



CONGRESS OF NEUROLOGICAL SURGEONS

— 2019 ANNUAL REPORT —



Congress of
Neurological
Surgeons

EVOLVING TO MEET
THE CHALLENGES OF
MODERN NEUROSURGICAL
PRACTICE

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Congress of
Neurological
Surgeons

— 2019 PRESIDENT —



Ganesh Rao, MD
2019 President,
Congress of Neurological Surgeons

It was my honor to serve as the 69th President of the Congress of Neurological Surgeons. My term as President culminated in the Annual Meeting held in San Francisco held from October 19 to 23, 2019. The theme of the meeting, “The Age of Reason for Neurosurgery,” was intended to highlight evidence-based neurosurgery and take controversial topics head on. Chronic traumatic encephalopathy, the need for randomized clinical trials, and the management of low-grade gliomas were but a few of the topics discussed and debated. High-quality science was also presented at the meeting with original contributions from our members. In all, over 1,800 abstracts were submitted to the meeting, including clinical and basic science as well as operative techniques. Overall, it was a successful endeavor and I owe a great debt to the CNS Executive Committee, the Annual Meeting team, CNS staff, and of course, all CNS members who have helped make the CNS one of the most dynamic medical professional societies in the world.

Over the past year we accomplished a lot together. The CNS completed a strategic plan that will help guide our actions over the next 3-5 years. One of our major undertakings is the CNS Foundation. The CNSF was capitalized with one million dollars and matched contributions from individuals, industry, and sections in order to grow it to over 2.5 million dollars. The mission of the CNSF is to support international philanthropic efforts (including observerships), the development of practice guidelines (a signature product of the CNS), and the NINDS K12/Getch award which supports a new surgeon/scientist as they begin their career. The “Getch” as we call it is the only NIH award sponsored by a neurosurgical organization. This program has been so successful we are now funding one K12 award each year.

The official journals of the CNS, *Neurosurgery* and *Operative Neurosurgery* continue to lead the pack. Submissions to *Neurosurgery* are climbing and the journal has attained an impressive impact factor of 4.605 under the leadership of Editor in Chief, Dr. Nelson M. Oyesiku. Dr. Oyesiku’s success has given us the momentum to roll out our first

open access journal, *Neurosurgery Open*. In addition to our successful journals, we also re-introduced the definitive neurosurgical anatomy text by Albert Rhoton: *Cranial Anatomy and Surgical Approaches*. This text contains masterful illustrations and in-depth depictions of surgical anatomy and is a must-have for any neurosurgeon.

The CNS has also created a stable of indispensable courses including Oral and Written Board review courses, the Spine Complications course, a Minimally Invasive Cranial Course and new for 2020, the Tumor Complications Course. These live offerings have been very successful and offer an opportunity for networking and CME in addition to great content. Our online portfolio also continues to grow. The Neurosurgery Survival Guide and the Guidelines apps are constantly being refined and improved. Nexus, which has over 350 cases from positioning to approach to closure, is one of our most popular products with more than 6,400 views per month.

One of the most successful efforts of the CNS is the Leadership Institute. This program is expanding to include mid to late career individuals. We have also expanded it to an international audience and a joint Leadership Course was held in Brazil. Participants in this course rave about its utility in interfacing with hospital administration in a variety of situations.

The CNS is in excellent hands with a very bright future under the leadership of my friend and colleague Dr. Steven Kalkanis, the current CNS President. The 2020 Annual Meeting in Miami is already shaping up to be one of our most exciting. As I leave my role as a leader in the CNS, I marvel at the energy and dedication of the Executive Committee. As diverse and dynamic as ever, I have no doubt that under their leadership, the best days of the CNS lay ahead. Thank you for giving me the opportunity to lead this great organization.

Sincerely,

Ganesh Rao, MD

Past-President, Congress of Neurological Surgeons

— MEMBERSHIP —



In 2019, the CNS Membership Committee, Resident Committee, Education Division and International Division collaborated on several initiatives to better engage with members across career phases and help them identify and access the educational products, resources, and services that best address their practice challenges. These efforts, in part, contributed to continued member growth across key CNS membership categories. With a total membership of 9,784 members, including 6,706 active (domestic) members and an active international membership of 1,018, the CNS has grown its domestic membership year-over-year for nine consecutive years.

We also continued our efforts to cultivate a community of neurosurgeon leaders this year, by engaging more than 740 neurosurgeon volunteers in committee work, special products and the delivery of educational courses, both live and online. Through these volunteer assignments, our members develop valuable leadership skills, build critical networks, and foster opportunities for mentorship. These volunteers' passion and enthusiasm ensure that the CNS remains the vibrant organization our members have come to expect, and that our programs and services are relevant across all neurosurgical practice settings.

CNS Member Growth



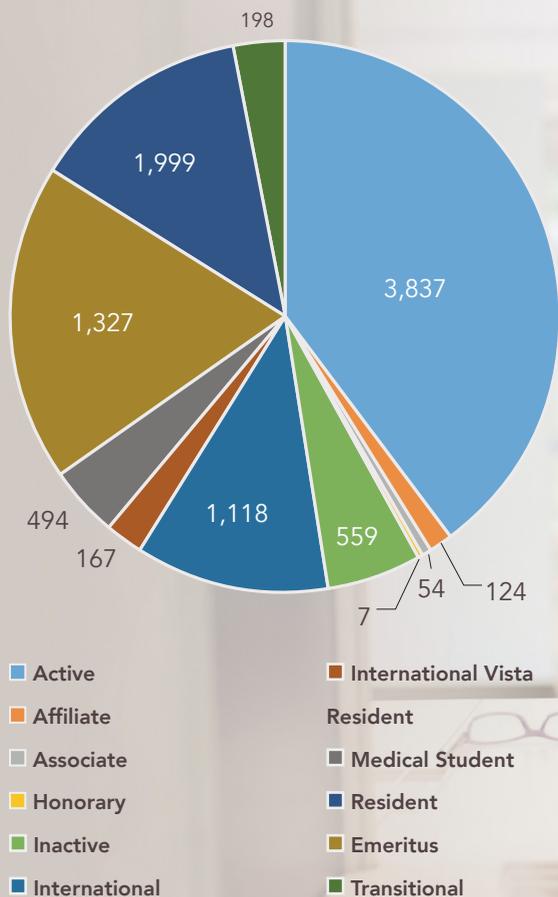
*Excludes Honorary, Emeritus, and Inactive members

■ Total International ■ Total Domestic

As a recognized leader in education and a partner in neurosurgical innovation, the CNS continues to offer the greatest membership value of any neurosurgical organization. CNS members enhance their leadership skills, advance their knowledge, and further their careers through a **host of benefits, including complimentary and discounted access to the CNS' premier offerings:**

- Extend the reach of your research with a 20% discount on article processing charges for content published in [Neurosurgery Open](#)
- Online and print access to NEUROSURGERY® Publication, Best in Class journals: *Neurosurgery*, *Operative Neurosurgery*, *Clinical Neurosurgery*, plus the Surgeon's Armamentarium
- *Congress Quarterly* magazine
- Self-assessment exams (SANS), 20 different modules and exams
- Online courses and webinars, offered live and on-demand
- NEXUS, the CNS online case-based repository of neurosurgical operative techniques and approaches
- CNS Annual Meeting—Leads as best neurosurgical meeting
- 11 courses on clinical and non-clinical topics
- Comprehensive Written and Oral Board preparation resources
- Leadership education, courses, and networking opportunities
- Neurosurgical Practice Guidelines—accessible on [cns.org](#) and via the newly updated Guidelines app
- Advocacy and representation in Washington, DC, via the Washington Committee

CNS 2019 Membership



— MEMBERSHIP —

continued

MEMBER BENEFITS

- Access your complimentary subscriptions to CNS top-rated publications including [Neurosurgery](#), [Operative Neurosurgery](#), and [Congress Quarterly](#), covering the latest advances in neurosurgical research and technology, practice management, socioeconomic developments, and more.
- Extend the reach of your research with a 20% discount on article processing charges for content published in [Neurosurgery Open](#).
- Enjoy a discounted member rate on the recently re-issued *Rhoton's Cranial Anatomy and Surgical Approaches*.
- Take advantage of our extensive online [education](#), a catalogue of over 200 CME hours, at your convenience, including webinars and course recordings, [CNS Spotlight](#), [SANS Lifelong Learning](#) and [Nexus](#) with more than 350 cases in all subspecialties.
- Download on-the-go resources, such as the [CNS Guidelines App](#), [SANS Boards App](#) and [Neurosurgery Survival Guide App](#), to access information when you need it most.
- Enjoy exclusive member rates at the [2020 CNS Annual Meeting](#), September 12– 16, and 10 courses throughout the year.
- Defend and protect the ability of neurosurgeons to practice medicine freely through neurosurgery [advocacy](#).
- Find your next in-person opportunity to connect and learn from your peers in the neurosurgical field in our [Calendar of Events](#) or via the [Membership Directory](#).
- Manage your [personal profile](#) by adding your subspecialties to get recommendations tailored for you as well as track your CME credits via your Member Dashboard.



As always, we are grateful to our members for continuing to make the CNS the premier neurosurgical organization.

— MEMBERSHIP —

continued



“I joined the Congress of Neurological Surgeons when I was still a resident. The main reason was to get online educational information and access to journals when I was in training. Also being in a Third World country, I wanted to keep abreast with the cutting-edge research and best current practices so I can offer the best for my patients. It is still resourceful even now that I am practicing!”

— Dr. Luxwell Jokonya

“I joined the CNS in 1999, at the end of residency. I felt it was a vibrant, contemporary, and inclusive professional society that perfectly met the needs of young neurosurgeons. The CNS is a unique society, and like many organization, its people are the most important element. I would recommend that a new member try to meet and spend time with as many people as possible including CNS staff, residents, fellows, junior faculty and senior faculty. Neurosurgery is a small community and it is possible to learn a great deal and to generate a network of friends and colleagues that will be important throughout career and life.”

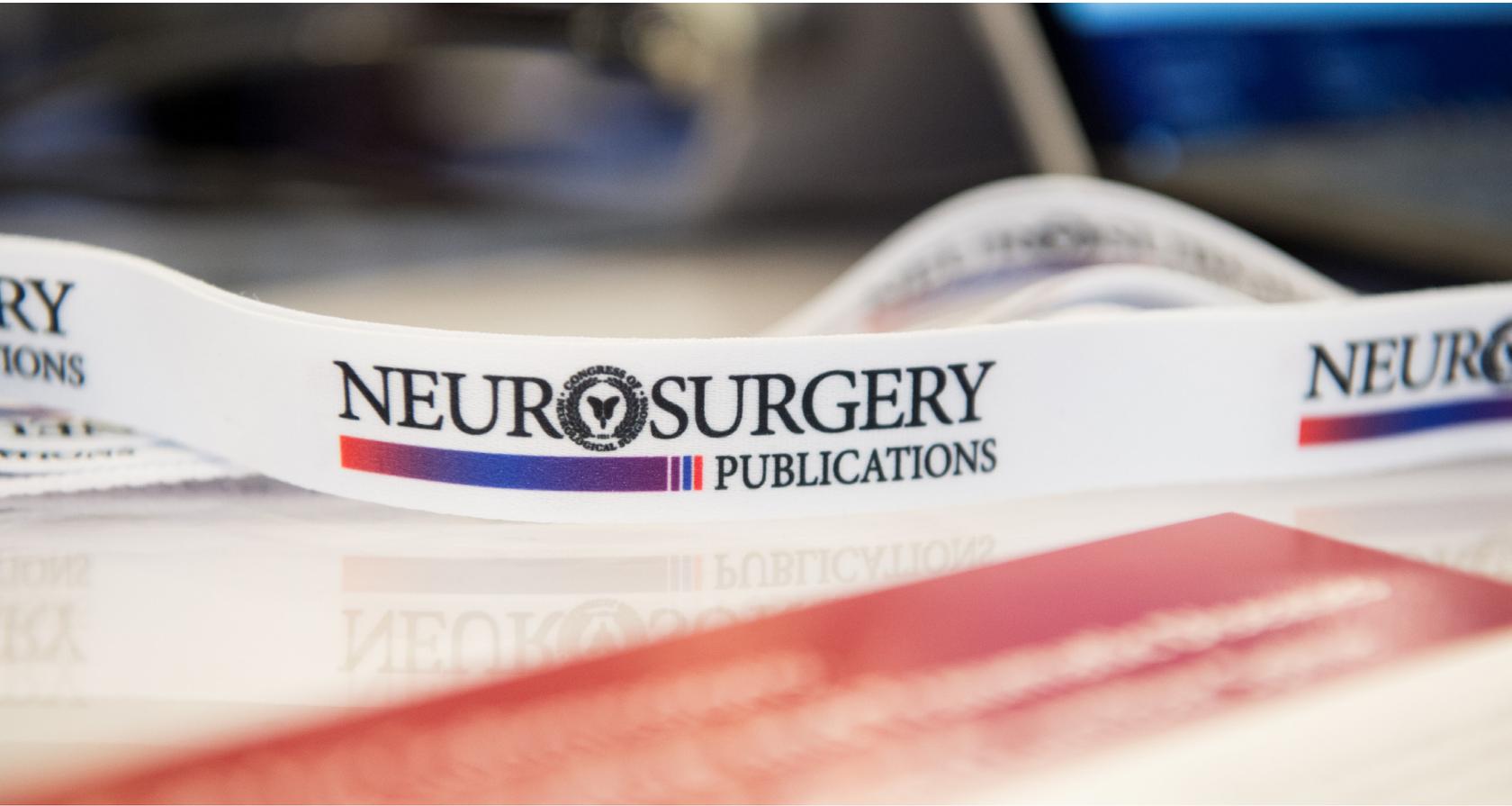
— Dr. Emad N. Eskandar

“I joined CNS because I wanted to acquire and expand my knowledge and skills in neurological surgery. I want my clinical practice to be at par with the current international standards of practice and to be able to take part in molding the future of the practice through breaking grounds in scientific research and innovation.”

— Dr. Maria Christine Florendo-Dalisay



— NEUROSURGERY PUBLICATIONS —



During 2019, **NEUROSURGERY® Publications** continued its tradition of excellence and innovation through multiple venues including *Neurosurgery* and *Operative Neurosurgery*, the expansion of advanced digital offerings, live events at the Annual Meeting, and the debut of a new title, *Neurosurgery Open*.

Neurosurgery and *Operative Neurosurgery* have an established history of publishing only the very highest quality science, a strategy which is reflected in both journals' Impact Factors. This year *Neurosurgery* received an Impact Factor of 4.605 placing it in pole position among its peers of purely neurosurgical journals. Such an accomplishment is reflective of the high-quality science published and the dedication of the journal's editorial board and reviewers, all of whom work tirelessly to provide fair, timely and thorough reviews.

Throughout the year, *Neurosurgery* published three CNS Guidelines ("Evaluation and Treatment of Patients with Thoracolumbar Spine Trauma," "Treatment of Adults with Metastatic Brain Tumors," and "Pediatric Myelomeningocele") and Guidelines on Pediatric Severe Traumatic Brain Injury in conjunction with *Pediatric Critical Care Medicine and Neurosurgery*, as well as contributions to two recurring series which debuted this year "Reasons to Believe: Biostatistics and Methodology for the Neurosurgeon" and "Pursuing Wellness."





Nelson M. Oyesiku addresses attendees during the Annual Meeting's popular "Meet the Editors" session.

In July, *Neurosurgery* published a dedicated supplement on the "Breakthroughs in the Endovascular Management of Acute Stroke". *Operative Neurosurgery* also published the "Essential Neurosurgery for Medical Students" supplement which provides a basic fund of knowledge for residents and medical students. Organized by the Society of Neurological Surgeons (SNS) under the leadership of Dr. Daniel L. Barrow and Dr. Bernard R. Bendok this supplement is a truly invaluable resource. We are happy to make this supplement freely accessible to all readers.

Operative Neurosurgery also published several additional contributions to Dr. Aaron Cohen-Gadol's "Neurosurgical Atlas Series" which highlights strategic techniques for microneurosurgical operations in operative videos, advanced multimedia illustrations, and immersive 3D and virtual reality models of normal and pathological neurosurgical anatomy. The 3D and virtual reality models employed by Dr. Cohen-Gadol are truly amazing! Finally, in its October issue, *Operative Neurosurgery* debuted the first in its "Masters of Neurosurgery" series with The Spetzler Collection. This historical archive of operative videos narrated by Dr. Spetzler honors his long career and provides a close look at the decision-making, techniques and skill of this remarkable surgeon. All of the publications listed above are accessible to CNS members with journal access and we encourage all to peruse them at their leisure.

Over the course of the past several years, *NEUROSURGERY® Publications* has made a concerted effort to build advanced digital offerings that provide authors with novel ways to disseminate their content and supply the reader with new ways to discover and interact with that content. In 2019 we saw two notable steps forward: the relaunch of The Surgeon's Armamentarium and the expansion of *Operative Neurosurgery's* Surgical

Video article type. Relunched and refreshed for 2019, The Surgeon's Armamentarium is now supported by our publisher, Oxford University Press (OUP), which allows for a more seamless experience. Visitors to the site can search and access material from *Neurosurgery*, *Operative Neurosurgery*, and supplements all in one convenient location. OUP and editorial office staff are hard at work on additional features and functionality for the platform and we look forward to sharing those updates with the membership in the near future. Interested members can access the site at www.ons-sa.com. The expansion of the Surgical Video article type to allow for videos on simulation, surgical animation and 360VR, all of which can be supported in either 2D or 3D formats, went into effect in October 2019. The journal plans to issue a formal "Call for Videos" intended to highlight these technologies in the coming year, however authors can submit Surgical Videos utilizing these newly supported video types today and are encouraged to do so.

In conjunction with the growth and expansion of the journals over the past several years, *NEUROSURGERY® Publications* has made an effort to offer CNS Annual Meeting attendees a variety of ways to engage with the journal at the *NEUROSURGERY® Publications* booth to learn about the latest journal news, or catch a *Neurosurgery* Paper of the Year presentation, or attend the Meet the Editors session (now in its third year). The journals are a central component of the CNS and its mission and offer members many avenues by which to engage with the specialty by furthering their knowledge and advancing the conversation through direct contributions. We hope members found this evident throughout the 2019 Annual Meeting in San Francisco. For those who are interested in learning more about journal related events at the Annual Meeting, we've published on this recently¹⁻² and we encourage all those who are interested to consult these pieces.

Perhaps the most significant news item to come out of the *NEUROSURGERY® Publications* editorial office in 2019 was the launch of our third title, *Neurosurgery Open*. *Neurosurgery Open* formally debuted on October 9th and is now welcoming submissions. The journal is an online-only, fully open access publication. Content accepted for *Neurosurgery Open* publishes online as soon as it is available in a continuous fashion with issues closing quarterly. The first *Neurosurgery Open* content published in January 2020. The first issue closes March 2020. As an open access journal, *Neurosurgery Open* content is freely accessible to all. It is our belief that the journal will provide the neurosurgical community with an important open access option for transmitting their research and we are thrilled to add this title to our portfolio. Those interested in reading more about the journal including its Instructions for Authors can visit www.neurosurgeryopen-online.com

As we reflect on the accomplishments of 2019 we would like to close by thanking our dedicated editorial review board, reviewers, authors, CNS Headquarters and editorial office staff. We look forward to 2020!

References

- 1 Oyesiku NM, Fiedor BJ. *NEUROSURGERY® Publications* at the 2019 CNS Annual Meeting. *Congress Quarterly Summer 2019*: 13.
- 2 Nahed BV, Fiedor BJ. Operative Techniques and Case-Based Discussion Sessions at the 2019 CNS Annual Meeting. *Congress Quarterly Summer 2019*: 12.

— RESIDENT COMMITTEE —

Resident Fellows Program

The CNS Resident Fellows program provides neurosurgery residents a unique opportunity to get involved in organized neurosurgery. Over their two-year term, Resident Fellows 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 contributions to NEXUS and the Neurosurgery Survival Guide (NSG) app, as well as creating products like the CNS Journal Club Podcasts. In 2019, 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.

The CNS congratulates our 2019 Resident Fellows and extends our sincere thanks for their work and contributions to CNS Standing Committees this year:

Aditya Iyer

Akshikumar Mistry

Candice Carpenter

Christian Hoelscher

Christopher Alvarez-

Breckenridge

Domenico Gattozzi

George Hanna

Giyarpuram Prashant

Jacky Yeung

Jeremy Hosein

Karthik Madhavan

Kartik Kesavabhotla

Laila Mohammad

Najib El Tecla

Nitesh Patel

Rimal Dossani

Tristan Stani

Tyler Schmidt

Yasser Jeelani

Andrew Kobets

James Wright

Sanjeet Grewal

Farhan Mirza

Luis Savastano

Matthew Decker

Sanjay Konakondla

NEUROSURGERY® Publications Resident Fellowship



Tarek Y. El Ahmadieh, MD was named the 2019-2020 **NEUROSURGERY® Publications** Resident Fellow, marking the start of our second successful year of the program. Dr. El Ahmadieh is a PGY-5 resident at University of Texas Southwestern.

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. Residents are encouraged to apply for the 2021-2022 fellowship next winter.

— 2019 CNS ANNUAL MEETING —



THE AGE OF REASON FOR NEUROSURGERY

The 69th Annual Meeting of the Congress of Neurological Surgeons

October 19-23, 2019

San Francisco, California

The 2019 CNS Annual Meeting brought together thousands of neurosurgeons and their team members across geographic boundaries, practice settings, and career stages to share groundbreaking research, discuss global perspectives on key neurosurgical disorders and treatments, and to examine the evidence for modern neurosurgical practice.

In a time when medical expertise and evidence are challenged by hearsay, and public safety and health are undermined by poor science, our 2019 meeting theme, "***The Age of Reason for Neurosurgery***" renewed an emphasis on rational thought and evidence-based reason as the cornerstones of neurosurgery.

ANNUAL MEETING HIGHLIGHTS

- A new format for weekend symposia offered a deeper dive into clinical issues relevant to practice, and bundled symposia offered even more clinical and scientific content at a reduced price, integrated with industry-sponsored breakout sessions.
- A new **Interactive Multimedia Research Presentation Session** paired our traditional poster session with mini-oral presentations from four podiums, and served it all up with wine and cheese.
- A new **Operative Techniques** abstract type highlighted expert and novel techniques to achieve the best outcomes during each afternoon Section Session, with operative videos and special oral presentation opportunities.
- Three **International Symposia** on Monday brought together international experts in brain tumor surgery, cerebrovascular surgery, and functional and stereotactic surgery brought a global perspective to our practice of neurosurgery.
- The first ever **3D Live Surgery** was presented Monday morning in the **CNS Xperience Lounge**.
- Six of our featured speakers hosted book signings following their sessions—**Lucy Kalanithi**, **Shankar Vedantam**, **Doris Kearns Goodwin**, **Carl Zimmer**, **Bret Stephens** and **Rebecca Skloot**—as did neurosurgeon author Dr. **Alan Scarrow** (*Hope over Experience: How Big Data, Automation, and AI Can Fix Healthcare*), and **Dr. Gary Simonds** (*The Thriving Physician: How to Avoid Burnout by Choosing Resilience Throughout Your Medical Career*).
- A new **Advanced Endoscopic and Exoscopic Neurosurgery Seminar** wrapped up the meeting on Wednesday afternoon.



ANNUAL MEETING BY THE NUMBERS

The CNS Annual Meeting serves as a hub for scientific exchange, educational courses, symposia, and technology.

- **2,858** medical registrants gathered in San Francisco to connect with colleagues and catch up on critical developments in the field.
- **394** international attendees attended (not including Canada or Mexico)
- **22,371.75** CME Hours were claimed
- **12** CNS US Active Duty Military members took advantage of CNS special benefits such as complimentary registration and free housing

The CNS was honored to welcome our International Partner Society, the Japanese Congress of Neurological Surgeons (JCNS).



A very special thank you to our 2019 CNS Honored Guest, Raymond Sawaya, for delivering three outstanding GSS talks:

- Role of Resection for Glioblastoma: Can Technology Overcome Biology? (Monday)
- Evidence based Medicine Through Development of Homegrown Databases (Tuesday)
- The Evolving Landscape and Management of Brain Metastases (Wednesday)

As well as the Honored Guest Luncheon on Monday

Innovator of the Year Finalists:

Over 35 submissions for Innovator of the Year this year were vetted by the Scientific Program Committee.

The top four finalists presented on Monday, October 21 in the CNS XPerience Lounge.

– Innovator of the Year –
Harnessing AI and
Smartphones to Develop
the Next Generation of TBI
Diagnostics
Lynn McGrath

– Finalist –
Microangiography for
Endovascular Neurosurgery
Peter Kan

– Finalist –
Live Machine Learning
Centered Architecture
System to Optimize Lumbar
Stenosis Surgical Outcome
Ghaith Habboub



Congratulations to Lynn McGrath the 2019 Innovator of the Year!

Congratulations to **Lynn McGrath**, selected by attendee vote as the 2019 Innovator of the Year!



CNS Resident Award Presentation: Hesham M. Zakaria

Ambulation on POD#0 is Associated with Decreased Adverse Events After Elective Lumbar Spine Surgery: Analysis of the Michigan Spine Surgery Improvement Collaborative (MSSIC)

Congratulations to the 2019 Abstract Award Winners

The Congress of Neurological Surgeons congratulates the recipients of this year's award winners:

Hesham M. Zakaria
CNS Resident Award

Daniel A. Orringer
Rosenblum-Mahaley Clinical Brain Tumor
Research Award

Tej D. Azad
Julius Goodman Resident Award

Bryan D. Choi
American Brain Tumor Association Young
Investigator Award

Jignesh Tailor
Columbia Softball Pediatric Brain
Tumor Award

Jignesh Tailor
Preuss Research Brain Tumor Award

Karam P. Asmaro
Integra Foundation Award

Matthew Shepard
Leksell Radiosurgery Award

Connor Liu
AANS/CNS Joint Section Tumor Neuro-
Oncology Trainee Award

Courtney Pendleton
Sherry Apple Resident Travel Scholarship

Michael Honey
Ronald R. Tasker Young Investigator Award

Ching-Jen Chen
Galbraith Award

Hao Chen
BrainLab Neurosurgery Award

Zachary A. Medress
Samuel Hassenbusch Young Neurosurgeon
Award

Iahn Cajigas
Stereotactic and Functional Neurosurgery
Resident Award

Bledi C. Brahimaj
AANS/CNS Joint Section on Tumor Skull
Base Surgery Award

Matthew M. Grabowski
Journal of Neuro-Oncology Award

Jack P. Rock
ThinkFirst Injury Prevention Research Award

NUMBER OF ABSTRACTS PRESENTED



121 Oral Presentations: Section Sessions/
Resident Award



118 Mini-podium presentations



164 Oral Presentations: Sunrise Sessions/Late



355 Posters



70 Breaking/Rapid Exchange/Afternoon Sessions
Oral Presentation: Operative Technique/
International



907 Digital Posters

Members and attendees gathered daily at the new CNS Pop-up shop to snag exclusive CNS branded items.



New CNS Wellness Afternoon

For the first time ever, Neurosurgeons gathered in the CNS Xperience Lounge on Tuesday to focus on wellness and work life balance. Our Wellness Afternoon featured fresh fruit smoothies made by attendees on the Blender Bike, Voices of Neurosurgery: The Unforgettable Moments story-telling event, complimentary CNS sweatpants. Dr. **Gary Simonds** also delivered a talk and signed copies of his book, *The Thriving Physician: How to Avoid Burnout by Choosing Resilience Throughout Your Medical Career*.

AWARDS



Founders Laurel Award Recipient, Daniel L. Barrow, MD



Distinguished Service Award Recipient, David C. Berg

SANS Challenge Winners

Thirty-six residency programs participated in the SANS Challenge qualifying rounds leading up to the Annual Meeting. The top 12 teams competed in live semi-final and final rounds in San Francisco. Congratulations to these teams for taking home the win!

– First place –

The Ohio State University

Jeffrey Hatef Jr.
Nguyen Hoang

– Second place –

University of Cincinnati

George Liu Yang
Zachary Plummer

– Third place –

University of Illinois at Chicago

Mandana Behbaha
Laura McGuire



SANS Challenge Winners



The CNS was proud to partner again with the Association for Neurosurgical Physician Assistants (ANSPA) to host the 2019 ANSPA Fall CME Meeting in San Francisco

2019 Neurosurgery Paper of the Year Award Recipients

The Paper of the Year Awards identify and honor the most impactful papers published in *Neurosurgery* from July 2018-May 2019. Winning papers challenged dogma, created a paradigm shift, and got surgeons rethinking approaches to patient care, big data, and trial results.

Top Paper of the Year: Spine: Symptomatic Adjacent Level Disease Requiring Surgery: Analysis of 10-Year Results from a Prospective, Randomized, Clinical Trial Comparing Cervical Disc Arthroplasty to Anterior Cervical Fusion
Presenting Author: Allan D. Levi

Paper of the Year: Section Level: Cerebrovascular: Accuracy in Identifying the Source of Subarachnoid Hemorrhage in the Setting of Multiple Intracranial Aneurysms Presenting Author: Sepideh Amin-Hanjani

Tumor: Phase I Trial of Radiosurgery Dose Escalation Plus Bevacizumab in Patients With Recurrent/Progressive Glioblastoma
Presenting Author: Michael A. Vogelbaum

Neurotrauma and Critical Care: The Intracerebral Hemorrhage Score: A Self-Fulfilling Prophecy? Presenting Author: D. Jay McCracken

Peripheral Nerve: Novel Findings in Obstetric Brachial Plexus Palsy: A Study of Corpus Callosum Volumetry and Resting-State Functional Magnetic Resonance Imaging of Sensorimotor Network
Presenting Author: B. Indira Devi

Stereotactic and Functional: Long-Term Follow-up Study of MRI-Guided Bilateral Anterior Capsulotomy in Patients With Refractory Anorexia Nervosa Presenting Author: Bomin Sun

Pediatric: The Preventable Shunt Revision Rate: A Multicenter Evaluation
Corresponding Author: Paul Klimo, Jr.

Health Policy, and Law: Drivers of Variability in 90-day Cost for Elective Laminectomy and Fusion for Lumbar Degenerative Disease Presenting Author: Clinton Devin

Pain: Spinal Cord Stimulation for the Treatment of Chronic Pain Reduces Opioid Use and Results in Superior Clinical Outcomes When Used Without Opioids
Presenting Author: Julie G. Pilitsis

— EDUCATION DIVISION COURSES —



Under the leadership of Co-Chairs **Ashok Asthagiri** and **Nicholas Bambakidis**, as well as Vice Chair **Garni Barkhoudarian**, the CNS Education Committee continued to expand our catalog in 2019 with a focus on building relevant content for key member segments and engaging with more members across all career stages. We expanded our live courses with three new offerings to reach more attendees than ever before and updated our online mobile resources to meet members' evolving needs. This included adding adding new webinars—*Neurosurgery Job Search*, *Excelling in your Neurosurgical Subinternship*, *Managing Conflict in the Workplace*, and joint international webinars with JCNS and SBN—as well as refreshing all three mobile apps and updating our online learning site to make it quicker and easier for members to identify appropriate educational offerings. All of this was accomplished through the efforts of 100 volunteer committee and work group members and over 200 live and online course faculty members.

Courses by the Numbers

	Total Attendance	Total CME credits claimed
<p><i>Spine Complications Course</i></p> <p>February 15-17, 2019 / Park City, UT — Still one of our most popular courses, the Spine Complications Course offered an intimate setting for the discussion of challenging spine cases and complications. The 2019 course was updated to incorporate a session on guidelines and indications.</p>	45	660
<p><i>Minimally Invasive Cranial Course</i></p> <p>February 15-16, 2019 / La Jolla, CA — New in 2019, the CNS MIC Course gathered practicing surgeons looking to introduce or expand the use of minimally invasive technologies and approaches into their cranial practice. The 2-day intensive course combined lectures, case-based discussions, and cadaver dissections to cover endoscopic evacuation of ICH, stereotactic navigation and exoscopic techniques for subcortical surgery, and laser interstitial thermal therapy for epilepsy and oncology indications.</p>	16	165.75
<p><i>SANS Written Board Course</i></p> <p>February 23-24, 2019 / Houston, TX — Now in its third year, the SANS Written Board Course has become an essential component of Primary Examination preparation. Faculty utilized a case-based approach with integrated real-time testing into this intensive two-day course, and provided attendees with supplemental SANS resources for continued study.</p>	72	
<p><i>Oral Board Course</i></p> <p>February 23-24, 2019 / Houston, TX; October 19-29, 2019 / San Francisco, CA — CNS held two Oral Board review courses in Houston this year—one in conjunction with the Written Boards course and a second in conjunction with the Annual Meeting. Designed for early exam preparation, these courses helped attendees get comfortable with the case-based nature of the exam and identify gaps for further study. One-on-one sessions gave attendees the opportunity to present a case to a faculty member and receive relevant feedback on indications and subsequent follow-through.</p>	88	416
<p><i>The Basis of a Rewarding Neurosurgical Career: A Career Guide for New Attending Physicians and Fellows</i></p> <p>August 9-10, 2019 / Rosemont, IL — This intensive new two-day 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. 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.</p>	28	77
<p><i>Advanced Endovascular Techniques and Devices</i></p> <p>August 24, 2019 / Buffalo, NY — This new one-day course gave residents and attending neurosurgeons an opportunity to learn how to employ new and emerging endovascular techniques and technology clinically in an unbiased, hands-on environment. Content covered stroke thrombectomy, aneurysm embolization, and AVM/AVF embolization. A difficult-case conference allowed participants to bring cases for advice from faculty and other participants</p>	28	20.25
<p><i>Skull Base Fellows Course</i></p> <p>August 29-30, 2019 / Cleveland, OH — The CNS once again gathered skull base fellows and early-career neurosurgeons in Cleveland OH this summer to cover the basic surgical approaches and anatomy required of every skull base neurosurgeon. Neurosurgeons and ENT surgeon faculty demonstrated posterolateral transtemporal surgical approaches as well as endoscopic endonasal anatomy and surgical options during this sold-out course.</p>	18	133

The Education Division has also continued to work on refining and enhancing our CME practices to ensure we remain a premier and preferred provider in neurosurgery. The division engaged residents and medical students in the COI Committee to help bring their perspective into the CME planning process and educate them on the best practices now, so they will be experienced planners in the future. We also revamped our CME planning guide to streamline communications and expectations for all planners and ensure that all CME activities consistently meet CNS' rigorous standards for quality and relevancy. We are grateful to Dr. Ashok Asthagiri for his leadership in this endeavor and to our more than 50 volunteer planners.

— ONLINE LEARNING —

215 On-demand activities offered at cns.org



2,732

Total CME Hours Claimed from On Demand
Online Educational Products

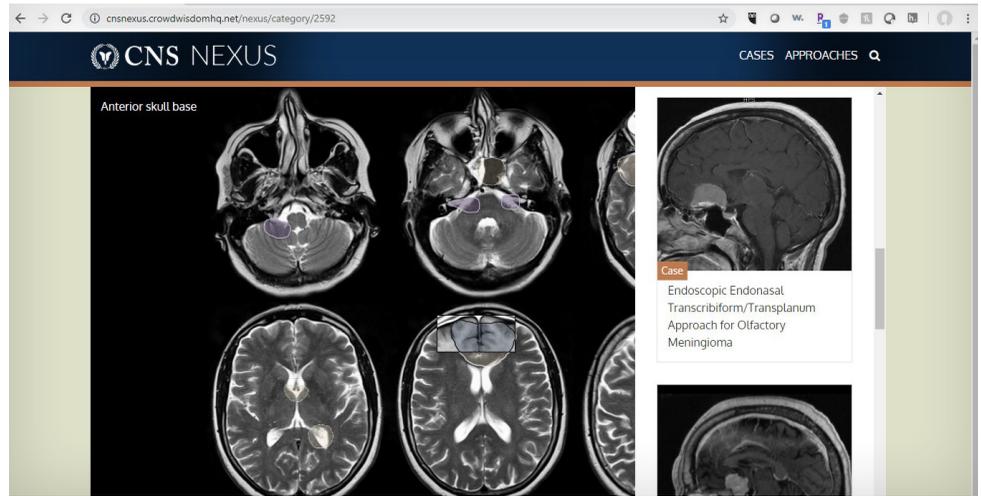
NEXUS

CNS' comprehensive case-based repository of neurosurgical operative techniques and approaches--was expanded to include **377 cases** across all neurosurgical subspecialties, thanks to the tireless efforts of our 16 member Nexus Editorial Board and Managing Editor, Maryam Rahman.

More than **220 authors** have contributed cases to the Nexus, most cases 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.

With its streamlined format, simple navigation and mobile-friendly content, Nexus is proving to be a practical, on-the-go reference for Residents and practicing surgeons alike. In 2019 Nexus was visited over **14,000 times** by users in **130 countries**. From an initial idea of sharing best practices, to a visual network of cases from an esteemed editorial board, Nexus has grown to be one of CNS' premier educational products. Co-chairs Nicholas Bambakidis and Peter Nakaji have been devoted to releasing 100 new Nexus cases or more a year since our launch and today, Nexus showcases over 350 cases across seven specialties. In 2019, we updated the interface enabling authors to electronically set up their cases and submit to the editorial board for review. We are confident this effort will yield an influx of quality cases in the years ahead. Managing Editor Dr. Rahman worked with the newly established editorial board to publish over 150 cases and set up the new Peripheral Nerve sections this past year.

150
New NEXUS Cases



More than 150 new cases were added to NEXUS in 2019, each richly enhanced with intraoperative images, medical illustrations and operative video.



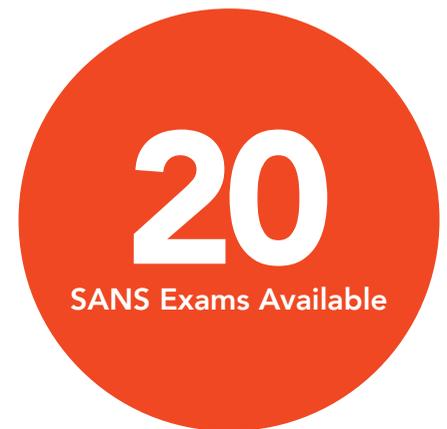
SANS

For decades, surgeons have depended on Self-Assessment Neurosurgery Exams, an exclusive CNS product designed to enhance medical knowledge and self-assessment in neurosurgery, reinforce practice patterns, and recognize knowledge gaps to help neurosurgeons prepare for standardized examinations and improve surgical decision making. The SANS Committee partners with other CNS committees and organizations to develop specialty SANS exams to cover topics including indications, neuromodulation, and course topics from our Annual Meeting.

In 2019, the CNS Education Division and SANS Committee partnered with The North American Neurological Society (NANS) to create SANS for NANS I and II. Each exam offers 25 questions covering neuromodulation and its application to spine stimulation techniques, patient selection, indications, practice management integrations and alignment of neuromodulation direction, guidelines & goals. Exam I provides questions to establish a baseline of knowledge and

Exam II evaluates knowledge gained from additional NANS certification curriculum. Together CNS and NANS have developed educational content to meet the needs of both our members.

Additionally, the SANS committee continues to make it easier for learners to delve into important concepts within neurosurgical specialties by offering new subspecialty-focused SANS modules designed to explore medical knowledge in a more in-depth, comprehensive curriculum. This year they released the SANS Neuropathology Module which discusses the basic pathological processes recognizing and interpreting evidence of gross and microscopic disease of the nervous system and exploring correlations of clinical and pathological findings related to the nervous system through its 100 questions.



403 Total CME Claims for Online Activities

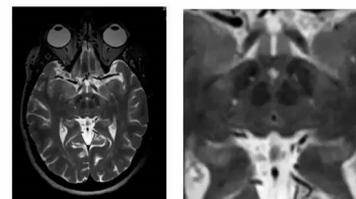
Webinars

Dr. Mohamad Bydon took webinars in a new direction this year, focusing on the development of on-demand webinars that can be conveniently accessed anytime, including via mobile devices. These convenient didactic lectures last 60 to 90 minutes and include topics on robotics, job search tips, and core neurosurgery knowledge. We hosted three joint International webinars in 2019—two with SBN, Functional Review and Anatomy Review, and a Cerebrovascular Review with JCNS that was held in conjunction with their live Annual Meeting.

18
New
webinars
presented

Determining the surgical target – STN

- T2
- 12mm lateral
- 4mm deep to MCP
- 4mm posterior to MCP



CNS' Written Board preparation webinar series continue to be among the most accessed online resources, live and on-demand.

Additional Online Education Offerings:

Podcasts

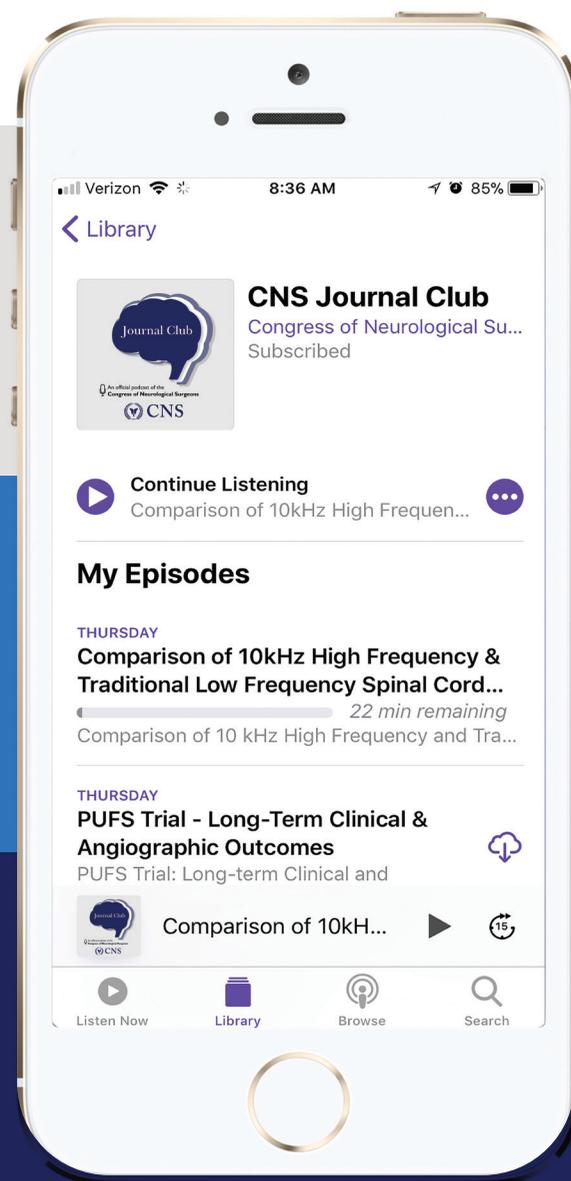
CNS Journal Club podcasts, under the direction of **Dr. Martina Stippler**, has been updated to offer a CME quiz for purchase related to both the 30-minute free podcast and highlighted Neurosurgery Journal article. The quizzes are 5 to 10 questions offering 0.5 up to 1.0 CME. Related quizzes can be found on the podcast page or in the online catalog.

Case of the Month

Under the leadership of **Dr. Maryam Rahman**, the Case of the Month format has been updated to better facilitate Indications training by requiring participants to answer all questions before viewing correct answers and feedback. Once complete you are provided rationale for correct answers, references and recommendations to related Nexus cases, SANS exams and other online education.

Neurosurgery Watch

Neurosurgery Watch continues to be a great online resources for staying up to date with the latest clinical findings. This committee is led by **Dr. John Kuo** and **Dr. Robert Starke** to select compelling papers from over 50 journals including *Neurosurgery*, *Operative Neurosurgery* and *Neurosurgery Open*.



— CNS LEADERSHIP INSTITUTE —

Empowering Surgeons to Lead throughout their Careers



Since the CNS Leadership in Healthcare Course was first piloted in 2016, the CNS has remained focused on developing well-rounded surgeon leaders with the practical skills and breadth of knowledge necessary to lead in today's complex healthcare environment. That first course has blossomed into the CNS Leadership Institute—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.



Dr. Asdrubal Falavigna participates in a teamwork exercise with Vanguard Leadership Fellows, Sameer Sheth, R Webster Crowley and Sunit Das during the 2019 course.

The curriculum's unique mix of healthcare finance and business acumen along with soft skills like building influence, communication, and presentation skills, helps surgeons understand and communicate across all levels of the organization to 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.

The CNS received a record 50 applications for its 2019 program, the highest number of applications to-date. In addition to a CV and personal statement, each candidate proposed a personal leadership project they would undertake over the course of the year-long program at their own institution. A selection committee vetted many applications to select a final roster of 14 Leadership in Healthcare Course participants and 12 Vanguard Leadership in Healthcare Course participants.



The 2019 Vanguard Leadership Group.

Cultivating Neurosurgical Leaders around the Globe

In 2019, the CNS was privileged to partner with the Brazilian Neurosurgical Society (SBN) to develop our first international leadership course, the SBN-CNS Leadership in Neurosurgery Course, which was held September 25 in Rio de Janeiro, Brazil.

"The CNS was proud to collaborate with the SBN in launching the first SBN Leadership course," said Leadership Institute Chair, Brian Nahed, MD. "Alumni of the CNS leadership institute have taken on leadership roles in their institutions, nationally and internationally, and we look forward to working with the SBN to continue an international collaboration in leadership training."

This new course was designed to teach practical skills and strategies for meeting modern leadership challenges in neurosurgery, including improving quality of patient care and satisfaction, improving the health of populations, reducing healthcare costs, and improving the work life of healthcare providers. The course was led by CNS Leadership Institute Faculty, Drs. Brian Nahed and Ashwini Sharan, as well as SBN's Dr. Falavigna Asdrubal.

"I was most impressed and touched by this experience," shared Dr. Ashwini Sharan. "Even though Portuguese was not my or Brian's primary language and English not theirs, it was so obvious that the topics around leadership were universal and so well received from the young neurosurgeons aspiring in their careers."

“My interest in the CNS Leadership course arose from a growing role that I took at our hospital in programmatic for cancer care. While in the course, I became involved with Cancer Care Ontario, the provincial organization tasked with delineating the structure of cancer care delivery for the province, and for guaranteeing quality of care and care delivery. The program introduced me to a language and heuristics for thinking about problems that was novel for me, and that complemented my training as a clinician,” said Sunit Das, a Scientist in the Keenan Research Centre for Biomedical Science and neurosurgeon at St. Michael’s Hospital in Ontario also a 2019 Vanguard Leadership in Healthcare Course participant.



“The CNS course and this new work opportunity prompted me to go further and pursue advanced training in circle leadership and business administration, which I completed this past year through a joint program at the Harvard Medical School and Harvard Business School. It also encouraged me to take a greater role at Cancer Care Ontario, where I have recently been named the lead for CNS tumor care for the province. This position will allow me to play a critical role in directing care of patients with CNS tumors at the systems level over the next decade.”

In 2019, 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 Vanguard CNS Leadership in Healthcare Course for those in practice who are already in or are moving into formal leadership roles within their home institution.

These workshops introduced analytical tools and facilitated small-group discussion of real-world decision scenarios faced by administrative and neurosurgical leaders. Participants were led in discussion by seasoned course faculty Ashwini Sharan and David Langer, as well as Vanguard Leadership course faculty Richard Byrne and Joseph Cheng. Business and leadership experts from the University of Illinois at Chicago (UIC) and Medtronic provided a critical perspective on relationships and partnerships with industry and the hospital administration.

This year’s program also included a joint networking dinner where participants and faculty from both courses could connect and discuss their leadership challenges. The learning was extended through a series of follow-up webinars, and through individual and peer mentorship surrounding each individual’s leadership project. Throughout the program, participants reference their personal leadership challenges or projects 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. The end result was a dynamic and adaptive learning experience unlike anything available in the specialty today, and has been well received by participants and their mentors back home.



CNS Leadership Institute 2019 Cohort

In addition, to the live course offerings the CNS Leadership Institute will soon launch a series of on-demand webinars open to all CNS members. These webinars will become a requisite for the incoming class of 2020 participants. The Institute is also pleased to offer extended mentoring and coaching opportunities next year. Finally, the new Leadership & Careers page on cns.org boasts a new and improved application process making it much easier to apply to the program.

In today’s health care environment, the role of a modern neurosurgeon includes healthcare leadership. 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.

— WASHINGTON REPORT —

Neurosurgery Makes Significant Progress Advancing Health Policy Agenda

Through advocacy, policy development and public relations, the Washington Committee and Washington Office have played a fundamental role in advancing key healthcare initiatives. Throughout the year, the Washington Office staff are in the halls of Congress or working with government agencies and other healthcare stakeholders advocating on behalf of neurosurgery. In this role, the CNS frequently interacts with members of Congress, the Centers for Medicare & Medicaid Services (CMS), the Food and Drug Administration (FDA), third-party payers and state and national medical associations. As a result of these interactions, organized neurosurgery has achieved a variety of advocacy successes, including:

Champion Fair Reimbursement

- Due to the advocacy efforts of the CNS, no major changes in global surgery fees were forthcoming in 2019 or 2020. The CMS global surgery code data collection initiative was poised to produce cuts in neurosurgical reimbursement by at least 25%, which translates to approximately \$175,000 per neurosurgeon each year from 2018 through 2020.
- Cuts in professional liability payments in the Medicare physician fee schedule were reversed once the CNS demonstrated to CMS that the agency's methodology was flawed. This **prevented Medicare cuts totaling approximately \$9 million.**
- Following vigorous advocacy by the CNS, CMS did not implement its proposed sweeping changes to the evaluation and management (E/M) codes in 2019. Rather than collapsing the office visit codes from five to two levels, the agency delayed implementing any changes to E/M codes until 2021, allowing medicine to work on updating these codes. These efforts **prevented nearly \$9 million in Medicare cuts to neurosurgical payments.**
- The Joint Coding and Reimbursement Committee continued to promote the need for new and revised CPT codes and ensure that neurosurgical services are appropriately valued and reimbursed. This past year, our Rapid Response Teams worked tirelessly to ensure that third-party payers cover necessary neurosurgical services, including topics such as magnetic-resonance-guided focused ultrasound surgery for essential tremor, stereotactic radiosurgery, endoscopic discectomy, interbody devices for lumbar fusion (including expandable cages), minimally invasive ablative surgery for epilepsy, vagus nerve stimulation for treatment-resistant depression, posterior cervical fusion, sacroiliac joint fusion, spine arthroplasty and the use of interspinous devices.

- Seeking to expand neurosurgical influence over Medicare decision-making, the CNS was successful in getting **Ahmed M. Raslan, MD, FAANS**, appointed to the Medicare Evidence Development & Coverage Advisory Committee (MEDCAC).



2020 CNS President Steven N. Kalkanis, MD and CNS Past President Ganesh Rao, MD in the White House Press Briefing Room.

Regulatory Relief

Faced with an ever-growing morass of regulations with which neurosurgeons must comply, the Washington Committee has been working with Congress and regulators to reduce the burdens associated with practicing medicine. CMS Administrator Seema Verma launched the "[Patients over Paperwork Initiative](#)," a cross-cutting, collaborative process that evaluates and streamlines regulations to reduce unnecessary burden, increase efficiencies and improve the beneficiary experience. Priority topics include prior authorization reform and repeal of Medicare's mandatory appropriate use criteria (AUC) for advanced diagnostic imaging program.

On the prior authorization front, the CNS has made progress in bringing much-needed transparency and oversight to the Medicare Advantage program. Having surveyed CNS members, the Washington Committee demonstrated the growing imperative for prior authorization reform. The [survey](#) found the following:

- Eighty-two percent of respondents state that prior authorization either always (34%) or often (49%) delays access to necessary care.
- The wait time for prior authorization can be lengthy. For most neurosurgeons (67%) it takes between two to 14 days to obtain prior authorization, but for 22%, this process can take from 15 to more than 31 days.

- Prior authorization causes patients to abandon treatment altogether with 21% reporting that patients often abandon treatment and 60% reporting that patients sometimes abandon treatment.
- Overwhelmingly (88%), neurosurgeons report that prior authorization has a significant (37%) or somewhat (51%) negative impact on patient clinical outcomes.
- Ninety-one percent of neurosurgeons report that the burden associated with prior authorization has significantly increased over the past five years.

As a leader in the [Regulatory Relief Coalition](#), the CNS worked with key members of Congress to develop and get introduced the Improving Seniors' Timely Access to Care Act ([H.R. 3107](#)). The bill would protect patients from unnecessary prior authorization practices that limit their timely access to medically necessary care. With more than 150 cosponsors at the end of 2019, this bill is poised for action in 2020.



Washington Committee Chair Ann R. Stroink, MD with Rep. Darin LaHood (R-Ill.).



Rep. Ami Bera, MD, (D-Calif.) with CNS Executive Committee member Alexander A. Khalessi, MD.

Improving the Nation's Health Care System

The CNS made strides in improving 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 — including high-deductibles, narrow provider networks and prior authorization requirements.

- Given the growing concern over the practice of unanticipated medical bills — largely driven by narrow insurance networks — leaving some patients on the hook with the bill if they receive care from an out-of-network provider, eliminating surprise medical bills is a top priority for neurosurgery. To this end, the CNS has been instrumental in leading the charge to get legislation passed. Due to this advocacy, the Protecting People from Surprise Medical Bills Act ([H.R. 3502](#)) was introduced in the house. This legislation reflects neurosurgery's principles on out-of-network care and strikes the right balance to protect patients from unanticipated medical bills,

while at the same time facilitating a process to quickly, efficiently and fairly resolve physician and health plan billing disputes.

- America has a long tradition of excellence and innovation in patient care, and neurosurgeons have been on the cutting edge of these advancements. However, due to the medical device excise tax, American medical innovation and patient care have been at risk. To ensure that the US continues to lead the world in medical innovation, the CNS helped gain passage of [H.R. 1865](#), the *Further Consolidated Appropriations Act, 2020*, which permanently repealed this tax. President Trump signed the legislation into law (P.L. 116-94).
- Given the significant gaps in our trauma and emergency health care delivery systems, the CNS continued to urge Congress to provide the full funding for trauma and emergency care regionalization programs. On June 24, 2019, the president signed into law the Pandemic and All-Hazards Preparedness and Advancing Innovation Act ([S. 1379](#)), which would reauthorize several preparedness and response programs for five years. The bill also includes [H.R. 880](#), the MISSION Zero Act, which would assist US military health care providers in maintaining a state of readiness by embedding military trauma teams and providers in civilian trauma centers.
- Efforts to improve the Affordable Care Act (ACA) continued, and on June 17, 2019, backed by the CNS, the House [passed](#) legislation to fully repeal the ACA's 40% tax on high-cost health plans, also known as the Cadillac tax. The tax was initially supposed to go into effect in 2018 but has been delayed twice and was scheduled to go into effect in 2022 without congressional action. Congress permanently repealed this tax in [H.R. 1865](#).

Medical Liability Reform

The CNS moved the medical liability reform bill further down the field on several fronts. The president signed into law the Sports Medicine Licensure Clarity Act ([S. 808](#) / [H.R. 302](#)) on Oct. 5, 2018, which clarified medical liability rules for physicians traveling with sports teams. Additionally, progress was made to provide physician volunteers with medical liability protections in the event they render care during a national emergency or disaster, as elements of the Good Samaritan Health Professionals Act were included in the Pandemic and All-Hazards Preparedness and Advancing Innovation Act ([S. 1379](#)), which was signed into law on June 24, 2019 (PL 116-22). Finally, members of Congress demonstrated their support for protecting physicians from medical liability claims by cosponsoring the Accessible Care by Curbing Excessive LawSuitS (ACCESS) Act ([H.R. 3656](#)), which is modeled after proven reforms already in place in Texas, California and many other states around the country that have improved access to affordable health care by increasing the number of practicing physicians and reducing medical lawsuit abuse.

Graduate Medical Education

To ensure an adequate supply of physicians, organized neurosurgery has been on the front lines advocating to improve the current GME system. Through the continued advocacy of the CNS, bills for additional Medicare graduate medical education (GME) funding were introduced. A growing number of members of Congress cosponsored the Resident Physician Shortage Act ([S. 348](#) / [H.R. 1763](#)), which would provide Medicare funding for an additional 15,000 residency training slots. To help raise awareness, the Washington Committee



2019 CNS President Ganesh Rao, MD with Rep. Lizzie Fletcher (D-Texas).

past chair, **Alex B. Valadka**, MD, FAANS, authored an [opinion piece](#) for *The Hill* newspaper about the need to expand Medicare's support for residency training to ensure all Americans have access to the care they deserve now and into the future.

In addition, the CNS successfully advocated to increase funding for Children's Hospitals Graduate Medical Education (CHGME). Congress increased CHGME by \$15 million to \$340 million for fiscal year 2020 in [H.R. 1865](#). The CHGME program protects children's access to high-quality medical care by providing freestanding children's hospitals with funding to support the training of pediatric providers.

Addressing the Nation's Opioid Crisis

The growing opioid crisis is having a devastating impact on communities across the country, with nearly 500,000 deaths occurring over the past decade. Today, nearly 12 million Americans over or misuse prescription pain medicine. On Oct. 24, 2018, the president signed into law the Substance Use-Disorder Prevention that Promotes Opioid Recovery and Treatment (SUPPORT) for Patients and Communities Act ([H.R. 6](#)) aimed at combating the opioid epidemic. Through the advocacy of the CNS, the legislation reflects organized neurosurgery's priorities, including no opioid prescribing limits; improved e-prescribing of opioids; enhanced prescription drug monitoring program (PDMP) interoperability; and improved payment for opioid alternatives and surgical pain therapies, such as neuromodulation.

Backed by the CNS, [H.R. 1865](#) provided \$818 million for research on opioid addiction, development of opioids alternatives, pain management and addiction treatment. This legislation also requires CMS to collaborate with the FDA and consider approved devices and therapies for unique post-surgery patient populations for effective pain management., and to take steps to improve the tracking of patient pain scores and opioid consumption using alternative means for effective pain management.

Injury Treatment and Prevention

The CNS successfully advocated for increased funding for injury prevention and treatment and emergency preparedness. In addition, on Dec. 21, 2018, the president signed into the Traumatic Brain Injury Program Reauthorization Act ([H.R. 6615](#)), which renews federal brain injury programs and authorizes more than \$19 million annually for federal and state programs. In addition, [H.R. 1865](#) provides \$68

million for injury prevention activities at the CDC, including \$12.5 million to support firearm injury and mortality prevention research; funds to investigate the establishment of a national surveillance system to determine the incidence of sports- and recreation-related concussions among youth aged 5 to 21 years; and \$6.7 million for traumatic brain injury activities.

Grassroots Advocacy

Beyond Washington Office staff, it is neurosurgeons that make a difference in Washington, DC, and the CNS actively engaged its members in the advocacy process through a variety of grassroots activities. To this end, the CNS helped make the Alliance of Specialty Medicine's annual Washington, DC, legislative conference an overwhelming success. Neurosurgeons from across the country met with their elected officials on such topics as prior authorization, surprise medical bills, medical liability reform and graduate medical education.



Rep. Raul Ruiz, MD, (D-Calif.) with CNS Executive Committee member, Maya Babu, MD.

Communications Outreach

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. The Washington Office's traditional media/communication efforts include Op-Eds, letters to the editor, radio "tours" and desk-side briefings with reporters from the *Wall Street Journal*, *Washington Post*, CBS, NBC, Politico and others. In addition, the Washington Office's digital media platforms continue to see significant expansion and have garnered more than 615 million individual impressions and have amassed a subscription audience of more than 130,000. These communication tools include:

- [Neurosurgery Blog: More Than Brain Surgery](#), a web-based opinion and perspective column, through which we offer insight and perspective on contemporary health issues as they relate to organized neurosurgery.
- Various social media platforms that are used to gain greater visibility for neurosurgery's advocacy efforts, including [Twitter](#), [Facebook](#), [Instagram](#), [LinkedIn](#), [Tumblr](#), and [YouTube](#).

— GUIDELINES PROGRAM —



Langston Holly presents the Guidelines for the Management of Metastatic Disease of the Spine

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 volunteers in all aspects of the development process, from topic refinement and development of clinical questions to publication and dissemination.

In 2019, the Guidelines Committee, under the direction of Co-Chairs Drs. Brian Hoh and Nader Pouratian, and Vice-Chair Dr. Jennifer Sweet, the CNS continued to advance the practice of neurosurgery through the development of clinical practice guidelines. Together, the approximately 115 members of the CNS Guidelines Committee and its associated task forces published three new guidelines, and continued work on ten additional guidelines in development. The CNS also initiated an unprecedented three-year partnership with the Spine Section to publish a comprehensive Perioperative Spine Guideline, including three parts (preoperative, intraoperative and postoperative). Through this initiative, funded by a generous donation from the Spine Section to the CNS Foundation, the CNS will publish the first guideline (of a three part series) on perioperative spine in 2020.

2019 Program Highlights

- Published three guidelines:
 - Myelomeningocele
 - Thoracolumbar Trauma
 - Update to Metastatic Brain Tumors
- Ten guideline topics are currently in development
- New topics to be published in 2020 include Spine Metastases, Neuroablation for Cancer Pain and Perioperative Spine: Preoperative
- Updates to be published in 2020 include Pediatric Hydrocephalus, Progressive Glioblastoma and Deep Brain Stimulation for OCD.

During the 2019 Annual Meeting, Drs. Nader Pouratian and Mohamad Bydon stepped into their new roles as Guidelines Chair and Vice Chair.



Nader Pouratian, MD, PhD
Guidelines Chair



Mohamad Bydon, MD
Guidelines Vice-Chair

CNS Guidelines App

The CNS continues to successfully support the CNS Guidelines app (Developed in 2017, thanks to generous grants from the Section on Neurotrauma and Critical Care to the CNS Foundation, and Medtronic.) The Guidelines app has over 5600 downloads and continues to be widely disseminated and utilized.

This free app, available for download on Apple and Android devices, includes guideline recommendations and topic overviews for all CNS-produced guidelines in six specialty areas. Through the app, clinicians have immediate, at the point-of-care access to 16 guideline topics, with links to the full-text of the guideline, including:

Pain

- Occipital Neuralgia Guideline

Pediatrics

- Pediatric Hydrocephalus Guideline
- Positional Plagiocephaly
- Myelomeningocele

Spine and Peripheral Nerves

- Acute Cervical Spine and Spinal Cord Injuries
- Cervical Degenerative Disease
- Lumbar Fusion Guideline
- Thoracolumbar Trauma

Stereotactic and Functional

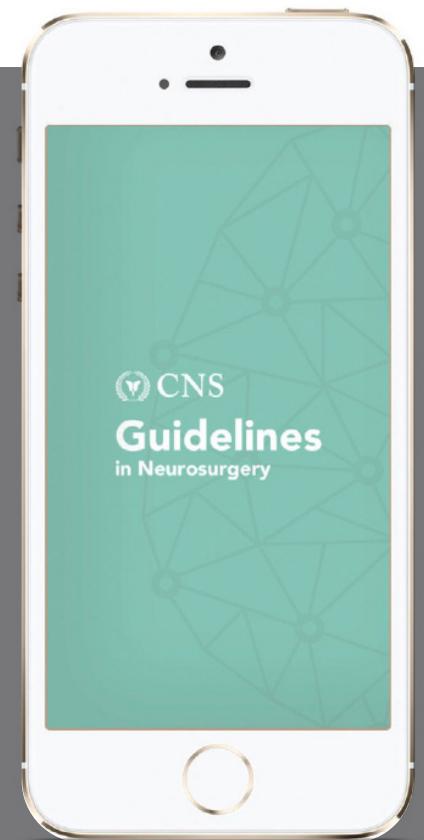
- Deep Brain Stimulation for Parkinson's Disease
- Deep Brain Stimulation for OCD

Tumor

- Low Grade Glioma Guidelines
- Newly Diagnosed Glioblastoma
- Nonfunctioning Pituitary Adenoma
- Progressive Glioblastoma
- Vestibular Schwannomas
- Update to Metastatic Brain Tumor

Trauma

- Thoracolumbar Trauma
- Severe Traumatic Brain Injury for Adults (used with permission from Brain Trauma Foundation)
- Severe Traumatic Brain Injury for Pediatrics (used with permission from Brain Trauma Foundation)



New guidelines are added to the app upon publication in *Neurosurgery*.

— QUALITY IMPROVEMENT INITIATIVES —

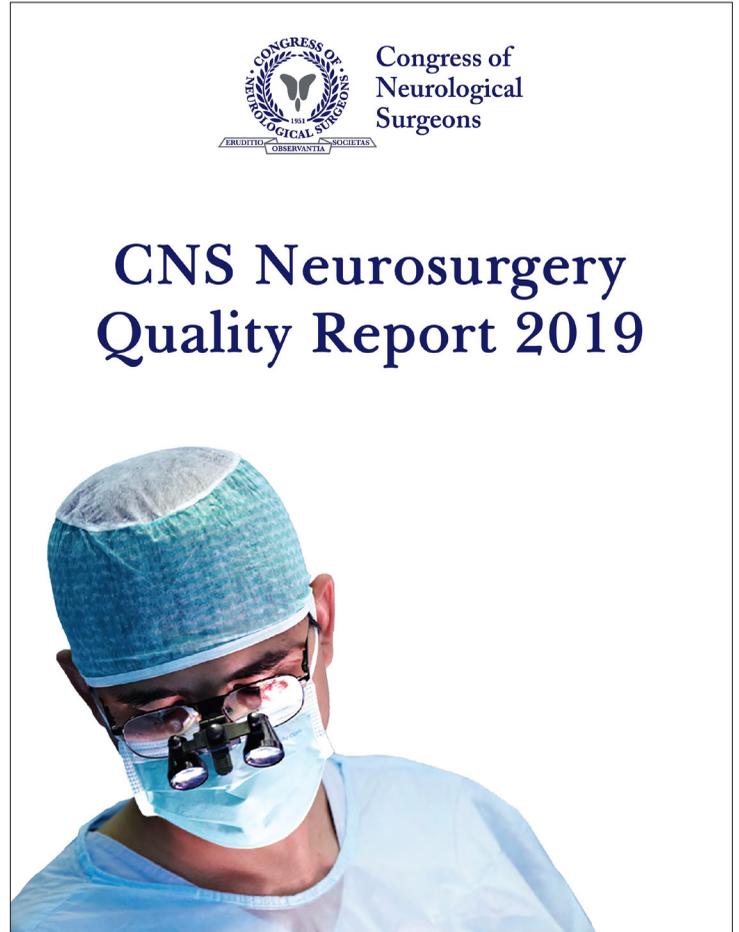
The CNS is committed to improving neurosurgical care and health outcomes through education and scientific exchange. In pursuit of this mission, the CNS launched new Quality Initiatives in 2019 to continue identifying novel strategies that improve quality related to neurosurgery and to educate practicing neurosurgeons on applying these data collection methods and quality outcomes assessment tools in their own practice.

CNS Quality Report

The CNS Quality Initiatives committee, under leadership of Chair **Mohamad Bydon, MD**, developed the inaugural Quality Report including four important neurosurgical topics: cervical spine, lumbar spine, craniotomy for brain tumor and craniotomy for cerebral aneurysm surgery. The purpose of this initial report is to educate neurosurgeons and other stakeholders such as healthcare providers and healthcare organizations and policymakers on the quality outcomes regarding important topics in neurosurgery to better inform policy and healthcare decision-making. The Quality Report was recently submitted for publication.



Quality Chair:
Mohamad Bydon, MD



CNS Quality Summit

The CNS also hosted a Quality Summit at the CNS Annual Meeting, consisting of two half-day Symposia (for CME). SYM17A: *QI: Implementation and Results* critically evaluated quality from a neurosurgical perspective, highlighting traditional quality metrics, and identifying neurosurgical quality measures that document excellent care, including from the patient perspective. SYM17B: *Using Big Data to Help Neurosurgeons and Their Patients* provided a framework to understand how advanced data science techniques can be employed to improve study design, patient outcomes, and practice management. This course was led by a diverse group of speakers with backgrounds in neurosurgery, statistics, imaging, and industry. Both symposia were well received and the committee is in the process of reviewing the evaluations to build on next year's summit. The CNS is also exploring additional educational courses and partnerships to further educate our members on these critical topics.

— STRATEGIC PARTNERSHIPS —

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 advanced partnerships with the Sections and other neurosurgical organizations in 2019.

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.

Spine Summit & Pain Meeting

The CNS was honored to partner again with the Section on Disorders of the Spine and Peripheral Nerve as well as the Joint Section on Pain to put on the 2019 Spine Summit and Joint Section on Pain Meeting in Miami, FL.

A record 615 medical attendees travelled to the beautiful Fontainebleau Miami for Spine Summit 2019, the Section's 35th Annual

Meeting, March 14–17, 2019. There, they enjoyed three days of scientific sessions and breakouts, seven special courses, spirited debates on controversial topics, and a Hands-on Cadaver Course, as well as opportunities for golf and deep sea fishing activities in the afternoons. Young neurosurgeons also took part in a new "Wine and Spine" session.

This year, the Joint Section on Pain also partnered with the Spine Section and the CNS to host their Pain Meeting in conjunction with Spine Summit. This event offered a full day of didactic lectures plus a half day of hands on cadaver lab, drawing 47 attendees.

Spine Summit represents CNS' oldest, but by no means its only, partnership with the Section. In addition to managing the wildly successful meeting, the CNS redesigned the Spine Section website, spinesection.org, in 2019 and began a strategic three-year partnership with the section to develop a

series of Perioperative Spine Guidelines (see the guidelines report for further details).

Cerebrovascular Section

In addition to managing the Cerebrovascular Section's administrative and Executive Committee business and managing abstract submission for their Annual Meeting, the CNS partnered with the Section in 2019 to launch a new Transradial Course for Interventional Neurosurgery (TRAIN Course). The first dedicated radial access course specifically designed for neurointerventionalists, the TRAIN Course drew 35 medical attendees to Miami April 26-27.

This two-day program was led by high volume neuroradiologists who have converted the majority of their practices to the radial approach, and covered the technical nuances and tricks of radial access, from room setup, puncture and closure, diagnostic angiography, interventions, and mechanical thrombectomy.

Neurosurgical Society Partnerships

In 2019, the CNS continued to extend its impact throughout neurosurgery by partnering with two key neurosurgical societies.

American Academy of Neurological Surgery (AAcNS).

In March, the CNS redesigned and assumed management of the American Academy of Neurological Surgeons' website as well as abstract submission management. 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).

SNS – The Senior Society

In October, the CNS assumed all administrative, meeting planning, membership and website support for the Society of Neurological Surgeons (SNS), at no additional cost to the Society.

The SNS, which comprises US 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)

— THE CNS FOUNDATION REPORT —



*Elad I. Levy, MD,
MBA, Chair*

The CNS Foundation Board of Directors and Chair, **Elad I. Levy**, are honored to report the CNS Foundation's accomplishments for 2019. With incredible support from the CNS Executive Committee, a dynamic Board, and the tremendous outpouring of support from the CNS membership and our industry partners, our philanthropic outreach to support world health and our neurosurgical community has never been stronger. It is happening because of you and all that you have made possible.



CNS Foundation Board of Directors and Staff

\$1 MILLION LEADERSHIP GIFT TO CNS FOUNDATION FOR STRATEGIC CAPACITY BUILDING.

CONGRESS OF NEUROLOGICAL SURGEONS (CNS) LEADS BY EXAMPLE

In appreciation of CNS community's generosity, the CNS Foundation pledged to match 1:1, all gifts from individuals and medical societies, until the \$1 million leadership gift is matched. To date, more than \$515,000 has been matched, doubling the impact of generous donors on Clinical Scientist Career Development, International Philanthropy and the CNS Guidelines Fund.

COMING IN 2020 – EXPANSION OF CLINICAL SCIENTIST CAREER DEVELOPMENT AWARDS

In early 2019, CNS and CNS Foundation announced plans to expand the current K12 Scholar Award partnership with the National Institute of Neurological Disorders and Stroke (NINDS), and the Foundation for the National Institutes of Health (FNIH). Having already awarded two NINDS/CNSF "Getch" K12 Scholar Awards, first in 2016, and again in 2018, funding from both organizations will double, creating an annual prize.

— THE CNS FOUNDATION REPORT —

continued

INTERNATIONAL PHILANTHROPY WITH IMPACT

The CNS community is committed to supporting neurosurgeons around the world. In 2019, your contributions sponsored more international neurosurgeons than ever before, helping them broaden their knowledge by attending US based educational opportunities.

“The possibility to interact with the people in the same field is invaluable to improve patient care. During these conversations it becomes clear that we face many of the same problems, and sometimes the solution has already been found elsewhere.”

-Eelke M. Bos, Netherlands



Attended ICH Workshop at Northwestern University

This observership was made possible by a generous grant from Penumbra, Inc.

“I’m currently working as a teacher at my medical school and I have already shared the valuable insights...Being from a developing country this travel grant gave me the opportunity to learn and moreover to take back what I have learned and improve the care of my patients in my country. Otherwise, it would have been impossible.”

-Jose Eduardo Leon



Attended CNS Annual Meeting, 2019

The observership was made possible by donors to the CNS Foundation

2019 CNS Foundation International Observership Recipients:



Luigi Rigante
Italy



Franco Rubino
Argentina



Juliana Sporrer
Great Britain



Viktoria Sefcikova
Canada



**Jose Eduardo
Leon Rojas**
Ecuador



Bertrand Mathon
France



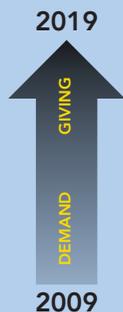
Eelke M. Bos
Netherlands

— THE CNS FOUNDATION REPORT —

continued

WORKING TO MEET THE DEMAND FOR DEVELOPMENT AND DISSEMINATION OF CNS GUIDELINES

This year, with the value of CNS Guidelines clearly established for neurosurgeons around the world, gifts to the initiative soared to \$308,692.



- Generous grants directed to guideline development were made by the American Society for Stereotactic and Functional Neurosurgery (ASSFN), the Spine Section and many individuals. The Spine Section's first year \$100,000 gift will be followed by an additional \$200,000 for the entire three-year Perioperative Spine Guidelines project, to be completed by 2021. Generous grants for guideline dissemination were also made by industry partners.
- By 2019, annual demand for CNS Guidelines production has more than tripled.
- By 2019, the free CNS app is downloaded 11,250 times, worldwide.
- 2017, the Trauma Section donates \$5,000 to fund development of the free downloadable Guidelines App.
- CNS Guidelines project launched with three guidelines in development.

LEADERSHIP

Elad I. Levy, MD, MBA,

Chair of the CNS Foundation and CNS Secretary

Gita Barry, Penumbra

David Crawford, CFA, Crawford Investments

Steven N. Kalkanis, MD, 2020 CNS President

Ricardo J. Komotar, MD, FACS

Praveen V. Mummaneni, MD, CNS Treasurer

Brian V. Nahed, MD, MSc

Ganesh Rao, MD, Past CNS President

Clemens M. Schirmer, MD, PhD

Regina Shupak, CNS CEO

Martina Stippler, MD

2019 GIFTS TO CNS FOUNDATION	
Mission Advancement (Board Directed) 2019 gifts	\$ 1,270,034.00
Donor directed International Philanthropy Funds	\$ 154,262.00
Donor directed K12/Career Development Funds	\$ 133,836.04
Donor directed Guidelines Funds	\$ 308,692.00
Remaining for matching	\$ 485,192.98
TOTAL RAISED	\$ 2,352,017.02

CNS FOUNDATION SOUL CYCLE FUNDRAISING RIDE



The CNS Foundation hosted an early morning fundraising ride during the CNS Annual Meeting in San Francisco, October 2019.

Riders and their sponsors netted \$3,400 for the CNS Foundation Mission Advancement Fund

— THE CNS FOUNDATION REPORT —

continued

We wish to extend special appreciation to our generous industry, section and medical society donors, as well as the individuals who gave 2019 gifts at the inaugural Leadership Circle Level.

THANK YOU.

\$5,000+	\$1,000+	\$500
Melissa and Brian Hoh David Crawford	Steven K. Kalkanis Praveen Mummaneni Garni Barkhoudarian Brandon Fiedor William Friedman Jorge Gonzalez-Martinez Murali Guthikonda Daniel Hoh John Lopez Ricky Madhok	Brian V. Nahed John O'Toole Nader Pouratian Reza Ramazankhani D.Thomas Rogers Clemens Schirmer Joseph Schnittker Martina Stippler Zeguang Ren
		Sepideh Amin-Hanjani Ashok Asthagiri Grant Gauger Shankar Gopinath Christopher Kellner Alexander Khalessi Ricky Madhok Nicolas Phan Ganesh Rao Chandranath Sen Walavan Sivakumar Hoan Tran Joseph Zambramski

SECTIONS & MEDICAL SOCIETY PHILANTHROPY PARTNERS

Section on Disorders of Spine and Peripheral Nerves	Section on Cerebrovascular Surgery
American Society for Stereotactic and Functional Neurosurgery	
Women in Neurosurgery Section	Section on Neurotrauma & Critical Care
Section on Tumors	Trans-Atlantic Education Foundation

CORPORATE PHILANTHROPY PARTNERS

STRATEGIC PARTNERS

Medtronic

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Penumbra 

ADVOCACY PARTNERS


MONTERIS[®]
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BENEVOLENT PARTNERS

MINNETRONIX[®]
NEURO


iz.ai

TO MAKE A GIFT OR INQUIRE ABOUT THE CNS FOUNDATION:

Visit Foundation.CNS.org

Contact Manager of Foundation & Giving Courtney Johnson: (847) 240-2500

CJohnson@CNS.org

— CORPORATE DEVELOPMENT —

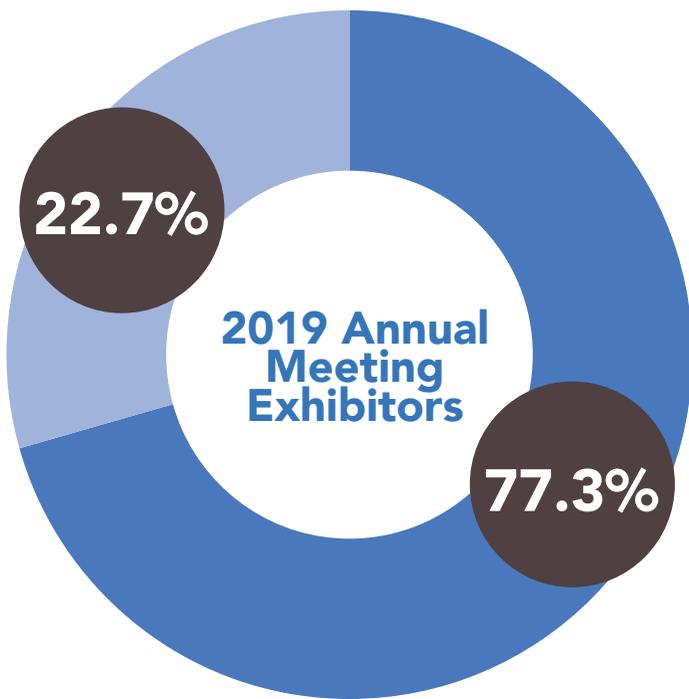
In what has been another successful year, the CNS continues to show that dedication to the field of neurosurgery will result in growth and engagement from our valued industry partners.

Thanks to that industry support, we were able to continue to offer all courses from 2018, and also add three new courses. We would like to thank the following companies for their support of our 2019 Courses:

- **Spine Complications:** DePuy Synthes, Medtronic, BK Meditech, Joimax, Innovasis, Globus, NuVasive, and SpineCraft.
- **Minimally Invasive Cranial:** Medtronic, Penumbra, Monteris Medical, Brainlab, Olympus, and NICO Corporation.
- **Leadership Institute:** Exclusive Supporter, Medtronic.
- **Advanced Endovascular Techniques:** Cerenovus, Medtronic, MicroVention, Penumbra, RAPID Medical, and Stryker.
- **Career Guide:** Medtronic and DePuy Synthes.
- **Skull Base:** Medtronic, KLS Martin, Integra LifeSciences, Carl Zeiss, Olympus, Stryker, Sophysa, and Peter Latic US.

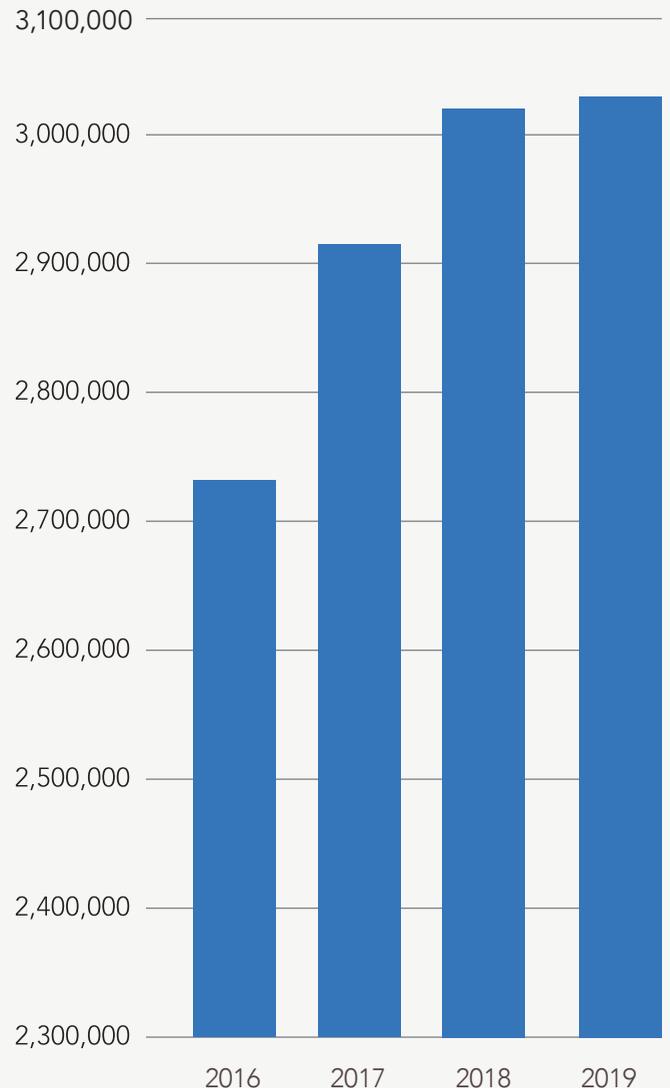
In 2019, the CNS focused on diversifying opportunities for industry participation. As a result 49 companies increased their year round support.

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



- New Exhibitors
- Returning Exhibitors

CNS Corporate Revenue



— INDUSTRY ALLIES COUNCIL —

The CNS is grateful for the ongoing support of our Industry Allies Council (IAC) 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.

To foster this dialogue in 2019, the CNS Executive Committee gathered with the leaders of our 2019 IAC partner companies twice, on April 15, in San Diego, and at the CNS Annual Meeting last October, to discuss the future of our specialty.

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

AMBASSADOR

COMPANIES OF *Johnson & Johnson*

PART OF THE *Johnson & Johnson* FAMILY OF COMPANIES

PREMIER PARTNER

Your Vision, Our Future

INDUSTRY ALLIES COUNCIL

SUPPORTER

— FINANCIAL REPORT —

Statement of Financial Position

December 31, 2019

2019 Assets

	Current	Aug 2018	Increase/ (Decrease)
CNS Cash	\$1,297,930	\$1,601,470	(\$303,540)
Accounts Receivable	858,964	24,084	834,880
Pre-Paid Expenses & Deposits	482,315	470,834	11,481
Misc Prepays	203,306	73,923	129,383
Beneficial Interest	360,000	407,000	(47,000)
Due from Misc	0	22,818	(22,818)
Investments	21,286,912	22,929,094	(1,642,182)
Equipment & Software	1,216,301	933,745	282,556
Joint Section Assets (Net)	3,896,978	3,852,555	44,423
Total Assets	29,602,706	30,315,523	(712,818)

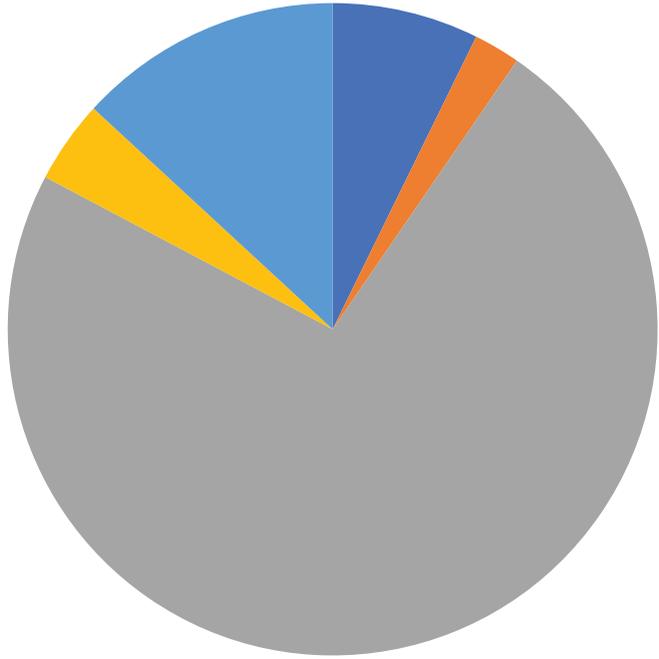
2019 Liabilities

Accounts Payables	578,829	719,640	(140,811)
Deferred Rent	123,589	167,396	(43,807)
Accrued Expenses	242,122	554,235	(312,113)
Deferred Revenue-Dues	598,214	818,769	(220,555)
Deferred Revenue-Annual Meeting	433,656	2,666,124	(2,232,468)
Deferred Revenue-Journal	600,000	1,657,291	(1,057,291)
Deferred Revenue-Other	21,755	154,655	(132,900)
Meeting Mgmt: DSPN, ASSFN, & Tumor	109,223	23,846	85,376
Net Payable - Foundation	48,958	14,865	34,093
Total Liabilities	2,756,346	6,776,821	(4,020,476)

Net Assets

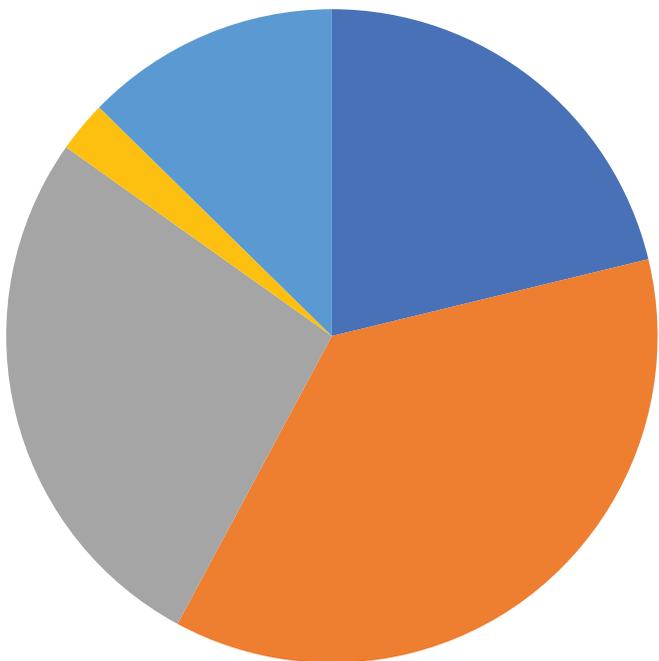
Unrestricted	26,486,360	23,131,702	3,354,658
Permanently Restricted	360,000	407,000	(47,000)
Total Net Assets	26,846,360	23,538,702	3,307,658
Total Assets	29,602,706	30,315,523	(712,818)

Assets as of December 31, 2019



Cash & AR	\$2,156,894
Prepaids	\$685,621
Investments	\$21,646,912
Fixed assets, etc.	\$1,216,301
Other	\$3,896,978

FY19 Revenue



Membership Dues	\$2,637,482
Annual Meeting	\$4,553,627
Publications and Journal	\$3,348,983
Online Products	\$314,000
Other	\$1,574,809

— 2020 PRESIDENT —



Steven N. Kalkanis, MD

President, Congress of Neurological Surgeons

I am honored and excited to have the opportunity to lead the CNS into a new decade. Our immediate Past-President, Ganesh Rao set a high bar. The 2019 Annual Meeting in San Francisco was one of our most vibrant meetings yet, drawing near-record attendance and presenting more than 1700 abstracts over the course of the week. Annual Meeting Chair, Brian Hoh, Scientific Program Chair, Nader Pouratian, and Vice Chair, Brian Nahed, worked hard to deliver on Ganesh's vision and advanced a critical dialogue on evidence-based neurosurgery.

The growth of the CNS Foundation (CNSF) this past year was equally remarkable. Both Drs. Rao and Foundation Chair, Elad Levy, deserve credit for the tremendous growth in the Foundation's financial reserves, which will allow us to make a strong, positive impact in the field of neurosurgery through the development and publication of guidelines, the advancement of clinical research, and international philanthropy. I am especially looking forward to the

expansion of our clinical scientist career development award in 2020 and the impact our awardees will have on the field in the years ahead.

And of course I must congratulate Editor in Chief, Nelson M. Oyesiku, for another incredible year in the NEUROSURGERY® Publications. From the relaunch of the Surgeons' Armamentarium and remarkable Impact Factors for both *Neurosurgery* and *Operative Neurosurgery* to the debut of the first in the "Masters of Neurosurgery" series, the Spetzler Collection, and the launch of *Neurosurgery Open*, Nelson and his team worked tirelessly this past year to deliver unprecedented value for our members.

Looking ahead to 2020, I am committed to continuing this momentum to ensure that the CNS remains relevant and impactful for our members. Our new strategic plan sets a path forward for building relevance in each member segment and across our educational portfolio. We will begin by making the Annual Meeting the cornerstone of that relevance. Our theme for the Miami meeting is *2020: Vision for the Future* and our scientific program will focus on the innovations that will shape our specialty in the years to come. You can expect to see another amazing lineup of original science presentations, breakthrough developments in the field, and illuminating keynote speakers, who will challenge us to rethink the way we approach our practice.

In addition, we will continue to modernize our educational platform for the lifecycle of neurosurgery, helping members access the professional development opportunities essential to their career growth. We will explore new delivery mechanisms and identify appropriate technologies to not only enhance our educational content, but also deliver seamless educational experiences in ways that work for your practice. Above all, we will listen to you, our members and work to create the educational resources, courses and career development tools that you need. I invite you to please reach out

to the CNS if there is anything we can do to enhance your membership experience, or if you are interested in getting involved with one of our committees or programs.

Another key focus for CNS in 2020 is on the strategic partnerships that help us advance neurosurgery throughout the US and around the world. The first of these partnerships is with the Society of Neurological Surgeons (SNS), or the Senior Society. The CNS recently entered into an agreement with the SNS to support their administrative infrastructure and we will be working closely with the SNS this year and into the future to ensure the efficient and effective management of their meeting and other operations in support of their mission. We are honored to be entrusted with this role and look forward to helping the SNS advance neurosurgical training.

In addition, we will work to optimize our relationships with our key international partners—the Japanese Congress of Neurological Surgeons (JCNS), the Neurological Society of India (NSI), and the (SBN)—as well as our 2020 Annual Meeting partner society, Federación Latinoamericana de Sociedades de Neurocirugía (FLANC), to leverage the expertise of our respective societies and promote scientific exchange.

We will also focus on our strategic partnerships with the Sections, continuing our successful partnerships with the Section on Disorders of the Spine and Peripheral Nerves, Cerebrovascular Section, Tumor Section, Section on Pain, Association for Stereotactic and Functional Neurosurgery and Women in Neurosurgery, as well as working toward new collaborations on educational courses, guidelines and professional development resources essential in each subspecialty.

We have set some ambitious goals for 2020, but with the experience and enthusiasm of our CNS Executive Committee, I am confident that we be able to accomplish a great deal.

— MESSAGE FROM THE CEO —



Regina Shupak

CEO, Congress of Neurological Surgeons

As I reflect on another successful year at the Congress of Neurological Surgeons, I am reminded of what an honor and privilege it is 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. We continue to value your membership and your involvement above all else. I am proud to share with you these highlights from 2019 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 2019 CNS President, Ganesh Rao. Your clear vision and quiet encouragement were critical in driving the CNS toward truly remarkable accomplishments this year. I am grateful for the opportunity to work with you and proud of all we have achieved.

We set out in 2019 to engage more deeply with even more members across all practice settings and career stages. We expanded our educational offerings and developed new avenues for scientific exchange, resulting in renewed enthusiasm for CNS educational offerings and record participation in our live educational activities.

2019 was an especially fruitful year for our NEUROSURGERY® Publications team, under the leadership of Editor in Chief, Nelson M. Oyesiku and in collaboration with President Rao. In addition to publishing 12 outstanding issues of *Neurosurgery* and *Operative Neurosurgery*, the editorial team launched a new open-access journal, *Neurosurgery Open*, this fall, and reissued the classic *Rhoton's Cranial Anatomy & Surgical Approaches* text on the microsurgical anatomy of the brain. The dedication and hard work it took to tackle these projects on top of an already busy editorial calendar is truly exceptional.

The publications team also worked with our guidelines teams to publish three new guidelines in 2019 and update our Guidelines app to include new clinical decision making tools and another 46 chapters of content, significantly increasing the utility of this already popular and widely utilized tool.

The CNS Foundation (CNSF) had a tremendous year in 2019, refining its mission, bylaws and Board of Directors, and growing its reserve to \$2.4M through a combination of member, Section and Industry support. We also collaborated with the Foundation for the National Institutes of Health (FNIH) to fund a second K12 award through the CNSF, allowing the CNS to support one two-year

award each year.

Once again, we are thrilled to see continued growth amongst our corporate partners and sponsors. 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. These partnerships will help the CNS thrive and continue to expand our educational catalog in the years ahead and continue exploring new programs and technologies on behalf of our membership.

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 2020 CNS President Dr. Steven Kalkanis and the 2020 CNS Executive Committee are committed to continued growth of our educational programs and member services and greatly value your feedback. I encourage you to reach out to me and the officers with your ideas and suggestions. It is a great honor to continue serving the Congress of Neurological Surgeons, the CNS members, the CNS Executive Committee, volunteers, and staff in 2020!

— 2019 EXECUTIVE COMMITTEE —



Thank you for an exceptional year!

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Ganesh Rao, MD

President-Elect

Steven N. Kalkanis, MD

Vice-President

Brian L. Hoh, MD

Secretary

Elad Levy, MD, MBA, FACS,
FAHA

Treasurer

Praveen V. Mummaneni, MD

Past President

Ashwini D. Sharan, MD

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Daniel J. Hoh, MD

Jennifer A. Sweet, MD

Maya Babu, MD, MBA

Garni Barkhoudarian, MD

Lola B. Chambless, MD

Ex-Officio Members

Ashok R. Asthagiri, MD

Nicholas C. Bambakidis, MD

Alexander A. Khalessi, MD

Brian V. Nahed, MD, MSc

Akash Patel, MD

Nader Pouratian, MD

Clemens M. Schirmer, MD, PhD

Historian

Christopher E. Wolfla, MD

CNS Executives

CEO

Regina Shupak

CNS Executive Office

10 N. Martingale Road
Suite 190

Schaumburg, IL 60173

TEL: 847.240.2500

FAX: 847.240.0804

Toll-free: 877.517.1CNS

Email: info@cns.org

www.cns.org



Welcome aboard 2020 CNS Executive Committee



CONGRESS OF NEUROLOGICAL SURGEONS

— ANNUAL REPORT 2019 —



Congress of
Neurological
Surgeons