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25 NEUROTRAUMA STANDING FRONT AND CENTER

San Diego CALIFORNIA

9th ANNUAL MEETING
September 24-28, 2016

Explore new courses, sessions, and science inside this issue!
Get ready to dive into this special Congress Quarterly (CNSQ) issue highlighting the 2016 CNS Annual Meeting in San Diego! We are delighted to give you a sneak preview of what’s coming at this spectacular meeting. President Russell Lonser coined the meeting theme Advance, Adapt, Achieve, which serves to highlight how our nimble young specialty has been ahead of the curve throughout our history and how we continue to lead and innovate in neurosurgery across the globe.

As the Honored Guest, Dr. Edward Oldfield epitomizes excellence in leadership, scholarship, and mentorship within our specialty. We look forward to his honored guest presentations on Cushing’s disease, Chiari I and syringomyelia, and spinal dural AV fistulas. Steve Kalkanis, annual meeting chair, James Harrop, scientific program chair, and Brian Hoh, scientific program vice-chair, have orchestrated an outstanding program that highlights the latest and greatest advances in the neurosciences and neurosurgical education. Two outstanding symposia focusing on neurovascular surgery and spinal cord stimulation occur on Saturday and Sunday, respectively, and we’re also pleased to host—for the first time—the Joint Tumor Section Satellite Symposium, which focuses this year on advances in low-grade glioma management.

Other highlights at the meeting include the rollout of Operative Neurosurgery: The Surgeon’s Armamentarium. This new search engine, originally conceived by Neurosurgery Editor-in-Chief Dr. Nelson Oyesiku, allows you to pull up tagged video or photo content tailored to your specific operation. We will highlight the power of this platform through live surgery and simulator sessions.

In this issue of CNSQ we will also hear from the following joint sections: Spine, Cerebrovascular, Neurotrauma, and Women in Neurosurgery.

Thank you to my lead staff editors in the CNS office, Antonia Callas, Ruby Thomas, and Michele Lengerman, for all their hard work and dedication to CNQ. It is an honor to serve the CNS membership as Editor of Congress Quarterly. Hope to see you all in San Diego.
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CNSQ BACK PAGE

Images in Neurosurgery
I want to personally invite you to the 2016 Congress of Neurological Surgeons (CNS) Annual Meeting in San Diego, California. The theme of this year’s meeting is Advance, Adapt, Achieve. These three words define neurological surgery’s past, present, and future success. Neurosurgery has consistently demonstrated a unique ability to advance, adapt, and achieve in all facets of our profession. Our field has been, and will continue to be, a leader across medicine in education, resident training, neuroscience research, and legislative affairs.

This year’s Annual Meeting has been designed to update and celebrate the features of past and current successes that directly impact member practice as well as advance these triumphs to create adaptive strategies for continued future achievement.

Based on CNS meeting feedback, Annual Meeting Chair Steven Kalkanis, Scientific Program Chair James Harrop, and Scientific Program Vice-Chair Brian Hoh have conceived and developed new program offerings that will provide greater attendee interaction with the most recent information that impacts all facets of members’ practice (clinical, economic, legal, and research). They have seamlessly integrated cutting-edge educational technology to present content in engaging formats. World-class speakers in and outside of neurosurgery, who epitomize the broad-based characteristic strengths of our specialty, will provide unique insights into successful strategies moving forward.

I am honored to welcome Dr. Edward H. Oldfield as the 2016 CNS Annual Meeting Honored Guest. Dr. Oldfield exemplifies the theme of this year’s meeting. He has continually advanced, adapted and achieved across neurosurgical research, organized neurosurgery, and young neurosurgeons’ training during his career. Specifically, he has made essential practice-altering insights into malignant tumor biology/treatment, nervous system drug delivery, pituitary disorders, spinal vascular malformations, neoplasia syndromes, and Chiari I malformation. Dr. Oldfield is an outstanding mentor and has trained over 100 fellows at the National Institutes of Health and University of Virginia. These individuals have gone on to make significant contributions to neurosurgery in a variety of different areas that impact our specialty. Finally, Dr. Oldfield supported the efforts of organized neurosurgery as president of the Society of Neurological Surgeons and chair of the Neurosurgical Research and Education Fund.

This year, the CNS has added several satellite courses and meetings to occur in conjunction with the Annual Meeting, which will allow attendees to make the most of their time while accessing best-in-class educational opportunities. The CNS is holding the successful Oral Board Exam Preparation Early Review Course on Saturday and Sunday, September 24–25. Course attendees will have the flexibility to get exam prep and then stay on an extra few days and catch the CNS Annual Meeting. A new SNS/CNS PGY4-5 Boot Camp course is being rolled out on Sunday, September 25, which targets PGY4 and PGY5 residents with greater opportunities to advance their skills in the operating room and with leadership training. The SNS/CNS Boot Camp series has earned high praise, and we welcome this new addition for what is sure to be another success story.

This year, the CNS is thrilled to embark upon a historic collaboration with the Tumor Section by co-sponsoring the biennial Tumor Section Satellite Symposium on Friday and Saturday, September 23–24. The symposium will focus on management strategies and innovations for low-grade gliomas, and features Mitchel Berger, Hugues Duffau, and James Rutka as the keynote speakers. Hundreds of tumor neurosurgeons, residents, and neuro-oncologists from around the world are expected to attend the symposium and the 31st Anniversary Gala Dinner. Under the direction of Section Chair Steven Kalkanis and Scientific Program Chairs Chetan Bettegowda and Brian Nahed, the symposium will offer interactive sessions on recent clinical trials, tumor guidelines, and imaging for gliomas. A significant registration discount is offered to all tumor symposium participants that register for the CNS Annual Meeting.

With all that we have planned, the 2016 CNS Annual Meeting will be an exciting opportunity for educational exchange, practice development, scientific discovery, and social interaction. I invite you and your family to attend this event set in one of America’s most beautiful coastal cities.

See you in San Diego!
The CNS Scientific Program Committee is proud to showcase the 2016 CNS Annual Meeting, featuring the theme Advance, Adapt, Achieve. This theme affirms neurosurgery’s ability to succeed throughout its history by advancing innovative ideas through research, adapting treatments through knowledge, and ultimately, achieving breakthroughs in patient care. The CNS Annual Meeting always highlights the greatest advances in neuroscience and neurosurgical education. This year, we look forward to exploring many new and evolving challenges in our rapidly changing profession by focusing on topics relevant to you. We’ve added more variety and included more clinically focused content, case-based presentations, and in-depth sessions on the pathologies and techniques that are critical to advancing your practice and achieving success.

The 2016 CNS Annual Meeting offers participants an exceptional opportunity to earn CME credits, network with colleagues, and increase their knowledge in central nervous system pathology and treatment. This year, we are offering more high-impact education, with 50 new sessions across all subspecialties. The best thought leaders from around the world were chosen as faculty to bring these new courses to life, and we’ve redesigned existing courses to bring you more of the content you’ve asked for. With 43 Luncheon Seminars—25 of them new this year—and 33 Practical Courses—16 of them new—the CNS continues to highlight its central mission through the advancement of educational opportunities that inspire and facilitate scientific discovery.

Please join us in the city of San Diego, California for the 66th Congress of Neurological Surgeons Annual Meeting
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the central nervous system. A model of the modern clinical investigator, his clinical service is a prime example of patient-oriented research. He has sought to use new information and techniques of basic science to develop new treatment approaches for disorders of the brain and spinal cord. Dr. Oldfield will be presenting three lectures throughout the meeting: Cushing’s Disease: Lessons Learned from 1400 Cases, Pathogenesis of Chiari I Pathophysiology of Syringomyelia: Implications, and Spinal Dural Arteriovenous Fistulas: 40 Years of Progress—Unanswered Issues.

**Featured Speakers**
There is a fantastic line-up of featured speakers that embody our theme of **Advance, Adapt, Achieve**.
- The Walter E. Dandy Orator is the legendary co-founder of Apple Computer Inc., tech icon, and philanthropist **Steve Wozniak**, who joins us for a convivial conversation.
- The Neurosurgery Lecturer, Oakland A’s Executive VP of Baseball Operations **Billy Beane**, is best known for his revolutionary style of baseball management that was the inspiration for the bestselling book and Oscar-nominated film, **Moneyball**.
- Author **Daniel James Brown** is this year’s John L. Thompson History Games Lecturer, Oakland A’s Executive VP of Baseball Operations, tells the inspirational story of young men beating the odds with true grit.
- The Michael L. J. Apuzzo Lecturer on Innovation and Creativity is the award-winning Sterling Professor of Law and Political Science at Yale University, **Akhil Reed Amar**. He will discuss contemporary challenges to the US Constitution.
- We welcome to the plenary stage the commander at the helm of US Naval Air Forces and naval aviation’s seventh “Air Boss,” **Vice Admiral Mike Shoemaker**.
- Featured speaker **Viktor Mayer-Schönberger**, co-author of the international bestselling book **Big Data: A Revolution that Will Transform How We Live, Work, and Think**, delivers a lecture on the concept of “Big Data” and how it will impact neurosurgery and our lives in the future.

**Partner Societies**
The CNS is exceptionally proud to partner with the Society of Neurosurgeons of South Africa (SNSA) in association with the Continental Association of African Neurosurgical Societies (CAANS) for the 2016 Annual Meeting. CAANS President Dr. Graham A. G. Fieggen has been a spectacular collaborator in this partnership with our neurosurgical colleagues throughout continental Africa and will speak at our opening plenary session. Speakers from across the continent of Africa will describe their approach and perspective to neurosurgical issues common to the international community of neurosurgeons, as well as issues unique to Africa.
International attendees are encouraged to join us at the International Reception on Saturday, September 24, on the Coronado Terrace at the Marriott Marquis San Diego Marina. It’s the perfect opportunity to meet global experts, network, and share ideas with colleagues from around the world.

We also welcome 2016 Partner Society, the California Association of Neurological Surgeons (CANS). The CNS is honored to work with our host state organization to promote and advance neurosurgical care.

**Symposia and Practical Courses**
Kicking off the Annual Meeting are two exciting symposia and two full days of practical courses. On Saturday, we will offer a symposium on evidence-based guidelines in ischemic and hemorrhagic stroke. Attendees will obtain the latest information on endovascular therapy, review endovascular versus EC-IC bypass, CAS versus CEA, and optimal treatment, including flow diversion and other new therapies. Sunday’s symposium delves into the new data and technologies that are rapidly changing the field of spinal cord stimulation. You’ll be able to catch up on the latest technology releases including the emergence of new tools, understand paradigms in stimulation frequency, and learn how to target structures such as the dorsal root ganglion.

Practical courses run the spectrum, tackling everything from current challenges in the healthcare system to more case-based subspecialty issues. Take advantage of new practice management courses on topics such as CPT Coding /ICD-10 and managing your online reputation.

**General Scientific Sessions**
In addition to honored guest and featured speaker presentations, science sessions highlight the theme of Advance, Adapt, Achieve. The program has been enriched to feature prominent national and international neurosurgical leaders who will present a summation of advances in their fields. Following are just a few of the many speakers slated to present over three days.

- Dr. Hunt Batjer discusses the latest advances in surgical management of cerebral aneurysms.
- Dr. Mitchel S. Berger talks about achieving change in the treatment and understanding of GBM.
- Dr. Robert Spetzler presents AVM treatment advances and adapting to ARUBA.
- Dr. Christopher Shaffrey discusses adapting spinal deformity alignment principles to achieve improved outcomes.
- Dr. Alexander Vaccaro tackles patient care safety in his presentation on the rapid transformation in health care.

The GSS Sessions are also an opportunity for us to recognize the achievements of others. Mary Louise Sanderson will be receiving the Distinguished Service Award, and the Founder’s Laurel Award recipient will be presented to Dr. H. Hunt Batjer. We’re looking forward to hearing from the K12 Awardee Dr. Timothy H. Lucas, as well as from CNS resident awardee Dr. Nohra Chalouhi.

Be sure to hear Dr. Russell R. Lonser deliver his keynote presidential address at the General Scientific Session on Monday, September 26.

**What’s New?**
- The respected Operative Neurosurgery journal connects with live surgery via telemedicine technology and a state-of-the-art vascular replication system using 3D printing for two afternoon sessions you won’t want to miss.
- Learn and interact with the authors of soon-to-be-published guidelines updates who will be presenting new recommendations in three afternoon sessions, Monday through Wednesday.
- New live surgery sessions Monday through Wednesday morning in the Exhibit Hall. Surgeons at some of the top institutions in the US will operate live via telemedicine technology, giving you the chance to observe and ask questions.
- The best in new science, with hundreds of abstract presentations across all subspecialties, late-breaking abstracts, and three-minute, rapid-exchange oral presentations.
- Four dinner seminars offer new clinical and practice management topics while you enjoy a fine dining experience at San Diego’s top-rated restaurants.

**Register Today**
There has never been a better time to attend the 2016 CNS Annual Meeting than now. Our main convention hotel, the Marriott Marquis San Diego Marina, provides breathtaking views of the San Diego Bay. Our meeting venue, the San Diego Convention Center, is located conveniently near some of the city’s most popular attractions, from the deep-water harbor and pristine Pacific beaches to the historic Gaslamp District, Balboa Park, and Coronado Island. Bring the family with you for excursions to SeaWorld, LEGOLAND, and the world-famous San Diego Zoo and Safari Park. Have fun, learn, earn CME, network, and contribute to help our field Advance, Adapt, Achieve.

Explore the program and register today at cns.org/2016.
Live Surgery Sessions Highlight Operative Neurosurgery: The Surgeon’s Armamentarium

The Operative Neurosurgery journal has undergone a rich transformation in the past several years under the creative vision of its editor, Dr. Nelson Oyesiku. It has evolved into a separate publication with a variety of robust content including operative procedures, instrumentation, and case series featuring 2D and 3D videos, high-quality anatomic and surgical illustrations, and more. The recent expansion of its digital platform has allowed for its most recent transformation, the birth of Operative Neurosurgery: The Surgeon’s Armamentarium (ONS-SA). This unique and sophisticated digital content delivery system utilizes a robust search engine to deliver essential operative content from its repository to your fingertips in real time. The versatility and depth of ONS-SA will be demonstrated in two live surgery sessions at the upcoming CNS Annual Meeting.

Neurovascular Simulator
The Monday afternoon session, Live Neuroendovascular Surgery: Novel Devices and Treatment Controversies, will compare different neuro-endovascular technology such as new flow diverters and intra-aneurysmal devices in aneurysms with identical geometry, and different techniques for mechanical thrombectomy. The procedures will utilize live demonstrations with the VascSim simulator (Figure 1), and will be performed by an expert advocate for that technology, and in some cases, its inventor. We will highlight high-impact endovascular technique articles in Operative Neurosurgery which complement these simulator models.

The Vascular Simulations (LLC) Replicator is an artificial replica of the left side of the heart and the arterial tree. Arterial vessels can also be modeled from clinical imaging such as CTA, MRA, or rotational angiography such that the geometry of an intracranial aneurysm is identical to that of the patient. Endovascular techniques can then be tested, practiced, or compared prior to the actual treatment of the aneurysm.

Endonasal Pituitary Case: Live Surgery
This is a live endoscopic endonasal surgery for resection of a large pituitary adenoma. This Tuesday afternoon session will cover the endonasal endoscopic surgical approach, tumor resection, reconstruction techniques, and methods to maximize efficiency of the neurosurgery and otolaryngology team during concurrent surgery. Particular emphasis will be placed on techniques for the preservation of normal sinonasal structures and function, while achieving maximal tumor resection. The tagged and searchable 3D endoscopic pituitary video content from Operative Neurosurgery was highly cited and will be used to review the surgical techniques used to preserve normal sinonasal structures and function.

We look forward to seeing you in these live sessions to showcase the capabilities of the new Operative Neurosurgery platform.
The tradition of the symposium goes back thousands of years. According to the ancient Greeks, the word “symposium” meant a philosophical dialogue or convivial meeting for intellectual discussion. Ancient symposia were often accompanied by food, poetry, and music. Today’s symposia have evolved significantly, but they still embody the idea of a group of intellectuals coming together for a free exchange of ideas.

The CNS Annual Meeting has its own tradition of symposia. These day-long meetings on a single topic are presented through a series of lectures and sessions. Symposia provide an important channel for the exchange of information and are an opportunity for neurosurgeons to hear the latest research. This year, two symposia are being held, and while both involve lunch breakouts with corporate sponsors, music or the recitation of poetry is solely at the discretion of the faculty.

Symposium 01
The Neurovascular Update Symposium, Saturday, September 24, from 8:00 am to 5:00 pm, provides a forum for attendees to obtain the latest information on cerebrovascular surgery, endovascular neurosurgery, and management of ischemic and hemorrhagic stroke from a panel of national experts.

This course is designed for the busy general neurosurgeon and provides a concise update on relevant topics and controversies in cerebrovascular surgery. Throughout the course, recent literature regarding patient selection and outcomes for endovascular treatment of acute ischemic stroke as well as emerging technologies on endovascular stroke therapy will be reviewed.

Discussions will also be held in a point/counterpoint format on the controversies around endovascular (balloon angioplasty and stenting) and surgical revascularization (EC-IC bypass) for intracranial atherosclerotic, or vaso-occlusive diseases, based on current evidence and guidelines. Another discussion on endovascular and surgical revascularization (CAS versus CEA) for extracranial atherosclerotic diseases will occur, with a focus on new and ongoing trials such as CREST2.

The course will then cover optimal treatment of intracranial aneurysms, including surgery (clip reconstruction and bypass), traditional endovascular techniques (primary and assisted-coil embolization), flow-diversion, and other new technologies such as intrasaccular devices and novel stents and coils.

Finally, a comprehensive panel discussion on multimodal treatment options (surgery, embolization, and radiosurgery) for intracranial arteriovenous malformations and dural arteriovenous fistulas will be held. The course will conclude with evidence-based management and emerging minimally invasive surgical techniques on the management of intracerebral hemorrhage. Sponsored breakout sessions will be hosted by Penumbra, Medtronic, and Stryker.

Symposium 02
Spinal Cord Stimulation: The Transformation, Sunday, September 25, from 8:00 am to 4:00 pm, provides a forum for attendees to obtain the latest information on neuromodulation for chronic pain, including new paradigms in the frequency of stimulation, novel target structures such as the dorsal root ganglion, the emergence of new tools, and management of chronic neuropathic pain conditions from a panel of national experts.

This course is designed for general neurosurgeons interested in learning relevant topics and controversies in neuromodulation. Participants will have the ability to learn the latest concepts on neurostimulation paradigms ranging from tonic, high frequency, and Burst stimulation. Novel therapies such as dorsal root ganglion (DRG) stimulation for complex regional pain syndrome (CRPS) will be discussed, as well as the role of imaging and the significance of MRI compatibility.

The course will then cover novel therapies such as neuromodulation for low back pain and new techniques such as targeted muscle stimulation, and how neuromodulation procedures may fit into your practice. Experts will then discuss the nuances of surgical techniques for implantation, including complication avoidance, awake versus asleep placement, and revision surgeries.

Finally, a discussion of emerging therapies such as autonomic stimulation for cluster headache, peripheral neurostimulation, and wireless stimulation technologies will be covered. By the end of the symposium, attendees will have a comprehensive overview of the modern-day transformation that has occurred in spinal cord stimulation. Sponsored breakout sessions will be hosted by Medtronic and other industry leaders.
Beyond the Operating Room: Managing your Medical Practice

Medical practice management requires a physician or provider to deal with a tremendous variety of issues. During this time of challenging industry transformation, medical professionals must stay on top of a complex healthcare system and manage a busy practice, all while continuing to focus on serving patient needs.

The 2016 CNS Annual Meeting addresses these multiple issues with a series of practice management courses. The CNS asked Scientific Program Chair Dr. James S. Harrop about the thought process behind these highly anticipated sessions.

Congress Quarterly: Why there an increased focus on practice management topics at the CNS Annual Meeting this year?

Dr. James Harrop: Each year the Annual Meeting Committee spends considerable time going through the members’ comments and ratings of the annual meeting courses. Over the last few years we have noted an increase of comments about these courses and a request to add more variety. Therefore, we sought out the thought leaders on these topics and modified the courses available.

CNSQ: What new courses are being prepared for the future?

JH: This is where membership input is extremely valuable. Again, we place high value on attendees’ comments and rating of each course. Further, if you have an idea for a new course or see a void in neurosurgery education we are happy to listen to your ideas.

Practice Management Courses Offered at the CNS Annual Meeting

Practical Courses: Saturday, September 24

PC03: Leadership Development
PC09: CPT Coding and All You Need for ICD-10

Practical Courses: Sunday, September 25

PC16: eNeurosurgery: Adapting Your practice for 2016 and Beyond
PC23: Neurosurgeon-Hospital Relationships: Options, Negotiations, and Achieving What You Are Worth
PC26: Improve Quality, Reduce Cost, and Increase Revenue

Dinner Seminar: Monday, September 26

DIN02: New CPT Codes, ICD-10, MIPS, and Bundling: What These Challenges Mean to Your Bottom Line

Luncheon Seminar: Wednesday, September 28

W40: From Residency to Practice: Getting the Job You Want and What to Ask For
Clinical guidelines are important to every neurosurgeon as they identify best practices in neurosurgery based on scientific and clinical evidence. Guidelines improve patient outcomes and safety, and therefore are essential to the practice of all neurosurgeons.

The CNS maintains an in-house infrastructure to lead, promote, and support the creation and methodological processes to produce evidence-based guidelines, working closely with specialty sections from initiation through endorsement and publication. Using a high quality, methodologically robust, and transparent process that combines research, clinician expertise, and patient preferences, the CNS develops clinical guidelines on an ongoing basis.

Augmenting the CNS’s dedication to remaining at the forefront of guideline production, the 2016 CNS Annual Meeting in San Diego will highlight three timely new clinical guidelines updates for neurosurgeons. Three afternoon sessions are dedicated to cover guidelines that are soon-to-be-published, and guidelines that every neurosurgeon should know. We’re also excited to announce that the authors of each of the guidelines will be in attendance and presenting the guideline recommendations, as well as facilitating discussion.

On Monday, September 26, 2:15–3:15 pm, the soon-to-be-published update on *Guidelines for the Management of Traumatic Brain Injury* will be presented and discussed. There are a number of controversies in the management of TBI, notably the role of ICP monitoring based on recent clinical trials. These questions, along with the most up-to-date guideline recommendations, will be discussed in relationship to ICP monitoring, hypothermia, ventilation, blood pressure, thresholds, and the prevention and management of deep venous thrombosis. Every neurosurgeon that takes call or takes care of trauma patients will need to know these guidelines.

The session on *Guidelines for the Management of Brain Metastases* will be presented on Tuesday, September 27, 2:15–3:15 pm. Since the publication of the original guidelines six years ago, there have been advances in treatment and emerging therapies for brain metastases. These new therapies, controversies, and questions regarding the management of brain metastases, including the role of whole brain radiation, surgical resection, retreatment, emerging therapies, chemotherapy, prophylactic anticonvulsants, prophylactic steroids, and stereotactic radiation, will be discussed. The soon-to-be-published guideline recommendations will be presented by the authors so that participants will be up-to-date on the most current best practices.

> THERE ARE A NUMBER OF CONTROVERSIES IN THE MANAGEMENT OF TBI, NOTABLY THE ROLE OF ICP MONITORING BASED ON RECENT CLINICAL TRIALS. <

Every neurosurgeon that takes call or takes care of patients with thoracolumbar spine trauma will want to attend the *Guidelines for the Management of Thoracolumbar Fractures* session on Wednesday, September 28, 2:15–3:15 pm. The authors of these guidelines will discuss controversies regarding the management of thoracolumbar spine trauma and will present the most current guideline recommendations including the medical management of fractures, operative versus nonoperative treatment, timing of surgical intervention, surgical approaches, and novel surgical strategies.

Take advantage of this fantastic opportunity to attend these timely new guidelines sessions relevant to your practice, and ask questions directly to the authors that wrote these guidelines. See you in San Diego!
New Practical Courses and Luncheon Seminars

The CNS Annual Meeting boasts an expanded menu of optional courses this year, with 17 new practical courses and 25 new luncheon seminars covering topics across the subspecialties, as well as practice management and career development issues. These new courses are a direct response to requests from you, our membership, based on the last three years of course reviews and discussion with members.

Optional courses provide attendees the flexibility to customize their learning according to their particular needs and interests. Practical courses take place on Saturday and Sunday, September 24-25, and provide either a half day or a full day of focused learning with expert faculty. Luncheon seminars take place Monday through Wednesday, September 26–28, and are an intense, focused one and a half hours on a specific neurosurgical topic, discussed over a catered lunch. Following are new optional course highlights, organized around our meeting theme Advance, Adapt, Achieve.

**ADVANCE**

A number of courses have been added to advance participants’ knowledge of the most current treatment and management strategies for brain and spine pathologies. For cranial tumor surgeons, there are updates on management of acoustic neuromas (M11), low-grade gliomas (M13), meningiomas (T26), pituitary adenomas (PC24), and benign cranial tumors (PC33). Cerebrovascular neurosurgery courses are directed toward current treatment of cranial AVMs (M09), aneurysms (T16), carotid artery disease management (T30), and management of hemorrhagic stroke (W41). Spine surgeon courses include management of spinal column metastases (M12), treatment of cervical radiculopathy (M15), degenerative thoracic spine disease (T27), and more. One luncheon seminar that was introduced last year and had very high reviews was the case-directed spine deformity (W39), a course that was solely case presentations and focused discussions. Trauma courses cover intracranial pressure in trauma patients (T29) and sports-related pediatric head trauma (W38).

Many of the new practical courses offer updates via case-based learning on topics such as cerebrospinal fluid abnormalities (PC02), surgery/SRS for malignant tumors (PC17), and spinal trauma (PC31). Some courses utilize high-definition 3D surgical videos to maximize the learning experience for participants. For example, the course on complex skull base and brain tumor surgery (PC06) features a focused 3D surgical anatomy review, followed by clinical cases presented with 3D surgical videos by senior faculty. An advanced course on cerebrovascular surgery (PC19) offers both 2D and 3D operative video highlighting difficult cases and special challenges such as intraoperative rupture of aneurysms.

**ADAPT**

With advances in technology and medicine as well as changing regulations and economic realities, our medical landscape evolves constantly. New optional courses are designed to help neurosurgeons adapt and thrive with these medical and socioeconomic changes.

Luncheon seminars cover the state-of-the-art in skull-base endoscopy (W33), innovations in the treatment of spinal deformity (M04) and acute cervical spine and cord injuries (W31), and emerging treatment strategies for epilepsy (W42) and other technological advancements in functional neurosurgery (M14). Trauma neurosurgeons can expect cutting-edge updates on how to limit sports-related head and spinal cord injuries (PC32), while tumor experts discover the latest approaches for brain metastases radiosurgery (T19) and surgery and adjuvant therapy for malignant gliomas (T24).

On the socioeconomic side, a new practical course, eNeurosurgery: Adapting Your Practice for 2016 and Beyond (PC16), focuses on real-world strategies to identify your online reputation through private and federal websites and databases, build an online presence, identify and surpass metrics used to rate neurosurgeons, reduce medical malpractice, and more. Another valuable course focuses on quality care from the neurosurgical perspective (PC26), revealing novel strategies to increase revenue using quality data.

**ACHIEVE**

Of course, neurosurgeons have personal and professional goals that go beyond the operating room, and several new courses aim at helping participants achieve those goals.

For residents, the ABNS Primary Examination High Yield Review (PC14) and the Women in Neurosurgery luncheon seminar on mentorship and becoming a neurosurgery leader (W42) are particularly relevant, as younger residents prepare to pass the board exam and senior residents seek to launch their careers. For advance practice providers, a full-day ANSPA course (PC13) equips physician assistants and nurses to advance their practice as they apply neurosurgical principles in their triage and treatment of patients.

Neurosurgeons of all ages and levels of experience can benefit from new courses on how to get a job (W40) and how to negotiate with hospitals to achieve their real worth (PC23). For an even bigger-picture perspective, a new course (PC29) focuses on developing a strategic plan for the future, from age 35 to 100. With a financial expert among the speakers, the course addresses a range of challenges and considerations, from planning for a second career to dealing with job loss, retirement, caregiving for parents, family issues, financial planning, types of investments, and much more.
Introducing the CNS Rapid-exchange Oral Presentations Sessions

Each year, the Annual Meeting Committee spends a considerable amount of time and effort to meet our members’ needs in providing the most relevant informational and educational forums. Significantly, one area in which membership expressed an interest was in expanding the original science program. The call for an increase in abstract content comes at a time when the meeting schedule is very compact. The answer was to increase the number of oral presentations while simultaneously decreasing their time allotment.

We are pleased to introduce the new Rapid-exchange Oral Presentations Sessions, which will add 78 new oral presentations that are each just three minutes in length. The shorter time frame will allow for stimulating and quick-moving sessions that transfer a good amount of content. The sessions will take place on Tuesday and Wednesday afternoon, with the number of presentations divided evenly between the two days. Topics will be grouped by subject and presented in four different rooms simultaneously. This convenient format allows you to attend the presentation which is most appropriate to your practice, rather than bouncing from room to room to hear various topics by subspecialty.

Tuesday, September 27
4:45–5:15 pm

Session 1: Cerebrovascular, Pain, Pediatric
Moderators: Robert F. James, Elias Boulos Rizk

Session 2: Spine and Peripheral Nerves
Moderator: Kevin S. Cahill

Session 3: Stereotactic and Functional, Neurotrauma and Critical Care
Moderators: Kathryn M. Beauchamp, Uzma Samadani, Sameer A. Sheth

Session 4: Tumor
Moderators: Jennifer A. Moliterno Gunel, Nader Sanai

Wednesday, September 28
3:15–3:45 pm

Session 5: Spine and Peripheral Nerves
Moderator: John K. Ratliff

Session 6: Pediatric, Pain, Cerebrovascular
Moderators: Andrew F. Ducruet, Meysam Ali Kebriaei

Session 7: Tumor
Moderators: Orich Bloch, Jason Heth

Session 8: Socioeconomic, CSNS, Stereotactic and Functional, Neurotrauma and Critical Care
Moderators: Gregory W.J. Hawryluk, Alan S. Hoffer, Nader Pouratian
FOUR NEW DINNER SEMINARS
Join your friends and colleagues! You are invited to savor San Diego’s award-winning restaurants for an inspiring dining experience. Connect with leading neurosurgical experts on a range of clinical and neuroscience topics—and earn CME.

**DIN01: Cervical Spondylotic Myelopathy**
Saturday, September 24
6:00–8:30 pm
**Moderators:** Michael G. Fehlings, Robert F. Heary
**Speakers:** Paul M. Arnold, Andrew T. Dailey, Langston T. Holly
Upon completion of this course, participants will be able to: Discuss etiology and natural history of cervical spondylosis, define cervical myelopathy, and review advantages of various surgical approaches to treat CSM.

**DIN02: New CPT Codes, ICD-10, MIPS, and Bundling: What These Challenges Mean to Your Bottom Line**
Monday, September 26
7:00–9:30 pm
**Moderators:** John K. Ratliff, Henry H. Woo
**Speakers:** Clemens M. Schirmer, Philip W. Tally, Luis M. Tumialan
Upon completion of this course, participants will be able to: Identify risk factors for meningioma progression, describe management in the setting of gross total and subtotal meningioma resection, apply existing evidence for adjuvant radiation and chemotherapy for meningiomas, and apply these data to counseling patients with asymptomatic or atypical meningiomas.

**DIN03: Management of Meningiomas (Asymptomatic to Atypical)**
Monday, September 26
7:00–9:30 pm
**Moderators:** Randy L. Jensen
**Speakers:** Ossama Al-Mefty, William T. Curry, Laligam N. Sekhar, Jason P. Sheehan
Upon completion of this course, participants will be able to: Recognize signs and symptoms of concussion, manage progressive return to play, identify risks factors for repeated concussion, describe outcomes after concussion, and use these data to inform counseling of patients suffering from concussion.

**DIN04: Concussion: Diagnosis, Management, and Outcomes**
Tuesday, September 27
7:00–9:30 pm
**Moderators:** Shelly D. Timmons
**Speakers:** Tanvvir Choudhri, James M. Johnston, Krystal L. Tomei, Jamie S. Lilliman, Alex B. Valadka
Upon completion of this course, participants will be able to: Discuss etiology and natural history of cervical spondylosis, define cervical myelopathy, and review advantages of various surgical approaches to treat CSM.

**Visit cns.org/2016 to join the 2016 CNS Annual Meeting and register for your seat at the table.**

Fee: $190 — Complimentary shuttle service will be provided for all dinner seminars. Shuttles will depart from the Marriott Marquis San Diego Marina Hotel.
Neurosurgeons value second opinions. The complexity of neurological disease processes and the broad scope of potential treatment paradigms often motivate the neurosurgeon to seek a second opinion. Most neurosurgeons have recognized the power of the second opinion and allow time in their week for case discussion with peers; whether it be a weekly tumor board for neurosurgical oncologists, a weekly multidisciplinary spine meeting, or daily rounds with peers and trainees, we are constantly seeking opinions for how to treat complex patients.

Enter eRounds and the CNS mCase Exchange. eRounds is a community-based mobile platform for exchanging anonymous medical images organized by cases. CNS mCase Exchange is a private, exclusive eRounds community for CNS members to share cases. With mCase, neurosurgeons can post their difficult cases to a social media-like platform and elicit opinions from any member within the CNS community anonymously (Figure 1).

In addition, mCase allows us to ask the opinion of thought leaders in our subspecialty from around the country or world. The mCase Exchange has designated such “key opinion leaders” within each subspecialty of neurosurgery, making your second opinion that much more powerful.

At this year’s CNS meeting in San Diego, a presentation to highlight the advantages of the mCase Exchange will take place on Wednesday, September 28, at 10:45 am during the General Scientific Session. This panel forum is aimed to showcase complex spine cases using the mCase Exchange application. All CNS members are encouraged to post cases to the mCase application leading up to the Annual Meeting (Figure 2). Cases will be selected in advance and presented to an expert panel of Key Opinion Leaders, who will provide their opinion on how to best treat your patient. Among the expert panel members are Drs. Praveen Mummaneni, Paul Park, and Nicholas Theodore. This is an opportunity for CNS members to have their cases highlighted and discussed on the national stage, so we encourage all CNS members to participate by posting their cases to mCase!

By sharing complex cases to a secure but accessible, broad, and easy-to-use format, we have potential to obtain opinions in an instant from our colleagues across the country. This could truly redefine the second opinion and be a huge benefit to anyone’s practice.

Figure 1: The CNS mCase Exchange can be accessed from most internet browsers, or through the eRounds iOS app from the App Store on your mobile device.

Figure 2: The process of posting cases to the mCase Exchange, receiving second opinions, and providing a second opinion is easy.
Technology in Action: Find Solutions for Your Practice in the Exhibit Hall

Neurosurgical technology evolves rapidly, and the techniques proving most effective for patients today may not be the same ones you learned in residency. While the 2016 Annual Meeting highlights new technologies through a number of clinical sessions, there is no better place to see all the latest advances in one place than the CNS Exhibit Hall. With more than 160 companies exhibiting, this is the most efficient way to find and compare devices and other technologies for your neurosurgical practice. This year’s exhibit hall also offers a number of opportunities to see how some of the leading subspecialty experts utilize that technology in their practice, as well as opportunities to try new devices out for yourself.

Live Surgery
The centerpiece of the CNS Exhibit Hall is our Live Surgery Theater, where surgeons from some of the top institutions in the US will operate live via telemedicine, giving you a chance to observe and ask questions of the operating surgeon. Karl Storz and KLS Martin have joined forces to support an Intraventricular Endoscopy Case on Monday, which will be performed by Dr. Paul Gardner at UPMC. Medtronic will take the reins for Tuesday and Wednesday.

Live surgery presentations will be held daily during the morning GSS break, 9:00–10:00 am.

New this year, we’re taking live surgery to the next level with a first-hand view of how a surgeon plans for a specific case. Surgical Theater will provide a special planning session presentation on Monday afternoon, 1:15–2:15 pm, where the team will detail the plan for a complex brain tumor removal.

Sponsored Lunches
Join some of CNS top corporate partners each day for complimentary lunch and learn sessions in the exhibit hall. Led by neurosurgeon faculty, these educational presentations cover important clinical topics such as Surgical Synergy™: Utilizing O-arm™ Imaging System and Navigation for Innovative Procedural Solutions. Sponsored lunches will be held Monday through Wednesday, 11:45 am–1:15 pm.

Educational Update Sessions
Grab a beverage and catch up on the latest developments in your subspecialty with these quick 10-minute presentations by CNS’ valued corporate partners. Whether presenting new technology or a new way to use existing technology, these concise sessions offer practical information you can take back to your practice. Sessions will take place Tuesday and Wednesday during the afternoon beverage break.

Leadership in Healthcare Update Sessions
With the evolution of the healthcare industry comes a shift in the necessary steps and tools to become a leader. Please join the CNS in partnership with Medtronic for a 30-minute discussion on key ways to influence and become a leader in your workplace. Sessions will take place Tuesday and Wednesday during the afternoon beverage break.

Medtronic
Other Opportunities in the Hall

Hang out with the CNS

While you’re in the hall, be sure to stop by the CNS Booth (#129) to say hello. Our membership team is there to help you with any questions you may have. We welcome your suggestions on how the CNS can better help you meet the demands of your practice. Be sure to meet with our education team to discover the myriad of ways to continue your education online between the Annual Meetings, get answers to all of your educational questions, and see demonstrations of our world-class educational offerings. Stop by our booth on Tuesday between 9:00 and 10:00 am to have your copy of Big Data: A Revolution That Will Transform How We Live, Work, and Think signed by author Viktor Mayer-Schönberger.

Visit the Digital Abstract Centers

Stay current on the “latest and greatest” science. Digital abstract centers allow you to review all accepted oral, neurosurgical forum, and digital abstracts at your leisure. View over 1,000 abstracts at convenient kiosks located throughout the exhibit hall.

As you plan out your agenda for San Diego, we hope you will carve out a few hours every day to visit the exhibit hall and take advantage of the wealth of information and education available on the technologies that are critical to your practice today, and in the future. And be sure to check out the Annual Meeting app before you leave for San Diego for more details on product demonstrations and other opportunities to learn and try new technologies.

Donate to the CNS Foundation

Learn more about the new NINDS/CNS Getch Scholar K12 Award and make your annual contribution to support access to quality neurosurgical care. The CNS Foundation, Inc., will also host its popular Silent Auction again this year. The Silent Auction is open every day during open exhibit hall hours. Drop in and stake your claim on the opportunity to win autographed sports and music memorabilia, as well as jewelry and other unique accessories. Last years’ top winners went home with signed electric guitars from Bruce Springsteen, Led Zeppelin, and Taylor Swift, a signed Jack Nicklaus replica Masters green jacket, a Michael Jordan black striped Bulls jersey, and much more!

Interact with our Industry Allies Council

Many of the education and opportunities we provide to our members and attendees are made possible due to the generous support of our corporate sponsors. Be sure to visit the following booths to see new technologies that can positively impact your practice!

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A growing number of ABNS Oral Exam candidates have added the CNS Oral Board Exam Preparation Early Review Course to their study plans, and that may be due in part to word of mouth. In 2015, 100 percent of participants who completed the course evaluation indicated that they felt the course was valuable and they were likely to recommend it to their colleagues.

Given the popularity of this course, the CNS Education Committee has chosen to move it to a new date and city—Saturday and Sunday, September 24–25 in San Diego, California, immediately preceding the CNS Annual Meeting. This change allows even more participants to attend while maximizing their travel budgets. Instead of paying for flights to two different cities and losing more time in travel, course attendees now have the flexibility to stay an extra night or two in sunny San Diego and catch the CNS Annual Meeting in the same trip.

The registration fee also now includes a pre-course webinar that supplements the live course content with exam preparation tips and strategies. The webinar will feature faculty in each subspecialty.

Robert Spinner and Shelly Timmons join Bernard Bendok, chair of the CNS Education Committee and chair of the department of neurosurgery at Mayo Clinic–Arizona, as course directors this year. Dr. Spinner chairs the department of neurosurgery at Mayo Clinic–Rochester and is board-certified in both orthopedics and neurosurgery. Dr. Timmons is a director of neurotrauma and residency program director at the Geisinger Health System in Pennsylvania.

In addition to these course directors, distinguished faculty spanning the various neurosurgical subspecialties will engage course participants in small-group discussions, case presentations, and lectures. This provides an opportunity for exam candidates to assess and shore up their knowledge of less familiar subspecialties such as peripheral nerve or stereotactic and functional neurosurgery.

Kendall Lee, professor of neurosurgery and physiology and director of the Neural Engineering Laboratory at Mayo Clinic–Rochester, taught the stereotactic and functional portion of the course last year. Dr. Lee says that for many neurosurgeons, the oral board exam is their first encounter with an oral examination format, and candidates are understandably intimidated. “You are being examined by masters in neurosurgery, full professors who are nationally known. After spending 15, 16 years of training, you practice for 3 to 5 years before taking the exam, and at that point, the consequences of failing the exam are daunting. If you fail, you have to take it again in a year. Candidates are extremely stressed, and the motivation to pass the first time is high.”

Most neurosurgeons have been away from an academic setting for a few years before they take the oral board exam, so the didactic format of the CNS course is an ideal way to become reacquainted with essential subspecialty knowledge, such as deep brain stimulation for the treatment of Parkinson’s disease—one of Dr. Lee’s areas of expertise. “Because the CNS course takes place a few months before the exam, you can see where your blind spots are, where your gaps in knowledge are, and you have time to fill in those gaps.”

For more information about the CNS Oral Board Exam Preparation Early Review Course, please visit cns.org/oralreview.
The Joint Tumor Section announces a Satellite Symposium that will take place in conjunction with the 2016 CNS Annual Meeting, September 23–24, 2016, in San Diego, California. This year’s meeting theme, Low-grade Gliomas: Management Strategies and Innovations, highlights exciting new developments in the management of central nervous system tumors. We are delighted to welcome three keynote speakers: Mitchel Berger, Hughes Duffau, and Jim Rutka, all world-renowned pioneers in the management of low-grade gliomas.

Day one (September 23) of the symposium is focused on biology and management of adult low-grade gliomas and associated technological advancements. Day two (September 24) will center around pediatric low-grade tumors, outcomes, and future treatment paradigms. Oral presentations selected from submitted abstracts will be interspersed throughout both days.

This year, we’re introducing new breakfast sessions that pair senior neurosurgeons with students, residents, and junior faculty to discuss pertinent topics such as starting a research lab, becoming involved in clinical trials, and finding the best possible academic position. These discussions will be facilitated by notable neurosurgeons in small-group settings to maximize meaningful interactions.

Indeed, the primary goal of this meeting is to facilitate and engage individuals interested in neurosurgical oncology to learn the state of the art from pioneers in the field. There has been an explosion of information which has led to an understanding of the molecular basis of low-grade gliomas at a depth and breadth that has never been seen before. This was highlighted by back-to-back articles in the June 2015 *New England Journal of Medicine* (NEJM). These articles described the genetic basis of low-grade gliomas, and proposed novel molecularly-based classification schemes, which have tremendous implications for future research, clinical trials, prognosis, diagnosis, and treatment paradigms. We are fortunate to have leaders in each of these arenas deliver talks at this year’s Tumor Satellite Symposium. We will also discuss another landmark study in NEJM published in April 2016, that demonstrated the utility of using chemotherapy in addition to radiation therapy for the treatment of lower-grade gliomas.

There has never been a more exciting time to be involved in studying and caring for individuals with low-grade gliomas. We hope that the Tumor Satellite Symposium will be able to encapsulate and disseminate the incredible progress that has and will continue to be made. We look forward to seeing you all in beautiful San Diego!
SNS/CNS Boot Camp Series Expands with a PGY4-5 Resident Course

Since the inaugural PGY1 SNS/CNS Boot Camp course in 2010, nearly all ACGME neurosurgery residents currently in training in the US have benefitted by learning the basics of neurosurgical care from senior faculty. This series of boot camp courses, focused on the critical issues of professionalism, communication, and common neurosurgical skills, parallel the ACGME Milestones and have been a useful tool of residency programs as they commit to a milestones-oriented curriculum. The courses have been extremely effective and have earned high praise in resident and faculty surveys. They have also attracted national and international attention and are being duplicated by other specialty societies in the US and abroad.

The initial vision for the boot camps was to create a series of courses for US neurosurgery residents that would be completed in succession through residency. The next step in realizing this vision was taken in 2013 when the SNS expanded the course to include a junior resident course. This course was designed as an introduction to the operating room and leadership training. The junior resident boot camp course has also been a great success, with over 90 percent of all US ACGME neurosurgery residents attending in each of the last four years.

This year, the SNS and CNS have come together again to roll out the next course in this series, which targets PGY4 and PGY5 residents and their educational needs. Since intermediate residents are entering the senior level of residency and are assuming higher levels of responsibility in the operating room, the new course focuses on specific common operative approaches and higher-level surgical management decisions. Common surgical approaches to glioma, parasellar pathology, trigeminal neuralgia, peripheral nerve disorders, pediatric neurosurgical conditions, and spine surgery are reviewed. In addition to presenting common surgical approaches, the PGY4-5 course also assists residents and their residency programs as they both attempt to reach the ACGME mandated milestones appropriate to the senior resident level. Topics such as mentoring, operating room crisis management, and managing surgery with complicating factors are also addressed.

The PGY4-5 one-day course will be held Sunday, September 25, in San Diego, California, in conjunction with the 2016 CNS Annual Meeting. This will allow residents to conveniently extend their stay and attend the educational meeting as well.

We’re confident that the PGY4-5 Boot Camp will continue to provide the same stellar training the resident courses have thus far produced, and give resident and residency programs assurance that key educational points in neurosurgery residency have been covered. The SNS/CNS Boot Camp course series exemplifies neurosurgery’s ongoing commitment to the role of mentorship and training. For more information, or to register, please visit the CNS website at cns.org.
Neurosurgical Residents!

The 2016 CNS Annual Meeting has more of everything you want

Free or Discounted Registration to the Annual Meeting
The first 80 CNS Resident members receive complimentary registration* for the CNS Annual Meeting, and all residents enjoy discounted registration, with access to General Scientific Sessions, Original Science Program, Live Surgery Sessions, Exhibit Hall, and more. *Registration fee reimbursed after residents attend the CNS Annual Meeting. Educational grant provided by DePuy Synthes.

Complimentary Resident Housing
Free hotel accommodations in San Diego available on a first come, first-serve basis for CNS Resident members. Application deadline July 1.

Sergeant-at-Arms Program
Volunteer as a Sergeant-at-Arms and receive complimentary admission to a practical course or luncheon seminar.

Resident Educational Courses
Take advantage of specialized learning opportunities.

Discounted tickets to Luncheon Seminars
Three days of neurosurgical courses served up with a plated lunch.

Invitation to Honored Guest Luncheon
Complimentary lunch and a talk from 2016 Honored Guest Dr. Edward H. Oldfield.

Resident Recruitment Social
A relaxed and informal networking event with recruiters and prospective employers.

SANS Challenge
Annual residency program battle for SANS dominance.

Visit cns.org/2016 to join the CNS Annual Meeting
The 2016 AANS/CNS Spine Summit brought together 11 international spine societies to deliver a record-breaking attendance that truly embraced its theme Global Challenges, Universal Solutions. With nearly 600 medical registrants and more than 50 exhibiting companies, the Loews Royal Pacific Resort at Universal Orlando was packed with stimulating discussion, provocative debates, hot topic leaders, and great entertainment.

The March 2016 summit kicked off with a filled-to-capacity opening reception on the Wantilan Pavilion. Tiki torches were ablaze as a lavish array of hors d’oeuvres and live entertainment brought friends and colleagues together for a festive evening.

The scientific program began with partner society leaders presenting their most challenging cases in the thought-provoking session How the Masters Avoid Disasters. Honored Guests Christopher Shaffrey and Larry Lenke squared off in a battle royale as they debated deformity principles and practices in an SRS session that included roundtable discussions from renowned neurosurgical and orthopedic thought leaders. Despite seating for more than 500, it was standing room only as Dr. Praveen Mummaneni delivered the chairman's address and broached the topic of our evolving health care environment and its impact on modern day training and academic practices.

Fallen mentors in DSPN history were memorialized by the presentation of the new JANE Award and Kuntz Scholars Awards, which were created in honor of the lifelong contributions made to the section and the field by Dr. John Jane Sr. and Dr. Charlie Kuntz IV, and delivered to more than 30 budding young neurosurgeons.

Afternoons filled thoughtful minds and appetites as our industry partners delivered seven What’s New sessions and four lunch-and-learn sessions on stimulating contemporary topics ranging from minimally invasive lateral access interventions to the latest in spinal cord injury treatment and trials.

Controversial topics were also tackled head on during the Spine Summit. A crowd favorite involved various speaker perspectives from health, payer, and provider systems. The impact of new payment models was contested as the business of medicine intersected with legislative advocacy, patient satisfaction, and quality versus cost disputes, and attendants challenged the concept of more bundling versus bungling.

Cooler deliberations ensued during the sold-out four-hour cadaver lab that introduced state-of-the-art techniques and technology. The lab was taught by expert faculty in stations that focused on lateral access, MIS, endoscopy, deformity correction, and peripheral nerve grafting.
More than 200 abstracts were delivered throughout the meeting as both young and established speakers commanded the podium in focused specialty breakout sessions including deformity, tumor, trauma, MIS, and peripheral nerve groups. Lunch symposia tackled the management of the osteoporotic patient, oncologic challenges, and the latest and greatest in spinal navigation, and provided even more opportunities for CME.

Friday evening was capped off with a motivational speech by Meritorious Member Award recipient Dr. Philip Weinstein at the Young Neurosurgeons Dinner. A record number of resident and fellow awardees were honored at the dinner for their research and scholarly accolades.

The scientific program concluded as robustly as it began with the section’s traditional Cahill Controversies session featuring past section chairs and contemporaries deliberating over topics new and old, from the utility of interbody grafting in lumbar fusions to optimal sagittal realignment practices. As the meeting wound down, attendants and their families suited up, and off to the theme parks they rode.

Spine Summit 2016 was a raging success from start to finish, and we plan to keep the momentum going into 2017. Plans are already underway for an event-packed and edifying summit held for the first time at the JW Marriott Resort & Spa in sunny Las Vegas, Nevada. Plan to join us March 8–11, 2017, as incumbent Chairman Jack Knightly leads the section to the city perfectly designed for disruption and sinnovation!

> A RECORD NUMBER OF RESIDENT AND FELLOW AWARDEES WERE HONORED AT THE DINNER FOR THEIR RESEARCH AND SCHOLARLY ACCOLADES. <

From left: Spine Section Chair Dr. Praveen Mummaneni, DuPuy Synthes Platform Leader Dan Wildman, and Annual Meeting Chair Dr. Zoher Ghogawala.

Honored Guest Dr. Phil Weinstein and Dr. Praveen Mummaneni at the Young Neurosurgeons Dinner.

Spine Summit Opening Reception
Neurosurgeon’s Key Role in the Future of Cerebrovascular Surgery

The 2016 AANS/CNS Joint Cerebrovascular Section (JCVS) Annual Meeting took place this past February in conjunction with the Society of NeuroInterventional Surgery (SNIS). Held at Universal Studios, Los Angeles, the meeting was a tremendous success, with over 500 attendees. This success points to a dedicated reinvigoration of joint programming and participation between the SNIS and the JCVS, which enabled the important interaction of all specialties delivering cerebrovascular care, including neurologists and interventional neuroradiologists.

We were honored to host the Neurosurgical Society of Australasia as our international partner. There was great enthusiasm from their society, with several members traveling to be in attendance. The American Heart Association International Stroke Conference immediately followed our meeting in downtown Los Angeles.

The CV Section continues to play a significant role in several important projects that will impact the delivery of cerebrovascular care for the ensuing years. Following are a few highlights on these endeavors.

QOD
A recent notable project has been the development of a CV Module for QOD in conjunction with NeuroPoint Alliance. The National Neurosurgery Quality and Outcomes Database’s (originally N²QOD, now renamed QOD) primary purpose is to track the quality of neurosurgical care and to provide practice groups and hospitals with an immediate infrastructure for analyzing and reporting specific metrics associated with this care delivery. It is extremely important to track cerebrovascular disease using this tool, which will help facilitate research, allow for the development of benchmarks, and meet organizational requirements for data tracking.

We were pleased to announce at the JCVS Annual Meeting that as of February, 2016, over 500 patients have been enrolled in the cerebrovascular module, with roughly 13 centers actively collecting data, and several others completing site enrollment.

Acute Stroke Trials
Recently, several landmark studies have been published that clearly demonstrate the superiority of mechanical thrombectomy over the non-invasive treatment of acute stroke caused by large vessel occlusion. The JCVS has been working on three fronts to promote these results. We have been heavily involved with the American Heart Association and American Stroke Association in the revision of the 2015 AHA/ASA Focused Update of the 2013 Guidelines for the Early Management of Patients with Acute Ischemic Stroke Regarding Endovascular Treatment. After our revisions were accepted, our executive council voted for endorsement. Other members of the Neurovascular Coalition are also endorsing the revisions.

The CV Section has also written a letter to the major payors in alliance with the AANS/CNS Washington Committee with assistance from Cathy Hill and Katie Orrico. The CV Section, past president of the CNS Dr. Nathan Selden, and current president of the AANS Dr. Hunt Batjer endorsed the letter. We finalized the distribution list using the policy reporter monitoring system, and sent the letter in September 2015 to the carrier medical directors of 31 major payors that had negative coverage policies for mechanical thrombectomy. According to the policy reporter, 23 of the payors that had previously considered mechanical embolectomy investigational have now changed their policy to medically necessary. This is a major step toward promoting the use of this important technique for our stroke patients and to insure the physicians who perform this vital work are compensated for their efforts. Through the AANS/CNS Washington Committee, along with the excellent work of Dr. Henry Woo and others, we are hoping the Centers for Medicare and Medicaid Services will soon follow suit.
Finally, we have been involved in key editorial statements on the importance of the acute stroke trials. We wrote a preliminary letter with principle members of the SNIS in the Journal of NeuroInterventional Surgery (JNIS) to discuss our position on the recently published acute stroke trials. We also plan to partner with the SIR/SNIS/SVIN/ASNR/CIRA (Canadian IR)/CIRSE (European IR)/ESMINT as a writing group to develop the editorial “Quality Improvement Guidelines for Intra-arterial Stroke Therapy.”

Stroke Center Accreditation
We continue to work with the AHA, Joint Commission, DNV-GL Healthcare, the Cerebrovascular Coalition (CVC), and the Brain Attack Coalition to use consistent and appropriate guidelines for the certification of primary and comprehensive stroke centers. There has been much discussion about varied standards by different accreditation organizations, and the lack of adoption of our previously negotiated standards. The latest action will be a consensus statement by the Cerebrovascular Coalition in published form after a consensus has been reached. The AHA has a new Hospital Accreditation Scientific Committee and Dr. Brian Hoh, our past chair, will be a member.

Fellowship Training Standards
The CV section has worked very closely with the task force of the Society of Neurological Surgeons, the JVIN, and the SNIS for the development of CAST (Committee on Advanced Subspecialty Training) standards for endovascular neurosurgery and open cerebrovascular fellowships, as well as program certification. The guidelines are now set, and the CAST website is actively accepting applications for CAST accreditation of a fellowship program in cerebrovascular and neuro-endovascular surgery, as well as certification of individuals in neuroendovascular surgery. The first set of individual neuroendovascular surgeon applicants were vetted at the CV Section Annual Meeting in Los Angeles.

We also recently completed a significant role in the development of an international article, "Training Guidelines for Endovascular Stroke Intervention: An International Multi Society Consensus Document." Article contributors included the American Association of Neurological Surgeons/Congress of Neurological Surgeons (AANS/CNS); the American Society of Neuroradiology (ASNR); the Asian Australasian Federation of Interventional and Therapeutic Neuroradiology (AAFITN); the Australian and New Zealand Society of Neuroradiology—Conjoint Committee for Recognition of Training in Interventional Neuroradiology (CCINR) representing the RANZCR (ANZSNR), ANZAN, and NSA; the Canadian Interventional Neuro Group (CING); the European Society of Neuroradiology (ESNR); the European Society of Minimally Invasive Neurologic Therapy (ESMINT); the Japanese Society for Neuroendovascular Therapy (JSNET); the Sociedad Ibero Latino Americana de Neuroradiologica (SILAN); the Society of NeuroInterventional Surgery (SNIS); the Society of Vascular and Interventional Neurology (SVIN); and the World Federation of Interventional and Therapeutic Neuroradiology (WFITN). The article will be published in Neurosurgery in the near future.

The Joint Cerebrovascular Section has placed an extremely high priority on neurosurgery’s role in the treatment of hemorrhagic and thromboembolic stroke. In light of recent landmark developments in clinical stroke intervention, our role has never been more vital. In close association with our colleagues in neurology and radiology, we will continue our efforts in education, clinical research, quality and outcomes tracking, training standards, and stroke center certification. The tireless efforts of many individuals in the JCVS will ensure that neurosurgery will continue to have a leading role in the delivery of stroke care to our patients, and in the development of policies related to that care.

> 23 PAYORS THAT HAD PREVIOUSLY CONSIDERED MECHANICAL EMBOLECTOMY INVESTIGATIONAL HAVE NOW CHANGED THEIR POLICY TO MEDICALLY NECESSARY. <
Get your TRAUMA CME at the 2016 CNS Annual Meeting

The CNS Annual Meeting is the perfect opportunity to earn the trauma credits you need with best-in-class instructors, all while increasing your knowledge of pathology and treatment. Following are the courses and sessions that offer trauma CME:

### Practical Courses—3.25 AMA PRA Category 1 Credits™

**PC12:** Neurocritical Care and Neurosurgical Emergencies Update  
Saturday, September 24: 12:30-4:00 pm

**PC22:** Trauma Update: Traumatic Brain Injury—Case-based Learning  
Sunday, September 25: 8:00–11:00 am

**PC31:** Spinal Trauma Cased-Based Guidelines Update  
Sunday, September 25: 12:30–4:00 pm

**PC32:** Sports-related Head and Spinal Cord Injury: Return to Play and Other Management Considerations  
Sunday, September 25: 12:30–4:00 pm

### Luncheon Seminars—1.5 AMA PRA Category 1 Credits™

**L02:** Athletic Head Injuries: Return to Play  
Monday, September 26

**T21:** Guidelines for Neurocritical Care Management  
Tuesday, September 27

**T29:** Managing Intracranial Pressure in the Trauma Patient  
Tuesday, September 27

**W36:** Neurovascular Emergencies: Case-based Discussion  
Wednesday, September 28

**W38:** Pediatric Head Trauma and Sports  
Wednesday, September 28

### Guidelines Session 1—1 AMA PRA Category 1 Credit™

Guidelines for the Management of Traumatic Brain Injury  
Monday, September 27: 2:15–3:15 pm

### Subspecialty Section Sessions—1.5 AMA PRA Category 1 Credits™

**Section on Neurotrauma**  
Monday, September 26: 3:15–4:45 pm

**Section on Neurotrauma Oral Presentations**  
Tuesday, September 27: 3:15–4:45 pm

### Dinner Seminar—2 AMA PRA Category 1 Credits™

**DINO4:** Concussion: Diagnosis, Management, and Outcomes  
Tuesday, September 27: 7:00–9:30 pm

For session details and registration, visit CNS.ORG/2016

CME credits may be claimed through the online CME system at cns.org.
Neurosurgeons and Neurotrauma: Standing Front and Center

Jamie S. Ullman, MD, FAANS, FACS

There is never an end to the work that we, as neurosurgeons, must do to improve the care of our patients, advocate for injury prevention, and devise innovative ways of treating neurotrauma to achieve the best outcomes possible. Through ongoing collaboration and research, we can truly and monumentally affect and minimize the impact of neurotrauma. To do this, we must be front and center of this effort.

There is a disturbing trend toward neurosurgeons abdicating their role in the management of acute traumatic brain injury (TBI), allowing other specialties, such as Acute Care Surgery, to advocate for protocols that exclude neurosurgeons from consulting upon and treating patients with mild traumatic brain injury (mTBI). Gaps in neurosurgery interest will result in many TBI patients finding themselves in the exclusive care of non-experts. General surgery residencies no longer require exposure to clinical neurosurgery except for what is likely encountered during trauma rotations. The American Association for the Surgery of Trauma (AAST) Acute Care Surgery Fellowship does not include direct neurosurgical experience in its curriculum. With this in mind, the section took a stance against a recent publication in JAMA Surgery advocating a hospital head injury management protocol that permitted acute care surgery to evaluate and treat mild TBI patients with “trivial” intracranial hemorrhage without the need of neurosurgery input. What was not clear in this protocol was how these patients were to be followed up and by whom. It is the position of organized neurosurgery that TBI management is a cooperative effort among the various disciplines, including trauma surgery. Trauma and other neurosurgical emergencies are at the very core of what we do. Our extensive training makes neurosurgery best suited to manage acute TBI because our three-dimensional perceptions go beyond what is presented at face value. It is true that neurosurgeons cannot be in all places at once; we are clearly a relatively rare commodity. Some of our colleagues, however, have fostered the use of teleradiology and telemedicine to facilitate the management of patients at facilities without neurosurgical services. Such practices can help keep our involvement strong.

In contradistinction, there is an exciting trend in neurosurgery toward increased interest in neurocritical care. The American Board of Neurological Surgery has developed its first subspecialty certificate in neurocritical care culminating its inaugural examination in March 2016. With increasing numbers of the Society of Neurological Surgeons Committee on Advanced Subspecialty Training (CAST)-accredited neurocritical care fellowships, we will see more neurosurgeons advancing in this direction.

Sadly, though, many neurosurgeons have long since abdicated their role in the management of concussion. Many primary care providers such as pediatricians and internists, as well as physical therapists and other providers, have filled in this gap. No doubt, it is important for primary care providers, coaches, and the public to recognize signs of concussion, ways to prevent them, and to be familiar with appropriate treatment and return to activity protocols. Even though a few neurosurgeons have achieved prominence in mTBI research, all neurosurgeons should take the lead and play an active role in educating stakeholders in these aspects of concussion. Sitting at the helm of the National Football League’s Head Neck and Spine Committee, our colleagues are currently providing organizational experience in the clinical and investigative evaluation of concussion. They are also standing on the sidelines during games to assess potentially injured players. ThinkFirst, neurosurgery’s own injury-prevention organization, has added concussion education and prevention as a priority. The section’s Sports Injury Committee, led by Julian Bailes and Tanvir Choudhri, has worked with the CNS and AANS in keeping us in the foreground of mTBI policy and education.
The section holds strong on its commitment to improve trauma care by fostering collaborations with the American College of Surgeons (ACS) Committee on Trauma (COT) and other organizations, such as the Neurocritical Care Society and Brain Trauma Foundation. Through the leadership of Geoffrey Manley, past section chair, a TBI best practices document was developed for the ACS Trauma Quality Improvement Program (TQIP). Additionally, we are involved in international outreach through our new international committee, chaired by Andres Rubiano. We are pleased to have supported a noble effort, initiated by Indian American neurosurgeons, to work with government officials to establish guidelines for a neurotrauma care system in India. We are also assisting in educational efforts in Latin America. We are looking forward to working with the World Federation of Neurosurgical Societies (WFNS) and President-Elect Franco Servadei, a noted neurotraumatologist, along with the Foundation for International Education in Neurological Surgery (FIENS), and the World Health Organization (WHO), in important efforts to increase international neurotrauma awareness and intervention.

Through a strong connection with the Brain Trauma Foundation (BTF), key section members, led by BTF Committee Chair Greg Hawryluk, have co-authored the new fourth edition of Guidelines for the Management of Severe Traumatic Brain Injury. After its publication, we will work with the BTF on the Living Guidelines initiative which will provide, at the very least, annual updates. This ongoing effort will facilitate the reporting of new evidence to guide practice in a timelier fashion. The section remains involved in reviewing evidence-based guidelines through representation on the ACS/COT and other committees.

Knowing the importance of neurosurgery to trauma centers throughout the United States, neurosurgeons are steadfast in their commitment to uphold the vigorous requirements set forth by the ACS COT. The section also has the duty to provide CME credit to help fulfill the ACS educational requirements. Our education committee, chaired by David Okonkwo, and annual meeting subcommittee chair, Craig Rabb, have provided meaningful trauma-related content for the CNS and AANS Annual Meetings. In addition, we have solidified our relationship with the National Neurotrauma Society (NNS) and look forward to collaborating with them on their 2016 Annual Symposium, held June 26–29, in Lexington, Kentucky. The section’s sessions will be held on June 26, 2016, and were devised by our superb scientific program subcommittee, chaired by Uzma Samadani. We encourage all of our members to attend these sessions and other sessions offered at the NNS Symposium. Attendance could easily provide a neurosurgeon with more than the required 16 annual CME credits. To register, visit neurotraumasociety.org. Additionally, we are happy to announce our partnership with the International Neurotrauma Society (INTS) and the NNS for the INTS Biennial Meeting in Toronto, Canada, August 11–16, 2018.

The Trauma Section has also had a long-standing commitment to resident research by offering the DePuy Synthes awards for craniofacial and spinal injury. In addition, Codman has supported a yearly neurotrauma fellowship that funds a top-selected research proposal culminating in a presentation at the AANS one year later. Our first Ethicon Resident Research Awards were presented to outstanding projects in spine and head injury, and were presented at the 2015 NNS meeting. Our awards committee, led by Eve Tsai, has tirelessly pursued the maintenance and expansion of our awards and lectureship offerings.

The section, with industry support, continues to offer three outstanding lectureships: The Charles Tator Honorary Lectureship on Spinal Injury research, the J. Douglas Miller Lectureship, and the Anthony Marmarou Memorial Lectureship. Recent honorees have included Charles Tator, Raj Narayan, Ross Bullock, Peter Hutchinson, Nino Stocchetti, Barth Green, Susan Harkema, and Jamshid Ghajar. We continue to support neurotrauma research, lectureships, and other initiatives through the generosity of our membership. Recently, through the hard work of Membership Chair Martina Stippler, the section sent out requests for contributions, either through a direct contribution to the section or through the Neurosurgery Research and Education Foundation’s (NREF) Honor Your Neurosurgical Mentor fund. A fund has also been established to honor Drs. Charles Tator and Anthony Marmarou. There is abundant room for all members to honor a colleague, mentor, or ourselves by funding research awards and lectureships through these mechanisms.

My tenure as chair came to a close on May 2. I want to thank officers and voting members Daniel Michael, Julian Bailes, Geoffrey Manley, Sharon Webb, and Rocco Armonda, for their dedication and wisdom. Special mention must go to our special advisor, Michael Fehlings, for his counsel and encouragement, and for providing opportunities for involvement. The section is fortunate to have an executive committee of more than 30 hardworking individuals. I want to personally thank all of them for contributing much of their time and effort in the past two years. The section also congratulates our past chairs—Alex Valadka for his election as AANS President for 2016–17, and Shelly Timmons for her appointment as chair of the AANS/CNS Washington Committee. The chair’s gavel has been passed to Daniel Michael, with Julian Bailes serving as chair-elect, and David Okonkwo as secretary/treasurer. We congratulate Patti Raksin and Odette Harris for their elections as members-at-large. Each of these individuals has a wealth of experience in clinical management, research, and leadership that will continue to strengthen the section and its scope. We encourage everyone interested in assisting and leading our efforts to join the Trauma Section.

The AANS/CNS Section on Neurotrauma and Critical Care exists to advise, advocate, and educate regarding issues pertaining to its title. We want to help reinforce and restore neurosurgery’s position at the forefront of all neurotrauma management, from concussion to severe TBI; from spinal column injury to spinal cord injury. As neurosurgeons, our unique and intensive training makes us most suitable for this task, granting each and every one of us leadership in this endeavor—so let us all stand front and center for neurotrauma.

Women in Neurosurgery: Positive Trends and Attrition

Women in Neurosurgery (WINS) is now entering its third year as a joint section of the AANS and CNS. It remains the fastest growing joint section in neurosurgery, with membership jumping from 143 to 173 members between 2014 and 2015. Currently, nearly half of the joint section chairs are women, and women represent an increasing proportion of academic neurosurgeons.1 The WINS mentorship program also continues to thrive with 19 new mentor assignments in 2015.

WINS accomplishments for 2015–16 include a follow-up to the 2015 manuscript “Attrition Rates in Neurosurgery Residency: Analysis of 1361 Consecutive Residents Matched from 1990 to 1999,” published in the Journal of Neurosurgery. The 2015 manuscript looked at residents who started training between 1990 and 1999, and found that 146 women matched into residency spots over ten years, of whom 92 became board certified. There was 17 percent attrition during residency for this cohort.

The new manuscript, published in March, 2016, in the Journal of Neurosurgery, investigates resident enrollment and attrition between 2000 and 2009, and found that 240 women matched during this decade. While board certification rates for this cohort of residents will not be apparent until 2024, we know that 41 of these women experienced attrition from the field during residency, which suggests that attrition during residency remains unchanged from the previous decade at 17 percent.2

Board certification for women in neurosurgery fluctuates. Nine women were board certified in 2015. Further statistics reveal that 11 women were certified in 2014, 15 women were certified in 2013, and 21 women received board certification in 2012.2 Thus, overcoming attrition remains a challenge to be addressed going forward.

Recently, WINS representative Sharona Ben-Haim generated a survey to explore issues related to pregnancy and childbearing among neurosurgeons. WINS has presented a recommendation to the ABNS regarding whether an extension should be considered for individuals who experience pregnancy and childbirth during the years immediately prior to board certification. Additional interventions to address attrition are also being discussed.

Other WINS accomplishments this year include an outreach to young children contemplating careers in neurosurgery. The daughters of Drs. Isabelle Germano and Odette Harris will soon be publishing a book telling the story of a neurosurgical mom from their own perspective.

At the end of April, I handed over the leadership reins of WINS to Stacey Quintero-Wolfe. Ann Parr will move to chair-elect, and Jennifer Sweet to secretary. I wish to thank the leadership of the CNS and AANS for an outstanding year, the membership of WINS for their support, and the many exceptional women who preceded me as chair for their phenomenal wisdom and mentorship.

Reference List


NERVES (Neurosurgery Executives’ Resource Value & Education Society) is the only national neurosurgery practice administrator society in the United States. NERVES was established as an initiative of the Council of State Neurosurgical Societies (CSNS) to help neurosurgery practice administrators network, combine resources to gather information, and learn from experts and colleagues about how to build stronger practices. Current NERVES board members from the CSNS are Drs. Nicholas Bambakidis and Andy Wakefield.

NERVES holds its Annual Meeting each spring the weekend prior to the American Association of Neurological Surgeons (AANS) Annual Meeting, and continues the dialogue initiated at the meeting through an active Listserv where members ask questions, share knowledge, and exchange information. The 2016 meeting was held April 28–29, 2016, at the Fairmont Chicago, Millennium Park. The NERVES Financial and Annual Meeting committee prepared a diverse agenda that encompassed both educational sessions and networking experiences for members.

One particular highlight of the NERVES Annual Meeting is the group roundtable discussions, which are grouped by academic, hospital, and private practice groups, and vary between small (1-5 neurosurgeons), medium (6-10) neurosurgeons, and large (10-plus neurosurgeons). These open discussions are often the most beneficial sessions of the Annual Meeting and encompass a wide variety of topics such as marketing, insurance contracting, compensation models, staffing, billing, meaningful use, PQRS, and a cadre of other topics. In addition to receiving real-time advice from other administrators, attendees are able to meet one another face-to-face, which is beneficial for post-meeting connections.

This year, NERVES was pleased to welcome keynote speaker, Mary Kelly, PhD, an internationally renowned author and speaker who discussed communication and how to be a more productive leader. Educational sessions offered a variety of interesting topics. Experts discussed developing neuroscience service lines, the rationale for a service line, structure and governance, and a road map to service line implementation. Other sessions focused on negotiating skills, understanding the value of pre-negotiation planning and tactics, countering adversarial tactics and setting goals for negotiation outcomes, and working with other professional businesses encountered in the management of a neurosurgical practice. The ever-favorite topic of ACO and bundled payment models was reviewed, focusing on the varieties of reimbursement models coming down the pike, population-based reimbursement, defining and measuring the quality data, and developing practical steps for engagement with the various reimbursement models. There was also an opportunity to review the importance of strategic planning for the practice management; from overcoming the obstacle of gaining neurosurgeon involvement to learning how to conduct planning sessions for our own groups. Updates from the National Neurosurgery Quality and Outcomes Database and from Washington, DC, were extremely valuable in keeping up with legislative and CMS changes.
Each year, the NERVES Annual Meeting is highly anticipated by its membership. The professional expertise and personal insight shared within the diversity of members is extraordinary, and is invaluable for new managers and experienced managers alike. In addition to building meaningful relationships, members realize they are not alone in dealing with the difficult realities of a running a neurosurgical practice, and that colleagues can support each other in various situations, which in turn, serve the betterment of neurosurgical practices as a whole.

We urge each neurosurgeon to encourage their practice administrators to join NERVES, and attend the 2017 NERVES Annual Meeting, which will be held April 20–22, 2017, in Los Angeles, California. Agenda and registration information will be available in January 2017. To join NERVES, visit www.nervesadmin.com.

NERVES members reuniting at the Annual Meeting welcome reception

ANNUAL MEETING SPECIAL BENEFITS FOR US ACTIVE DUTY MILITARY MEMBERS

To honor those who serve our country, the CNS is offering complimentary registration and limited free housing to US Active Duty Military members. Free housing is limited to the first 10 Active Duty Military CNS members registered for the CNS Annual Meeting. Here’s how to take advantage of these benefits:

**CNS Members**
When registering for the CNS Annual Meeting, please select Active Duty Military member on the online registration form at cns.org/2016.

**Non-members**
Please contact membership@cns.org to join the CNS and confirm that you qualify for these benefits.

CNS membership is complimentary to Active Duty Military neurosurgeons. To see more great member benefits the CNS offers its Active Duty Military members, visit cns.org/membership.
On April 27, 2016, the Centers for Medicare & Medicaid Services issued a proposal to overhaul the way Medicare pays physicians. The proposed rule implements key elements of the Medicare Access and CHIP Reauthorization Act (MACRA). This legislation repealed Medicare’s sustainable growth rate (SGR) formula and replaced it with a new payment system. Through a single framework called the Quality Payment Program, the new payment paradigm has two paths; the Merit-based Incentive Payment System (MIPS) and Advanced Alternative Payment Models (APMs). The new program consolidates components of three existing Medicare penalty programs—Physician Quality Reporting System (PQRS), Electronic Health Record (EHR), and Value-Based Payment Modifier (VM)—and creates an opportunity for neurosurgeons to earn quality improvement bonus payments.

Initially, most neurosurgeons will likely participate in the Quality Payment Program through MIPS, which will allocate payments based on performance in four categories: quality, Advancing Care Information (formerly EHR meaningful use), clinical practice improvement activities, and cost/resource use. CMS would begin measuring performance for physicians through MIPS in 2017, with payments based on those measures starting in 2019. Neurosurgeons participating to a sufficient extent in risk-based APMs would be exempt from MIPS reporting requirements and qualify for financial bonuses in addition to any shared-savings earned through the APMs.

Members of the AANS/CNS Neurosurgery Quality Council (NQC) and Washington Office staff are currently analyzing the proposed rule and will submit comments by the June 27, 2016 deadline. Stay tuned for more details from the CNS.

Medicare PQRS Experience Report Sheds Light on Neurosurgical Participation Patterns

In April 2016, the Centers for Medicare & Medicaid Services (CMS) released its 2014 Physician Quality Reporting System (PQRS) Experience Report, which summarizes the historical reporting experience of eligible professionals (EPs) and group practices in Medicare’s Physician Quality Reporting System (PQRS) through program year 2014. The report also provides preliminary PQRS data for the 2015 program year.

Overall, nearly two-thirds of all EPs are now participating in PQRS; however, less than half of those eligible received a bonus payment, while more than one-half avoided a 2.0 percent pay cut in 2016, leaving 558,885 EPs subject to the penalty. The report also provided limited data regarding specialty participation rates and trends. Regarding neurosurgery:

- 66 percent of neurosurgeons participated in the PQRS in 2014 compared to 56 percent in 2013. Claims-based reporting remained the most popular reporting mechanism among neurosurgeons in 2014.
- 1,635 neurosurgeons (or 31.7 percent of neurosurgeons) were subject to a PQRS penalty in 2015 while 2,239 (or 38.4 percent) will receive a penalty in 2016. By comparison, the specialty with the smallest proportion of EPs subject to the payment adjustment was pathology (at 16 percent). The specialties with the highest proportion of EPs subject to the penalty were oral/maxillofacial surgery and general practice, both at 72 percent.
- Among participating EPs, 74.6 percent of neurosurgeons were eligible for an incentive in 2014.

The current PQRS program will be phased-out when CMS rolls-out the new Merit-based Incentive Payment System (MIPS) on Jan 1, 2017.

2015 Mid-Year Quality and Resource Use Reports Now Available

In April 2016, the Centers for Medicare & Medicaid Services (CMS) released the 2015 Mid-year Quality and Resource Use Reports (QRURs) to physician solo practitioners and groups of physicians nationwide who bill for Medicare-covered services under a single tax identification number (TIN). The reports contain information on cost and quality measures used to calculate the
2017 Value-Based Payment Modifier (VM). The mid-year reports are for informational purposes only and will not affect physician payments under the Medicare Physician Fee Schedule. Individual physicians and group practices can access their reports on the CMS Enterprise Portal using an Enterprise Identity Management (EIDM) account.

Organized Neurosurgery Testifies at ACGME Resident Duty Hours Congress
On March 16–17, 2016, the Accreditation Council for Graduate Medical Education (ACGME) convened the “Resident Duty Hours in the Learning and Working Environment Congress” in Chicago. In his capacity as president of the Society of Neurological Surgeons (SNS), Dr. Robert E. Harbaugh, testified on behalf of the SNS, CNS, AANS, and the American Board of Neurological Surgeons. Other neurosurgeons attending included CNS President Russell R. Lonser, AANS President H. Hunt Batjer, and AANS/CNS Washington Committee Chair Shelly D. Timmons. Neurosurgical resident Maya Babu, presented testimony on behalf of the American College of Surgeons Residents and Associate Society. Dr. Harbaugh testified on the need for flexible resident duty hours and reiterated key points from organized neurosurgery’s detailed written comments.

Neurosurgery Hosts Successful GME Awareness Campaign
Throughout the month of March (and part of April), Neurosurgery Blog hosted a graduate medical education (GME) awareness campaign. To maximize attention on GME and physician workforce issues, we planned our efforts around Match Day, which occurred on March 18, 2016. Dubbing March as “GME Month,” the CNS and AANS utilized the hashtags #GMEMonth and #GMEMatters on Twitter. Neurosurgery Blog and other AANS/CNS communications outlets focused on GME-related topics with multiple guest blog posts. Dr. Atul Grover, executive vice president of the Association of American Medical Colleges, authored our first guest post. Rep. Joe Crowley (D-N.Y.), vice chair of the House Democratic Caucus and a member of the powerful Ways and Means Committee, authored another guest post. Many others in the neurosurgical community took the time to contribute additional blog posts on this important topic.

In addition, Neurosurgery Blog created an engaging animation on GME-related issues and developed two infographics to clearly illustrate the facts about the physician workforce shortage and how it affects patient access to specialty care.

We invite all neurosurgeons to continue the conversation using the #GMEMatters hashtag so we can grow awareness through social media. In the meantime, if you have not already done so, we also encourage you to subscribe to Neurosurgery Blog to stay informed on this and other important topics facing neurosurgery. Visit neurosurgeryblog.org to enter your email address, confirm your subscription, and away you go!

U.S. House Energy and Commerce Committee Hosts Concussion Roundtable
On March 14, 2016, the U.S. House Energy and Commerce Committee hosted a roundtable to conduct a broad review surrounding the causes, effects, and treatments for concussions. The meeting brought together experts from the medical, military, athletic, and research communities to increase collaboration and expand the body of knowledge to help improve the diagnosis and treatments of concussions. Dr. Geoffrey T. Manley, past-chair of the AANS/CNS Section on Neurotrauma and Critical Care, chief of neurosurgery at San Francisco General Hospital, and professor of neurosurgery at the University of California at San Francisco, participated in the roundtable. The CNS and AANS issued a press release applauding the committee for its leadership on the issue of concussions.

Neurosurgery Advocates for Pediatric Trauma Care
On May 24, 2016, the AANS/CNS Section on Neurotrauma and Critical Care, and AANS/CNS Section on Pediatric Neurosurgery participated in a “Day on the Hill.” Additionally, we contrib-
Explore recent advances and techniques in the management of brain tumors at this exciting two-day event that immediately precedes the 2016 CNS Annual Meeting.

- **Engaging scientific sessions cover current topics**
  Recent clinical trials, tumor guidelines, and next-generation techniques in surgical, medical, and radiation therapies for adult and pediatric patients.

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**KEYNOTE SPEAKER**
Mitchel Berger, MD

**KEYNOTE SPEAKER**
Hugues Duffau, MD, PhD

**KEYNOTE SPEAKER**
James Rutka, MD, PhD

**REGISTER AT CNS.ORG/TUMOR**
Registrants receive a promo code for $100 off the 2016 CNS Annual Meeting registration fee!
Anterior Sacral Meningocele, Scimitar Sacrum

The patient is a 25-year-old female with a history of presacral mass found on routine pelvic examination five years previously. Current examination was for sacral and coccygeal aches in addition to urinary frequency. She was neurologically intact. On imaging, the mass had increased in size (Figure 1).

The lesion communicated with the dural sac at the coccygeal tip and did not enhance. There was auto-fusion of L3-4 vertebral bodies. A myelogram and operation were planned. Disruption of caudal eminence development and secondary neurulation can result in a spectrum of disorders, including anterior sacral meningocele, scimitar sacrum, sacral agenesis, sacrococcygeal dermoids and teratomas, and anomalous development of the anorectal, urinary, and genital tracts (Figure 2).

These disorders are thought to be more common in females, and may be related to X-linked or autosomal dominant inheritance.

Submitted by:
Osama Kashlan, MD, Paul Park, MD, and Suresh Ramnath, FRCSC
Department of Neurosurgery, University of Michigan, Ann Arbor, MI, USA

Figure 1: Sagittal T2 view of lumbosacral spine showing meningocele arising from terminal dural sac.

Figure 2: AP view of pelvis to show scimitar sacrum.
Oral Board Exam Preparation Early Review Course
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