



CONGRESS OF NEUROLOGICAL SURGEONS



Congress of
Neurological
Surgeons

FORWARD, TOGETHER.

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Congress of
Neurological
Surgeons

— 2020 PRESIDENT'S MESSAGE —



Steven N. Kalkanis, MD
2020 President,
Congress of Neurological Surgeons

As I accepted the gavel from former president Ganesh Rao at the Annual Business meeting over a year ago, I had a clear vision for the CNS—building upon the momentum of the prior year and continuing to expand and modernize our educational platform for the lifecycle of neurosurgery. I could not have foreseen how the year would unfold or how our plans would evolve, but in many ways, that clear vision was spot on. In the face of unprecedented challenges, the CNS remained true to its reputation as a pioneer in neurosurgical education and used the experience as a catalyst for growth.

Our tireless volunteers and staff worked to launch a record number of new educational programs and services that brought our members together—even as they remained apart—rapidly disseminating data and knowledge amidst the evolving pandemic. From the CNS Townhall Experience and Virtual Visiting Professor programs launched in the first weeks of the pandemic to the Virtual Tumor Boards program launched in partnership with the Society for Neuro-oncology (SNO) this fall and the new SANS Leadership module released at year-end, the Education Division maintained their focus throughout the year to create new content that meets your evolving needs. At the same time, they have reinvented several of our most valued courses as virtual learning experiences, including the Oral Board Exam Preparation Course and the Career Guide for New and Attending Physicians and Fellows Course.

Neurosurgery and *Operative Neurosurgery*, under the leadership of editor Nelson Oyesiku, processed a record number of submissions this past year including more than 200 submissions topics related to COVID-19. The staff and editorial board refined operational procedures to ensure that these and other submissions were reviewed and edited efficiently and this essential science could be published in a timely fashion. They also gathered all this content on a “COVID-19 Neurosurgery Perspectives” page so our members could easily access

the newest information. All the while, the editorial team managed the launch of our newest publication, *Neurosurgery Open*, exceeding submission expectations for 2020 in this publication as well.

The CNS Foundation (CNSF) celebrated many accomplishments in 2020, in spite of the challenges facing so many charities this year. Under the leadership of Chair Elad Levy and Vice Chair, Alex Khalessi, the CNSF has continued to grow both individual and corporate donations this year, and launched a new Future Women Leaders in Neurosurgery Scholarship. The Foundation has been essential in supporting some of the new educational programs launched this year, and I encourage you to continue to support one of its three initiatives while there are still funds remaining in the CNS Leadership gift to have your donation matched.

I am tremendously proud of how the CNS has risen to the unique challenges of this past year and continued to put our members' education and career development at the forefront. I am honored to have served alongside this dedicated group of CNS Executive Committee members and excited to see how we build on these successes in the year ahead. As you may already know, our 2020 and 2021 Annual Meeting committees have come together to plan an unprecedented extravaganza for 2021, combining the best elements from our 2020 and 2021 scientific programs. Under the leadership of President Brian Hoh, I am confident that the coming year and the 2021 meeting will be one to remember. I hope to see you there.

Sincerely,

Steven N. Kalkanis

Past-President, Congress of Neurological Surgeons

— MEMBERSHIP —

Even as the events of 2020 forced us to cancel our most popular and valued educational and networking activities, the CNS Membership Committee, Resident Committee, Education Division and International Division continued to collaborate on initiatives to engage our members remotely. These efforts, in part, contributed to continued member growth across key CNS membership categories. With a total membership of 9,819 members, including 6,761 active (domestic) members and an active international membership of 1,140, the CNS has grown its domestic membership year-over-year for ten consecutive years.

We also continued our efforts to cultivate a community of neurosurgeon leaders, engaging more than 650 neurosurgeon volunteers in committee work, special products and the delivery of our new online educational offerings. 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.

As a premier partner, the CNS takes pride in being members' go-to organization to develop surgical competency and learn best practices through its extensive catalog of cutting-edge resources and educational offerings. As such, we work to advance the overall industry through advocacy, leadership and Section opportunities and to achieve the highest standard of neurosurgical practice by supporting you through the entire life cycle of your career.

CNS MEMBER GROWTH



**Excludes Honorary, Emeritus, and Inactive members*

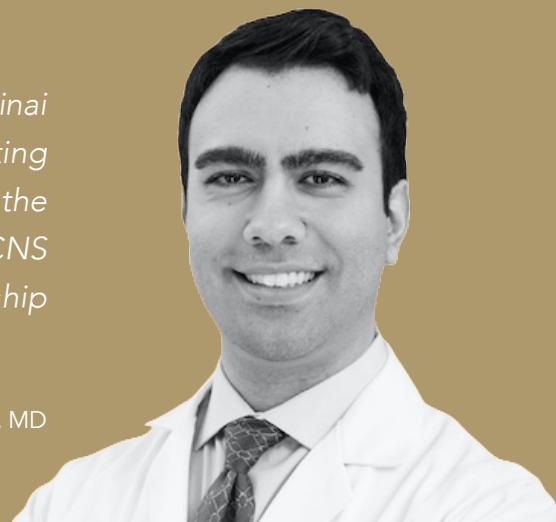


MEMBERSHIP

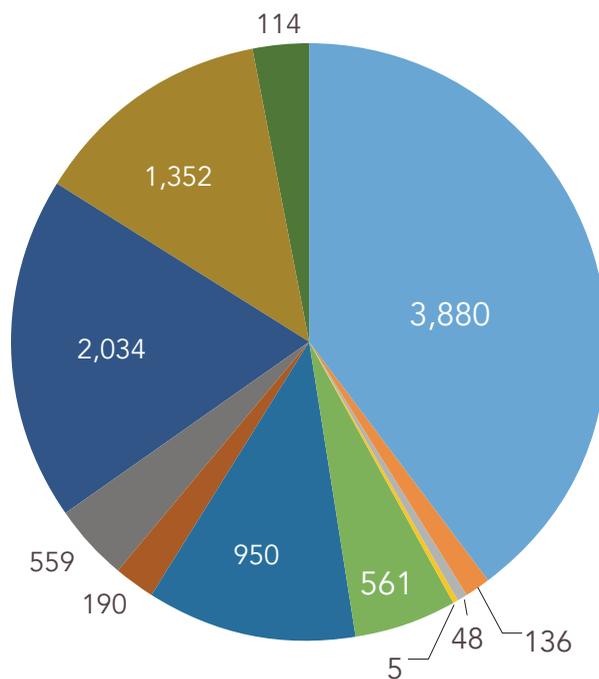
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"I joined the CNS during my neurosurgery residency [at the Mount Sinai Hospital]. Not only did I enjoy attending conferences and presenting my research amongst world-class faculty, but I was very interested in the sheer number of free educational resources available to residents. CNS promotes a culture of collegiality, intellectual curiosity, and leadership that is unparalleled.

– Dr. Jonathan Rasouli, MD



CNS 2020 MEMBERSHIP



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

— MEMBERSHIP —

continued



"I joined the CNS when I was a first year medical student because of the opportunities to get introduced into the field of neurosurgery and to network. The CNS meetings are always full of great educational initiatives, superb speakers, and volunteer opportunities. Again, networking with leaders and giants in the field, as well as peers, is an invaluable aspect of joining the CNS."

– Dr. Joseph R. Linzey

The essential membership association dedicated to neurosurgeons, trainees, and industry innovators in neurosurgical disease, the CNS offers members a host of benefits, including:

- Access your complimentary or significantly reduced subscriptions to CNS's top-rated [Neurosurgery](#), [Operative Neurosurgery](#), and [Congress Quarterly](#), covering the latest advances in neurosurgical research and technology, practice management, socioeconomic developments, and more.
- Claim member discounts on [Open Access Article Processing Charge \(APC\)](#) through Oxford University Press or on the purchase of select OUP books in neurosurgery, including [Rhoton's Cranial Anatomy and Surgical Approaches](#).
- Take advantage of our extensive educational resources, including our online [education catalog](#) of over 200 CME hours accessible at your convenience, including webinars and course recordings; [CNS Spotlight](#); [SANS Lifelong Learning](#); [Journal Club Podcasts](#); and [Nexus](#) with 450+ cases in all subspecialties.
- Benefit from your complimentary access to the innovative [Virtual Visiting Professor](#) and [Online Grand Rounds](#) series covering material ranging from subspecialty topics to healthcare economics.
- Enjoy exclusive member rates at in person events such as live courses and complimentary registration for the [2021 CNS Annual Meeting](#)—join us in Austin October 16-20, 2021, for unparalleled scientific discovery.
- 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.
- Utilize our easy-to-use Member Dashboard through your [personal profile](#) which makes it simple and efficient to get recommendations tailored for you by adding your subspecialties and checking the "opt in" field, as well as track your activity within your Member Dashboard (including CME tracking for certain member types).
- 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](#).
- Defend and protect the ability of neurosurgeons to practice medicine freely through neurosurgery [advocacy](#) in which CNS invests \$1 million annually towards advocating the best interest of our members and the neurosurgical community in Washington DC.



Jennifer Sweet, MD
Membership Committee Chair

— NEUROSURGERY PUBLICATIONS —

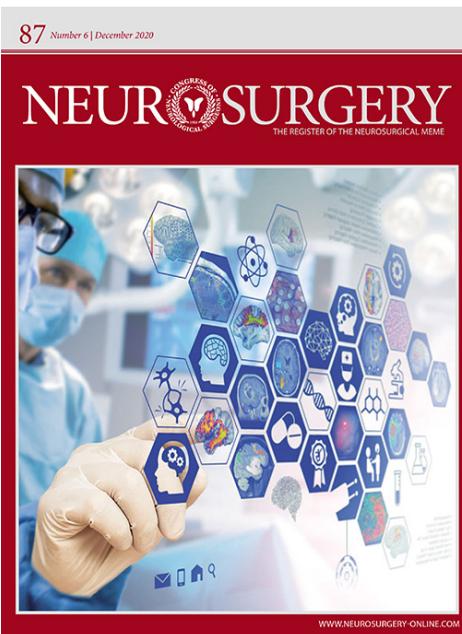


In a deviation from the standard “Word of the Year,” the lexicographers at Oxford Languages elected to report on the “Words of an Unprecedented Year” for 2020 citing the undeniable: that this year simply could not be represented by a single word.¹ How true! In preparing for this year’s Annual Report, the **NEUROSURGERY® Publications** team was faced with a similar dilemma, albeit a positive one thankfully, for this year was truly one full of much progress and accomplishment despite the challenges.

We were delighted this summer to receive the 2019 Impact Factors. **Neurosurgery** saw an increase from 4.605 to 4.853 and **Operative Neurosurgery** saw an increase from 1.470 to 1.886 the year prior.² **Operative Neurosurgery’s** current Impact Factor, its third, is the highest the journal has received to date! The continued success of the journals, reflected in part by the Impact Factor metric, is in no small part due to the dedication of the Editorial Board and reviewers as well as the sustained interest of our authors and readers. We thank each of you for contributing to the continued success of the journals.

journal’s homepage (www.neurosurgery-online.com). We encourage members to read through these fascinating perspectives on the pandemic and contribute to the ongoing conversation.

While meeting the demands placed on the editorial and production processes by the influx of submissions, COVID-19 and otherwise, the journals continued to fulfill their core missions and publish content of direct relevance and interest to neurosurgeons including guidelines, supplements, and series.



December Cover Image: © 2020, University of California, San Francisco, by Kenneth Xavier Probst.

For those who observed the scholarly literature this year it will come as no surprise to learn that most disciplines saw a sizeable increase in submission volume.³ **NEUROSURGERY® Publications** certainly observed this trend and as of late November 2020, both **Neurosurgery** and **Operative Neurosurgery** were on track to close the year with a record number of submissions! While there are open questions as to which factors drove the growth in particular, one is certainly undeniable, and that is the subject of COVID-19. As of late November, **NEUROSURGERY® Publications** journals have received over 200 submissions specifically on the subject. For convenience we have organized published articles regarding COVID-19 on a single gallery page, the “COVID-19 Neurosurgery Perspectives”, which is accessible from the

- **Neurosurgery** was thrilled to publish the “**Guidelines for the Management of Severe Traumatic Brain Injury: 2020 Update of the Decompressive Craniectomy Recommendations**” (September 2020 issue), “**Congress of Neurological Surgeons Systematic Review and Evidence-Based Guidelines on the Treatment of Pediatric Hydrocephalus: Update of the 2014 Guidelines**” (December 2020 issue), three dedicated supplements including **Flow Diversion for Intracranial Aneurysm Treatment** (January 2020 issue), **Clinical Neurosurgery** (December 2020 issue), and **Neurosurgery 20/20: Visual Abstracts—Concise, Clear Content** (December 2020 issue), as well as debut three review series including **Medicine & Law** (October 2020 issue), **Neuropathology** (November

— NEUROSURGERY PUBLICATIONS —

continued

2020 issue), and *Eloquent Area Tumors* (December 2020 issue). The *Medicine & Law Review Series* is an open series and as such authors are welcome to submit content for consideration. Those interested can read more [here](#).

- *Operative Neurosurgery* worked with the Spine Section on the development of the *DSPN Spine Video Series*, which debuted with content in the August 2020 issue, in order to enhance the journal's library of spine and peripheral nerve-related operative content. The journal also debuted the recurring *ENRG Collection: Endovascular Video Series* (December 2020 issue). In September 2020, *Operative Neurosurgery* announced a Call for Surgical Videos as part of its collaboration with Surgical Theater to enhance the journal's Surgical Video library in 360-degree virtual reality (360° VR). As part of this collaboration, a select number of Surgical Videos submitted to the journal will be invited to be enhanced by Surgical Theater via the addition of a 360° VR fly-through video. The journal is thrilled to offer this service to those selected

and encourages members to submit a Surgical Video for consideration. Those interested can read more [here](#).

- Launched October 2019, *Neurosurgery Open* is on track to exceed submission projections for 2020! To date the journal has published three issues with a fourth planned to close prior to year's end. Members are encouraged to read the original science published in *Neurosurgery Open* to date and to consider the journal as a venue for their next open-access publication. As a reminder CNS members receive a discount on the open access charge for publication in all **NEUROSURGERY® Publications** journals including *Neurosurgery Open*.
- Inspired by the *Biostatistics and Methodology for the Neurosurgeon Review Series*, **NEUROSURGERY® Publications** worked with CNS Education to organize and record the *Methodology/Study Design Webinar Series*. This series consists of six webinars designed to act as a guide for neurosurgery residents on key issues including "designing a study,"

"ethical considerations," and "statistical analyses". The full series can be accessed via the CNS Education library [here](#).

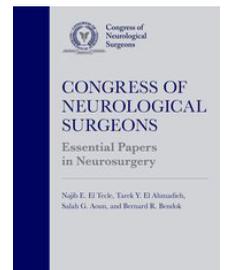
While 2020 was truly a productive and positive year for **NEUROSURGERY® Publications** the notable exception, of course, is that we were unable to meet with members—colleagues and friends, readers and authors—and discuss the latest in journal news and initiatives. We look forward to the year ahead and the opportunity to come together as a community in person once more. Until that time we wish you all a safe, healthy, and productive 2021.

References

- 1 Oxford Languages. Word of the Year 2020. <https://languages.oup.com/word-of-the-year/2020/>. Accessed November 23, 2020.
- 2 Clarivate. Journal Citation Reports. <https://clarivate.com/webofsciencegroup/solutions/journal-citation-reports/>.
- 3 Christos Petrou. Guest Post – Scientific output in the year of COVID. The Scholarly Kitchen. <https://scholarlykitchen.sspnet.org/2020/11/19/guest-post-scientific-output-in-the-year-of-covid/?informz=1>. Accessed November 23, 2020.

New from the CNS

In December, the CNS and Oxford University Press published CNS Essential Papers in Neurosurgery, presenting a collection of critically appraised neurosurgical papers that shed light on some of the most impactful studies in the history of neurosurgery. More than 200 expert neurosurgeon editorialists contributed to this valuable text, reviewing 71 papers that have shaped the practice of neurosurgery as we know it today. These expert editorialists evaluate the strengths and weaknesses of each paper as well as the impact it had on their personal practice of neurosurgery. The body of literature covered in this book has in many ways defined the gold standards of neurosurgical practice and is a must-know for every student of neurosurgery. CNS Essential Papers in Neurosurgery is now available for purchase via OUP and all major booksellers.



Nelson M. Oyesiku, MD, PhD, FACS
Editor-in-Chief



Nicholas C. Bambakidis, MD
Publications Liaison

— RESIDENT COMMITTEE —

The CNS Resident Committee provides neurosurgery residents with authentic leadership opportunities as they develop projects to improve and enhance the Residency training experience. Committee members work with volunteer leaders in key CNS committees such as the Education Division, Guidelines Committee, and NEUROSURGERY® Publications, as well as residents from across the country. Recent activities include: a series of successful Town Halls created by the Resident Committee to cover critical topics for residents, development of a Neurosurgery journal supplement devoted to Resident issues, infographics highlighting the top 10 papers for residents, a brainstorming session and symposium with medical students, and much more.

In September 2020, a new cohort of residents started the program. The CNS is looking forward to their enthusiasm and energy as they volunteer to take on new projects and contribute to organized neurosurgery. We encourage all residents to consider applying for this rewarding opportunity, where your contributions will advance education and the Residency training experience as well as provide opportunities for authentic resident leadership roles.

NEUROSURGERY® Publications Resident Fellowship

Dr. Ann Liu from Johns Hopkins was selected as the 2020-2021 Publications Resident Fellow, marking the start of our third year of this successful program. Dr. Liu is a neurosurgery resident (PGY5 or completion year of 2023) at the Johns Hopkins University Hospital in Baltimore, Maryland.

The **NEUROSURGERY® Publications** Resident Fellowship, a one-year term is a 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 2022 program next winter.

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

2020 COMMITTEE MEMBERS

Nitin Agarwal
Bart Thaci
Lee Hwang
Bledi Brahimaj
Aleka Scoco
Zaid Aljuboori
Kurt Yaeger
Lekhaj Daggubati
Jacquelyn Corley
Christopher Graffeo
Kenneth Sack
Jonathan Rasouli
Justin Thomas
Lauren Rotman
Han Yan
Tarek Mansour
Stephen Garrett Whipple
Kelly Collins
Teresa Wojtasiewicz
Ryan Holland
Christopher Young
Muhammad Burhan Janjua
Joseph Domino
Iyer Aditya
Christopher Alvarez-
Breckenridge
Gattozzi Domenico
Hanna George
Hosein Jeremy
Mohammad Laila
El Tecle Najib
Nitesh Patel
Rimal Dossani
Schmidt Tyler
Grewal Sanjeet
Decker Matthew
George Alexopoulos
Mayur Sharma
Vyacheslav Makler
Philip Cezayirli

M Macki
Jacob Young
Kevin Kumar
Jasmine Dicesare
Robert Maurer
Nicolas Khattar
Vikram Mehta
Michael McPheeters
Joseph Linzey
Ryan Cleary
Daniel Lubelski
Ahmad Bahy
Thomas Larrew
Vin Shen Ban
Danielle Dang
Megan Still
Seong Jin
Fadi Al-Saiegh
Victoria Schunemann
Sravanthi Koduri
Adam Ammar
Aurora Cruz
Michael Zhang
Mike Lawless
Mohamed Zaazoue
Aleka Scoco
Andrew Chan
Arati Patel
Silky Chotai
Aria Mahtabfar
Omadiya Khanna
Miracle Anokwute
Vikram Chakravarthy
Balint Otvos
Matthew Tobin
Jorge Galvez
Michael Gaub
Emal Leshia
Victoria Clark
Piiamaria Virtanen



Maya Babu, MD, MBA
Chair



Lissa A. Baird, MD
Vice Chair

— EDUCATION DIVISION —

The Education Division is the heart of the CNS. Under the leadership of Chair, **Ashok Asthagiri**, and Vice Chairs, **Lola Chambless** and **Garni Barkhoudarian**, the 2020 committee developed an incredible amount of new content to engage members around the globe and across all career stages. From kicking off the year with four outstanding live courses to developing a robust new catalog of virtual experiences, this team—made up of 100 volunteer committee and work group members and more than 250 faculty members—truly met the challenge of meeting members where they were in 2020.

COURSES

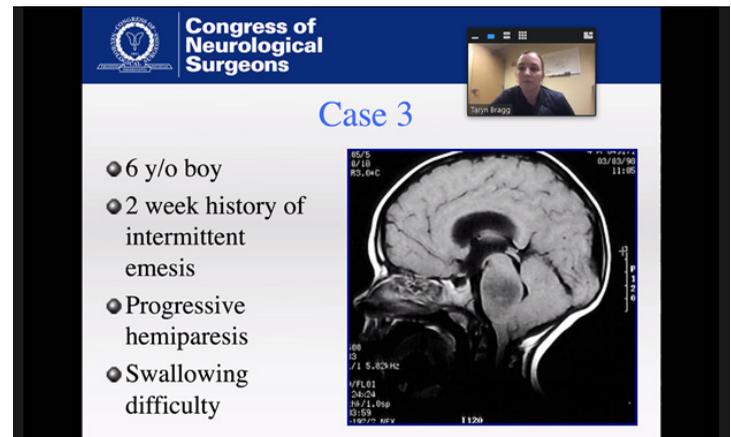
Essential Preparation for Board Exams

The ABNS Primary Examination and Oral Examination are critical milestones in a young neurosurgeon's career, and the CNS understands the pressure to prepare for and pass these exams. Over the past five years, the CNS has refined and perfected our live board preparation courses. In 2020, we successfully hosted two live board courses Saturday and Sunday, February 22-23, in Houston, TX.

- **Winter Oral Board Course** – 49 medical attendees joined us in Houston to gain study and exam tips, and to participate in one-on-one sessions where they practiced presenting cases to a faculty member and received relevant feedback on indications and subsequent follow-through.
- **Written Board Course** – 72 attendees joined us in Houston for this intensive case-based course with integrated real-time testing. Attendees also received supplemental SANS resources for continued study.

Additionally, with the cancellation of the Annual Meeting, the Education Division reinvented the fall Oral Board course in a new virtual format, Saturday and Sunday, September 12-13.

- **Oral Board Review Virtual Course** – 59 medical attendees logged on for one day of didactic lecture and interactive small group quiz sessions. On the second day attendees were offered a one on one session to review cases and complications and receive tips from expert faculty. This year to continue the learning after the course we offered special group quizzing sessions leading up to the board exam.



Complications Courses

Seven years ago, the CNS launched its first Spine Complications Course—an intimate gathering of surgeons designed to allow for open discussion of challenging spine cases and complications. Since then, we have continued to grow and refine the program format and in 2020, we rolled out a second complications course geared toward neurosurgeons specializing in tumors.

- **Spine Complications** – This year's Spine Complications Course drew 57 attendees to Park City, UT from February 7–9. The course combined faculty case presentations and discussions of attendee cases to address current research and developments in diagnostic techniques, as well as different strategies for resolving spine surgery complications should they arise.
- **Tumor Complications** - Our first ever Tumor Complications Course drew 33 attendees to Las Vegas, NV, January 25-26. Case-based sessions covered various tumors and approaches, as well as complications related to technology in brain tumor resection.

— ONLINE LEARNING —



For more than a decade, the CNS has been at the forefront of online education, developing the first online course catalog for neurosurgeons, and investing thousands of volunteer hours in updating content and developing new delivery formats. 2020 forced so many of our members to cancel trips for conferences, training courses, and visiting professorships. Under the leadership of Online Education Chair, **Maryam Rahman**, SANS Chair, **Akash Patel** and Webinar Chair, **Justin Hilliard**, our volunteers sprang into action developing a series of new virtual offerings to fill the void.

Online Grand Rounds

Within days of most hospital systems closing elective services and instituting measures limiting didactic conferences, the CNS developed Online Grand Rounds and the Virtual Visiting Professor series. Online Grand Rounds delivered two to three recorded webinars at a time, which were offered complimentary through a grant from the CNS Foundation. Early in the series, webinar content was changed weekly; then beginning in May, content was updated monthly. The 2020 Online Grand Rounds series featured 23 popular webinars from our existing online catalog, as well as 13 new webinars developed to address topics pertinent to neurosurgical trainees.

Virtual Visiting Professor (VVP)

The Virtual Visiting Professor program, which was also developed to address the unique needs of neurosurgical residents in 2020. This incredibly popular series, intended to reproduce a visiting professor lecture experience, featured prominent neurosurgeons and other physicians, addressing a wide variety of general and subspecialty topics. From March through November, the CNS hosted live 57 VVPs webinars, drawing 4,202 attendees for outstanding lectures and vibrant Q&A sessions. Topics ranged from COVID-19 care experience for neurosurgeons to practice development, as well as addressing key topics in every neurosurgical subspecialty. Through a generous grant from the CNS Foundation, VVP webinars are available live and on-demand for free.

— ONLINE LEARNING —

continued

The CNS Town Hall Experience

As our members experienced seismic changes in their lives and practices this spring, the CNS recognized a new urgency underlying our conversations. To help our community communicate about critical topics quickly and transparently, we developed the CNS Townhall Xperience. These highly interactive live sessions minimized traditional slide presentations in favor of lively discussions, facilitated by expert panelists.

Like the VVP series, the topics of the townhalls have been intentionally wide ranging, beginning with discussions unique to the challenges of neurosurgery during the COVID pandemic, and transitioning to legislative updates, discussions



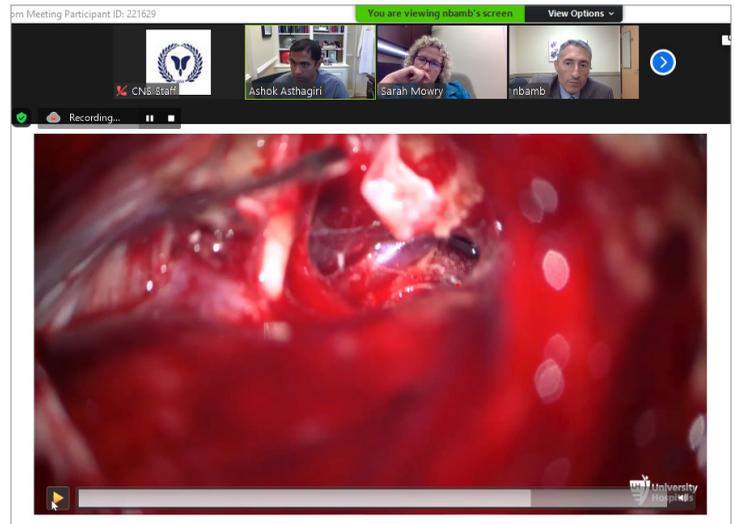
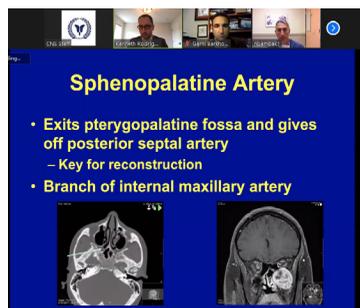
on resilience, and career development topics for trainees. Over the course of five months, we hosted 1,214 attendees at 14 unique Town Halls. We expect to bring the CNS Town Hall Experience back in 2021 as we identify appropriate topics. If you have suggestions, you are encouraged to contact education@cns.org.

CNS and SNO Virtual Tumor Boards

In September, the CNS joined forces with the Society of Neuro-Oncology (SNO) to introduce a Virtual Brain Tumor Board. This quarterly webinar series, developed in collaboration with the Tumor Section and The Neurosurgical Atlas, features globally recognized experts in brain tumor management (neurosurgery, neuro-oncology, radiation oncology, neuropathology, neuroradiology and other specialists) to discuss actual cases presented by our faculty. The series, which drew 242 registrants in 2020, extends through June of next year. We hope to continue this partnership and provide a lasting value for our combined memberships.

Skull Base Fellows Program

The CNS Skull Base Fellow Course was reimagined in 2020 as a six-part webinar series for residents, skull base fellows, and early-career neurosurgeons, running September 24 – December 3. Leading neurosurgeons and ENT surgeons covered the basic surgical approaches and anatomy required of every skull base neurosurgeon. Each 2.5-hour webinar incorporated didactic lecture, cadaver review of dissection with anatomy, case examples, and a Q&A session. This new virtual format allowed us to expand the reach of this valuable program, drawing 27 Residency programs in addition to 16 individual registrants.



Special Webinar Series

Building on the success of our online learning platform, the CNS Education Division expanded the catalog in 2020 with six new webinar series, including a six-part series on methodology and study design, a five-part radiosurgery series, a four-part series on modern microsurgery, and a four-part series on Navigating the Neurosurgery Match in 2020.

From June through September, we rolled out a three-part Black Lives in Neurosurgery webinar series addressing the impact of racism, bias, and discrimination within and outside of the healthcare system. The first seminar, addressing racism and implicit bias in healthcare was led by Dr. Uché Blackstock, Founder and CEO of Advancing Health Equity, LLC. The second webinar on diversity in graduate medical education featured William A. McDade, MD, PhD, Chief Diversity and Inclusion Officer of the ACGME. The final webinar in the series, titled *Where Do we Go from Here?* led by Course Directors, William W. Ashley Jr., Nnenna Mbabuikwe and Edjah K. Nduom, featured guest speakers: Allan D. Levi, Bonnie Mason and Ian T. McNeill, as well as special panelists: William T. Curry, Odette Harris, Nelson M. Oyesiku. Over the course of the series, 469 attendees joined in these critical discussions.

We also partnered with the Sociedade Brasileira de Neurocirurgia (SBN) and Societe Marocaine de Neurochirurgie (SMNC) on a five-part live webinar series covering tumor, vascular, brain trauma, spine, and functional neurosurgery topics. The series, which was offered complimentary drew nearly almost 1,700 attendees.

Recordings of our webinar series are available on demand at CNS.org, along with more than 100 additional webinars, offering 83.5 hours of CME.

— 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 2020, the SANS committee continued to review and update our bank of questions, ensuring that our suite of SANS exams remains relevant. The committee also partnered with the Leadership Institute to develop a new SANS: Leadership exam, which launched in December.

SANS Live

Unlike lecture-based webinars, SANS Live! utilizes a question and answer, quiz-show format to help participants enhance their surgical knowledge and decision-making skills. Session moderators deliver SANS questions, which the attendees answer using a polling system. Subspecialty experts then discuss the nuances of the questions and the reasoning behind the answer selection. From May through November, we held eight SANS Live sessions, drawing a total of 415 attendees. These sessions are also available on-demand at cns.org, and the CNS plans to continue SANS Live sessions next year, on a monthly basis.



SANS Live
Develop your surgical knowledge and decision-making skills through these lively, complimentary webinars. Each incorporates SANS questions in a debate format while reviewing core neurosurgical content with detailed answers and discussion by subject matter experts.

Tuesday, September 29
2:00 pm EDT / 4:00 pm CDT / 5:00 pm EDT
Title: Controversies in Neurotrauma
Moderator: Akash J. Patel
Faculty: David O. Okonkwo, Martina Stippler

Learn more at cns.org/OnlineEd

— NEXUS —

CNS' comprehensive case-based repository of neurosurgical operative techniques and approaches--was expanded to include 474 cases across all neurosurgical subspecialties, thanks to the tireless efforts of our 16 member Nexus Editorial Board and Managing Editor, Maryam Rahman.

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

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 2020 Nexus was visited over 8,830 by users in 134 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.

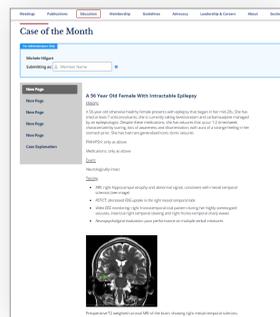
— OTHER ONLINE OFFERINGS —

Podcasts

The CNS Journal Club podcasts work group, under the direction of Dr. Rafael Vega, showcased twelve 30-minute podcasts this year. Each podcast, offering a 0.5 CME quiz, was provided complimentary to CNS members and made available for purchase to non-members.

Case of the Month

Under the leadership of Chair Khoi Than, the Case of the Month continues to deliver outstanding content each month, featuring ordinary and extraordinary cases across neurosurgical subspecialties in an interactive quiz format. Upon answering questions related to the case, participants are provided rationale for correct answers, references, and recommendations to



related Nexus cases, SANS exams and other online education. The COTM work group has worked especially hard in 2020 to better engage members, using videos about the cases on social media

Neurosurgery Watch

Neurosurgery Watch continues to be a great online resources for staying up to date with the latest clinical findings. This committee, led by Robert Starke and Brandon Rocque, identifies and summarizes key points of selected compelling papers from over 50 journals. In 2020, we implemented the use of infographics to further simplify the findings of critical papers published in respected journals, including *Operative Neurosurgery* and *Neurosurgery* Open.

— EDUCATION DIVISION —
continued

EDUCATION DIVISION LEADERSHIP



Ashok Asthagiri
Chair



Garni Barkhoudarian
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Online Education Chair

ONLINE EDUCATION WORK GROUP LEADERS



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Case of the Month Chair



Rafael Vega
Podcast Chair



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Robert Starke
Neurosurgery Watch Co-Chair



Brandon Rocque
Neurosurgery Watch Co-Chair

Special thanks to **Kaitlyn Melnick** and **Zaid Aljuboori** for their graphic editing work.

NEXUS LEADERSHIP



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Chair



Lissa Baird
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Nicholas Bambakidis
Advisor



Peter Nakaji
Advisor

SANS LEADERSHIP



Akash Patel
Chair



Lance Governale
Managing Editor

Special thanks to **Tiffany Hodges**, **Marte Van Keulen**, **Khoi Than**, **Ahmed Raslan**, **Jonathan Sherman**, **Brad Elder** and **Emily Seig** for their tremendous contributions to Nexus in 2020.

— CNS LEADERSHIP INSTITUTE —



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

In early 2020, the CNS gathered and vetted applications from neurosurgical leaders and aspiring leaders around the globe. By early March, a qualified group of 26 surgeons had been selected to participate in the year-long program, which was to kick off with two live courses in Chicago in mid-May. Just weeks later, the World Health Organization (WHO) would declare COVID-19 a global pandemic, and it quickly became clear to the chairs and vice-chair of the Leadership Institute that it would not be possible to safely hold the live courses.

In collaboration with our corporate partner, Medtronic, the committee set to work developing a new online program to introduce the 2020 Leadership Institute fellows to foundational concepts central to the CNS Leadership Institute curriculum.

- **Leadership in Times of Crisis** – The online program kicked off with a May webinar presented by Dr. Alan M. Scarrow, who has led the Leadership in Healthcare Course since its launch in 2016. This powerful and timely webinar was offered live to an exclusive group of 65 current and past CNS Leadership Fellows.

— CNS LEADERSHIP INSTITUTE —

continued

Leadership During Times of Crisis

- Crisis are not glitches in the world's operating system. Crisis have been and always will be part of human existence.
 - Infectious
 - Smallpox - Variola virus - (1400 - 1950; 300-500 million deaths)
 - Plague - *Yersinia pestis* - bubonic, septicemic, pneumonic (1347-1351; 75 to 200 million deaths)
 - Cholera - *vibrio cholerae* - (1642 - today; >20 million deaths)
 - Influenza - Influenza virus type A, a.k.a. Spanish flu - (1918 - 19; 50 million deaths)
 - HIV/AIDS - (1982 - today); (35 million deaths)
 - Also leprosy, tuberculosis, measles, SARS, MERS, H1N1, ebola, zika

- **Health Care Finance: Parts 1 & 2** – Valued faculty member, Brian Asmussen, delivered an intensive two-part webinar series in June that outlined health care finance topics from the practice perspective and the hospital perspective, including productivity measures and reimbursement models. Understanding these concepts, not often covered in neurosurgical training, is critical to leading neurosurgical and multi-disciplinary teams.
- **CliftonStrengths Assessment** – Our 2020 Leadership Institute fellows also completed the CliftonStrengths Assessment, a 177-question online assessment produced by GALLUP®, which is designed to help individuals identify and leverage their unique strengths to successfully lead diverse teams. After receiving their strengths reports, the fellows gathered for an online session to review strategies for building upon their individual strengths and building strong teams with complementary strengths.

The Leadership Institute chairs and faculty recognize that no virtual program can effectively replicate the interaction that takes place during small group discussion and communication exercises at the live course, but believe that this virtual program will serve to help these young leaders develop foundational knowledge in preparation for more in-depth study. The content will be used as prerequisite learning for future classes of Leadership Institute fellows, and all those fellows selected for 2020 have been offered the opportunity to participate in the live courses in May 2021.

Leadership During Times of Change

- "Nothing will ever be attempted if all objections must be overcome first." - Samuel Johnson
 - The more opinions you seek before you make a decision the better the decision will be...but it will never eliminate all the risk from a decision.
 - It is not necessary to change, survival is not mandatory. 99% of all species that have ever lived are now extinct.



Brian V. Nahed, MD
Co-Chair



Lola Chambless, MD
Co-Chair



Maryam Rahman, MD
Vice Chair



Ellen Air, MD
Advisor

— WASHINGTON REPORT —

Neurosurgery Makes Significant Progress Advancing Health Policy Agenda

Through advocacy, policy development and public relations, the Congress of Neurological Surgeons (CNS) and American Association of Neurological Surgeons (AANS) Washington Committee and Washington Office have played a fundamental role in advancing neurosurgery's [key health care initiatives](#). Throughout 2020, neurosurgeons and Washington Office staff met with Congress (virtually, following the onset of the COVID-19 pandemic) and worked with government agencies — including the Centers for Medicare & Medicaid Services (CMS) and the Food and Drug Administration (FDA) — and other health care stakeholders, such as third-party payers and state and national medical associations. And while the COVID-19 pandemic threw us a curveball, the CNS's advocacy continued unabated, with organized neurosurgery achieving a variety of successes.



AANS/CNS Washington Committee for Neurological Surgery

COVID-19 and the Global Pandemic

On Jan. 13, 2020, the Secretary of Health and Human Services (HHS) declared COVID-19 a national public health emergency. Soon after, in March, neurosurgical practices began temporarily suspending non-emergency neurosurgical cases and experiencing significant cash-flow challenges. Working with multiple coalitions of physician organizations in Washington, D.C., the CNS stepped into high gear to advocate for financial and other relief for neurosurgeons.

Congress passed several COVID-19-related bills, which included vital assistance for physicians and hospitals. The Coronavirus Aid, Relief, and Economic Security (CARES) Act ([H.R. 748](#)) and the Paycheck Protection Program and Health Care Enhancement Act ([H.R. 266](#)) established and funded the Paycheck Protection Program (PPP), allowing neurosurgical practices to receive grants to help keep their employees paid and their practices afloat. The Consolidated Appropriations Act, 2021 ([P.L. 116-260](#)) also provided additional funding for the PPP, extending the program through March 31, 2021. COVID-19 relief legislation also allocated more than \$175 billion to the Public Health and Social Services Emergency Fund, helping with bridge funding for neurosurgeons and the hospitals in which they practice. The expansion of telehealth, and increased payments for telehealth services, allowed neurosurgeons to continue to take care of their patients remotely and will likely be an integral part of neurosurgical practices in the future. Finally, the CNS led efforts to secure COVID-19-related medical liability protections. The CARES Act included liability protections for physicians rendering volunteer medical services during the COVID-19 public health emergency.

Reps. **Phil Roe**, MD, (R-Tenn.) and **Lou Correa** (D-Calif.) introduced [H.R. 7059](#), the Coronavirus Provider Protection Act, and Sens. **John Cornyn** (R-Texas) and **Mitch McConnell** (R-Ky.) introduced [S. 4317](#), the SAFE TO WORK Act. Both bills would provide physicians protections from certain COVID-19-related lawsuits. The CNS will continue to advocate for the adoption of COVID-19 related liability protections in the 117th Congress.

To tell neurosurgery's COVID-19 story, the Neurosurgery Blog launched a [blog series](#), covering a wide variety of topics related to the pandemic over nearly two-dozen posts. On the blog's pages, neurosurgeons from across the country told their stories about the global impact of the COVID-19 pandemic.

The CNS COVID-19 [Information Hub](#) includes a compilation of the Washington Committee's advocacy activities related to the pandemic.



Improving the Nation's Health Care System

The CNS advocated for improvements in the nation's health care system, including expanding access to affordable health insurance coverage for every American, enhancing patients' choice of insurance plans and providers and maintaining reforms that redress several inexcusable insurance practices — such as pre-existing condition exclusion, surprise medical billing, high-deductibles, narrow provider networks and prior authorization requirements. Recognizing that millions of Americans have no health insurance, the CNS continued advocating for a system that builds on and makes improvements to the existing pluralistic system, including employer-based coverage, Medicare for those currently eligible, state-based programs as Medicaid and those supported by the Affordable Care Act. To expand our voice in this critical debate, the CNS joined the [Partnership for America's Health Care Future](#), a coalition of the nation's leading doctors, nurses, clinicians, community hospitals, health insurance providers and biopharmaceutical companies.



Progress Made in Reforming Prior Authorization

For the past two years, the CNS has been tireless in its efforts to reform prior authorization in the Medicare Advantage (MA) program. Significant progress has been made, setting the stage for reforms in the coming year. Neurosurgery-backed legislation — the Improving Seniors' Timely Access to Care Act ([S. 5044/H.R. 3107](#)) — garnered overwhelming bipartisan support from nearly 300 members of Congress. Championed by Sens. **Sherrod Brown** (D-Ohio) and **John Thune** (R-S.Dak.) in the Senate, and Reps. **Suzan DelBene** (D-Wash.), **Mike Kelly** (R-Pa.), **Ami Bera**, MD (D-Calif.), and **Roger Marshall**, MD (R-Kan.) in the House, this bill would reform the use of prior authorization in Medicare Advantage (MA) through a streamlined and standardized process that focuses on increased transparency and accountability. The bill reflects a neurosurgery-supported [consensus statement](#) on prior authorization, developed by leading national organizations representing physicians, hospitals and health plans. Specifically, the legislation directs the Secretary of the U.S. Department of Health and Human Services to:

- Establish a real-time, electronic prior authorization process;
- Minimize the use of prior authorization for routinely approved services;
- Ensure prior authorization requests are reviewed by qualified medical personnel; and
- Require MA plans to report on their use of prior authorization, including delay and denial rates.

CMS also finalized its [Interoperability and Prior Authorization final rule](#), which aims to streamline and make more transparent the prior authorization processes of select payers and improve patient and provider access to electronic health information.

As a founding member and leader of the [Regulatory Relief Coalition](#), the CNS will continue to work with policymakers on legislative and regulatory initiatives to improve prior authorization.

Protecting Patients from Surprise Medical Bills

The CNS has been advocating for federal legislation to protect patients from unanticipated medical bills (otherwise known as "surprise" medical bills) while at the same time providing for a fair process for resolving payment disputes. Organized neurosurgery adopted a [set of principles](#) for a balanced solution to the problem. After more than two years of sustained advocacy as leaders of the [Out of the Middle](#) coalition, Congress incorporated into the Consolidated Appropriations Act, 2021 ([P.L. 116-260](#)) the No Surprises Act, which applies to federally-regulated plans, including ERISA plans, and does not preempt state laws governing state-regulated health plans. The provisions of the new law, which will be implemented on Jan. 1, 2022, meet many of neurosurgery's principles and includes the following elements:

- Patients are protected from surprise medical bills and only responsible for the in-network cost-sharing amount for out-of-network (OON) emergency services and other services provided in in-network facilities.



- Insurers are required to make initial payments directly to OON providers for OON services within 30 days. The law does not define the payment rate.
- If a provider objects to the payment, they may proceed to an independent dispute resolution (IDR) process.
- The IDR process is baseball-style arbitration. There is no negotiation. Both parties submit a payment rate, and the arbiter selects one.
- The arbiter may consider several factors, including median in-network rates and any other information the provider or health plan submits, other than billed charges, Medicare, Medicaid, CHIP and Tricare rates.

The CNS will work with the Biden Administration on the implementing regulations.

Championing Fair Reimbursement for Neurosurgeons

On Jan. 1, CMS implemented the [new CPT guidelines](#) to report office and outpatient visits based on either medical decision making or physician time. These evaluation and management (E/M) services are valued in line with the AMA/Specialty Society RVS Update Committee (RUC) recommendations. Unfortunately, to comply with Medicare's budget neutrality requirement, any increases in payments for these services must be offset by corresponding decreases. CMS estimated that the 2021 policies would increase Medicare spending by approximately \$10.6 billion, and neurosurgery braced an overall 6-7% pay cut for neurosurgery.

Faced with these steep Medicare payment cuts (and potential future cuts to the 10- and 90-day global surgical codes), in June 2020, the CNS — with significant funding support from the AANS, Council of State Neurosurgical Societies and the Section on Disorders of the Spine and Peripheral Nerves — co-founded the [Surgical Care Coalition](#) (SCC). The SCC launched a targeted, multi-faceted advocacy and public relations campaign to prevent these cuts. Specifically, the SCC advocated that Congress adopt legislation that would:



- Increase the global surgery code values;
- Halt implementation of the G2211 add-on code for complex E/M visits; and
- Prevent any additional cuts resulting from the new E/M payment policies.

Working with the SCC and other physician and allied health professional organizations, the CNS successfully advocated for legislation to prevent these cuts, with the adoption of the Consolidated Appropriations Act, 2021 ([P.L. 116-260](#)). Specifically, the legislation:

- Prevents steep Medicare cuts by earmarking \$3 billion to help offset the budget-neutrality adjustment and by delaying for three years the new G2211 add-on code;
- Extends the moratorium on the 2% Medicare payment sequester for an additional three months through March 2021, allocating \$3 billion for this purpose;

- Increases payments for the work component of the Medicare Physician Fee Schedule in areas where labor cost is determined to be lower than the national average through Dec. 31, 2023; and
- Temporarily freezes alternative payment model (APM) payment incentive thresholds for two years, allowing more physicians to qualify for the 5% APM bonus payments.

As a result of this combined relief, overall, neurosurgeons should not experience any Medicare payment cuts (although the specific impact will depend on the mix of services provided) in 2021.

The surgical community will continue to advocate for CMS to adjust the 10- and 90-day global codes to reflect the increased values of the E/M portion of these codes. In that regard, on Dec. 1, 2020, Sen. **Rand Paul**, MD, (R-Ky.) introduced [S. 4932](#), the Medicare Reimbursement Equity Act. If enacted, this legislation would require CMS to value the E/M portion of the global codes equal to the stand-alone E/M codes.

This past year, the Coding and Reimbursement Committee (CRC) leaders worked tirelessly along with the Joint Section’s Rapid Response Teams to ensure that third-party payers cover necessary neurosurgical services, including:

- Achieving favorable coverage policies for all Medicare jurisdictions for magnetic-resonance-guided focused ultrasound surgery for essential tremor and many payors for MRI-guided laser interstitial thermal therapy (LITT);
- Encouraging Medicare contractors to begin overturning negative policies for percutaneous vertebral augmentation;
- Expanding covered indications for stereotactic radiosurgery;
- Halting onerous requirements for uploading of radiographic images to obtain prior authorization for surgery; and
- Nominating neurosurgeons to serve on carrier coverage committees.



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

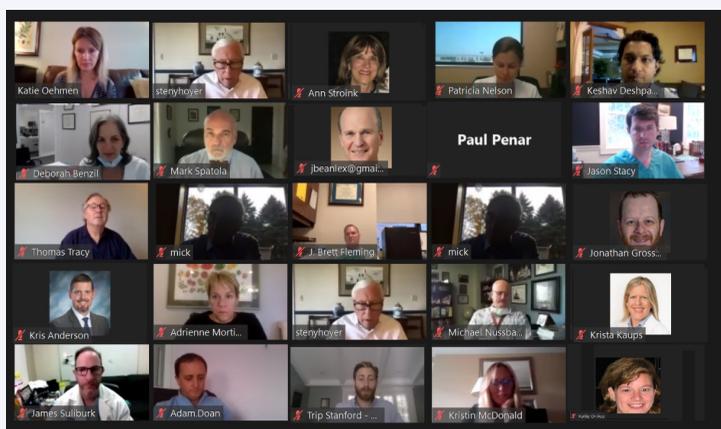
The CRC also monitored the need for new and revised Current Procedural Terminology (CPT) codes and worked to ensure that neurosurgical services are appropriately valued and reimbursed. For example, in response to neurosurgeon requests, CRC leaders worked with stakeholders to develop a new code for MRI-guided LITT and new lumbar spine decompression codes that will be included in the 2022 CPT book. CRC leaders also prevented unnecessary re-survey of numerous codes reviewed under CMS and RUC over-valued procedure screens, including percutaneous and open sacroiliac joint fusion, spinal laminectomy and intracranial endovascular procedures. Finally, the CNS coding and reimbursement team advocated for expedited Medicare coverage for medical devices approved under the FDA breakthrough device pathway.

Alleviating the Burdens of Electronic Health Records

To minimize the confusing and often unnecessary maze of federal regulations with which neurosurgeons must comply, the Washington Committee continued to work with Congress and regulators to reduce regulatory burden — particularly burdens associated with electronic health records. As a result of this pressure, CMS created the [Office of Burden Reduction and Health Informatics](#) to eliminate unnecessary and costly requirements and regulations. Over the past year, this office, with the CNS’s support, helped finalize multiple new rules to improve data exchange and reduce provider and patient burden. For example, in March, CMS and the Office of the National Coordinator (ONC) for Health Information Technology finalized [two separate rules](#) that aim to enhance interoperability of electronic health data and improve patient and provider access to such data.

Streamlining the FDA Approval Process

The Drugs and Devices Committee continued to work with the FDA and other stakeholders to advocate for the least burdensome appropriate classification for neurological devices. In 2020, the committee supported the reclassification for bone growth stimulators and facet spinal screws, which will allow those products to come to market more efficiently.



Neurosurgeons and others hold a Zoom conversation with House Majority Leader Steny Hoyer (D-Md.). The COVID-19 pandemic provide unprecedented opportunities for neurosurgeons to meet virtually with their elected officials and Capitol Hill staff.

Supporting Quality Resident Training and Education

An appropriate supply of well-educated and trained physicians — both in specialty and primary care — is essential to ensure access to quality health care services for all Americans. Looming physician shortages — by 2033, the nation faces a physician shortfall of between 54,100 to 139,000 — threaten this access to care. To help ease this shortage and support quality resident training and education, the CNS successfully advocated for the introduction of bipartisan legislation to increase the number of Medicare-sponsored residency training positions. Sponsored by Sens. **Robert Menendez** (D-N.J.), **John Boozman**, OD (R-Ark.) and **Charles Schumer** (D-N.Y.) in the Senate, and Reps. **Terri Sewell** (D-Ala.), **John Katko** (R-N.Y.) and **Xochitl Torres Small** (D-N.M.) in the House, the Resident Physician Shortage Reduction Act ([S. 348/H.R. 1763](#)), would increase the number of available medical residency positions by 15,000 over five years. While falling short of what is necessary to address the looming physician workforce shortage adequately, the Consolidated Appropriations Act, 2021 ([P.L. 116-260](#)) did provide funding for 1,000 additional Medicare-funded graduate medical education residency positions. The CNS will build on this down payment by advocating for additional funding in the 117th Congress.

Addressing the Nation's Opioid Crisis

The opioid crisis, exacerbated by the COVID-19 public health emergency, continues to negatively impact communities across the country. While prescriptions for opioids are decreasing, opioid deaths are increasing due to the increased use of illicit fentanyl, methamphetamine, cocaine and heroin. The Drugs and Devices Committee and Pain Section leaders have responded to many proposed regulations implementing the Substance Use-Disorder Prevention that Promotes Opioid Recovery and Treatment (SUPPORT) law for Patients and Communities Act ([P.L. 115-271](#)). For example, neurosurgery provided comments on the Centers for Disease Control and Prevention's updated Guideline for Prescribing Opioids for Chronic Pain. The CNS also provided input to members of Congress on opioid-related legislation. Each communication stressed the need to allow appropriate post-operative and chronic pain care, including the importance of adequate reimbursement and coverage for device-based non-pharmacological pain treatment options.

Additionally, representatives from neurosurgery also participate in national advisory panels addressing the issue, including **Jennifer A. Sweet**, MD on the American Medical Association (AMA) Opioid Task Force and **Jason M. Schwalb**, MD on the AMA Pain Care Task Force.



Grassroots Advocacy

It is neurosurgeons who make a difference in Washington, DC, and the CNS actively engaged its members in the advocacy process through various grassroots activities. To this end, the CNS helped make the Alliance of Specialty Medicine's [virtual legislative conference](#) an overwhelming success. Neurosurgeons from across the country met virtually with their elected officials on such topics as COVID-19, prior authorization, surprise medical bills and medical liability reform. Additionally, in 2020, the Washington Committee established its new [web hub](#) where neurosurgeons can get the latest health policy and legislative information. From here, CNS members can access the Advocacy Action Center to contact Congress on issues of importance to the specialty.

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. Throughout 2020, the Washington Office reached a circulation/audience of over one million in traditional media hits from *Becker's Spine*, *Bloomberg Law*, *Healthcare Drive*, *Inside Health Policy*, *MedPage Today*, *Medscape*, *Northern California Record*, *The Ripon Advance*, *WBTV* and *Winston-Salem Journal*. Additionally, the Washington Office's digital media platforms continue to see significant expansion and have amassed an audience of more than 155,000. These communication tools include:



Neurosurgery Blog

More Than Just Brain Surgery

- [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 — used to gain greater visibility for neurosurgery's advocacy efforts — including [Twitter](#), [Facebook](#), [Instagram](#), [LinkedIn](#) and [YouTube](#).

— GUIDELINES PROGRAM —



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

In 2020, the CNS continued to advance the practice of neurosurgery through the development of clinical practice guidelines. Approximately 115 members of the CNS Guidelines Committee) and its associated task forces, under the direction of Drs. Nader Pouratian (Chair) and Mohamad Bydon (Vice Chair), published three new guidelines and continued work on ten additional guidelines in development.

The CNS also continues an unprecedented and successful 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 completed the first guideline (of a three-part series) on perioperative spine in 2020. This guideline will be published in 2021 and the second part of the guideline series is underway.

2020 Program Highlights

- Published three guidelines:
 - Neuroablation for Cancer Pain
 - Update to Pediatric Hydrocephalus
 - Update to Deep Brain Stimulation for Obsessive Compulsive Disorder
- Twelve guideline topics are currently in development
- New topics to be published in 2021 include Perioperative Spine: Preoperative
- Updates to be published in 2021 include Update to Progressive Glioblastoma, Update to Low Grade Glioma



Nader Pouratian, MD, PhD
Guidelines Chair



Mohamad Bydon, MD
Guidelines Vice-Chair

During the 2020 Executive Committee Meeting, Drs. Jennifer Sweet, Ellen Air and Lissa Baird stepped into their new roles as Guidelines Chair and Co-Vice Chairs.

— DATA SCIENCE INITIATIVES —

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

2020 Program Highlights

Data Science Scholar Program: The CNS, CNS Foundation and Viz.ai partnered in 2020 to launch the CNS Data Science scholarship, designed to provide residents with structured mentorship in the use of advanced data science techniques, including artificial intelligence, for research and practice improvement in neurosurgery. Dr. **Matthew Pease** was selected as this first recipient for his project involving radiomic techniques to identify pathology based on MRI. We are also excited to announce that the CNS has received funding to support another award to be selected in 2021.

"I am very excited to be working with Drs. Oermann and Chambless as the CNS Data Science Fellow. I am learning how to perform machine learning analysis on MRI images of brain tumors to predict histopathological subtype. My hope is that we will develop an accurate enough model to avoid biopsies for several neurosurgical conditions, such as primary CNS lymphoma."

– Dr. Matthew Pease



Abstract Award: Congratulations to our 2019 [Data Science Abstract award](#) winner, **Todd C. Hollon, MD**. Dr. Hollon's research was published in *Nature Medicine* January 2020 (Hollon et al., Near real-time intraoperative brain tumor diagnosis using stimulated Raman histology and deep neural networks). We are excited to announce that submissions for the 2021 Data Science Abstract Award, supported by Nvidia, are now open in the CNS Abstract Center.



Mohamad Bydon, MD
Chair

— STRATEGIC PARTNERSHIPS —

The Congress of Neurological Surgeons is committed to partnering with other societies serving our neurosurgical members to develop content and programs that advance the specialty and ultimately improve patient care. In 2020, we extended and built upon our strategic partnerships with the Sections and other neurosurgical organizations.

Section Partnerships

For years, the CNS has partnered with the Sections, leveraging our experience delivering relevant and timely educational content with the Sections' subject matter expertise to deliver unparalleled educational programs 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 2020 Spine Summit March 4-7 and Joint Section on Pain Meeting March 4-6, 2020 in Las Vegas, Nevada. The 2020 Spine Summit, themed "Focus on Data-driven Innovation," featured three days of scientific sessions and breakouts, seven special courses, spirited debates on controversial topics, and a hands-on cadaver course.

It was on track to be the best attended Spine Summit yet, with over 600 medical registrants, but as the opening session drew near, it became clear that COVID-19 was an increasing threat in the US, and institutions across the country implemented travel bans, leaving some 25 faculty and many more attendees unable to make the trip to Las Vegas, or forced to return home unexpectedly. Thanks to the tremendous work of Section leadership and volunteers, and CNS staff, and meeting partners on the ground in Las Vegas, we were able to pivot the plenary sessions and others to allow many of these spine experts to present via Zoom. In the end, those who were able to stay for the duration of the meeting - enjoyed the same quality educational sessions and discussion they have come to expect from the Spine Summit, even under these challenging circumstances.



ASSFN

Since 2014, the CNS has partnered with the American Society for Stereotactic and Functional Neurosurgery (ASSFN) to host its Biennial Meeting, and by early 2020, the program for the meeting in Boston, MA was shaping up. But as winter gave way to spring, it became increasingly clear that it would not be safe, nor practical for members to gather in person. ASSFN leadership, working with CNS staff and volunteers, made a decision to cancel the meeting in Boston and develop a new virtual program in its place.

The ASSFN Virtual Scientific Update Program was held Sunday, June 28. This five-hour virtual event brought some of the most critical scientific presentations and lectures from the 2020 scientific program to ASSFN members, including a Presidential Address by Dr. Robert E. Gross, an Honored Guest presentation by Dr. Dennis D. Spencer, an overview of the BRAIN initiative, and a presentation on Interfaces Between Neuroscience, Neurosurgery, and AI.

Cerebrovascular Section

While the CNS and the Cerebrovascular Section did not partner on any educational courses in 2020, the CNS continues to manage the Section's administrative and Executive Committee business. This partnership has proven extremely valuable over recent years,

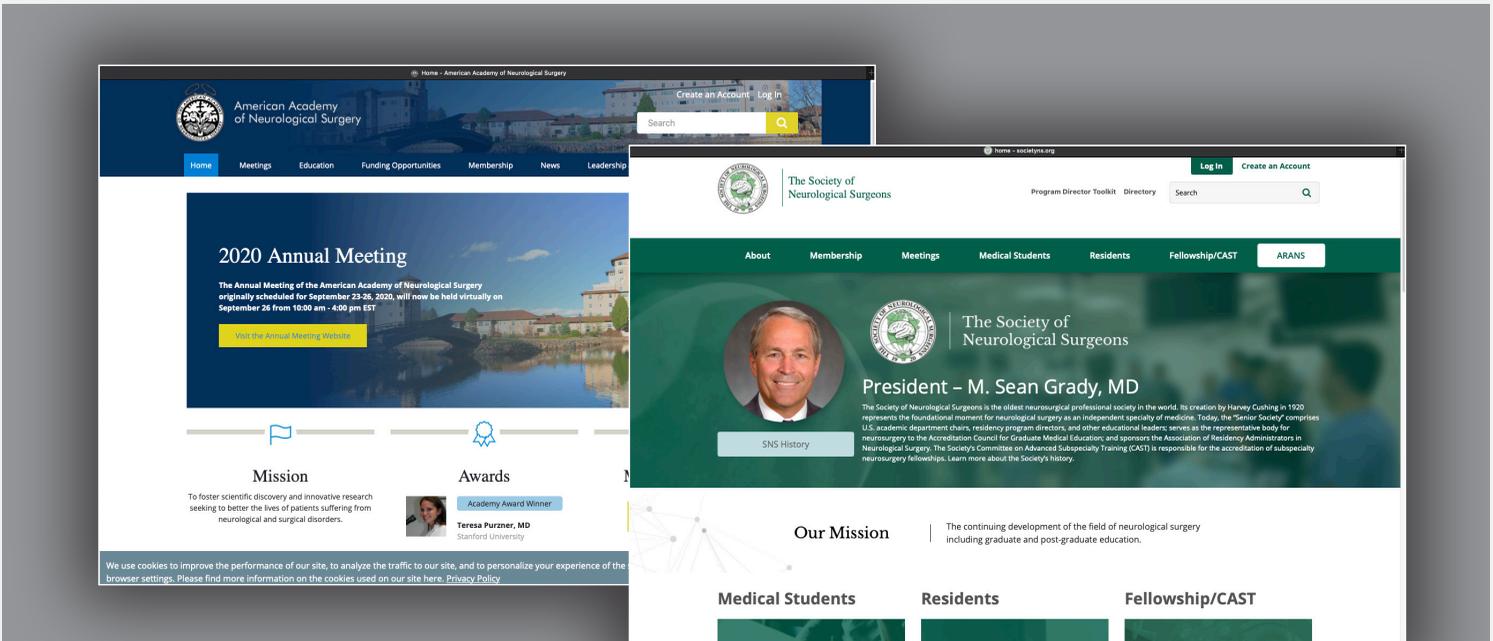
helping the CNS better understand and anticipate the needs of cerebrovascular surgeons, and ensuring that CV Section members and volunteers receive outstanding service and support.

— STRATEGIC PARTNERSHIPS —

continued

Neurosurgical Society Partnerships

The CNS also continued critical partnerships this year with two key neurosurgical societies.



American Academy of Neurological Surgery (AAcNS)

We also continued our valued partnership with the American Academy of Neurological Surgery (AAcNS) in 2020, administering membership dues, and managing the organization's website and abstract center. 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

The CNS was honored to continue its partnership with the Society of Neurological Surgeons (SNS) in 2020, managing the Society's administrative, membership and website support at no additional cost to the SNS. In May, we hosted a virtual Annual Business meeting for 250 SNS members, and we had the privilege of partnering with SNS to deliver a several training courses and meetings. The traditional SNS Annual Meeting was cancelled as a result of COVID, and replaced with a virtual webinar on May 30, titled "Need to Know: Right Here, Right Now." This online program drew 300 participants to view essential content pulled from the Annual Meeting program. The CNS also leaned on our expertise in online learning to help the SNS pivot their Junior Resident Course and Intern Boot Camp courses to a virtual format, May 28-29 and July 16-17, respectively. This move meant that

the SNS could still bring its critical training curriculum to 118 junior residents and 213 interns, even in the face of travel restrictions.

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

(societyns.org)

— THE CNS FOUNDATION REPORT —



The CNS Foundation's accomplishments over the past year are remarkable and entirely due to the generosity of you, our donors, and a hard-working group of volunteer board members. If you have not yet read about our **Spanish Translator Volunteers**, **third Getch K12 Scholar**, and our **first Innovative Seed Grant** to help fund online education for residents and international colleagues, please read our [2020 Fall Impact Report](#).

In 2019 and 2020, the board was very busy creating structure to support our initiatives behind the mission. As you will read on the following pages, 2021 will be a busy year executing and measuring our impact on the projects approved during 2020.

FALL 2020 IMPACT REPORT

CNS Foundation Strength in its Supporters
 In a year of unique pandemic challenges, it is my pleasure to report to you the strength of the CNS Foundation. I come to you with new ideas, innovation, new leadership and a partnership of humbling generosity. Below you will read about the CNS Foundation's partnership with the CNS to create a terrific online educational project. Funds from our generous donors made possible complimentary access to a fantastic array of virtual education for our international members and residents just as pandemic quarantine changed our world. This innovative solution continues to receive praise from doctoring globally. I am pleased to announce my new Vice Chair of the CNS Foundation, Alexander Khalessi. I have mentioned and consider Alex a friend of exceptional brilliance both as a neurosurgeon and as a leader. The CNS Foundation has grown rapidly in the past year and I am excited to have his vision and passion onboard to further our mission. And finally, but certainly not least, I am honored to thank Medictronics for a their generous 2020 leadership gift to the CNS Foundation.

Elad I. Levy, MD
CNS Foundation Chair

Alexander Khalessi, MD, MBA
CNS Foundation Vice Chair

The CNS and CNS Foundation Create Hit Online Resources in Response to COVID-19
 The CNS and the CNS Foundation collaborated to develop the **Virtual Visiting Professor (VVP) and Online Grand Rounds (OGR)** webinars to support neurosurgeons worldwide during the COVID-19 pandemic. Produced by the CNS Education Division volunteers and staff, the CNS Foundation's grant provides international neurosurgeons and residents complimentary access to an innovative collection of educational products. As the Virtual CNS educational platform has continued to thrive, several industry partners (Medtronic, Carl Zeiss, Medtronic, NIX Development, Glentall) have provided sponsorship to the CNS for these self-attended online educational hours.

Getch K12 Scholar Award goes to Nick Au Yong.
 Named in honor of past CNS president, the late Christopher C. Getch, the award is a testament to the CNS commitment to fostering tomorrow's neurosurgeon scientists. The CNS Foundation is pleased to announce that Nicolas Au Yong, assistant professor of Neurosurgery at Emory University School of Medicine, was named the NINDS/CNSF "Getch" K12 Scholar Award recipient by the National Institutes of Neurological Disorders and Stroke (NINDS), part of the National Institutes of Health (NIH). The award, which aims to increase the number of neurosurgeon-scientists trained to conduct research into neurological disorders, is made possible by a collaboration with the Foundation for the National Institutes of Health (FNHI). Dr. Au Yong is the third neurosurgeon to have received this prestigious honor.

Update on Second K12 Award: Due to the COVID-19 pandemic, the application cycle has been modified. Details for the next award will be announced in 2021.

INAUGURAL CNS GUIDELINES QUALITY SCHOLAR AWARD

With sincere gratitude to Mohamad Bydon, Nader Pouratian and Jennifer Sweet, tireless leaders of the CNS Guidelines Committee, the CNS Foundation approved funding for the new CNS Guidelines Quality Scholar Award. The resident or fellow recipient of this award will conduct a one-year project where they select guideline recommendation(s) from a published CNS Guideline, develop quality measures, and use CPT codes to analyze a dataset of their choosing to assess the impact of guidelines on practice. Applications opening in late Spring 2021.

For more information, please visit Foundation.CNS.org/Awards.



Elad I. Levy, MD, MBA
Chair, CNS Foundation
Secretary, CNS



Alexander Khalessi, MD, MBA
Vice Chair, CNS Foundation
Ex-Officio Member, CNS

— THE CNS FOUNDATION REPORT —

continued

Schedule of Awards and Scholarships supported by CNS Foundation Donors

Scholarship/Award	Application Period
Data Science Award	January 4 – February 15, 2021
Future Women Leaders in Neurosurgery Scholarship	March 1 – April 30, 2021
Innovative Seed Funding Program	Opening 2021
CNS Guidelines Quality Scholar Award	March 1-31, 2021
Tumor Observership in Miami	Late Summer 2021
2022 NINDS/CNSF Getch K12 Scholar Award	Fall 2021

Links to all awards and scholarships supported by the CNS Foundation are found at [Foundation.CNS/Awards](https://www.foundation.cns.org/awards)

To receive periodic emails announcing application openings, please contact **Courtney Johnson**, Manager CNS Foundation: CJohnson@CNS.org

Applications open March 1, 2021 for Inaugural Future Women Leaders in Neurosurgery Scholarships

The CNS Foundation and the Section for Women in Neurosurgery are preparing to receive their inaugural applications for the new Future Women Leaders in Neurosurgery (FWLN) Scholarship. Each awardee will receive a stipend to attend a leadership course of their choice. For more information on the Scholarship and a link to the application, please visit: [Foundation.CNS/Awards](https://www.foundation.cns.org/awards)

Goal to Raise \$50,000 for Future Women Leaders in Neurosurgery Scholarship Nearly Achieved!

The below individuals have joined the generous anonymous donor to raise nearly \$30,000 toward a goal of raising \$50,000. Would you like to support this scholarship? Matching funds from the CNS Leadership gift are still available, so every gift will be matched, 100%. Take advantage of this opportunity today. Make your 2021 gift to the **Future Women Leaders in Neurosurgery Scholarship** (FWLN Scholarship), have your gift matched by the CNS Leadership Gift, and help the fund reach its ultimate goal of \$100,000.

Ellen Air
 Laura Snyder
 Martina Stippler
 Brian Nahed
 Kashif Shaikh
 Nicholas Bambakidis
 Khoi Than
 Steven Kalkanis
 Maryam Rahman
 Katie Orrico

Nader Pouratian
 Idara Edem
 Annie Drapeau
 Michele Hilgart
 Jennifer Sweet
 Ugur Ture
 Courtney Johnson
 Megan Fogleson
 Catherine McNeill

Every Dollar Matched Help us establish a \$100,000 FWLN Scholarship Fund!



Interested in applying? FWLN Scholarship applications open March 1, 2021. See [Foundation.cns/awards](https://www.foundation.cns.org/awards) for more information.

— THE CNS FOUNDATION REPORT —

continued

CNS FOUNDATION INNOVATIVE SEED FUNDING PROGRAM

The CNS has always prioritized high quality education for its members and the Education Division strives to address the needs and exceed expectations of neurosurgeons around the world. With the abrupt closure in March 2020 of so many in-person educational centers, the CNS Education Division stepped in to fill the immediate need with virtual education. The Board of the CNS Foundation recognized an opportunity to support the neurosurgical community by awarding a grant to the CNS Education Division so that all international members and residents could receive complimentary access to a large library of these new webinars.

This nimble flexibility to respond to an innovative idea gave way to the CNS Foundation Board's development of the "Innovative Seed Funding Program." The goal is to provide one-time grants of up to \$25,000 in seed funding for innovative projects that meet the CNS Foundation mission and at least one of its core initiatives. The Board is finalizing the structure of this grant program and looks forward to receiving proposals by the end of 2021.



CNS Foundation Board Member Spotlight

Brian V. Nahed, CNS Foundation Board Member

What makes you hopeful for the future of philanthropy in neurosurgery?

Given the explosion of innovation, research, and technology, the best days of neurosurgical care are ahead of us. The CNS and the CNS Foundation are focused on supporting the next generation of neurosurgeons and it is through philanthropy that the CNS can provide state of the art education, resources, and opportunities to every neurosurgeon as they develop the neurosurgical procedures and cures for tomorrow, today.

CNS Foundation 2020 Financial Report

	2019		2020	
Industry	\$	586,250	\$	310,000
Medical Societies and Sections	\$	1,800,000	\$	100,000
Individuals (Pre-CNS 1:1 Match)	\$	65,234	\$	90,762
Total Fundraising (Includes CNS 1:1 Match)	\$	2,451,484	\$	591,484
Total Assets	\$	3,339,215	\$	3,396,361
Remaining in CNS \$1 million matching funds			\$	374,640

— THE CNS FOUNDATION REPORT —

continued

THANK YOU, 2020 SUPPORTERS!

CHAIRMAN'S CIRCLE

\$20,000+

Welcoming visionary donors who wish to help build a legacy of advancing neurosurgery through the CNS Foundation.

A gift from an **anonymous donor** to the Chairman's Circle has established the CNS Foundation Future Women Leaders in Neurosurgery Scholarship

2020 LEADERSHIP CIRCLE

\$5,000+

David Crawford | Barry Zimmerman

\$1,000+

Ellen Air*	Kikuo Ohno	John Caridi	Brian Nahed*	Teck-Mun Soo
Nicolas Phan	Nader Pouratian*	Ying-Chao Lin	Clemens Schirmer	Martina Stippler*
Laura Snyder*	Garni Barkhoudarian	Stavros Maltezos	Chandra Sen	Kevin Teal
Brian and Melissa Hoh	Praveen Mummaneni			

The generous Leadership Circle gift from **Stavros Maltezos** was made in memorial of Walter W. Whisler, MD, PhD, RUSH University

\$500+

Joseph Adel	Kelli Crabtree-Wilson	Jeremy Phelps	Mark Spatola
Faisal Al Otaibi	Gary Dix	Maryam Rahman*	David Stockwell
Alan Appley	Murali Guthikonda	Pranartiharman Ramachandran	Oszkar Szentirmai
Joseph Arguelles	Daniel Hoh	Ganesh Rao	Lee Tessler
Ashok Asthagiri	Alexander Khalessi	Joseph Schnittker	Jamie Ullman
Michael Ayad	Mark Krieger	Kashif Shaikh*	Dante Vacca
Nicholas Bambakidis*	Elad Levy	Todd Shanks	Agostino Visioni
Lissa Baird	Akash Patel	Regina Shupak	Marjorie Wang
Estrada Bernard		Justin Singer	Jeremy Wang

*Donors to the Future Women Leaders in Neurosurgery Scholarship Fund

Names of donors for gifts of \$1 - \$499 found at foundation.cns.org/our-impact/our-inspiring-supporters

— THE CNS FOUNDATION REPORT —

continued

2020 PHILANTHROPY PARTNERS

We deeply appreciate the continued partnership and support from Medtronic and Penumbra. Their return in 2020 to make Philanthropy Partner gifts at the Strategic and Guardian levels provides continued growth and opportunity for the CNS Foundation to help others.

STRATEGIC PARTNERS

Medtronic

GUARDIAN PARTNERS

Penumbra 

THANK YOU, CNS FOUNDATION BOARD

Please help us extend our sincere appreciation to the generosity of time and thoughtful engagement these volunteers have given to shaping the CNS Foundation into a philanthropy that gives back to worldwide patient health:

Nicholas C. Bambakidis

Gita Barry

David Crawford

Brian L. Hoh

Daniel J. Hoh

Alexander Khalessi, Vice Chair

Steven N. Kalkanis

Ricardo J. Komotar

Elad I. Levy, Chair

Praveen V. Mummaneni

Brian V. Nahed

Ganesh Rao

Clemens Schirmer

Regina Shupak

Martina Stippler

[To read more information on the CNS Foundation Board.](#)

The Mission of the CNS Foundation is to improve worldwide patient health through innovative programs that allow neurosurgeons to collaborate globally as researchers, learners, educators and caregivers.

Make Congress of Neurological Surgeons Foundation your charity of choice in your [AmazonSmile](#) account. Every eligible purchase generates a 0.5% donation to the charity of your choice.

amazonsmile
You shop. Amazon gives.

Make your 2021 gift to any initiative or project or support them all by giving to the Mission Advancement Fund. To date, \$374,640 remains of funds to match all donations from individuals and medical societies. **Please visit Foundation.cns.org/donate to make your annual donation today.**

— CORPORATE DEVELOPMENT —

As with most things in 2020, the CNS Corporate Development initiatives, were drastically changed. Historically, the CNS relies heavily on in-person meetings and courses for our corporate revenue generation; with COVID-19 that strategy was no longer feasible. As an organization, we quickly switched to a virtual online environment for our continued education, and just as swiftly provided opportunities for our industry partners to support those online options.

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

We would like to thank the following companies for their support of our 2020 Activities.

In-Person Courses

- **Tumor Complications:** Carl Zeiss Meditec, Inc., Integra LifeSciences, Medtronic, NICO Corporation, NX Development Corporation, Stryker, and SPIWay LLC.
- **Spine Complications:** Medtronic, DePuy Synthes, Globus, BK Meditech, Innovasis, Brainlab, NuVasive, SpineCraft, Stryker, and Zimmer Biomet.

Virtual Courses, Sessions and Series

- **Leadership Institute:** Exclusive Supporter, Medtronic.
- **Black Lives in Neurosurgery:** Medtronic, DePuy Synthes, GT Medical Technologies, Inc., Orthofix, and Stryker.
- **Skull Base Fellows Course:** Medtronic, KLS Martin, Carl Zeiss, Olympus America Inc., and SPIWay LLC.
- **Oral Board Fall Review Series:** Medtronic, Axogen, Inc. and Leica Microsystems.
- **Navigating the Neurosurgery Match:** Kuros Biosciences
- **CNS/SNO Virtual Tumor Board Review:** GT Medical Technologies, Inc., and Leica Microsystems.
- **Town Halls:** Medtronic and DePuy Synthes
- **Virtual Visiting Professor Series:** Medtronic, Carbofix, LLC., GT Medical Technologies, Inc., and Thompson Surgical Instruments
- **Online Grand Rounds:** Medtronic, Carl Zeiss Meditec, Inc., and NX Development Corporation (Gleolan™)
- **Industry Insights Webinar Series:** Medtronic, Omniscent Neurotechnology (o8t), and Astra Zeneca

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



Daniel J. Hoh, MD
Committee Chair

There were 29 companies who supported the CNS this year. This is an increase of 7 companies supporting our efforts outside of an Annual Meeting from 2019.

— INDUSTRY ALLIES COUNCIL —

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

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

AMBASSADOR

Medtronic

SUPPORTERS



— FINANCIAL REPORT —

Statement of Financial Position

December 31, 2020

2020 Assets

	Current	Prior Year	Increase/ (Decrease)
CNS Cash	\$2,093,831	\$1,364,307	\$729,523
Accounts Receivable	220,045	518,542	(298,497)
Pre-Paid Expenses & Deposits	681,417	711,471	(30,054)
Beneficial Interest	360,000	360,000	0
Investments	22,460,801	22,063,532	397,268
Equipment & Software	820,673	1,167,956	(347,283)
Joint Section Assets (Net)	4,501,989	3,844,907	657,082
Total Assets	31,138,756	30,030,716	1,108,040

2020 Liabilities

Accounts Payables	296,210	650,580	(354,370)
Loan Payment	634,915	0	634,915
Deferred Rent	84,380	121,048	(36,668)
Accrued Expenses	212,229	276,351	(64,122)
Deferred Revenue-Dues	1,413,015	498,569	914,446
Deferred Revenue-Annual Meeting	181,168	387,225	(206,057)
Deferred Revenue-Journal	305,000	600,000	(295,000)
Deferred Revenue-Other	0	401,195	(401,195)
Net Payable - Foundation	357,018	1,060,920	(703,902)
Total Liabilities	3,483,935	3,995,887	-511,952

Net Assets

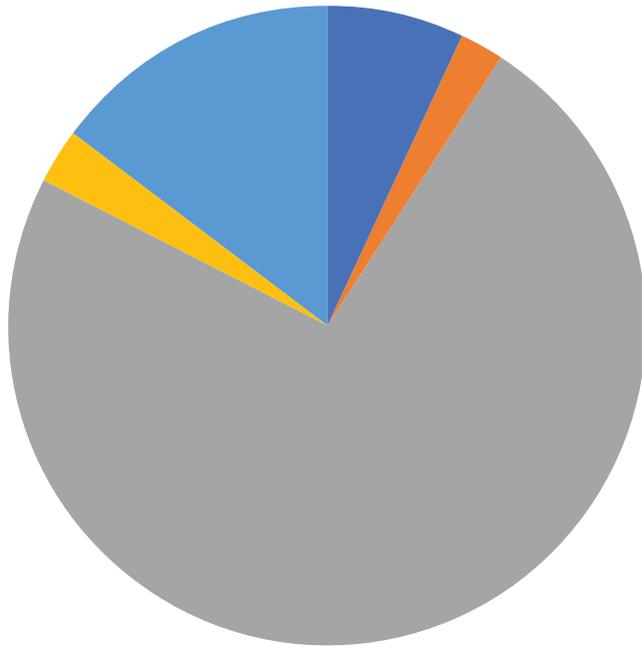
Unrestricted	27,294,821	25,674,828	1,619,992
Permanently Restricted	360,000	360,000	0
Total Net Assets	27,654,821	26,034,828	1,619,992

Total Assets	31,138,756	30,030,716	1,108,040
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— FINANCIAL REPORT —

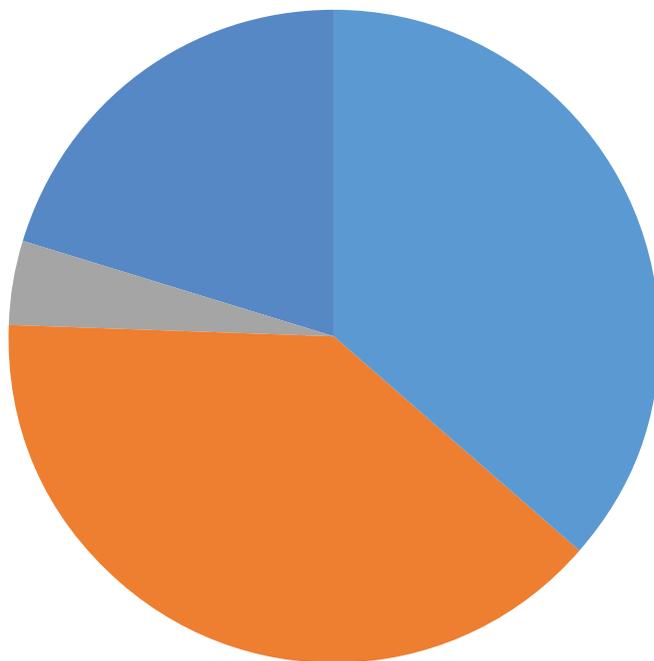
continued

Assets as of December 31, 2020



● Cash & AR.....	\$2,313,876
● Prepaids.....	\$681,417
● Investments.....	\$22,460,801
● Fixed assets, etc.....	\$820,673
● Other.....	\$4,501,989

FY20 Revenue



● Membership Dues.....	\$3,177,717
● Publications and Journal.....	\$3,401,565
● Online Products.....	\$361,615
● Other.....	\$1,751,054

— 2021 PRESIDENT —



Brian L. Hoh, MD

President, Congress of Neurological Surgeons

It is my great honor and privilege to lead the CNS into what we believe will be a year of great healing and growth. Our immediate Past-President, Steven Kalkanis, did an amazing job guiding our organization through unprecedented challenges. With the support and efforts of our many neurosurgeon volunteers, the CNS delivered extraordinary educational value to our members in 2020, launching a record number of new educational programs and services, which have been outlined in this Annual Report.

The CNS Foundation (CNSF) continued to see remarkable growth, growing donations across its strategic funds. The efforts by Foundation Chair Elad Levy and Vice Chair Alex Khalessi to make CNSF contributions meaning for donors and to allocate matching funds to the strategic initiatives identified by our individual donors have truly paid off. Your support of the CNS Foundation in 2020 was essential to supporting some of the new educational initiatives that delivered critical information and discussion to our members at the height of the pandemic.

I must also congratulate Editor in Chief, Nelson M. Oyesiku, for another incredible year in the NEUROSURGERY® Publications. From their efforts processed a record number of submissions to the continued growth of *Neurosurgery Open*, Nelson and his team worked tirelessly this past year to deliver essential content to our members more quickly than ever before.

Looking ahead to 2021, I will work with my colleagues on the Executive Committee to build on these successes to continue expanding our educational offerings to meet your practice needs and challenges as they continue to evolve.

I am most looking forward to reconnecting with all of you later this year at the 2021 CNS Annual Meeting in Austin, Texas. The 2021 Annual Meeting, "Vision for the Future," will imagine neurosurgery 25 plus

years from now. What technology will we use to treat our patients in 2050? What will be the next evolution of telehealth or other innovative methods of bringing care to our patients? These are the questions that we will explore at the conference and together anticipate providing significant insights.

The Annual Meeting Committee has put in a great deal of time and focus to ensure that many of the valuable sessions originally planned for the 2020 CNS Annual Meeting are incorporated into our 2021 program, all the while developing new sessions and lectures that will address topics most critical to your practice in 2021 and beyond. We will have the privilege of hearing from 2021's CNS Honored Guest Dr. William A. Friedman, as well as 2020's Honored Guests Dr. Bob S. Carter and Dr. Mark L. Rosenblum, plus there will be an incredible lineup of keynote lectures from luminary minds outside of neurosurgery. And of course, our dedicated staff is working closely with our partners in Austin to ensure this content is delivered safely and according to the latest public health guidelines.

Anticipating that the CNS Annual Meeting will be the first major meeting many of our members attend this year, we are committed to delivering as much educational and networking value as possible. As an expression of gratitude to our membership and acknowledgement of the sacrifices our colleagues have made this past year, we are pleased to extend complimentary registration to all current and new CNS Members. We recognize that the past year has been filled with challenges for those in our field, and want to ensure that the price of admission to our Annual Meeting won't be one of them.

Though there may still be some uncertainty about what the year ahead holds, the CNS remains committed to helping you navigate whatever lies ahead. I have personally felt a great deal of hope in recent months and I am looking forward to serving you in this new year.

— MESSAGE FROM THE CEO —



Regina Shupak
CEO, Congress of Neurological Surgeons

In all the years I have served the CNS and its members, we have faced and overcome a number of challenges, but this past year will definitely stand out in my memory for years to come. Reflecting back today on the past 12 months, I am most struck by the CNS' resounding ability to provide just-in-time services to our members even during the most difficult of times.

Even as the world around us seemed to grind to a halt last winter, our Education Division members and volunteers ramped up their focus and creativity to develop truly impactful programs. I am inspired and honored to have the privilege of working alongside these dedicated surgeons who give so much to our organization and our members. In particular, I must acknowledge the leadership of our 2020 President, Steven Kalkanis, who successfully led the CNS through this most unprecedented time with great poise and clear vision. I am grateful for the opportunity to work with you and proud of all we have achieved.

We set out in 2020 to build deeper engagement with our members and continue to expand our educational portfolio. After a strong start, launching the new Tumor Complications Course and

welcoming members back to the popular Spine Complications, Oral Board Early Exam Preparation and SANS Written Boards courses, our plans took a turn as the emerging pandemic forced the cancellation of our live courses and eventually the CNS Annual Meeting. Almost immediately, our Education Division volunteers jumped into action, identifying new areas of need and building a suite of new online products to address neurosurgical training gaps and member CME needs in light of the changes happening at institutions around the world. In all, we hosted more than 150 new online activities in 2020.

This suite of new offerings could not have been launched so quickly and offered complimentary to our Resident Members without the support of the CNS Foundation (CNSF), which successfully grew donations this year from both individual donors and corporate partners. I am grateful to Foundation Chair, Elad Levy, and Vice Chair, Alex Khalessi for their vision and stewardship throughout the year, and excited to see how they build on this growth in the year ahead.

Our NEUROSURGERY® Publications team, under the leadership of Editor in Chief, Nelson M. Oyesiku, also rose to the occasion, efficiently processing an influx of submissions and collating relevant papers on COVID related topics in a "COVID-19 Neurosurgery Perspectives" page on the journal site. Even while they were focused on processing these timely submissions, the publications team partnered with the Spine Section on the development of the DSPN Spine Video Series, released new editions of *Neurosurgery Open* and celebrated Impact Factor increases for both *Neurosurgery* and *Operative Neurosurgery*, with *Operative Neurosurgery* receiving its highest Impact Factor to date!

Once again, maybe even more this year, I am grateful for the continued support of our corporate partners and sponsors. Though sponsorships and grants are typically directed primarily to the CNS Annual Meeting and our other live educational

programs, our industry partners stepped up in 2020 to partner with CNS on many of our new online programs and other member services that were so essential this year. 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 have helped the CNS maintain a positive financial position and will allow us to continue expanding our educational catalog and exploring new programs and technologies on behalf of our membership.

Looking ahead to 2021, my focus is on building up our member services and connecting with you, our members to better understand what you need most from the CNS. We want to be able to deliver the services and programs you need, exactly when and where you need them. I am confident that with the continued support of the Executive Committee, the CNS Committee member volunteers, and our dedicated and professional staff, we can do even better in 2021. I encourage you to reach out to me and the officers with your ideas and suggestions. I am especially excited to work with Dr. Brian Hoh as we move through 2021, and welcome members back to the 2021 Annual Meeting with complimentary registration! I am proud that we are able to extend this benefit and show our gratitude for our members' dedication and participation in CNS activities.

It is a great honor to continue serving the Congress of Neurological Surgeons, the CNS members, the CNS Executive Committee, volunteers, and staff in 2021.

— 2020 EXECUTIVE COMMITTEE —



Thank you for an exceptional year!

Officers

President

Steven N. Kalkanis, MD

President-Elect

Brian L. Hoh, MD

Vice-President

Nicholas C. Bambakidis, MD

Secretary

Elad Levy, MD, MBA

Treasurer

Praveen V. Mummaneni, MD

Past President

Ganesh Rao, MD

Members-at-Large

Mohamad Bydon, MD

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

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Regina Shupak

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CONGRESS OF NEUROLOGICAL SURGEONS

— 2020 ANNUAL REPORT —



Congress of
Neurological
Surgeons