (Lond), PhD, FACS  
*Editor-in-Chief*

## — RESIDENT COMMITTEE —

The CNS Resident Committee provides neurosurgery residents a unique opportunity to get involved in organized neurosurgery. During their tenure on the committee, Resident Committee members work alongside volunteer leaders in key CNS committees, such as the Education Division and the Congress Quarterly Editorial Board, as well as a wide variety of work groups responsible for developing and refining online education. Recent activities include development of the online fellowship directory and the Resident Research Forum.

### THE RESIDENT COMMITTEE WAS INCREDIBLY BUSY THIS YEAR, FOCUSING ON THREE NEW INITIATIVES:

- CNS Online Fellowship Directory** – The committee worked in partnership with fellowship programs to compile an online directory of available fellowships, complete with search features and a detailed list of standardized data elements, ensuring the directory will serve as a sustainable resource for neurosurgical residents for years to come. <https://www.cns.org/cns-online-fellowship-directory>
- Resident Research Forum (CNS RRF)** – The CNS RRF is a resident-led, faculty-mentor supported research forum to promote research among residents and fellows enrolled in neurosurgery residency programs in the US. The primary goal of this alliance is to encourage resident-led multi-institution research initiatives. CNS resident members across all postgraduate years from all US neurosurgery programs will be invited to join the alliance. The goal is to complete our first CNS-RRF study for abstract submission to CNS 2022 Annual Meeting and have it published by end of 2022.
- Neurosurgery Watch Classic** – The Resident Committee created easy to interpret, visually appealing abstracts that summarize the key findings of landmark neurosurgical papers that helped shape our practice. These visual abstracts are now housed on CNS' website as Neurosurgery Watch Classic.

*The CNS congratulates our 2020-2021 Resident Committee and extends our sincere thanks for their work and contributions to CNS Standing Committees this year:*

#### 2021 COMMITTEE MEMBERS

Olusoji Afuwape  
Fadi Al-Saiegh  
Adam Ammar  
Vin Shen Ban  
Evan Bander  
James Caruso  
Phillip Cezayirli  
Vikram Chakravarthy  
Andrew Chan  
Kevin Chan  
Silky Chotai  
Arunit Jessey Chugh  
Victoria Clark  
Ryan Cleary  
Aurora Cruz  
Lekhaj Daggubati  
Danielle Dang  
Rafael De la Garza Ramos  
Jasmine Dicesare  
Ehsan Dowlati  
Aladine Elsamadicy  
Jorge Galvez  
Kelly Gassie  
Michael Gaub

Elizabeth Ginalis  
Christopher Graffeo  
Sabrina Heman-Ackah  
Nick Khattar  
Sraavanthi Koduri  
Jacob Kosarchuk  
Thomas Larrew  
Emal Lasha  
Joseph Linzey  
Daniel Lubelski  
Vikram Mehta  
Rachel Moor  
Tim O'Connor  
Nabiha Quadri  
Miner Ross  
Mayur Sharma  
Helen Shi  
Megan Still  
Michael Strong  
Christopher Sy  
Chad Tuckek  
Arvin Wali  
Han Yan  
Mohamed Zaazoue

In October 2021, a new cohort of residents started the program. The CNS is looking forward to their enthusiasm for volunteering and their energy to take on new projects and make contributions to organized neurosurgery. We encourage all residents to consider applying for this rewarding program, where your contributions will advance education within the specialty.

## — RESIDENT COMMITTEE —

### Congratulations to the NEUROSURGERY Publications Resident Fellow

**Matthew J. McPheeters**, MD, MBA was named the 2021-22 **NEUROSURGERY Publications** Resident Fellow, marking the start of our fourth successful year of the program. Dr. McPheeters is a PGY-6 resident at the University at Buffalo.

The **NEUROSURGERY Publications** Resident Fellowship is a one-year 10-hour per week engagement that focuses on all aspects of the CNS journals, including training in the editorial process. Applications for this prestigious opportunity typically open in early January and close in early February.

*"Serving as the NEUROSURGERY Publications Resident Fellow is an incredible opportunity and one of the most valuable experiences of my neurosurgical training. Dr. Oyesiku, Brandon, and the editorial team have taught me a great deal about the editorial process, and the opportunity to work as a reviewer and editor has vastly improved how I approach my own research. The fellowship provided me with the opportunity to build a network of connections with leaders in academic neurosurgery. In doing so, the editorial team and I developed the Resident Review Board, an effort to increase resident engagement in the editorial process."*

– Dr. Matthew J. McPheeters



**CNS Virtual Residency Fair** – The CNS Resident Committee also helped support the development of a Virtual Residency Fair, which took place September 8-9, 2021. During this new program, 66 residency programs presented information on their respective programs to perspective/interested medical students. In all, 205 total medical students registered to attend this unique event.



**Anand Veeravagu**  
2021 Resident Committee Chair

## — DEI COMMITTEE —

2021 was an exciting and fruitful year for the CNS Diversity, Equity and Inclusion Committee. The Committee started the year with three primary goals:

1. Addressing implicit bias and diversity within the CNS Executive Committee
2. Ensuring diversity and equity in and for CNS membership
3. Lowering barriers to recruiting a diverse neurosurgical residency applicant pool

And over the course of the year, we made strides in all three areas, launching two new programs and hosting sessions during the CNS Annual Meeting.



In June, the committee kicked off a new longitudinal program to enhance awareness of implicit bias amongst CNS Executive Committee members with a half-day session. In preparation for the in-person session, Executive Committee members participated in an online implicit bias survey through Project Implicit, which is designed to help individuals identify and be more aware of their biases. The in-person session that followed allowed Executive Committee members to further explore and understand these biases and how

they may be impacting CNS' activities and service to members, as well as to develop strategies for developing more diverse and inclusive volunteer teams around CNS activities and offerings.

Then in the fall, the Committee launched a new [Pathways to Neurosurgery](#) program, in conjunction with the CNS Annual Meeting. Developed in collaboration with Rosalind George and Breakthrough, Pathways to Neurosurgery brought more than 30 local high school

# — DEI COMMITTEE —

*continued*



**New Pathways to Neurosurgery** brought more than 30 local high school students to the CNS Annual Meeting for an immersive look at the specialty through plenary talks and a hands-on activity lab giving them insight into a day in a neurosurgeon's life.

*“The only times I see women that look like me, they’re nurses, so this is the first time I have seen anyone like me as a surgeon.”*

students—many first generation college bound—to the Austin Convention Center for an immersive look at the specialty through plenary talks and a hands-on activity lab, giving them insight into a day in a neurosurgeon's life. Following the program, these students had the opportunity to apply for a mentoring experience with Austin Dell neurosurgeons through the Neurosurgery Experience award with the recipients to be selected by April 2022.

The Annual Meeting also hosted the Committee's third initiative, a new special course titled “Implicit Bias: [How to Promote Equity in](#)

[Neurosurgical Practice and Training.](#)” This course featured a diverse faculty with different viewpoints to review the historical events that have led to inequity in health care system, case studies of how biases affect training, hiring and promotion in neurosurgery, and strategies to mediate implicit biases. The discussion that came out of this session was illuminating and incredibly helpful in guiding the DEI Committee's future initiatives. We are grateful to those CNS members who participated and shared their experiences and perspectives.

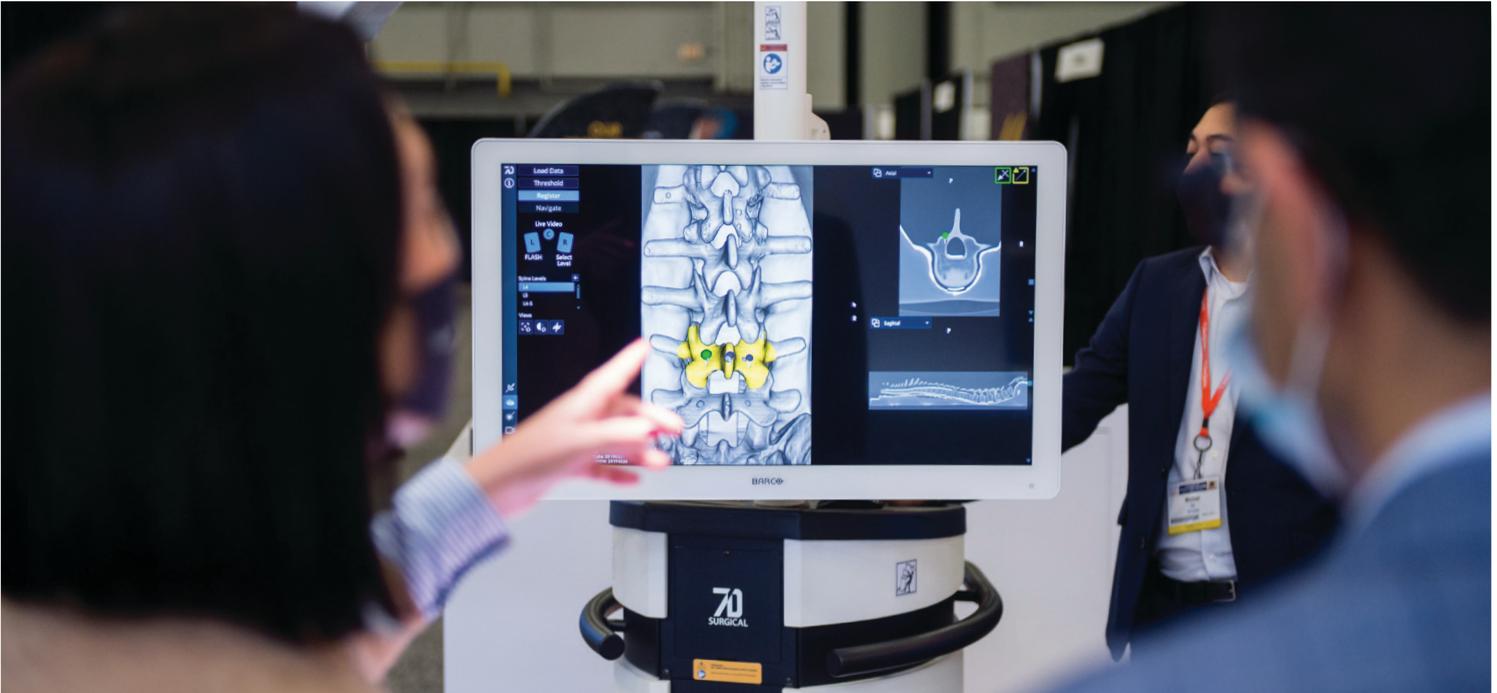


Maryam Rahman, MD  
Co-Chair



Tiffany Hodges, MD  
Co-Chair

# — 2021 CNS ANNUAL MEETING —



## VISION FOR THE FUTURE

**70th Annual Meeting of the Congress of Neurological Surgeons**

Austin, Texas, October 16-20, 2021

The 2021 CNS Annual Meeting brought together thousands of neurosurgeons and their team members across geographic boundaries, practice settings and career stages to share their groundbreaking research, discuss surgical advances and new technology within each subspecialty, and imagine the future of neurosurgery now.

For the first time in nearly two years, our members were able to gather safely, in person to reconnect with their colleagues and share their research. And for the first time in our organization's history, the CNS was pleased to waive registration fees for our members, to show our gratitude for their support and sacrifices during the prior year.

## ANNUAL MEETING HIGHLIGHTS



*Interactive Multimedia Research Presentation Sessions* – Featured 4 mini stages simultaneously presenting 3-minute oral presentations of selected posters.



*The Sunset Room:* This new informal networking venue, located across the street from the Convention Center, allowed attendees to meet up with friends, grab a drink or snack and take in live performances by local musicians on Saturday, Monday and Tuesday evening.

### **New** CNS Medical Student Townhall

On Monday, October 18, medical students from around the US came together to network and learn from a panel of Neurosurgery Residency program directors how to navigate the match and develop a successful neurosurgical career.





## ANNUAL MEETING BY THE NUMBERS

**2,912** medical registrants gathered in Austin, Texas to connect with colleagues and catch up on critical developments in the field.

**16,036.75** CME hours were claimed

**1,424** scientific abstracts were presented

- **351** Oral Presentation & Oral Presentations
- **363** Poster Presentation
- **710** Digital Posters

**30** weekend symposia presented on topics including 3D Surgical Neuroanatomy, Surgical Management of Eloquent Area Tumors, and Bypass and Complex Vascular Lesions

**28** Luncheon Seminars, including “Minimally Invasive Surgical Evacuation of Intracerebral Hemorrhage” and “Peak Performance: Optimizing the Spine Surgical Patient from Pre-op to Post-op”

## HONORED GUESTS:

By incorporating the best of the 2020 Scientific Program into this year’s meeting, we were fortunate to celebrate three Honored Guests in Austin, each of whom delivered outstanding talks during the General Scientific Sessions.



**Honored Guest Presentation:**  
2021 – Dr. William Friedman



**Honored Guest Presentation:**  
Engineering Our Future: Advancing Cell and Gene Therapy in Neurosurgery  
2020 – Dr. Bob S. Carter



**Honored Guest Presentation:**  
Neurosurgery’s Impact on Neuro-Oncology - “Can We Do Better?”  
Lessons Learned Over 50 Years  
2020 – Dr. Mark L. Rosenblum

## SPECIAL SPEAKERS:



Alex Honnold, professional rock climber: *"Free Solo with Alex Honnold"*



Mae Jemison, astronaut, entrepreneur, and polymath: *"How Space Exploration Expands the Boundaries of Human Capabilities"*



Garry Kasparov, CNS Michael L.J. Apuzzo Lecturer on Creativity and Innovation: *"The Future of Augmented Intelligence: How Smarter Machines Can Boost Human Creativity, Satisfaction, and Performance"*



Siddhartha Mukherjee, John Thompson History of Medicine Lecturer: *"Thinking Outside the Medical Box: Three Themes for the Future of Medicine"*



Malcolm Gladwell, Walter E. Dandy Oration: *"Catalysts for Changing Human Behavior: How Science and Technology have Changed Post-pandemic Behaviors and Attitudes for the Better. Looking into the Future of Neurosurgery."*

## CONGRATULATIONS!



### Distinguished Service Award Recipient

Nelson M. Oyesiku, MD, PhD



### CNS Founder's Laurel Award Recipient

Beverly C. Walters, MD, MSc

## Congratulations to the 2021 Abstract Award Winners

Each year, merit-based abstract awards at the CNS Annual Meeting are granted to acknowledge the achievements of residents, fellows, and attending neurosurgeons in various categories.

CNS Resident Award  
Malia McAvoy, MD

The Abhijit Guha Award  
Gelareh Zadeh, MD, PhD

American Brain Tumor Association Young Investigator Award  
Diogo P. Garcia, MD

Brainlab Neurosurgery Award  
Mitsutoshi Nakada, MD, PhD

Duke Samson Award  
Andre Monteiro, MD

Galbraith Award  
Jacob F. Baranoski, MD

Integra Foundation Award  
Lucas P. Carlstrom, MD, PhD

Joint Section Tumors Neuro-Oncology Trainee Award  
David T. Asuzu, MD, PhD

Journal of Neuro-Oncology Award  
Anudeep Yekula

Julius Goodman Resident Award  
Jacob K. Greenberg, MD

Lunsford Leksell Radiosurgery Award  
Jason P. Sheehan, MD, PhD

Mizuho Minimally Invasive Brain Tumor Surgery Award  
Jubran Jubran

National Brain Tumor Society Award  
Roberta Rehder, MD

Natus Resident/ Fellow Award for Neurocritical Care  
Georgios A. Maragos, MD

Ronald R. Tasker Young Investigator Award  
Ilknur Telkes, PhD, MSc

Rosenblum-Mahaley Clinical Brain Tumor Research Award  
Tito Vivas-Buitrago, MD

Samuel Hassenbusch Young Neurosurgeon Award  
Thomas C. Steineke, MD, PhD

Sherry Apple Resident Travel Scholarship  
Faith Robertson, MD

Southeastern Brain Tumor Foundation Award  
David S. Baskin, MD

StacheStrong Award  
Alexander A. Aabedi, BS

Stereotactic and Functional Resident Basic Science Award  
Newton Cho, MD

Stereotactic and Functional Neurosurgery Resident Clinical Award  
David Satzer, MD

Stereotactic and Functional Neurosurgery Young Neurosurgeon Clinical Award  
Josue M. AVECILLAS-CHASIN, MD, PhD

Stereotactic and Functional Neurosurgery Young Neurosurgeon Basic Science Award  
Elliot H. Smith, MD, PhD

Stryker Tumor Award  
Ava Kjos

Synaptive Preuss Research Award  
Bhuvic Patel, MD

Zeiss Brain Tumor Research Award  
Alexander J. Schupper, MD

## NEUROSURGERY PAPERS OF THE YEAR

“NEUROSURGERY Publications is delighted to continue the Neurosurgery Paper of the Year awards for 2021,” said Dr. Nelson M. Oyesiku, Editor-in-Chief of NEUROSURGERY Publications. “We are fortunate to have the brightest minds in neurosurgery submit their original papers to *Neurosurgery*. It was an extremely competitive selection however we are confident the awardees constituted a significant contribution to our field.”

### Top Paper of the Year

“Validation and Optimization of Barrow Neurological Institute Score in Prediction of Adverse Events and Functional Outcome After Subarachnoid Hemorrhage—Creation of the HATCH (Hemorrhage, Age, Treatment, Clinical State, Hydrocephalus) Score”

Corresponding Author: Menno Robbert Germans

#### *Paper of the Year: Cerebrovascular*

“Spetzler-Martin Grade III Arteriovenous Malformations: A Multicenter Propensity-Adjusted Analysis of the Effects of Preoperative Embolization”

Corresponding Author: Michael T. Lawton

#### *Paper of the Year: Neurotrauma and Critical Care*

“Predictive and Discriminative Power of Pressure Reactivity Indices in Traumatic Brain Injury”

Corresponding Author: Lennart Riemann

#### *Paper of the Year: Pain*

“Neuromodulation for Chronic Pelvic Pain: A Single-Institution Experience With a Collaborative Team”

Corresponding Author: Tarun Prabhala

#### *Paper of the Year: Pediatrics*

“Selective Dorsal Root Rhizotomy for Spastic Cerebral Palsy: A Longitudinal Case-Control Analysis of Functional Outcome”

Corresponding Author: Jean-Pierre Farmer

#### *Paper of the Year: Peripheral Nerve*

“Genetic Events and Signaling Mechanisms Underlying Schwann Cell Fate in Development and Cancer”

Corresponding Author: Harish N. Vasudevan



#### *Paper of the Year: Socioeconomics, Health Policy, and Law*

“The Enforceability of Noncompete Clauses in the Medical Profession: A Review by the Workforce Committee and the Medicolegal Committee of the Council of State Neurosurgical Societies”

Corresponding Author: Kristin Huntoon

#### *Paper of the Year: Spine*

“Sexual Dysfunction: Prevalence and Prognosis in Patients Operated for Degenerative Lumbar Spondylolisthesis”

Corresponding Author: Andrew K. Chan

#### *Paper of the Year: Stereotactic and Functional*

“Brain-Responsive Neurostimulation for Loss of Control Eating: Early Feasibility Study”

Corresponding Author: Casey H. Halpern



#### *Paper of the Year:*

Tumor “Sarcopenia as a Prognostic Factor for 90-Day and Overall Mortality in Patients Undergoing Spine Surgery for Metastatic Tumors: A Multicenter Retrospective Cohort Study”

Corresponding Author: Victor Chang

# SANS Challenge Winners

Congratulations to these Residents, who beat out 12 teams from around the country to bring SANS Challenge glory to their programs.



### 1st Place

UNIVERSITY OF CALIFORNIA SAN DIEGO

Lauren Stone and Brian Hirschman



### 2nd Place

THE OHIO STATE UNIVERSITY

Joshua Wang and Jeffrey Hatef



### 3rd Place

UNIVERSITY OF ILLINOIS AT CHICAGO

Zayed Almadidy and Peter Theiss



### Innovator of the Year Award

*Congratulations to the CNS 2021 Innovator of the Year, Samuel Browd, for his project Proprio Paradigm System!*

## — CNS EXPERIENCE LOUNGE —



For the past five years, the CNS Xperience Lounge has become a hub of the Annual Meeting, allowing attendees to connect with colleagues, awardees and speakers, and learn more about new technologies featured throughout the meeting. In a year where we were all eager to reconnect, the Xperience Lounge was buzzing.

### BOOK SIGNINGS:

- *Dr. William Friedman*
- *Alex Honnold*
- *Mae Jemison*
- *Siddhartha Mukherjee*
- *Malcolm Gladwell*



# — CNS EXPERIENCE LOUNGE —

*continued*



## MEET AND GREET:

- *Dr. Bob S. Carter*
- *Dr. Mark L. Rosenblum*
- *Garry Kasparov*



## VOICES IN NEUROSURGERY

- *Presented as part of Tuesday Wellness Afternoon*
- *5 Neurosurgeons shared their stories of resilience and perseverance in Neurosurgery*
- *Fruit smoothies were served*
- *CNS travel blanket give away*



## LIVE SURGERY

- *WEB Device with Walrus Access*
- *Sponsored by MicroVention and Walrus Balloon Guide Catheter (Q'Apel Medical)*

## — EDUCATION DIVISION —



Under the leadership of Chair Nader Pouratian, as well as Co-Vice Chairs Garni Barkhoudarian and Maryam Rahman, the CNS Education Division continued to expand our catalog in 2021 with a focus making our world class content wherever members need it, and engaging with more members across all career stages.

We hosted five virtual courses in 2021, continued our quarterly Tumor Board sessions in conjunction with the Society of Neuro-oncology (SNO), launched a new K12 webinar series and expanded our existing Virtual Visiting Professor webinars, hosting 14 new sessions featuring 51 presenters. This virtual content expansion allowed us to deliver essential content to reach record numbers of attendees. In addition, we launched two new SANS examinations, updated the Nexus platform and introduced two new offerings that make it easier than ever for our members to access our online catalog.

In all, the Education Division offered 181 activities in the online catalog, which included podcasts live webinars and recorded webinars. A total of 623 AMA PRA Category 1 credits have been claimed to date. All of this was accomplished through the efforts of 100 volunteer committee and work group members and over 200 faculty members.

## — VIRTUAL COURSES —

### *The Basis of a Rewarding Neurosurgical Career: A Career Guide for New Attending Physicians and Fellows*

Originally launched in 2019, the “Career Guide” course is part of a comprehensive curriculum designed by the CNS to help guide participants through the transition period from senior residency to mid-career neurosurgeon. The 2021 Course, led by Ashok Asthagiri and Mark Hadley, along with 9 other neurosurgical faculty, was held virtually as a one-day intensive course on January 23, 2021.

Topics included strategies for establishing a career focus, indications (and the lack thereof) for surgery for various neurosurgical disorders commonly encountered in clinical practice, techniques to become a productive and effective contributor in your new practice/institution, and processes to establish effective physician-patient relationships that translate to an improvement in patient outcomes, patient safety, and patient satisfaction.

NUMBER OF ATTENDEES:



46

### *SANS Written Board Course*

Since 2018, the SANS Written Board Course has become an essential component of Primary Examination preparation. In January 2022, the CNS hosted the Written Board Course online, which made it possible for a record 122 residents to attend the January course. The one-day intensive review, led by Akash Patel and Russell Lonser, provided summative didactic sessions covering the breadth of neuroanatomy, neurobiology, neuropathology, neuroimaging, neurology, neurosurgery, critical care, and core competencies—from synaptic physiology to cranial nerve anatomy to complex spine surgery. Each lecture incorporated live SANS questions with interactive polling to help learners test their knowledge.

NUMBER OF ATTENDEES:



122

### *Oral Boards Review Course*

With the ABNS decision to shift the oral examination to virtual format during the pandemic, the CNS has likewise moved 2021 Oral Board Courses in a virtual format to align with the Board’s decision. Virtual courses were held in February and September. These highly interactive virtual courses were designed to prepare surgeons for the case-based nature of the exam with multiple learning formats, including didactic, case presentations, small-group discussions and one-on-one sessions. This year’s courses were led by Drs. Robert Spinner and Garni Barkhoudarian, along with 22 other expert faculty. In addition to the virtual courses, we have continued to post course quiz sessions for course attendees with around 30-40 people participating each week, and for those registered for the fall virtual course, we held one-on-one sessions with examiners, just prior to the CNS Annual Meeting in Austin.

NUMBER OF ATTENDEES:



FEBRUARY

62



SEPTEMBER

58

### *NEW! Data Science and Image Analysis for the Neurosurgeon*

In June 2021, the CNS launched a new virtual course designed for neurosurgeons with an academic or leadership focus who will use data science in their research or hospital administrative duties. Led by Drs. Mohamad Bydon, Matthew Pease and Daniel Donoho, the course provided an overview of various types of data science techniques, with a focus on image analysis with artificial intelligence, and incorporated interactive small-group breakout sessions where participants got one on one feedback for their specific data projects.

NUMBER OF ATTENDEES:



50

## — ONLINE LEARNING —

### Webinars

- K12 webinar series launched in March. These webinars featured past K12 awardees and their research work. Each webinar was led by a senior guest faculty, as well as a moderator to facilitate discussion and questions from the audience. The webinars from March-Oct were live, but the December webinar was pre-recorded.
- May 17-27 we hosted 14 Virtual Visiting Professor webinars featuring 51 presenters. All webinars were complimentary. Participants earned 1.0 – 1.5 CME credits per webinar and a special gift was offered to those who attended a live VVP session. Medtronic sponsored the overall VVP series along with 7 other sponsors for individual webinars. 135 CME claimed in total.
- Oral Board Review Fall 2022 live webinar series was held Oct. 4-14. This year's series featured a diverse panel of 22 presenters, 5 of which were new to the Oral Board series. There were 7 webinars with a total of 104 attendees. 124 CME claimed.

**Webinar Chairs:** Justin Hilliard, Kristopher Hooten

### Podcasts

This year we recorded 12 Journal Club Podcasts – one each month. CME was increased to 1.5 credits to recognize participants' time reading the journal article. Podcasts are approximately 30 minutes each and complimentary to all CNS members. In August we opened an application for residents interested in volunteering with the Journal Club Podcast. We had a positive response that provided a wide selection of highly qualified volunteers. Three new volunteers were selected for 2022- 2023.



- The Online Education Committee introduced two new podcast tracks in 2021 and plan to release a third in 2022.
- Guidelines (released six episodes in 2021) **Chair:** J. Bradley Elder
- The CNS Leadership Institute launched a series of 4 "Lessons Learned" podcasts in November.
- Controversies in Neurosurgery (first one to be released December 2021) **Co-Chairs:** Seth Oliveria, Rushna Ali
- Optimizing Neurosurgical Practice (first one to be released January 2022) **Co-Chairs:** Joslyn Woodard, Kathryn Hoes

**Journal Club Podcast Chairs:** Rafael A. Vega, Tiffany R. Hodges

Controversies and Optimizing podcasts will alternate every other month, producing several 6 episodes each in 2022. Journal Club and Guidelines will continue to offer episodes monthly.

### NEW Micro Learning

During our last member survey, we heard loud and clear that members want to see more short-format educational content that can be accessed on the go or between cases. This year, the Education Division launched a new series of micro learning content for exactly that purpose. Every month from February through December, we featured a new case through one of our social media platforms, including one-minute Case of the Month videos on Instagram SANS micro learning polls on Twitter, Nexus video highlights and Neurosurgery Watch graphics.

### Case of the Month

To date, a total of 1,616 learners have participated in Case of the Month (COTM) [CNS.org](https://www.cns.org). This year we incorporated Instagram Live sessions to increase social media engagement. We found that when presenters saved and shared their video recordings, over 1,500 viewers accessed the recording of the live session! We hosted 6 Instagram Live sessions beginning in February. We also secured our first sponsorship from Medtronic for the September COTM.

**Chair:** Khoi Than

**Vice:** Chair Seth Oliveria

### Neurosurgery Watch

This year Neurosurgery Watch has published 11 articles, highlighting new and interesting research in a bite size format with infographics. In October, the Neurosurgery Watch team added additional Resident volunteers to aid in content generation for the then end of 2021 and the 2022 year.



This year Neurosurgery Watch Classic has been created by volunteers from the Resident Committee and Neurosurgery Watch groups who have found a selection of classic papers that have changed clinical management or treatment of neurological diseases. Neurosurgery Watch Classic has published 5 articles to date, since its launch in October.

**Co-Editors:** Robert Starke, Brandon Rocque

**Graphic Editor:** Zaid Aljuboori, Kaitlyn Melnick

**756.75 CME Credits claimed** for webinars, online courses and podcasts.

# — ONLINE LEARNING —

*continued*

## STAY CONNECTED TO CNS EDUCATION



### Case of the Month on Instagram Live

Each month CNS Case of the Month authors have the opportunity to present their case on Instagram Live

Follow [@CNS\\_Update](#) on Instagram



### Nexus Videos

Every month a new case is featured on social media with a video that is 1 minute or less

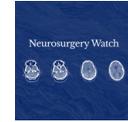
Follow [@CNS\\_Update](#) on Twitter



### SANS Twitter Questions

A SANS question is posted to Twitter very week as an interactive poll

Follow [@CNS\\_Update](#) on Facebook



### Neurosurgery Watch

Engaging infographics posted to social media monthly

## — SANS —

For much of our organization's history, the Self Assessment in Neurosurgery (SANS) exam has been a flagship CNS product. Generations of neurosurgeons have trusted SANS to assess and expand their surgical knowledge, as well as prepare for board certification. Over time, SANS has evolved into a comprehensive arsenal of 16 targeted exams and tools, uniquely suited to meet the needs of modern neurosurgical practice and training. This incredible accomplishment has been possible only through the thousands upon thousands of hours our dedicated volunteers have committed to writing, vetting and reviewing SANS questions.

In 2021, the CNS launched the new [CNS SANS ABNS Primary Board Exam Review I & II](#) exams, which are available to Residency programs. These exams represent the first two installments of a 4-part series, developed using question stems from the ABNS primary exam question bank. With a 500-question exam released in the spring and a 700-question exam released in the fall, it has been a tremendous undertaking, even by SANS standards. Under the leadership of Drs. Akash Patel, SANS Chair, Lance Governale, SANS Vice Chair and Peds Editor, Laura Snyder, SANS Co-Managing Editor and Tiffany Hodges, SANS Co-Managing editor and Tumor Editor, a group of more than 70 these dedicated volunteers worked throughout the year to craft critiques to accompany each ABNS question, as well list two references for additional study. For their efforts, the SANS ABNS Volunteers were recognized at the CNS Annual Meeting with the CNS Educator of the Year award.

### SANS Live

We also continued our popular SANS Live webinars in 2021, hosting four new sessions and attracting an average 34 attendees per session. Unlike lecture-based webinars, SANS Live! utilizes a question and answer, quiz-show format to help participants enhance their surgical knowledge and decision-making skills. Session moderators deliver SANS questions, which the attendees answer using a polling system. Subspecialty experts then discuss the nuances of the questions and the reasoning behind the answer selection.



### SANS by the numbers:

**16**

Exam Modules

**4**

SANS Live events with **104** Attendees

**2704.75**

CME Credits Claimed

**23**

SANS micro learning polls this year, answered by **1429** users

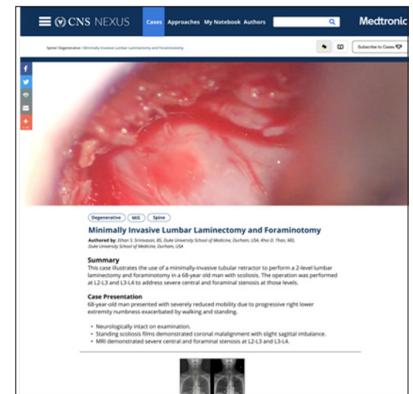
## — NEXUS —

In September 2021, the CNS relaunched NEXUS, our comprehensive case-based repository of neurosurgical operative techniques and approaches, with new features and page views designed to improve usability and searchability. The new look includes tags on the home screen to highlight new content, a fresh new case layout that offers better image and video visibility, and a new text list filtering option, in addition to NEXUS' typical image mapping navigation. The new platform also includes links to related content, where users can easily find Guidelines, CNS webinars, journal articles and other content related to the case they are viewing, as well as a new My Library feature, where CNS members can save their favorite cases for quick access in the future, organize their content in their own folder system, and highlight tips or sections of importance.

In addition to the platform upgrade, we have continued to grow NEXUS content through the efforts of our 24-person Editorial Board and more than 360 volunteer authors. NEXUS currently features 474 cases

across all neurosurgical subspecialties, thanks to the tireless efforts of our, under the leadership of Nexus Editorial Board and Managing Editor, Dr. Marta Van Keulen, as well as Co-Chairs Drs. Khoi Than and Tiffany Hodges.

More than 360 authors have contributed cases to the Nexus, most including a combination of medical illustration and operative video. Each case efficiently highlights the approach and alternatives, walks through the procedure step by step, and covers the outcomes, pearls and pitfalls.



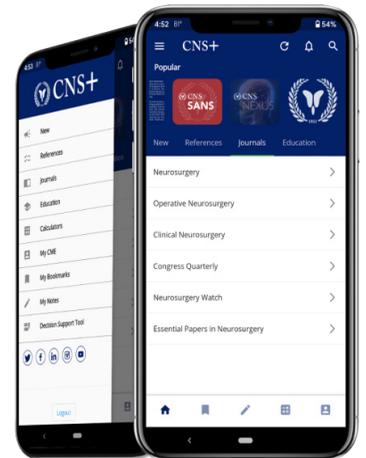
## — CNS+ AND THE ONLINE EDUCATION SUBSCRIPTION —



### *CNS+ and the Online Education Subscription*

In late 2021, we launched the new CNS+ app, which provides neurosurgeons, residents and medical students easy access to CNS' top educational resources and tools in one convenient location, including Case of the Month, Neurosurgery Watch, CNS Podcasts, CNS Guidelines, NEXUS and CNS Spotlight. In addition, CNS Members can use the app to easily access NEUROSURGERY Publications as well as any webinars, online courses or SANS modules they have purchased through their "My Education" tab.

The Education Division also launched a new Online Education Subscription at the end of 2021, designed to help our members stay abreast of advances in practice and fulfill CME requirements from the convenience of their home or office. Available exclusively to CNS Members, this new subscription gives surgeons unlimited access to more than 120 live and archived webinars, SANS Indications, SANS Leadership, and the Neurosurgery Survival Guide—more than \$7,500 worth of educational content—for a monthly rate of \$14.99. A discounted annual rate of \$119 is also offered.



## — SKULL BASE FELLOWS COURSE —

*September 16-17, 2021 Cleveland, OH*

After having this course virtually in 2020, skull base fellows, early career neurosurgeons, and course faculty were eager to gather with the CNS in Cleveland OH this fall to cover the basic surgical approaches and anatomy required of every skull base neurosurgeon. This two-day intensive course included a combination of lectures, case-based discussions, and cadaveric dissections.

Neurosurgeons and ENT surgeon faculty demonstrated posterolateral transtemporal surgical approaches as well as endoscopic endonasal anatomy and surgical options.

**Course Director:** Nicholas C. Bambakidis

— EDUCATION DIVISION —  
*continued*

EDUCATION DIVISION LEADERSHIP



**Nader Pouratian, MD, PhD**  
*Chair*



**Garni Barkhoudarian, MD**  
*Vice-Co Chair*



**Maryam Rahman, MD**  
*Vice-Co Chair*



**Ashok R. Asthagiri, MD**  
*Senior Advisor*

ONLINE EDUCATION



**Maryam Rahman, MD**  
*Chair*



**Tiffany Hodges, MD**  
*Vice Chair*

SANS LEADERSHIP



**Akash Patel, MD**  
*Chair*



**Lance Governale, MD**  
*Vice Chair*



**Laura Snyder, MD**  
*Co-Vice Managing Editor*

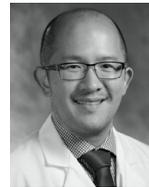


**Tiffany Hodges, MD**  
*Co-Vice Managing Editor*

NEXUS LEADERSHIP



**Maryam Rahman, MD**  
*Advisor*



**Khoi Than, MD**  
*Co-Chair*



**Tiffany Hodges, MD**  
*Co-Chair*

## — CNS LEADERSHIP INSTITUTE —



On May 21, 2021, after 15 months of virtual learning, the Congress of Neurological Surgeons welcomed 36 rising neurosurgical leaders to Chicago for the CNS Leadership Institute—our specialty’s first in-person course since the start of the COVID-19 pandemic. The group included 13 surgeons who participated in our virtual Leadership Institute curriculum in 2020, as well as 23 new applicants. Through the careful application of mitigation strategies, we were able to gather this group and bring back the essential networking and small group collaboration that makes the Leadership Institute so unique and impactful.

The CNS has developed and refined the CNS Leadership Institute over the past six years, with a focus on developing well-rounded surgeon leaders with the practical skills and breadth of knowledge necessary to lead in today’s complex health care environment. This prestigious program has grown from a single course to a comprehensive neurosurgical leadership training curriculum designed to empower neurosurgeons with the skills and resources they need to be leaders in their institutions and in organized neurosurgery at each phase of their career.

In 2021, the CNS Leadership Institute offered two intensive weekend training courses in Chicago—the [CNS Leadership in Healthcare Course](#), designed for surgeons within five years of completing their Residency, as well as the [CNS Vanguard Leadership in Healthcare Course](#) for those more tenured in their practice who are already in or are moving into formal leadership roles within their home institution. Each course was led by neurosurgeon leaders—Dr. Alan Scarrow for the junior attending course, and Drs. Steve Kalkanis, Sepideh Amin-Hanjani and Hunt Batjer for the Vanguard course—as well as a group

# — CNS LEADERSHIP INSTITUTE —

*continued*



of organizational communications and healthcare finance experts affiliated with the University of Illinois at Chicago, Henry Ford Health and Medtronic.

The curriculum's unique mix of health care finance and business acumen along with soft skills like communication and building influence helps surgeons understand diverse perspectives, communicate across all levels of the organization, and more effectively lead teams and advance their projects. Both the original course and the Vanguard offering covered health system alignment and change management strategies, in order to equip neurosurgeons with the information and skills needed to engage in meaningful dialog with administrators. Throughout the program, participants reference a personal leadership challenge or project to apply the learning from the live course and work with their mentor group to overcome obstacles while working toward their personal and organizational goals.

These workshops introduced analytical tools and facilitated small-group discussion of real-world decision scenarios faced by administrative and neurosurgical leaders. This year's program also included a joint networking dinner where participants and faculty from both courses could connect and discuss their leadership challenges, as well as a shared negotiations session featuring a panel of all neurosurgeon faculty members.

The learning from our weekend course was prefaced by a series of pre-requisite webinars and a leadership strengths assessment, and then extended through follow-up webinars, and a final session during the CNS Annual Meeting where selected participants shared their progress and challenges around the leadership projects they were pursuing and gained feedback from their colleagues. The end result is a dynamic and adaptive learning experience unlike anything available in our specialty, which has been well received by participants and their mentors back home.

In today's health care environment, the role of a modern neurosurgeon includes healthcare leadership. Leadership, change management and negotiation skills are as critical to the role as surgical training and knowledge. The CNS is proud to continue growing this essential program, and grateful for the continued support we have received from Medtronic, who has supported the Leadership Institute since the beginning. The alignment of vision and synergy between our organizations' resources, have been instrumental in the program's growth and we look forward to expanding the program further in the years ahead.



**Brian V. Nahed, MD**  
*Co-Chair*



**Lola Chambless, MD**  
*Co-Chair*



**Ellen Air, MD**  
*Co-Vice Chair*



**Maryam Rahman, MD**  
*Co-Vice Chair*

# — WASHINGTON REPORT —



## Improving the Nation's Health Care System

The CNS advocated for improvements in the nation's health care system, including expanding access to affordable health insurance coverage for every American, enhancing patients' choice of insurance plans and providers and maintaining reforms that redress several inexcusable insurance practices — such as high-deductibles, narrow provider networks and prior authorization requirements.

- Streamlining prior authorization.** The CNS has been tireless in its efforts to reform prior authorization in the Medicare Advantage (MA) program. Neurosurgery-backed legislation — the Improving Seniors' Timely Access to Care Act ([S. 3018/H.R. 3173](#)) — was reintroduced in the U.S. Senate and House of Representatives and has garnered significant bipartisan support. This legislation would streamline prior authorization in the Medicare Advantage program to help ensure that patients have timely access to medically necessary care. As a founding member and leader of the [Regulatory Relief Coalition](#), the CNS will continue to work with policymakers on legislative and regulatory initiatives to improve prior authorization.



- Expanding health insurance coverage.** Recognizing that millions of Americans have no health insurance, the CNS continued advocating for a system that builds on and improves the existing pluralistic system, including employer-based coverage, Medicare for those currently eligible, state-based programs such as Medicaid, and others supported by the Affordable Care Act. To expand our voice in this critical debate, the CNS is a member of [Partnership for America's Health Care Future](#), a coalition of the nation's leading doctors, nurses, clinicians, community hospitals, health insurance providers and biopharmaceutical companies.



To ensure that children do not face any gaps in health insurance coverage, the CNS continued to advocate for legislation to permanently extend the Children's Health Insurance Program or CHIP. The Build Back Better Act ([H.R. 5376](#)), which passed the House of Representatives on Nov. 19, 2021, included a provision to fund CHIP permanently.

## Working for You in Washington: Neurosurgery Making a Difference

Through advocacy, policy development and public relations, our Washington Committee and Washington Office have played a fundamental role in advancing neurosurgery's [key health care initiatives](#). Throughout 2021, neurosurgeons and the Washington Office frequently interacted with members of Congress and worked with government agencies — including the Centers for Medicare & Medicaid Services (CMS) and the Food and Drug Administration (FDA) — and other health care stakeholders, such as third-party payers and state and national medical associations. Despite continued challenges due to the ongoing COVID-19 pandemic, CNS advocacy continued unabated, making progress on priority health policy issues.



AANS/CNS Washington  
Committee for  
Neurological Surgery

# — WASHINGTON REPORT —

*continued*

- Preventing surprise medical bills.** The CNS successfully advocated for federal legislation to protect patients from unanticipated medical bills (otherwise known as “surprise” medical bills) while at the same time providing for a fair process for resolving payment disputes. Congress incorporated into the Consolidated Appropriations Act, 2021 ([P.L. 116-260](#)) the “No Surprises Act,” which bans surprise medical bills and establishes an independent dispute resolution process for resolving payment disputes for out-of-network care. Unfortunately, the implementing regulations require the arbitrators to presume that the median in-network rate is the appropriate payment rate despite clear direction in the law that multiple factors must be considered. The American Medical Association and American Hospital Association filed suit against the government challenging this rule, and the CNS, along with others, spearheaded a physician-led amicus brief. A decision on the lawsuit is pending.
- Ensuring Medicare patient choice.** To empower patients and preserve timely access to care, patients and physicians should be allowed to privately contract without being forced out of the Medicare program for two years. Due to the advocacy of the CNS, the Medicare Patient Empowerment Act ([H.R. 3322/S. 826](#)) was reintroduced. This legislation would allow patients to seek care from the physician of their choice at a mutually agreed upon fee other than the Medicare fee schedule amount.
- Increasing values for arthrodesis decompression.** Since 2015, the Centers for Medicare & Medicaid Services (CMS) has not allowed decompression CPT code 63047 to be reported with CPT codes 22630-34 posterior, posterolateral or lateral transverse process arthrodesis lumbar spine procedures at the same level. The CNS successfully created two new codes for reporting arthrodesis decompression, CPT codes 22652 and 22653, and CMS ultimately adopted improved values for these new codes, which went into effect in 2022.

## Championing Fair Reimbursement for Neurosurgeons

- Halting steep Medicare payment cuts.** Neurosurgeons had anticipated a 9% Medicare pay cut for 2022. The CNS led several coalition efforts during the year, including the [Surgical Care Coalition](#), to advocate for legislation to prevent these cuts. Before adjourning in 2021, Congress passed, and President Biden [signed](#) into law the Protecting Medicare and American Farmers from Sequester Cuts Act ([P.L. 117-71](#)) — legislation mitigated these steep Medicare payment cuts. The CNS will continue to press Congress to adopt longer-term solutions to fix the broken Medicare payment system to prevent future payment crises.



- Restoring payments for critical care services.** In the 2022 Medicare Physician Fee Schedule proposed rule, CMS planned to prohibit reporting critical care visits during the same time as a procedure with a global surgical period, even for unrelated conditions. Based on the advocacy of the CNS and others, CMS reversed course and decided to maintain the current policy that allows critical care visits to be paid separately in addition to a procedure with a global surgical period, as long as the critical care service is unrelated to the procedure.
- Securing coverage of neurosurgical services.** Throughout 2021, the Coding and Reimbursement Committee (CRC) worked tirelessly along with the joint sections’ rapid response teams to ensure that third-party payers cover medically necessary neurosurgical services, including favorable coverage policies for:
  - Magnetic-resonance-guided focused ultrasound surgery for expanded indications including tremor-dominant Parkinson’s Disease; and
  - MRI-guided laser interstitial thermal therapy (LITT) for epilepsy and brain tumors.

The CNS also successfully delayed the implementation of a policy that would have retroactively denied coverage for emergency care and halted requirements to upload radiographic studies to obtain prior authorization for certain surgical spine procedures.

*In commenting on this action, John K. Ratliff, MD, chair of the Washington Committee, stated, “By delaying significant cuts to surgical care, this bill will help protect patient access to care across the country. Still, physicians continue to face these same payment cuts year after year. We look forward to working with Congress to reform the Medicare payment system so that it invests in health care providers and ensures that they can be there for patients when and where patients need them.”*

# — WASHINGTON REPORT —

continued

## Supporting Quality Resident Training and Education

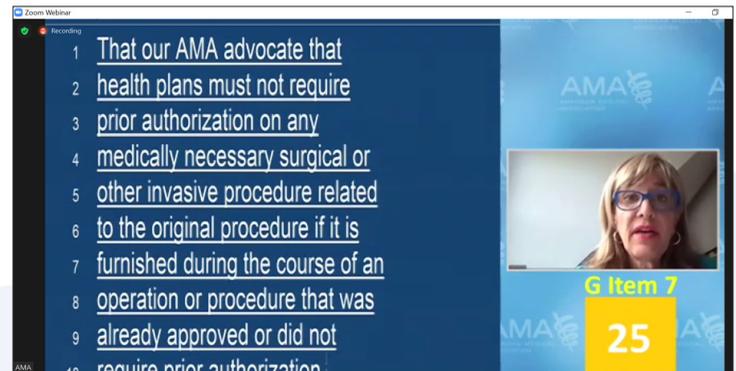
An appropriate supply of well-educated and trained physicians — in specialty and primary care — is essential to ensure access to quality health care services for all Americans. Looming physician shortages — by 2033, the nation faces a physician shortfall of between 54,100 to 139,000 — threaten this access to care. To help ease this shortage and support quality resident training and education, the CNS successfully advocated for the re-introduction of bipartisan legislation to increase the number of Medicare-sponsored residency training positions. The Resident Physician Shortage Reduction Act ([S. 834/H.R. 2256](#)) would provide 14,000 new Medicare graduate medical education (GME) slots over seven years. The bill builds on the GME provisions in the Consolidated Appropriations Act, 2021 ([P.L. 116-260](#)), which provided 1,000 new Medicare-funded GME positions. Additionally, the House-passed Build Back Better Act included funding for 4,000 GME training slots.

## Medical Liability Reform

The CNS continued to advocate for common sense, proven comprehensive medical liability reform legislation, advancing several bills in Congress. Legislation to provide COVID 19-related liability protections — the Coronavirus Provider Protection Act ([H.R. 3021](#)) — was reintroduced. In addition, the Good Samaritan Health Professionals Act of 2021 ([S. 2941/H.R. 5239](#)) was reintroduced. This bipartisan bill is designed to provide liability protections to health professionals who volunteer to assist victims of federally-declared disasters.

## Continue Progress with Medical Innovation

America has a long tradition of excellence and innovation in patient care, and neurosurgeons have been on the cutting edge of these advancements. Increased funding for the National Institutes of Health, Food and Drug Administration (FDA) and other federal agencies, whose research investments are responsible for incalculable medical breakthroughs, was included in the temporary funding for FY 2022 ([P.L. 117-70](#)). Additionally, the 21st Century Cures Act 2.0 ([H.R. 6000](#)) — which will support further research and technology development — was introduced. The CNS also continued to support legislative and regulatory efforts to provide Medicare coverage for procedures involving medical devices approved through the FDA's Breakthrough Devices Pathway.



CNS delegate to the American Medical Association, Ann R. Stroink, MD, FAANS, testifies at a special virtual meeting of the AMA's House of Delegates. Neurosurgery's AMA delegation was successful in advocating for the adoption of additional policy on prior authorization.

## Amplifying Neurosurgery's Message

Beyond its direct lobbying and grassroots advocacy, the Washington Committee garners support for neurosurgery's health policy positions by carrying out a nationwide earned media campaign and by providing the media with timely information that can be used for their reporting. Throughout 2021, Neurosurgery garnered traditional media hits from *The American Spectator*, *Becker's ASC*, *Becker's Spine*, *The Hill*, *InsideHealthPolicy*, *MedPage Today*, *Medscape*, *Modern Healthcare*, *Radiology Business*, *Wall Street Journal* and *WIBW*. The traditional media/communication efforts include Op-Eds, letters to the editor and briefings with reporters.

In addition, the Washington Office's digital media platforms continue to see significant expansion and have amassed an audience of more than 130,000. These communication tools include:

- [Neurosurgery Blog: More Than Just Brain Surgery](#), a web-based opinion and perspective column, through which the CNS offers insights and perspective on contemporary health issues as they relate to organized neurosurgery; and
- Various social media platforms, including [Twitter](#), [Facebook](#), [Instagram](#), [LinkedIn](#) and [YouTube](#).

# — GUIDELINES PROGRAM —



Since 2012, the CNS has demonstrated its commitment to the development of neurosurgical guidelines by supporting an in-house infrastructure, including robust methodological processes, to produce high-quality evidence-based clinical practice guidelines. The CNS Guidelines Department supports over 100 volunteers in all aspects of the development process, from topic refinement and development of clinical questions to publication and dissemination.

In 2021, the CNS continued to advance the practice of neurosurgery through the development of clinical practice guidelines. Approximately 115 members of the CNS Guidelines Committee) and its associated task forces, under the direction of Drs. Jennifer Sweet (Chair) and Ellen Air and Alyssa Baird (Co-Vice Chairs), published one new guideline and continued work on twelve additional guidelines in development.

The CNS also advanced an unprecedented and successful three-year partnership with the Section on Disorders of the Spine and Peripheral Nerves to publish a comprehensive Perioperative Spine Guideline, including three parts (preoperative, intraoperative and postoperative). Through this initiative, funded by a generous donation from the Section on Disorders of the Spine and Peripheral Nerves to the CNS Foundation, the CNS published the first guideline (of a three-part series) in 2021 and the second part of the guideline series is underway.

## 2021 Program Highlights

- Published the first of three Perioperative Spine Guidelines, in conjunction with the Section on Disorders of the Spine & Peripheral Nerves: Perioperative Spine: Preoperative
- Twelve guideline topics are currently in development
- New topics to be published in 2022 include:
  - Spinal Cord Stimulation
  - Chiari Malformation
- Updates to be published in 2021 include
  - Update to Progressive Glioblastoma
  - Update to Low Grade Glioma



Jennifer Sweet, MD  
*Guidelines Chair*



Ellen Air, MD  
*Guidelines Co-Vice Chair*



Lissa Baird, MD  
*Guidelines Co-Vice Chair*

During the 2021 Executive Committee Meeting, Dr. Anand Veeravagu stepped into his new role as Vice Chair and Dr. Jennifer Sweet continues in her role as chair.

## — DATA SCIENCE INITIATIVES —

As part of our mission to advance health and improve lives, the CNS is committed to the development and evaluation of novel strategies that improve data science initiatives related to neurosurgery. In keeping with our focus on education, CNS also strives to help educate practicing neurosurgeons to apply these data science tools in their own practice to improve health outcomes.

### 2021 Program Highlights

**Data Science Scholar Program:** The CNS, CNS Foundation and VizAI partnered in 2021 to continue the CNS Data Science scholarship, designed to provide residents with structured mentorship in the use of advanced data science techniques, including artificial intelligence, for research and practice improvement in neurosurgery. Dr. Daniel Sexton was selected as the 2021-22 recipient for his project studying the use of novel machine learning methods to better characterize the normal and abnormal networks in epilepsy patients who underwent intracranial monitoring.

*“The CNS Data Science Scholarship has been instrumental to my development as a researcher. It has provided me with the means to pursue coursework, purchase specialized computing hardware, and, most importantly, has introduced me to the network of neurosurgeons bringing advances in data science to our field.”*

– Dr. Daniel Sexton



**Abstract Award:** Congratulations to our 2021 [Data Science Abstract award](#) winner, Omaditya Khanna, MD. Dr. Khanna’s project included machine learning using multiparametric MRI radiomic feature analysis to predict Ki-67 in meningiomas.



A new virtual course was launched in 2021 - [Data Science and Image Analysis for the Neurosurgeon](#) provided an overview of various types of data science techniques, with a focus on image analysis with artificial intelligence. For more details, see the Education Division report on page 22.



Mohamad Bydon, MD  
Quality Chair

## — STRATEGIC PARTNERSHIPS —

*Collaborating with Organized Neurosurgery to Advance Neurosurgical Training and Patient Care*

The Congress of Neurological Surgeons is committed to partnering with adjacent specialty and subspecialty societies to develop content and programs that advance the specialty and ultimately improve patient care. To that end, we continued to advance our partnership with the Sections and other neurosurgical organizations in 2021.

### Section Partnerships

As the leader in neurosurgical education, the CNS has established a reputation for delivering the most relevant and cutting-edge educational content to help surgeons expand their knowledge and skills in this rapidly advancing specialty. Likewise, the Sections are widely recognized for their expertise and authority within their respective subspecialties. For years, the CNS has partnered with the Sections, leveraging our respective strengths to deliver unparalleled educational programs and meetings, and world-class subspecialty content and in 2021, we helped two key sections navigate a safe return to in-person meetings at a time when this connection and collaboration was critical to our shared membership.

### Section on Disorders of Spine & Peripheral Nerves

The CNS was honored to partner again with the Section on Disorders of the Spine and Peripheral Nerves as well to host the first in-person, large-scale spine meeting of the year. After postponing the planned March meeting due to COVID-19, the CNS and the Spine Section successfully pivoted to a summer meeting, in an entirely new venue. The 2021 Spine Summit, aptly themed “Courage, Resilience, Excellence: Setting the Path,” welcomed 479 medical attendees to San Diego, California July 29-31, 2021.

Under the leadership of Section Chair, Michael Steinmetz, Annual Meeting Chair, Louis Tumilian, and Scientific Program Chair, Erica Bisson, the Scientific Program Committee presented three days of

plenary sessions and breakouts, nine special courses, spirited debates on controversial topics, and an inspiring presentation by Richard H. Carmona, MD, MPH, FACS, 17th Surgeon General of the United States, who will deliver an inspiring on “Leading Through Crisis”. Three Honored Guests were celebrated in San Diego—Neurosurgeons, Gregory Trost and Eric L. Zager, as well as Orthopedic Surgeon, Sigurd Berven—and Nicholas Theodore was named the 2021 Neurosurgery Meritorious Awardee. In addition to this robust scientific program, the Section hosted valuable networking events where many members connected with their colleagues in person for the first time in more than a year.

The CNS continued its Guidelines partnership with the Spine Section in 2021  
*(see the guidelines report for further details).*

## — STRATEGIC PARTNERSHIPS —

*Collaborating with Organized Neurosurgery to Advance Neurosurgical Training and Patient Care continued*

### Tumor Section

We also continued our valuable partnership with the Tumor Section in 2021, hosting the 15th Biennial Tumor Section Satellite Symposium in conjunction with the CNS Annual Meeting in Austin. This two-day symposium, themed “Neurosurgical Oncology 2021: A Vision for the Future,” featured engaging scientific sessions that explore technological advances in neurosurgical neuro-oncology with a special focus on neurosurgeons as clinical scientists and managing recurrence in neuro-oncology.

This year’s Satellite Symposium included a half-day Laws Symposium, honoring the career of Dr. Edward R. Laws Jr. Director, Pituitary and Neuroendocrine Center, Harvard Medical School. The program was rounded out by high impact abstract sessions featuring

53 oral abstract presentations, General Sessions on OR technology advances, immunotherapy and data technology, as well as three breakout sessions on endoscopic skull base surgery, incorporating technology in neuro-oncology, and tips for the first three to five years of practice. Keynote Speaker, Dr. José del R. Millán delivered a particularly impactful talk on Brain-Machine Interfaces for Fostering Brain Plasticity and Recovery during the opening session.

During the Anniversary Gala on October 15, the Tumor Section’s Career Awards were presented for distinguished service, career accomplishments, and mentoring (see inset), along with certificates for best oral and poster presentations from the open abstract sessions during the day.

#### *Congratulations to the 2021 Tumor Section Career Award Recipients*



Charles B. Wilson Award  
**Alfredo Quinones-Hinojosa**



Rosenblum Distinguished Service Award  
**Mitchel Berger**



Andy T. Parsa Mentorship Award  
**L. Dade Lunsford**

### Cerebrovascular Section

The CNS continues to manage the Section on Cerebrovascular Neurosurgery’s administrative and Executive Committee business. This partnership has proven extremely valuable over recent years, helping the CNS better understand and anticipate the needs of cerebrovascular surgeons, and ensuring that CV Section members and volunteers receive outstanding service and support.

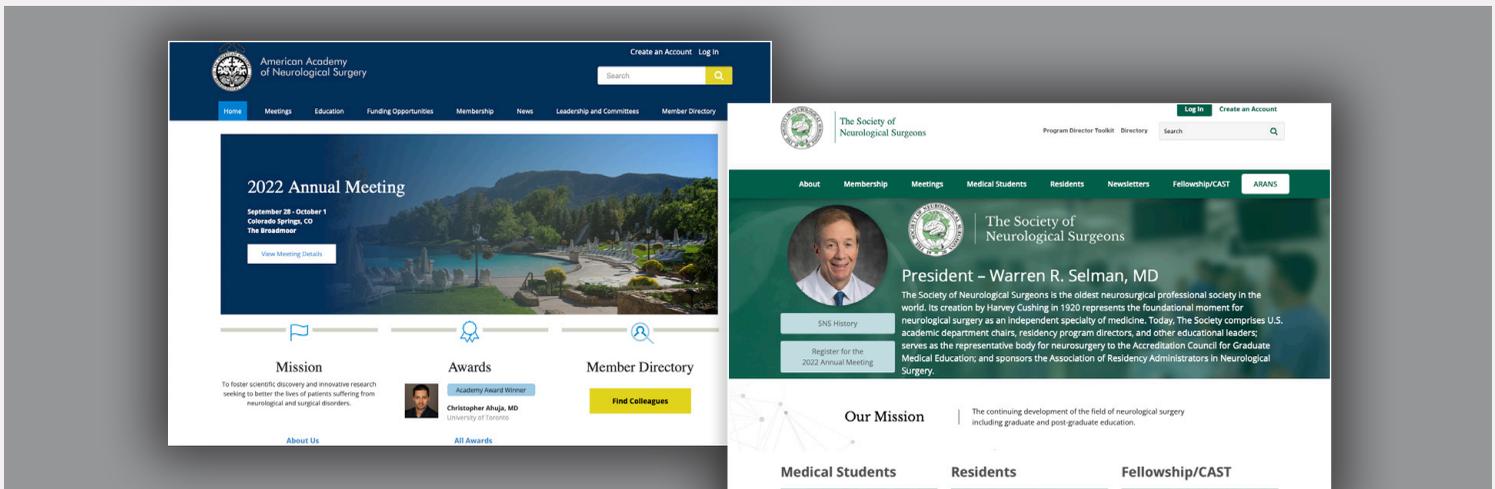
In 2021, the CNS also partnered with the CV Section to launch a new webinar series, which will run through 2022. The Section held the first of these webinars, focusing on ICAD treatments in late November of 2021. The webinar, which covered medical management and ongoing trials for ICAD, endovascular and microsurgical treatments, was non-CME, and was well attended with over 70 attendees joining the live event.

## — STRATEGIC PARTNERSHIPS —

*Collaborating with Organized Neurosurgery to Advance Neurosurgical Training and Patient Care continued*

### Neurosurgical Society Partnerships

In 2021, the CNS continued to extend its impact throughout neurosurgery by partnering with two key neurosurgical societies.



#### American Academy of Neurological Surgery (AAcNS)

We also continued our valued partnership with the American Academy of Neurological Surgery (AAcNS) in 2021, administering membership dues, and managing the organization's website and abstract center.

#### SNS – The Senior Society

The CNS was honored to continue its partnership with the Society of Neurological Surgeons (SNS) in 2021, managing the Society's administrative, membership and website support at no additional cost to the SNS. After an entire year of adapting the Society's offerings to a virtual format, the organization made the decision to postpone its planned May meeting and host it in conjunction with the CNS Annual Meeting in Austin, allowing SNS members to optimize their travel time and take advantage of both essential programs. The meeting, held October 15-16, was titled *The Next 100 Years*, and attracted 256 attendees to Austin.

The opening session, "Resident Education Looking Forward" included a "Mock RRC" session, as well as talks about new case logs, curriculum for quality improvement, and enfolded CAST Fellows, among other topics. Session Two: "Neurosurgery Research and Education - The Next 100 Years," addressed simulated and remote resident training, journals of the future, and the impact of big data and augmented reality on neurosurgery. It also featured "The NFL 2020" presented by Allen K. Sills, MD, NFL Chief Medical Officer. Session Three: "Next 100 years of Clinical Practice and How to Teach It," covered topics

The Academy focuses on promoting, sponsoring and mentoring laboratory, translational, and clinical research in the neurological sciences, and CNS' expertise in abstract management is sure to enhance their success over the course of the partnership. ([americanacademyns.org](http://americanacademyns.org)).

ranging from neuromodulation and psychosurgery to endovascular changes, immunotherapy and machine learning. And Session Four: "Really New in the Next 100 years," included talks on bioinformatics tools to improve the quantity and quality of data, the use of AI, and the role of social media in neurosurgery, as well as keynote speaker Ben Carson, MD's talk "From the Operating Room to the Situation Room."



The SNS, which comprises U.S. academic department chairs, residency program directors, and other educational leaders, serves as the representative body for neurosurgery to the Accreditation Council for Graduate Medical Education, and plays a critical role in graduate and post-graduate education of Neurosurgical Residents and Fellows, making it a natural partner for the CNS and our commitment to providing educational and career development support for neurosurgeons at all career stages. ([societyns.org](http://societyns.org))

# — THE CNS FOUNDATION REPORT —



## Dear Colleagues,

On behalf of the CNS Foundation (CNSF), thank you for your support in 2021. The CNS Foundation's growth demonstrates that our programs are needed and that our community's desire to help others extends far beyond our daily medical practice.

To give you a better picture of what you have made possible, in 2018 the the CNS Foundation (CNSF) received \$30,000 in annual donations – these gifts were barely enough to fund one scholarship. In 2021, the foundation brought in an incredible \$716,273 in revenue, which allowed us to support eight annual grants totaling more than \$163,000. In 2022, we are projected to fund a minimum fifteen awards, distributing more than \$450,000 to deserving neurosurgeons around the world. Many of you have been essential in these remarkable achievements.

We want to acknowledge and thank Dr. Elad Levy for his three years' service as Chair and leading CNS Foundation growth to \$4,000,000 in assets. His clear vision for advancing neurosurgery is certain to benefit CNS during his 2023 presidency.

Martina Stippler and Alex Khalessi are honored to lead as Co-Chairs of the Foundation; Dr. Stippler will serve as Strategic Chair, and Dr. Khalessi will serve as Chair of Operations. Daniel Hoh will continue into his second year as Treasurer.

## IMPORTANT CHANGES WERE APPROVED BY THE CNS FOUNDATION BOARD IN OCTOBER 2021:

1. Each neurosurgery sub-specialty section recognized by the CNS was invited to nominate a member to serve on the CNS Foundation Board. We believe this expansion represents our inclusive and broad approach to subject matter sub-specialty expertise. The full roster of the CNS Foundation Board can be found online at [foundation.cns.org/leadership/board-of-directors](https://foundation.cns.org/leadership/board-of-directors).
2. CNS Executive Committee Members-at-Large have also been asked to serve as members of the CNS Foundation during their term.
3. Diversity, Equity and Inclusion was formally adopted as a new, fourth pillar of the CNS Foundation.

We continue to work on your behalf to improve worldwide patient health. We invite you to contact us any time with your thoughts. Join us in 2022 as we increase the impact and reach of our work, made possible by your generosity.



**Alexander Khalessi, MD, MBA**  
*Co-Chair, CNS Foundation*  
*CNS Vice President*



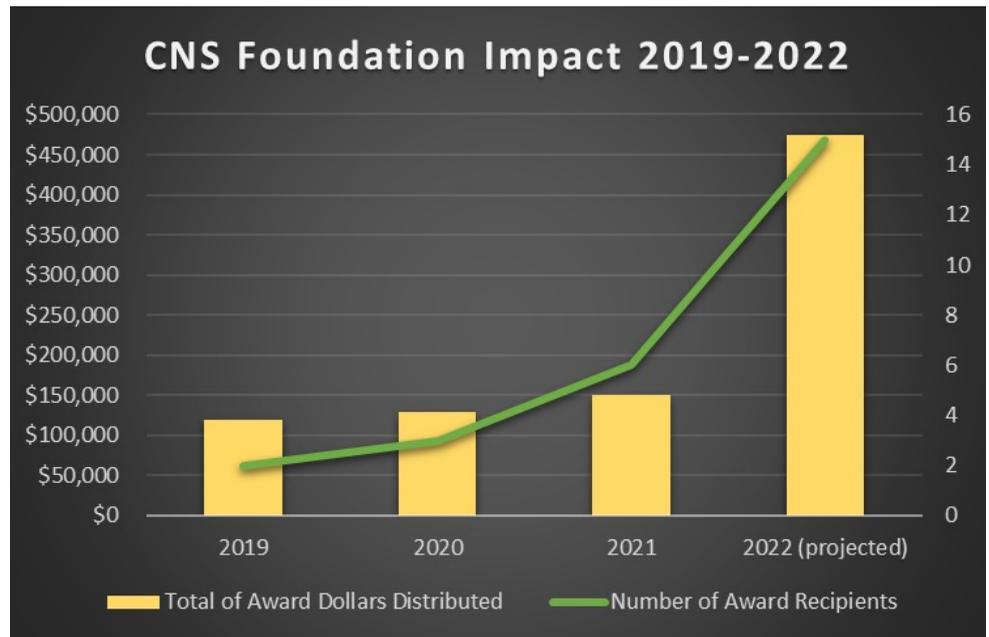
**Martina Stippler, MD**  
*Co-Chair, CNS Foundation*  
*CNS Secretary*

# — THE CNS FOUNDATION REPORT —

*continued*

## Thank you! You make this good work possible!

The CNS Foundation Board is grateful to all supporters of the CNS Foundation who are responsible for this incredible growth and impact. In 2022, the CNS Foundation will launch additional awards, made possible by many generous donors including Medtronic. For a complete list of our generous sponsors, see page 38.



## Schedule of awards for CNS Foundation 2022 Awards and Scholarships

Thanks in large part to generous gifts from Medtronic and VizAi, and the continued support of many CNS members, the CNS Foundation Board will be adding more awards in 2022 and 2023.

The following application windows will open Spring 2022:

- Future Women Leaders in Neurosurgery Scholarship
- CNS Data Science Scholar Award
- CNS Guidelines Scholar Award

Visit [Foundation.cns.org/awards](https://foundation.cns.org/awards) for more information.

## Have you met our new CNS Foundation Board Members?

Members of the CNS Foundation Board:  
*Left to Right:*

**Front Row:** Courtney Johnson (CNSF Director), Scott Simon, Joseph Phelps, Alexander Khalessi (CNSF Co-Chair), Martina Stippler (CNSF Co-Chair), Sarah Woodrow, Gita Barry, Nicholas Bambakidis (CNS President), Daniel Hoh (CNSF Treasurer)

**Back Row:** Brian Nahed, Paul Gardner, Elad Levy (Past CNSF Chair, CNS President-Elect), Clemens Schirmer, David Crawford



Meet the entire board: [foundation.cns.org/leadership/board-of-directors](https://foundation.cns.org/leadership/board-of-directors)



# — THE CNS FOUNDATION REPORT —

*continued*

## And the winner is John Lopez!

Congratulations CNS member and CNS Foundation donor John Lopez of Fairbanks, Alaska! Dr. Lopez is our winner of a \$500 Visa Gift Card.

*“My CNS membership has been essential to me and my practice ever since I joined in 2007. Giving back to the neurosurgical community has also become one of my priorities, by annually supporting the CNS Foundation.”*

All CNS members who both renewed their CNS membership and gave a CNS Foundation donation between January 1, 2021 and December 31, 2021 were entered into the drawing.



## Announcement of third winner of the CNS Foundation Miami Tumor Observership

“We are thrilled that Matias Merenzon of Buenos Aires, Argentina, is our third winner of the prestigious three-month International Observership at Miami Brain Tumor Program,” announced Martina Stippler, Co-Chair of the CNS Foundation.

Dr. Merenzon is Chief of Residents of the Department of Neurosurgery at the JM Ramos Mejia General Hospital in Buenos Aires and assistant professor from Department of Neurosurgery of the School of Medicine at the University of Buenos Aires. Trained in every neurosurgery subspecialty, his special interest is in neuro-oncology. His research and publications include investigation of epidemiological glioma.

Dr. Merenzon will spend three months in 2022 at the University of Miami under the mentorship of Ricardo Komotar, Michael Ivan and team.

The CNS Foundation wishes to thank the TransAtlantic Education Foundation for its continued financial support of this model international educational opportunity for neurosurgeons from South America.

## The CNS Foundation thanks Medtronic for three generous grants to support the CNSF International Portfolio, Innovative Seed Grants and Diversity, Equity and Inclusion Programs.

Martina Stippler, who chairs committees for these efforts reports, “We are hard at work creating a robust structure for new DEI programming and grants for innovation. Not only will we be selecting deserving recipients, we will also be seeking partnerships with host organizations and institutions who can demonstrate a full infrastructure for creating innovative, rewarding learning opportunities. We are extremely grateful to Medtronic for their investment in our work to improve the future of neurosurgery.” “Medtronic’s investment makes possible the expansion of our highly acclaimed international portfolio. Having learned from the success of our Miami Tumor Observership, we will launch the Harvard-Massachusetts Observership this spring,” CNS Foundation Co-Chair Alexander Khalessi explained. “There is tremendous need to diversify neurosurgery both here at home and internationally. Thankfully, Medtronic recognizes this need,” he said.





— THE CNS FOUNDATION REPORT —  
continued

# Thank you, CNS Foundation Donors 2021

## 2021 INNOVATION CIRCLE

Brian and Melissa Hoh ● Steven and Laurel Kalkanis ● David Crawford ●

## 2021 VISION CIRCLE

Garni Barkhoudarian ● Clemens Schirmer ● Barry Zimmerman  
Alexander Khalessi ● Laura Snyder ●

## 2021 ANNUAL ALLIES CIRCLE

Ellen Air ●	John Lopez ●	Juan Ronderos
Alan Appley ●	Stavros Maltezos ● ★	Joseph Schnittker ●
Paul Arnold ●	Erwin Mangubat ●	Warren Selman
Daniel Clay Cochran	William McAllister	Chandra Sen ●
Abel Huang	Brian Nahed ●	Adnan Siddiqui
J. Patrick Johnson ● ★	Nicolas Phan ●	Quoc-Anh Thai
John Lancon	Jeremy Phelps ●	Krystal Tomei ●
Elad Levy ●	Nader Pouratian ●	Gerardo Zavala ●

## 2021 LEADERSHIP CIRCLE

Joseph Adel ●	Zachary Hickman	Regina Shupak ●
Olaide Ajayi	Daniel Hoh ●	Scott Simon
Ashok Asthagiri ●	Christopher M. and Paula J. Holland	Justin Singer ●
Lissa Baird	Michael Ivan	Fotis Souslian ●
Nicholas C. Bambakidis ●	Robert Johnson	Martina Stippler ●
Lola Chambless ●	Ying-Chao Lin ●	Durga Sure
John Caridi ●	Praveen Mummaneni ●	Jennifer Sweet ●
Shakeel Chowdhry	Edjah Nduom	Khoi Than ●
Christopher Cifarelli	Bodene Orr	Hari Tumu
Gary Dix ●	Akash Patel ●	Jamie Ullman ●
Eldan Eichbaum	Maryam Rahman ●	Marjorie Wang ●
Ann Marie Flannery ●	Ganesh Rao ●	Jeremy Wang ●
Michael Healy ●		

KEY: ● = 3 years and more donor    ● = 2-year donor    ★ = Memorial Gift

# — THE CNS FOUNDATION REPORT —

*continued*

## Thank you, CNS Foundation Donors 2021 *continued*

### 2021 FRIENDS OF THE FOUNDATION

Samy Abdou	Arash Farahvar	Yan Li.....●	John Quinones
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Shawn Adams	Linden Fornoff	SzuYuan Liu.....●	Todd Ridenour
Bamidele Adebayo.....●	Joel Franck.....●	Sergio Lutz	Cleresa Roberts
Charles Agbi.....●	Michael Freed.....●	William Maggio	Jose Rodriguez
Nikita Alexiades	Anthony Frempong-Boadu.....●	Amir Shahram Makoui.....●	Szymon Rosenblatt
Reem AlMarshad	Grant Gauger.....●	Grant Mallory	Juan Ruiz
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James Arthur.....●	Bernice G. Gulek	Gina Monaco	Todd Shanks.....●
Rebekah Austin	Kevin Gunawan	Andrew Morokoff	Justin Singer
Rebecca Babcock	Alexander Haddad	Graham Mulvaney	Anil Singh
Dickson Bando	Shafi Hamid	Tomohiro Murakami.....●	Jesse Skoch
Mandana Behbahani	Travis Hamilton	Edward Murphy	Alicia Skulemowski
Sylvia Bele	Douglas Hardesty	Bob Murphy	Richard Stanger
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David Berg.....●	Justin Haydel.....●	Hidemitsu Nakagawa	Patrick Sugrue
Clark Bernard.....●	Alia Hdeib	Jaime Nieto.....●	Arno Sungarian.....●
Raphael Bertani.....●	Michael Healy.....●	Misao Nishikawa.....●	Naoya Suzuki
Carl Bevering	Robert Heary.....●	Samuel Ohaegbulam	Charles Taylon.....●
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Peter Bullock	Katherine Holste	Brett Osborn	Henry Ty
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Luis Cervantes.....●	Shiveindra Jeyamohan.....●	Babu Pansey	Leonardo Vieira Neto.....●
Bogdan Marius Corbu	Courtney Johnson.....●	Carlos Alberto Parga Vazquez	Wayne Villanueva
Aurora Cruz	Wesley Jones	David Park	Todd Vogel
Gregory Cumberbatch	Krishna Joshi	Viktor Peskov	Amir Vokshoor
Badih Junior Daou	Tsutomu Kadekaru.....●	Jeremy Phelps.....●	Ayobami Ward
Dawn Davis.....●	Kenji Kanamaru.....●	Harold Pikus	Daniel White
Ramiro del Valle Robles	Brian Kelley.....●	Alfio Piva	Arthur Williams.....●
Michael du Trevou.....●	Kevin Kelly.....●	Deborah Pleasants	Dennis Winters.....●
Wissam Elfallal	William Kuhn	Michael Poarch	Si Yu
Javier Fandino	Suresh Kumar	Nicholas Post	Zaitun Zakaria

### 2021 SECTION AND MEDICAL SOCIETY PARTNERS

Cerebrovascular Section.....●
Pediatric Section
Section on Disorders of Spine and Peripheral Nerves.....●

### STRATEGIC PARTNERS

Medtronic.....●	
Stryker	

### 2021 PHILANTHROPY PARTNERS

#### GUARDIAN PARTNER

Penumbra.....●	
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#### BENEVOLENT PARTNER

Viz.ai.....●	
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KEY: ● = 3 years and more donor    ● = 2-year donor    ★ = Memorial Gift

## — CORPORATE DEVELOPMENT —

As with most things in 2021, the CNS Corporate Development initiatives, allowed us to take what we learned from 2020, and expand on what worked while being able to get back to what we do best. Being able to execute two in person courses as well as our Annual Meeting, while expanding our virtual presence allowed the CNS to have its most productive corporate development year to date.

This quick adjustment to our new environment, existing relationships with industry, and efforts to continue to engage with our valued partners resulted in another successful year.

We would like to thank the following companies for their support of our 2021 Non-Annual Meeting Activities.

### *In-Person Courses*

- **Leadership Institute:** Exclusive Supporter, Medtronic
- **Skull Base Fellows Course:** Medtronic, Stryker, Integra LifeSciences, KLS Martin, Carl Zeiss, Peter Lasic, Mizuho America, Inc. Sophysa USA Inc., Olympus America Inc., Apex Medical Inc. and SPIWay LLC.

*Diversity, Equity, & Inclusion Support: Medtronic*

### *Virtual Courses, Sessions, and other Online Education*

- **Career Guide Course:** Medtronic and DePuy Synthes
- **CNS/SNO Virtual Tumor Board Review:** GT Medical Technologies, Inc., and Leica Microsystems.
- **Virtual Visiting Professor Series:** Medtronic DePuy Synthes, MicroVenton Q'Apel, NICC Monteris Medical, and Balt USA
- **ICH Webinar:** Medtronic
- **Modern Microsurgery Webinar:** Carl Zeiss
- **CNS/JCNS Joint Webinar:** Medtronic
- **CNS/CV Section Joint Webinar:** Acandis
- **Case of the Month:** Medtronic
- **Nexus:** Medtronic, Stryker

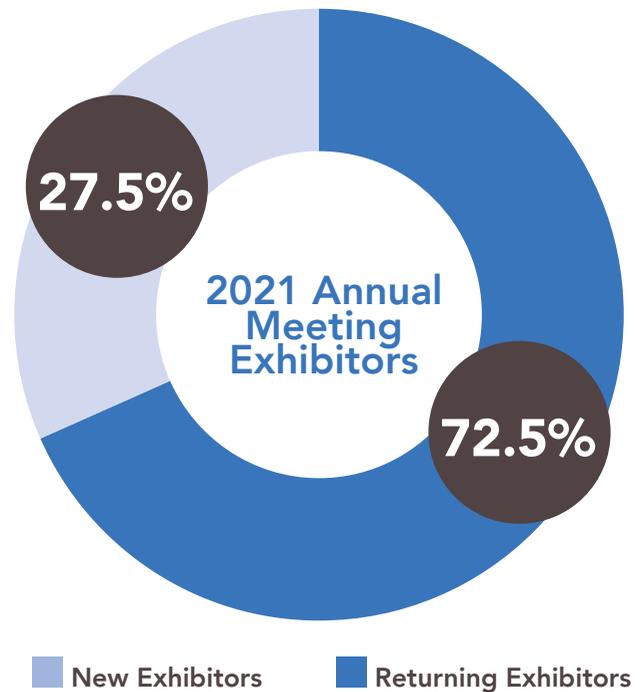
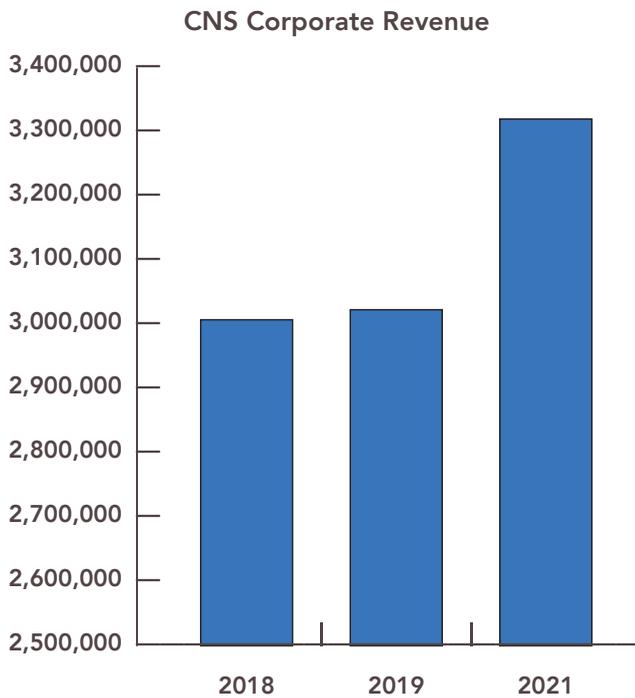


## — CORPORATE DEVELOPMENT —

**Annual Meeting Supporters:** Medtronic, Stryker, DePuy Synthes, Surgical Theater LLC, Integra LifeSciences, MicroVention, o8t: Omniscient Neurotechnology, Synaptive Medical, Globus Medical, Cerenovus, Penumbra, Inc., 3M Health Care, Mizuho America, Inc., Longeviti Neuro Solutions, Boston Scientific, Carl Zeiss Meditec, Inc., NuVasive, BK Medical, NeuroPace, Inc., Olympus America Inc., Novocure, Inc., Alexion Pharmaceuticals, ClearPoint Neuro, Inc., Karl Storz Endoscopy, Q'Apel, BioVentus, Monteris Medical, and AstraZeneca.

There were 41 companies who supported the CNS this year. This is an increase of 12 companies supporting our efforts throughout the year from 2020.

We continue to be both proud and grateful for the collaboration with companies in the field. Our partnerships allow the CNS the opportunity to provide products and solutions that help achieve our mission of enhancing health and improving lives through the advancement of neurosurgical education and scientific exchange.



Daniel J. Hoh, MD  
Co-Chair



Brian V. Nahed, MD, MSc  
Co-Chair



Khoi Than, MD  
Co-Vice Chair



Robert G. Whitmore, MD  
Co-Vice Chair

## — INDUSTRY ALLIES COUNCIL —

The CNS is grateful for the ongoing support of our Industry Allies Council partners, as well as for their insights on issues facing our specialty and the emerging trends that are impacting neurosurgical practice. Only by continuing to come together and engage in open dialog can the CNS and our corporate partners develop truly mutually beneficial partnerships that leverage both organizations' core competencies for the benefit of our specialty and our patients.

The CNS would like to extend a sincere thank you to the following companies for their participation in our Industry Allies Council.

### AMBASSADOR

# Medtronic

### SUPPORTERS



# — FINANCIAL REPORT —

## Statement of Financial Position

December 31, 2021

### 2021 Assets

	Current	Prior Year	Increase/ (Decrease)
CNS Cash	\$4,406,411	\$2,093,831	\$2,312,58
Accounts Receivable	734,850	220,045	514,804
Pre-Paid Expenses & Deposits	1,091,762	681,417	410,345
Beneficial Interest	390,000	360,000	30,000
Investments	27,437,025	22,460,801	4,976,225
Equipment & Software	816,956	820,673	(3,717)
Joint Section Assets (Net)	4,738,571	4,501,989	236,582
<b>Total Assets</b>	<b>39,615,575</b>	<b>31,138,756</b>	<b>8,476,819</b>

### 2021 Liabilities

Accounts Payables	1,549,331	296,210	1,253,121
Loan Payable	0	634,915	(634,915)
Deferred Rent	51,478	84,380	(32,902)
Accrued Expenses	1,004,683	212,229	792,454
Deferred Revenue-Dues	1,248,176	1,413,015	(164,839)
Deferred Revenue-Annual Meeting	276,875	181,168	95,707
Deferred Revenue-Journal	2,000,000	305,000	1,695,000
Deferred Revenue-Other	607,468	0	607,468
Net Payable - Foundation	260,388	357,018	(96,630)
<b>Total Liabilities</b>	<b>6,998,399</b>	<b>3,483,935</b>	<b>3,514,464</b>

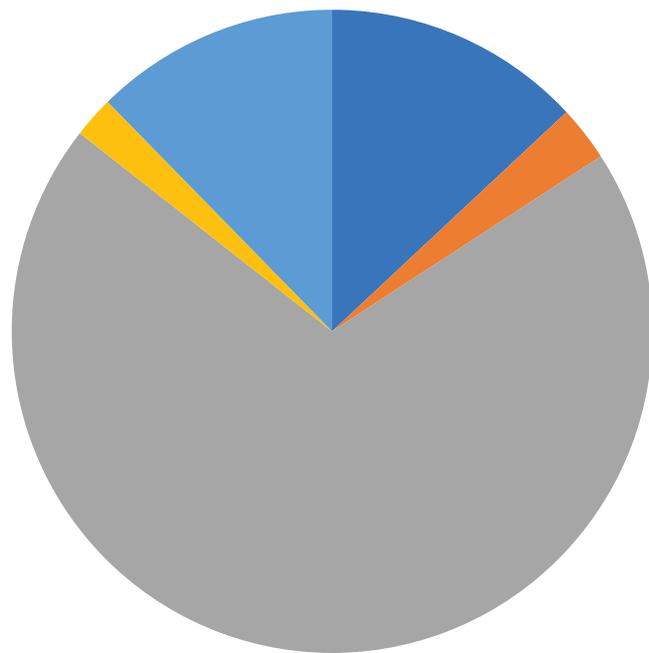
### Net Assets

Unrestricted	7,176	27,294,821	4,962,355
Permanently Restricted	360,000	360,000	0
<b>Total Net Assets</b>	<b>32,617,176</b>	<b>27,654,821</b>	<b>4,962,355</b>
<b>Total Assets</b>	<b>39,615,575</b>	<b>31,138,756</b>	<b>8,476,819</b>

# — FINANCIAL REPORT —

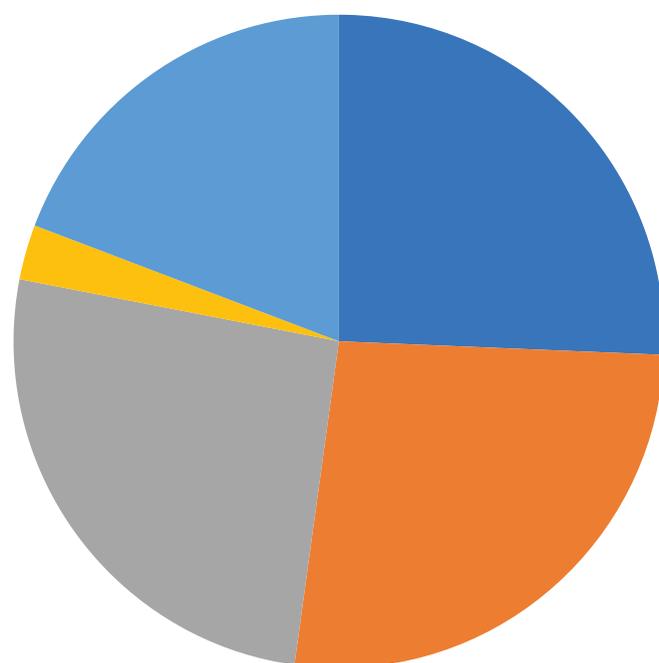
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## Assets as of December 31, 2021



<span style="color: #4F81BD;">●</span> Cash & AR.....	\$5,141,261
<span style="color: #E67E22;">●</span> Prepaids.....	\$1,091,762
<span style="color: #A6A6A6;">●</span> Investments.....	\$27,437,025
<span style="color: #F1C40F;">●</span> Fixed assets, etc.....	\$816,956
<span style="color: #34495E;">●</span> Other.....	\$4,861,989

## FY21 Revenue



<span style="color: #4F81BD;">●</span> Membership Dues.....	\$3,356,113
<span style="color: #E67E22;">●</span> Publications and Journal.....	\$3,469,240
<span style="color: #A6A6A6;">●</span> Annual Meeting.....	\$3,383,032
<span style="color: #F1C40F;">●</span> Online Products.....	\$356,693
<span style="color: #34495E;">●</span> Other.....	\$2,515,033

## — 2021 PRESIDENT —



**Nicholas Bambakidis, MD**

*President, Congress of Neurological Surgeons*

I am honored to have the privilege of leading the Congress of Neurological Surgeons in the year ahead. My successor, Dr. Brian Hoh did an outstanding job guiding our organization through all the twists and turns of the past year and I believe we are heading into 2022 stronger than ever.

By leaning into the expertise, passion and commitment of our volunteers and staff, the CNS lead the way back to safe in-person education last year, first with our Leadership Institute Courses in May and ultimately with the successful return of the CNS Annual Meeting. Through the careful selection and execution of critical safety measures, we were able to gather more than 2,900 surgeons and allied professionals in Austin, Texas to present their original research, connect with colleagues and mentors, and hear from visionary leaders both within and outside of our specialty. The impact of this gathering was incredible and the developments that come out of this crucial scientific exchange will propel neurosurgery into the future. Congratulations to Drs. Brian Hoh, Steven Kalkanis, Nader Pouratian, Brian Nahed, Ashok Asthagiri and the dozens of Annual Meeting Committee members who contributed to this effort.

Congratulations also to Drs. Nader Pouratian, Garni Barkhoudarian, Maryam Rahman, Tiffany Hodges, and the many members of CNS' Education Division who continued to build our online learning opportunities, even as our attention returned to live education. From January onward this team developed virtual courses for written and oral board preparation, as well as a virtual Career Guide course for those transitioning into practice. Their efforts ensured record numbers of CNS members were prepared for these critical career stages.

Looking ahead to 2022, I have great hope for CNS' future. We have established strong partnerships with other essential organizations in neurosurgery, including the American Board of Neurological Surgery and the Society of Neurological Surgeons—both outlined in this Annual Report—as well as with our subspecialty sections. We are entering a new partnership with Wolters Kluwer Health to further advance our already successful portfolio of journals, and transitioning to a new Editor-in-Chief, Doug Kondziolka. The CNS Foundation is in its strongest financial position ever, ensuring continued support for clinical scientist career development, neurosurgical guidelines and international philanthropic efforts. This is all bolstered by a team of the most talented, dedicated and passionate volunteers and staff leading our organization forward. I am especially grateful for the support of our CEO Regina Shupak, whose experience and leadership are critical to our organization's success. I am committed to leveraging every one of these resources to deliver new educational opportunities, career resources, and networking opportunities in the year ahead.

Preparations for our Annual Meeting in San Francisco are already well underway, under the leadership of Drs. Ashok Asthagiri, Lola Chambless and. Our theme of Neurosurgery Connected celebrates the many ways we coming together as neurosurgeons to advance the specialty and patient care.

I am grateful for the opportunity to serve our members as President in 2022. I look forward to welcoming you all to the CNS Annual Meeting in San Francisco this fall, and hope to see you both virtually and in-person throughout the year.

## — MESSAGE FROM THE CEO —



**Regina Shupak**

*CEO, Congress of Neurological Surgeons*

As I reflect on another challenging year, full of unexpected twists and turns, I am so very proud of how the Congress of Neurological Surgeons has continued to adapt and innovate to bring our valued members the educational content, career development resources, and networking opportunities you need in the ways that work for your practice. I am proud to share with you these highlights from 2021 and to celebrate the tremendous work of our CNS Executive Committee and the hundreds of volunteer surgeons serving on CNS committees and work groups.

First, I must congratulate and acknowledge the outstanding leadership of our 2021 CNS President, Brian Hoh, whose clear vision and decisive leadership were critical in navigating the unique challenges this year brought. I am grateful for the opportunity to work with you and for all we achieved under your leadership. ▬

We set out in 2021 with a clear goal to bring our members back together safely after a year of practice disruption, cancelled meetings, staffing shortages and more. With careful preparation, multiple safety measures, and the consummate leadership of Dr. Hoh and CNS Past-President Steven Kalkanis,

we exceeded even our own expectations bringing more than 2,000 surgeons and allied providers to Austin for an outstanding program and invaluable networking. It was so rewarding to see you all again.

The Annual Meeting also marked the launch of an exciting new program, Pathways to Neurosurgery, which brought more than 30 Austin high school students to the CNS for an immersive look at the neurosurgery. The students joined plenary talks and a hands-on activity lab giving them insight into a day in a neurosurgeon's life. This was just one of the new initiatives launched in 2021 by our Diversity, Equity and Inclusion committee and the impact on the students was clear. I am excited to see this initiative grow and impact the specialty into the future.

2021 was an especially fruitful for the CNS Foundation (CNSF), which supported eight annual grants totaling more than \$163,000. And with the outstanding fundraising efforts put forth this year, the Foundation is on track to more than double this impact next year. I am grateful to Dr. Elad Levy and Dr. Alex Khalessi for their leadership of the Foundation this year and excited to see where Dr. Khalessi and Dr. Martina Stippler take the organization in the future.

The NEUROSURGERY Publications team had a busy year as well, under the leadership of Editor in Chief, Nelson Oyesiku. In addition to producing outstanding content across all journal platforms, the publications team initiated a transition to a new publisher, Wolters Kluwer Health, and completed an exhaustive search for our next Editor in Chief. Congratulations to Dr. Doug Kondziolka on his appointment. I am looking forward to working with you in the years ahead.

Even with our renewed focus on live events, and our decision to extend complimentary Annual Meeting registration, the CNS has remained mindful that not all members were able or comfortable to return to travel in 2021. Our Education Division continued to

produce outstanding online content and a collection of new micro learning content to ensure timely education was delivered to all members right in their homes and offices.

So many of these accomplishments were bolstered by continued growth amongst our corporate partners and sponsors, who have remained committed to supporting our members' education both in person and online. We are especially grateful to our member companies of the CNS Industry Allies Council (IAC) for the ongoing support of the CNS and its educational mission as well as for their significant support of CNSF this year.

The CNS Executive Committee, the CNS Committee member volunteers, and I would like to extend a sincere thanks to our dedicated and professional staff. We are all very excited about the future of the CNS. The 2022 CNS President Dr. Nicholas Bambakidis and the 2022 CNS Executive Committee are committed to continued growth of our educational programs and member services and greatly value your feedback as we begin planning for the years ahead. Many of you will receive invitations from the CNS this month to participate in surveys or interviews to support our strategic planning process. I hope you will take this opportunity to share your hopes and concerns with us, and I encourage you to reach out to me and the officers any time with your ideas and suggestions.

I am grateful for the opportunity to continue serving the Congress of Neurological Surgeons, the CNS Executive Committee, volunteers, and staff in 2022. Most of all, it is an honor and a privilege to serve you, our members, every day. You continually inspire us to achieve more, and your participation and commitment to neurosurgery makes the CNS a stronger, more vibrant organization.

# — 2021 EXECUTIVE COMMITTEE —



*Front row from L: Jennifer Sweet, Ashok Asthagiri, Martina Stippler, Praveen V. Mummaneni, Nicholas Bambakidis, Brian Hoh, Steven Kalkanis, Elad I. Levy, Daniel Hoh, Lola B. Chambless, Alexander Khalessi, Regina Shupak*

*Back row from L: Maryam Rahman, Akash Patel, Robert Whitmore, Garni Barkhoudarian, Anand Veeravagu, Tiffany Hodges, Laura Snyder, Clemens Schirmer, Khoi Than, Brian Nahed, Edjah Nduom, Nader Pouratian, Ellen Air*

## Officers

### President

Brian L. Hoh, MD, MBA

### President-Elect

Nicholas C. Bambakidis, MD

### Vice-President

Praveen V. Mummaneni, MD

### Secretary (18-21)

Elad Levy, MD, MBA

### Treasurer (20-23)

Daniel J. Hoh, MD

### Past President

Steven N. Kalkanis, MD

## Members-at-Large

Lissa C. Baird, MD (19-21)

Maryam Rahman, MD (19-21)

Robert G. Whitmore, MD (19-21)

Ellen Air, MD, PhD (20-22)

Tiffany Hodges, MD (20-22)

Akash Patel, MD (20-22)

## Ex-Officio Members

Ashok R. Asthagiri, MD

Garni Barkhoudarian, MD

Mohamad Bydon, MD

Lola B. Chambless, MD

Alexander A. Khalessi, MD, MBA

Brian V. Nahed, MD, MSc

Nader Pouratian, MD, PhD

Clemens M. Schirmer, MD, PhD

Martina Stippler, MD

Laura Snyder, MD

Jennifer A. Sweet, MD

Khoi Than, MD

Anand Veeravagu, MD

## Historian

Christopher E. Wolfla, MD

## CNS Executives

### CEO

Regina Shupak

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CONGRESS OF NEUROLOGICAL SURGEONS

— 2021 ANNUAL REPORT —



Congress of  
Neurological  
Surgeons