EDITOR'S NOTE

The Congress Quarterly (cnsq) Staff, as well as the entire CNS Team, welcomes you to the Fall Issue of Congress Quarterly. This issue serves as an introduction to our rapidly approaching 2013 CNS Annual Meeting, October 19-23 in San Francisco, California. This is always a very popular and productive location, and if you haven’t already done so, we encourage you to make your travel plans and reservations to ensure your spot at what is sure to be the neurosurgical event of the year.

In the President’s Message, Ali R. Rezai discusses how 2013 was A Year of Innovation and Growth for the CNS. We are fortunate to have a summary of all the new and exciting events that will take place at the Annual Meeting provided by the Annual Meeting Chairman and Scientific Program Chairmen, Drs. Alan M. Scarrow, Ashwini D. Sharan and Elad I. Levy. Their article details the fantastic array of international speakers, as well as the diversity of the program. One unique feature of this meeting is the CNS and Ali R. Rezai have chosen not one, but three honored guests. Detailed biographies of these talented scientists and surgeons have been provided:

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Each individual has a dedicated lecture during the Annual Meeting which will be both enlightening and informative. The CNS international partner this year is China, and Charles Y. Liu, Shannon Hann, Peter Kan, Ying Mao, Zhao Yuani and Ashwini D. Sharan provide insight in their article, State of Neurosurgery in China. Brian L. Hoh, Steven N. Kalkanis, Michael Y. Wang, Elad I. Levy and Ashwini D. Sharan review the new four-day symposia, Neurosurgery Innovations, and their implementation throughout the meeting. A summary of the advances the CNS has made through its Simulation Educational Initiative, including the resident simulation-based neurosurgical training practical course, now in its third year, is also provided. A recent Neurosurgery® supplement on simulation and education will soon be published for further reading.


Bernard R. Bendok, Najib E. El Telle, Nicholas Bambakis, Elad I. Levy and Zoher Ghogawala discuss the Cutting-edge Online Neurosurgeons Education at Your Convenience. Michael Y. Wang provides the Membership Committee Report, the Publications Committee Report is provided by me and the Fellowship Committee Report by Aviva Abosch. Lastly, Anil Nanda and Dilantha Ellegala review the CNS/ Centra Neuroscience Institute Global and Rural Neurosurgery Fellowship.

This issue is only a preview of the upcoming exciting activities and events at the 2013 CNS Annual Meeting. We hope this serves as a template for your planned visit to the meeting, and as always, if you have any interesting articles or topics you would like to discuss, please forward them to our attention at info@1cns.org.
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Images in Neurosurgery

The Changing of the Guard — A New Term for the CSNS
Mark E. Linskey
The CNS membership has grown 8.2 percent this year alone and 31.3 percent in the last five years, making the CNS the largest neurosurgical society in the world.

For the past 12 months, I have had the distinct honor and privilege of serving as President of the CNS, and it has been a memorable year. I am pleased to report that our organization has seen impressive growth, both domestically and internationally, as the global leader in neurosurgical education. In fact, our membership has grown 8.2 percent this year alone and 31.3 percent in the last five years, making the CNS the largest neurosurgical society in the world.

This remarkable upswing in our membership can be explained with one word: Value. The value of CNS membership has become increasingly clear as more and more neurosurgeons understand that by joining us they can advance their careers and help our specialty. And this value is driven by our core mission: Education.

**Lifelong Learning**

The CNS provides the most advanced educational experiences for neurosurgeons at all stages of their careers. For example, we have always been dedicated to offering specialized education experiences for residents, such as our Boot Camp and 3D Anatomy Courses.

And the learning doesn’t end once practice begins. The CNS supports young neurosurgeons with opportunities to become actively involved in our professional society as they begin their careers. And we are constantly examining ways to better serve more established neurosurgeons with valuable practice management information and resources, as well as regular updates on healthcare reform and other important legislative developments.

We have continued working in earnest with all of our partner societies on an innovative new online educational platform for interactive learning and streamlined CME. The learner-driven, custom tools offered by this new portal will significantly enhance the CNS’ existing global leadership in neurosurgical education,
already embodied in CNS University, SANS Lifelong Learning, hundreds of free webinars and online courses as well as in MOC-related offerings.

As simulation becomes an increasingly important requirement for training and certification in our specialty, we developed and recently launched CNS-SIM, our innovative new simulation platform. This platform not only uses web-based technologies, virtual reality, haptic feedback devices and physical models, but for the first time ever in neurosurgery, it incorporates these technologies into a standardized curriculum with task validation models and prospective objective assessments, all of which improve learning.

Implementation of CNS-SIM is already in progress; it was featured in an EANS resident course last summer in Prague and in Tel Aviv. It will also be used this December at the Annual Meeting of NSI in Mumbai, India. Multiple additional partnerships utilizing CNS-SIM are underway with colleagues and partner societies around the world.

The CNS offerings are also unmatched in another vital area: Practice Guidelines. Each year, we dedicate thousands of hours of staff and volunteer time to the development and continuous updating of evidence-based clinical practice guidelines for neurosurgery. This effort benefits our members and our entire specialty by improving standards of care and protecting patient access to care. Guidelines also help third-party payers better understand our specialty and provide valuable opportunities for us to collaborate with other medical specialties.

The CNS has also made great strides internationally. We now have more than 1,348 international members in more than 101 countries, and we received 1,800 international submissions in 2012 to our journal Neurosurgery®. In addition, we partner regularly with the WFNS to donate equipment to underdeveloped countries and to plan international society meetings.

Spirit of Collaboration
At the CNS, we believe strongly in a spirit of collaboration with other medical societies, both in the United States and abroad. The CNS contributes half the cost of a joint Washington committee and Washington office to present a unified voice and more powerful representation for neurosurgery on important public policy issues. The CNS was a founder of the Council of State Neurological Societies (CSNS), and we continue to this day to subsidize half of the budget, meeting space and other support for this important grassroots organization.

We believe that having multiple societies serves our members’ interests on the state level and in Washington far better than one society could alone. It provides more opportunities for participation, multiple seats at the table and an amplified representation for our profession on Capitol Hill. All of this helps us navigate and influence the changing landscape of healthcare policy and, more importantly, ensures access to quality care for our patients.

An additional benefit of CNS membership is our distinguished, industry-leading journal Neurosurgery®. Featuring nearly 500 original research articles, reviews and technical notes in all areas of neurosurgery last year, as well as supplements on topics such as virtual reality and robotics, the journal is a vital resource for our members and other colleagues, and it offers the most leading-edge content for all.

Annual Meeting: Technology and Innovation
The 2013 CNS Annual Meeting promises to be a very exciting event, with technology and innovation serving as the hallmarks of this precedent-setting gathering. There will be tremendous opportunities to learn and engage in dialogue on critical topics in our rapidly advancing field. Our Innovation and Technology Symposia will explore how the latest technologies are advancing our profession – and our members – into the future. And we will all benefit from learning how collaboration between physicians and industry will ensure the continuation of cutting-edge innovation in our field.

The meeting will also be filled with dynamic keynote speakers – including the world-renowned violinist Itzhak Perlman and best-selling author Steve Johnson, both drawing parallels between their own areas of specialty and advances in neurosurgery. There will be a strong international showing at this year’s meeting, as we welcome the Chinese Neurological Society as our official Annual Meeting Partner society, along with several international speakers.

This year, I am proud to report that we all have achieved great things together. We have sharpened our focus on innovation and honed our delivery of outstanding educational value to our members. I am privileged and honored to work with such a dedicated team of neurosurgeon volunteers and association professionals who have helped take the CNS to new levels of excellence, making it the premier choice for neurosurgical education and member value. It has been an experience that I will cherish for the rest of my life.

I look forward to having the opportunity to visit with many of you at our Annual meeting in October.
Does this sound like it might be of interest to you? Five days and four nights in one of the most beautiful cities in the United States, with iconic scenery and fantastic restaurants serving some of the best food and wine to be found, surrounded by old friends and colleagues from medical school and residency in addition to more than 2,500 of the world’s brightest and most innovative neurosurgeons and neurosurgical residents. Interested? If so, you won’t want to miss this year’s Annual Meeting, taking place October 19-23 in San Francisco.

We encourage you to register today at www.cns.org to ensure your spot at what is certain to be the neurosurgical event of the year!

Spend your mornings listening to lectures from best-selling authors, world-class educators and luminaries in neurosurgery, while your afternoons will be spent engaging with leading experts discussing the latest innovations about where our industry is heading – including both the opportunities and challenges we face in our profession. Your evenings will be spent connecting with colleagues at some of the city’s premier restaurants or taking in the sights, tastes and sounds of the city.

Past attendees know that the unique culture and beauty of San Francisco combined with its favorable location along the Pacific Rim, create an atmosphere for a great meeting experience. We anticipate this year’s Annual Meeting will be one of the largest gatherings in CNS history as we host our colleagues from the Chinese Neurosurgical Society, our 2013 international partner organization. While we may be in a familiar city, the 2013 Annual Meeting will be unlike any neurosurgical meeting in history. The 2013 Annual Meeting, themed Evolution of Neurosurgery, explores the past, present and future of neurosurgery and takes an in-depth look at how far we’ve come, where we are and what’s coming next. Look for these – and many more – exciting highlights!

General Scientific Sessions
The daily General Scientific Sessions have been completely reinvented with a new, more dynamic format that features a daily anatomy lesson, platform debates on controversial topics, and talks by authors of some of the top papers published in Neurosurgery® in the past year. Other portions of the Sunday through Wednesday plenary sessions will focus on the evolution of technology and technique in the spine, tumor, vascular and pain subspecialties.
Additionally, we are pleased to have an outstanding lineup of featured speakers from a variety of fields providing their insight and perspectives during the daily General Scientific Sessions. Sunday evening’s keynote speakers include Charles Elachi, Director of the Jet Propulsion Lab and leader of the Mars Exploration Rover project, Allan I. Basbaum, Professor and Chair of the Anatomy Department at UCSF, and Steven Johnson, author of the best-selling book *Where Good Ideas Come From*. Itzhak Perlman, the CNS Michael L.J. Apuzzo Lecturer on Creativity and Innovation, takes the stage on Monday morning where he will discuss the musician’s brain, the role of nerves, performance, concentration, practice and much more. Tuesday morning offers an International Lecture from Professor Bainan Xu from the Chinese Neurosurgical Society, Clay Marsh, MD leading a riveting discussion *From the Blue Zones to the Lab: Secrets to Living Long and Living Well* and David Brooks, the 2013 Walter E. Dandy Orator. Finally, Wednesday provides a strong conclusion with Benjamin Warf discussing the Echternach Procession, Dr. Yuichi Hirose of the Japanese Congress of Neurological Surgeons provides his Presidential Address, Professor Liangfu Zhou from the Chinese Neurosurgical Society will speak, along with Susan Hockfield, President Emerita from MIT will wrap-up the morning plenary sessions.

Also taking the stage this year will be our three honored guests—each having their own Honored Guest Luncheon to discuss their perspectives on leadership and career lessons both within the US and globally. First, L. Nelson Hopkins from the University at Buffalo has been a pioneer in the catheter-based treatment of stroke and has spearheaded one of the largest and most respected stroke treatment centers in the world where new and innovative methods have been developed to reverse acute stroke and will speak during Sunday and Wednesday’s sessions. Andrew Kaye, Head of the Department of Neurosurgery at The Royal Melbourne Hospital, one of the best known brain tumor scientists in the world with numerous awards and many contributions to neuro-oncology, will speak during Monday’s General Scientific Session. Johannes Schramm, Professor and past Chair of the Department of Neurosurgery at the University in Bonn, will speak on Tuesday morning. His research has ranged from the basic understanding of the pathogenesis of epilepsy to innovative surgical techniques for its treatment. Dr. Schramm has also published widely on surgical treatment of tumors and non-neoplastic lesions.

Afternoon sessions will see the return of Aaron Cohen-Gadol’s Operative Neurosurgery courses, two new Special Courses and the ever-popular, ever expanding Original Science Program featuring more than 800 abstracts presented from all subspecialties, in addition to each section session covering the latest issues in contemporary neurosurgery.

We encourage you to register today at www.CNS.org to ensure your spot at what is certain to be the neurosurgical event of the year!
Renowned for his commitment and contributions to endovascular neurosurgery, stroke prevention and stroke treatment, Dr. L. Nelson “Nick” Hopkins has pioneered contemporary endovascular techniques and has enabled paradigm shifts in vascular neurosurgery. Completing his neurosurgery residency at the University at Buffalo, Dr. Hopkins began his private neurosurgical practice in 1975, and in 1989, was appointed Professor and Chairman of the University at Buffalo Department of Neurosurgery, subsequently earning the title of Distinguished Professor of Neurosurgery and Radiology from the State University of New York.

Dr. Hopkins led the department to flourish academically, guided his astutely selected faculty to produce prolific, significant publications and mentored an entire generation of young neurosurgeons via his continuously accredited residency program. Ranking seventh in academic productivity among neurosurgical departments in North America by the *Journal of Neurosurgery*, Dr. Hopkins has established UB Neurosurgery as an elite academic and clinical institution, treating patients from across the globe that come to Buffalo seeking care for complex neurovascular problems.

What most people do not know about Dr. Hopkins is how at a young age, his entrepreneurial spirit, avant-garde thought process and tireless work ethic were fostered and blossomed. His tenacity was cultivated at young age through athletic pursuits. He desperately wanted to play ice hockey but did not know how to skate. The school’s hockey coach agreed to train with him one-on-one after practice and eventually put him in the goal. By junior year, he was captain and voted most valuable player. When he went to college at Rutgers University, there was no hockey team, but he did not give up playing. He created a club hockey team that went on to play some of the best teams in the University’s league. The highlight of his college hockey career was when he saved more than 80 shots on goal in one game, such an extraordinary feat, that he was featured in major news stations (and may still hold the record for the most saves in a game despite a 20-0 loss).

Another occurrence that undoubtedly molded Nick Hopkins involved a lesson taught to him by his beloved father. Nick told his father that he wanted a Corvette for his birthday. His father gave him the most inspiring advice by replying, “Great. Go get one.” Dr. Hopkins found a job as a steamfitter and after two summers of hard labor, he did just that.

Dr. Hopkins, or “Nick” as his friends fondly call him, has diverse interests and hobbies. Years ago, Nick and his wife, Bonnie, went on a trip to Bangkok with friends who were gemologists. Dr. Hopkins became so interested in learning about gems that he took a correspondence course immediately after the trip. He bought rubies, sapphires and emeralds, brought them home and sold them to his friends. Bonnie learned how to design settings, and, together, they created a small family business. These, among a lifetime of exceptional experiences, have forged Dr. Nick Hopkins into the incredibly accomplished neurosurgeon, pioneer, and innovator that he is today.

Just last year, Dr. Hopkins’ visionary dream of creating a facility where physicians and researchers can work to diagnose and treat cardio, peripheral and neurovascular disease, as well as conduct groundbreaking research, became a reality with the opening of the Gates Vascular Institute (GVI) in Buffalo, NY. The GVI, a $300 million multidisciplinary vascular institute, is the culmination of a decade of collaboration and community effort spearheaded by Dr. Nick Hopkins. As his father advised so long ago, he went and got it!

Dr. Hopkins is now focusing on expanding his roles as the President of the GVI and President and CEO of the Jacobs Institute, as always devoted to inspiring novel medical technology, to generating optimal outcomes for our patients. Although Dr. Hopkins’ roles and responsibilities are ever-changing, his passions—medicine, technology, learning, teaching and above all, his family—remain constant. Though he starts a new chapter as the President of the GVI, he has already left an astounding legacy: hundreds of neurovascular surgeons in the world, dually trained in the most innovative surgical techniques, dedicated to refining the care and maximizing the outcomes of patients worldwide.
The Congress of Neurological Surgeons is proud to have Johannes Schramm, MD as an Honored Guest for the 2013 Annual Meeting in San Francisco. Professor Schramm was born in a small village in East Germany on March 24, 1946. Under extremely challenging circumstances in post-war Germany, his family fled to West Germany in 1953. He studied medicine in Heidelberg, Berlin and Manchester, United Kingdom. He wrote his dissertation and received his MD degree from the University of Heidelberg in 1972. After completing an internship in West Berlin, he did his residency at the University Hospital of the Free University in West Berlin. There, he was introduced to microsurgery by Mario Brock and initiated to first scientific work by Takanori Fukushima who was a post-doctoral research fellow there.

After post-graduate training, he did his Habilitation (equivalent to a PhD) at the Free University of Berlin in 1981. In 1983, he was promoted to Associate Professor of Neurosurgery in Rudolf Fahlbusch’s Department of Neurosurgery at the University of Erlangen-Nürnberg and was appointed as Vice-Chairman. In 1989, he was appointed Professor and Chairman of the Department of Neurosurgery at the University of Bonn. Under his leadership, Bonn became one of the premier neurosurgery departments in the world. He retired from that position in March 2012 after 23 years, leaving behind an impressive legacy and his department well-positioned for the future with brand-new operating rooms and neurosurgical ICU facilities.

Dr. Schramm is perhaps best recognized for his contributions to epilepsy surgery; however, his broad clinical interests range from glioma surgery to AVMs as well as spine. His research initially focused on experimental cord injury and evoked potentials. These interests found clinical expression with the development and introduction of intraoperative neurophysiological monitoring. These efforts were later expanded to include excellent work on gliomas and surgery for drug-resistant epilepsy.

Dr. Schramm has been a principal on the scene of international neurosurgery, having served in leadership positions in neurosurgery organizations in Germany, Europe and internationally. He is currently Past-President of the European Association of Neurosurgical Societies (EANS), having been the President of the EANS from 2007-2011. He is second Vice-President of the World Federation of Neurological Surgeons and currently a member of the Joint Residency Advisory and Accreditation Committee of the EANS and the UEMS Section of Neurosurgery. He served as Co-Chairman of the working group Neurophysiology and Neuromonitoring of the German Society of Neurosurgery, as Chairman of the Committee on Training and Continuing Medical Education and was delegate of the German Society of Neurosurgery in the Examination Committee and the Training Committee of the EANS. He served as Chairman of the Research Committee of the EANS, then as Vice-President of the EANS. He was Vice-President of the German Society of Neurosurgery and President of the German Academy of Neurosurgery. He was also President of the German language working group on presurgical evaluation and epilepsy surgery. He served as a member of the Scientific Advisory Board of the German Federal Medical Association, as Deputy Medical Director of the University Hospital in Bonn and later served as a member of the supervisory board of the Bonn University Medical Center.

Dr. Schramm is a member of the German Society of Neurosurgery, Congress of Neurological Surgeons, American Association of Neurological Surgeons, German Academy of Neurosurgery, Academia Eurasiana Neurochirurgica and the American Academy of Neurological Surgeons. He was the organizer and scientific chairman of several international symposia, an EANS winter meeting, as well as of several national and one EANS CME course. He served as editor of Zentralblatt für Neurochirurgie/Central European Neurosurgery Journal. He was a van Wagenen lecturer at the AANS and was awarded the Travenol-Prize of the German Society. His research was funded continuously by the German Research Council (Deutsche Forschungsgemeinschaft) for more than two decades. He currently is the editor of the book series Advances and Technical Standards in Neurosurgery. Despite universal recognition for his accomplishments and a CV that lists over 400 publications and over 50 book chapters, he derives most satisfaction from the young neurosurgeons that he has mentored, including five university chairmen and numerous other prominent neurosurgeons worldwide.
E ach year the Congress of Neurological Surgeons (CNS) recognizes the immense contribution of leaders in the field of neurosurgery by selecting a CNS Annual Meeting Honored Guest. For the 2013 CNS Annual Meeting, we are pleased to announce Andrew H. Kaye, MBBS, MD, FRACS as one of three Honored Guests.

Born in Melbourne, Australia in 1950, Dr. Kaye completed his early schooling at Scotch College, Melbourne and went on to graduate from the University of Melbourne in 1973. He subsequently trained in neurosurgery at the Royal Melbourne Hospital and the Royal Children’s Hospital in Melbourne. Following completion of his neurosurgical training in Australia in 1980, he spent two years as a Senior Registrar at the Radcliffe Infirmary in Oxford and one year as Chief Resident in Neurosurgery at the Cleveland Clinic. He then returned to London, England where he spent a year undertaking research in the Institute of Neurology at Queens Square.

On returning to Australia in 1983 he was appointed neurosurgeon at The Royal Melbourne Hospital, and commenced brain tumor research at the Ludwig Institute for Cancer Research. He was appointed Professor of Neurosurgery at The University of Melbourne in 1992, and the James Stewart Professor of Surgery and Head of the Department of Surgery at The University of Melbourne, Royal Melbourne Hospital in 1997. He is the Head of the Department of Neurosurgery at The Royal Melbourne Hospital. For the past twelve years he has been the Chairman of the Board of Examiners for final year Medicine at the Faculty of Medicine, Dentistry and Health Sciences at The University of Melbourne. In 2010, he was appointed by the New Zealand Government to chair the Board of the New Zealand South Island Neurosurgery Service.

Dr. Kaye’s primary clinical and research interest involves neuro-oncology and cerebrovascular disease. His initial work related to the use of photodynamic therapy to treat cerebral gliomas. In recent years, he has focused his attention to the mechanisms of brain tumor cell invasion, intracellular signaling and the development of gene therapy treatment paradigms. He has authored and co-authored over 200 journal articles and book chapters, as well as five books including being the co-author (with Dr. Edward R. Laws, Jr.) of “Brain Tumors”, a text recognized as being the definitive work on the subject.

Dr. Kaye has received numerous awards for his contribution to neurosurgery. In 1992, he was awarded the John Mitchell Crouch Fellowship by the Royal Australasian College of Surgeons, and in 1997 was appointed the Sir Arthur Sims Commonwealth Travelling Professor. In 2003, the American Association of Neurological Surgeons honored him with the Ronald Bittner Award for contributions to the treatment of brain tumors, and in 2006 the Paul Bucy Award for his contribution to neurosurgery education. He was awarded the Commonwealth of Australia Centenary Medal in 2003 and Order of Australia in 2004. In 2004, he presented the Sir John Eccles Lecture at the Australian Neuroscience Society. In 2011, he was awarded the Medal of Honor from the World Federation of Neurosurgical Societies for “outstanding contribution to neurosurgery.”

Andrew Kaye is the founding Editor-in-Chief of the Journal of Clinical Neuroscience. He is Chairman of the Royal Australasian College of Surgeons Board of Neurosurgery, President of the Asian Australasian Society of Neurological Surgeons and Vice President of the World Federation of Neurosurgical Societies. Outside of neurosurgery, Dr. Kaye is a keen follower of Australian rules football, and serves as a Director of the Hawthorn Football Club, Australian Football League.

Dr. Kaye is often acknowledged as a one of Australia’s leading neurosurgeons. In addition to being a dedicated clinician and researcher, he is also an inspirational teacher and leader. His accomplishments are a testament to his commitment to the field of neurosurgery. For this, we are proud to confer the title of 2013 CNS Annual Meeting Honored Guest to Dr. Kaye.
Historical background

Though scarce, there are several examples of neurosurgical practice in China from antiquity. The earliest evidence is found in the primitively trephined skulls of Dawenkon aboriginals in Shandong province dating back approximately five thousand years (Figure 1). Neither the tools of trephination, nor the reasons for such practice have been discovered.

Further history of neurosurgery in China is revealed in 150 B.C. when a famous doctor Hua Tuo, diagnosed King Cao Cao with a brain tumor after the King presented with headache. Unfortunately for Tuo, Cao Cao did not believe in brain surgery and further had Tuo killed for conspiracy against the king.

Stepping forward to the modern era, evidence of neurosurgical practice has continued to be scarce right up through the founding of the People’s Republic of China (PRC) in 1949. Very few surgeons had performed neurosurgical operations. In the early 1900s, SongTao Guan of Beijing and Charlie Chang of Shenyang are some of the first doctors to perform neurosurgery in China. After Guan had finished his chief residency training in general surgery at Peking Union Medical College Hospital, he journeyed to the US for neurosurgical training under the guidance of Charles Harrison Frazier in the University of Pennsylvania in Philadelphia. Guan returned to Beijing in 1930 and began treating patients with head trauma, brain tumors, and spinal cord tumors at his alma mater.

After the Korean War, the PRC government organized the first one-year training course in neurosurgery in 1955 in Beijing. The trainers were Dr. Yicheng Zhao (Figure 2), who founded the first neurosurgery department in Tianjing, China in 1952, and former Soviet Union neurosurgeon Dr. Artuinov. After the training course, the trainees returned to their hospitals to develop neurosurgical programs. In Southern China, the development of neurosurgery was pioneered by Dr. Yuquan Shi. In 1953, Dr. Shi established a neurosurgical service at the Shanghai Red Cross General Hospital, the predecessor to Huashan Hospital. Following this, the first cerebral vascular angiogram was performed by Dr. Chungcheng Wang in 1965, the use of the microscope was first described in neurosurgery in 1970, and the “Textbook of Neurosurgery” in Chinese was published in 1980s. In 1985, the Chinese Neurosurgical Society (CNS), the first national organization for neurosurgery in China, was founded in Beijing.

Today, the Chinese Neurosurgical Society (CNS) has more than 6,000 registered active neurosurgeon members. Similar to the Congress of Neurological Surgeons in the US, it organizes conferences and courses as well as establishes rules and academic guidelines. The organization holds the National Congress of the CNS every other year, which is considered the gala event for neurosurgeons in China. Additionally, academic conventions are hosted regularly in each province and in major cities all over China by local branches of neurosurgical organizations.

China has also made great strides regarding neurosurgical literature. Annually, over 2,000 articles on neurosurgery are published, and in recent years, more than ten major neurosurgery books have been released.

Neurosurgical practice today

In the late 1980s as China’s economy grew, so has the country’s medical systems and hospi-
Large and internationally recognized neurosurgery centers have been established in the major cities, notably Tiantan Hospital of Beijing, and Huashan Hospital of Shanghai. These hospitals are staffed by over one hundred neurosurgery attendings and residents and house over 500 dedicated neurosurgical beds. Annually, approximately 7,000 neurosurgical cases are carried out at each of these centers, including brain tumors, vascular disease, functional cases, trauma, and spinal cord tumors. Other major centers include the General Hospital of the People’s Liberation Army 301 and General Hospital of Tianjin Medical University.

One interesting and seemingly significant difference between a Chinese and a US neurosurgical practice is in the proportion of neuro-ICU beds. This is significantly lower in China with ICU beds only comprising approximately 5% of the total number of neurosurgical beds. In rural hospitals, all post-op craniotomies and subarachnoid hemorrhage patients could be housed in floor beds. Nursing staff to patient ratio is also lower in these hospitals and patients are often cared for by their family for non-critical aspects of hospital stays. Another difference in the practice of neurosurgery is that Chinese neurosurgeons traditionally do not perform spinal surgery unless it is for a spinal cord tumor. A majority of those spine surgeries shared by neurosurgeons and orthopedic spine surgeons in the US are performed solely by orthopedic surgeons in China.

According to the CNS statistical data, the number of qualified neurosurgeons practicing in China in 2000 was about 4,000. The ratio of neurosurgeons to population in China is about half that of the United States, especially in some under-developed areas, the ratio is much lower. In Beijing and Shanghai, the ratio is 1:30,000-40,000, but in some rural areas such as Szechwan, Tibet, Inner Mongolia, and other western provinces, it is 1:300,000-400,000. The distribution difference in the number of neurosurgeons, has contributed to the inequality of neurosurgical care in much of China outside its major cities. Though there are only 4,000 or so neurosurgeons who have been trained the in “standardized” way described above, there are some 9,000 surgeons who do in fact perform neurosurgery throughout China.

Training and education

Neurosurgical candidates choose their specialty during the last year of medical school (which occupies 5-8 years immediately following high school). Traditionally, Chinese medical education has been five years in length; however, many graduates will pursue masters and doctorate degrees in medicine in order to gain positions at medical centers in desirable locations. In recent years, many medical schools have started eight year medical programs (after high school) intended for comparable education to the US “MD”. An examination is taken one year after graduating from medical school, at which time those graduates who have completed their first year as a surgical resident may apply for a neurological residency program.

In 2003, the Ministry of Health and the Chinese Medical Association began a standardization of clinical specialty certification policy. Because of this decision, many neurosurgery training centers have been established in the major cities around China. The training in these centers today consists of two stages. Stage 1 lasts for three years and is immediately after graduation from medical school. During this time, residents perform their rotations in surgery, neurology, and neuroradiology. Stage 2 lasts for three to four years, and immediately follows the first stage. During stage 2, residents begin and complete their general neurosurgery training along with a research year. Following the second stage, residents take examinations for certification administered by the National Board of Neurosurgery. This certification is relatively new, having been first implemented in 2006 in Beijing.

After working for over five years as an attending, a surgeon may take another examination given by the Regional Board of Neurosurgery where they are located. Upon successful completion of this, they may become a vice-chief neurosurgeon. Should a surgeon desire to be “chief neurosurgeon” he or she must work at least five years after passing their National Board Examination, must become vice-chief, and then must pass
yet another examination given by the Regional Board of Neurosurgery.

In addition to the board certification examination, there are other requirements for neurosurgeons, the most important of which is participation in annual continuing medical education (CME) experiences. Each year neurosurgeons are required to obtain credits by participating in various academic conferences or training courses. For many neurosurgeons in more rural parts of China, these continuing education courses may pose a very real logistical problem. Larger cities such as Beijing and Shanghai offer many hours of CME courses on a regular basis, but there are significantly fewer CME offerings outside of these larger neurological centers.

**Healthcare reform in China and its implication to neurological care**

Today, the provision of quality healthcare care for the very large population remains a tremendous challenge. Compared to the US where over 15% of GDP is expended to fund health care, the Chinese government allocated 5% of its GDP to support its 1.3 billion populations in 2000s (Graph 1). Furthermore, there are differences in the access of care between the major coastal cities and more rural interior regions.

In the mid-20th century after establishment of communist party government, China had universal health care with a robust primary care system. Millions of “barefoot doctors” provided basic medical services in villages, and attention to prevention ensured significant gains in life expectancy. The reforms in the 1980s that opened China up to western technologies, unfortunately had the side effect of changing health care into commodities. Universal insurance was dismantled, and health care was decentralized to provincial governments, who allowed the markets to operate with few restrictions. In rural areas, over 30% of public expenditure was devoted to health care in 2001.

In order to alleviate such health care disparity, the Chinese government undertook a five year plan for health care reform in 2005 by spending $2.4 billion US dollars to implement a public health care insurance system aimed to provide health care coverage for all citizens. By 2007, even 80% of the rural populations were reportedly insured by this system. This national insurance also has interesting co-pay schedules to incentivize patients to use local hospitals thereby closing the gaps of health care between cities and villages. If patients go to a small hospital or clinic in their local town, the system will cover roughly 70-80% of their bill. If the patient visits a county clinic, the percentage of the cost covered falls to about 60%. If the patient requires a specialist in a modern city hospital, the plan would cover only about 30%. The neurological dilemma to this newest change in Chinese health care also becomes obvious. In order to provide the large population of Chinese people with adequate neurosurgical care, further training of more qualified neurosurgeons is the largest challenge facing China and one of the major goals of the leadership of Chinese neurosurgery.

**References**


**Graph 1:** Government spending in health care in major countries in 2003
(From Gross B: Emerging markets notebook (5/24/2010))
Historical background

Join other physicians, entrepreneurs, industry stakeholders, and engineers in San Francisco – the heart of technology and innovation with neighboring Silicon Valley – at a focused symposium to engage in open dialogue about the future of cerebrovascular/endovascular, spine, and brain tumor neurosurgery. The CNS is proud to host the first Innovation and Technology symposium, Neurosurgery Innovations on Saturday, October 19, 2013, at the 2013 CNS Annual Meeting.

Neuromedicine is among the most rapidly growing areas in surgery and medicine, and novel technologies in devices, imaging, biomaterials, molecular diagnostics, and regenerative medicine are leading this field forward.

This all-day open forum includes a faculty of key thought-leaders in neurosurgery, chief executive officers, and lead engineers, each offering their expertise in the cutting-edge technologies of the future in cerebrovascular/endovascular, spine, and brain tumor neurosurgery. The open forum will enable participants, faculty, and panelists to engage in free dialogue for the purpose of collectively pushing the field forward.

Do not miss this unique opportunity to be a part and have a voice in this important event in the field of innovation and technology in neurosurgery.

The symposium will be the perfect environment for those interested in learning about key new technologies and innovations that are on the horizon, which are likely to transform neurosurgery, and creative forward-thinkers that can give a voice to where unmet needs can be addressed by novel devices and therapies. The session will also benefit those interested in learning how to start with a technology, take it through the entrepreneurial process, and to market.

Neurosurgeons, neurologists, engineers, scientists, entrepreneurs, and industry affiliates are all invited and will benefit from this symposium.

The symposium will begin with an exciting cerebrovascular neurosurgery session with discussion of novel endovascular aneurysm devices, a device for sutureless bypass surgery, an endoscope device for intracerebral hemorrhage, and intraoperative MRI technology for cerebrovascular surgery.

This will be followed by an enlightening session on spine neurosurgery with discussion of novel endovascular aneurysm devices, a device for sutureless bypass surgery, an endoscope device for intracerebral hemorrhage, and intraoperative MRI technology for cerebrovascular surgery.

The final session will be brain tumor technology and innovation with discussion of exosomes as biomarkers, laser-induced interstitial thermal therapy for brain tumors, and novel neuronavigation technologies.

We hope that you will join us for the truly exciting venture which will prove to be illuminating and beneficial to all. The CNS gratefully acknowledges Medtronic for providing support for this symposium.
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The Congress of Neurological Surgeons’ (CNS) mission statement notes the organization exists “To enhance health and improve lives worldwide through the advancement of education and scientific exchange.” The CNS has several tools in order to accomplish this mission. The well-established vehicles of the Annual Meeting and various publications (Neurosurgery®, Clinical Neurosurgery®, CNSq) have been exceptionally successful. However, the internet and electronic media have allowed the CNS to further expand our international and global educational efforts. Some examples of the CNS’ expanded effort are its educational products in the CNS University, including webinars.

In the United States, in order to reduce fatigue-related errors, as well as maximize educational efforts, the ACGME initiated an 80-hour work-week restriction. Unfortunately, for the task-based educational disciplines, such as surgical residencies, this restriction has resulted in a reduction of time residents are able to spend time in the operating room. Educators throughout North America have therefore focused on ways to maximize resident education. The result has been a rapid advancement in simulation-based education, in part due to simulation allowing the educational environment to be exceptionally controlled and defined. By controlling the educational environment, simulation provides a safe arena, in which residents can “practice” and redefine their skill set. Furthermore, simulation provides specific portions of the operation or procedure to be repeated numerous times with much more efficiency than in an operating room. For example, a bypass procedure can be performed numerous times undergoing the specific skills of suturing vessels together repetitively in a simulation environment. In addition, the simulation provides the opportunity to objectively rate and grade residents’ performances by using predefined metrics.

The CNS has recognized the ability for simulation to maximize education more efficiently on the local, national, and international levels and has created a CNS Simulation Committee, which is chaired by Dr. Darlene Lobel, MD and myself. Presently, the committee has four major activities and focuses:

1. The Annual Meeting Simulation Course
2. Local simulation curriculum
3. International simulation courses
4. Neurosurgery® Simulation Supplement
The CNS initiated its simulation educational program during the 2011 CNS Annual Meeting by having the inaugural resident simulation course. This year’s CNS Annual Meeting will be the third annual simulation course. At each meeting, there has been continued growth in the number of simulations, as well as the number of residents and participants. This year, we are fortunate to have twelve different neurosurgical operative simulators. As in the past, each simulator is based around a two-hour educational module that consists of both a didactic and an objective component. Skill sets and technical components are assessed using objective outcome measures.

These CNS simulation models have been created by the individual team members. Presently, they are categorized into spine/peripheral nerve, vascular, and cranial sections. In the spine/peripheral nerve curriculum, there consists of a CSF repair module, an anterior cervical disectomy and fusion module, a posterior cervical laminectomy module and a minimally invasive percutaneous lumbar fusion module. In addition, this year we have a peripheral nerve module which consists of the release of the ulnar nerve in the cubital tunnel. In the cranial simulation curriculum, there are both virtual reality and physical modules for craniotomy and decompression of the posterior fossa. Also, a traumatic skull fracture module with repair of the skull fracture, evacuation of subdural hematoma and lastly, insertion of a ventriculostomy. This year, we have also added a new robotic-controlled reality simulation for aneurysm. The vascular simulation curriculum consists of an angiography module, an aneurysm clipping module, and a vascular bypass module.

As witnessed by this list of simulators, there is a large diversity of procedures, which is unique to the neurosurgical subspecialty. The CNS is extremely proud of the simulation team members, who have dedicated many hours to these individual models and their educational curriculum.

Presently, this simulation-based course into a local simulation curriculum is being developed as the CNS recognizes that repetitive use of simulation is necessary in order to maximize task performance. Thus, in a pilot program, Thomas Jefferson University, Northwestern University, and Ohio State University have designed a six module simulation course. This course will be performed at the host school’s location over two separate days with their neurosurgical staff and a curriculum provided by the CNS. This is being accomplished by having the simulators brought in or shipped to the individual residency programs. The overall goal is to have residents perform these modules repetitively in their local environment, so they do not have to travel to obtain this training.

While in North America, the simulation efforts evolved out of the work-hour restrictions, it is interesting that the interest and acceptance to this educational program has been greatly endorsed by our international colleagues. At last year’s CNS Annual Meeting Simulation Course, the number of international participants exceeded US Residents. This has grown further with several international societies seeking out the CNS in order to utilize these educational simulation programs at their annual meetings. The CNS is happy to report that the first international simulation course will be held at the EANS Meeting in Prague this September. This will be followed by a second course with NSI in India, this December. In addition to these two courses for 2013, two additional courses are being planned for 2014 with the Brazilian Neurosurgery Society and the Chinese Neurosurgical Society.

In order to further educate the ideas, concepts, and processes the CNS has gained with the development of this simulation program, a Neurosurgery supplement on simulation was created. This simulation supplement issue, available at the CNS meeting, highlights each of the individual models and illustrates the objective, didactic and technical accomplishments of each simulation educational curriculum.

In summary, the CNS is very excited about the continued and rapid growth of our simulation program. We are happy to hear your input and comments at info@1cns.org.
On Friday, February 1, 2013, the Centers for Medicare & Medicaid Services (CMS) released the final rule implementing the Transparency Reports and Reporting of Physician Ownership or Investment Interests section of the Patient Protection and Affordable Care Act (ACA), commonly referred to as the “Sunshine Act,” with data collection commencing on August 1, 2013. Although physicians, defined as “covered participants” under the final rule, do not have any specific reporting requirements, it is important for surgeons to understand the Sunshine Act, and the implications it will have on their interactions with industry and with professional societies.

Under the Sunshine Act, manufacturers of drugs, medical devices, and biologics must submit annual reports to the CMS outlining certain payments and items of value given to physicians and teaching hospitals. In addition, manufacturers and group purchasing organizations (GPOs) must report certain ownership interests held by physicians and their immediate family members. Companies will be required to use the National Plan & Provider Enumeration System (NPPES) on the CMS website to identify physicians by their distinct National Provider Identifier (NPI).

The Sunshine Act obviously impacts surgeons who engage in any direct financial relationship with industry, including consulting agreements, honoraria, royalties, licenses; ownership or investment interest. Even if you do not have any such direct financial relationships, it is important to recognize that lesser and indirect financial transactions will also be reported and published under the final rule. These financial relationships can include accepting speaker fees for participation in non-CME education programs, accepting indirect payments in the form of charitable contributions or accepting any gift or meal valued over $10, among others. And, while companies will not be required to report contributions they make toward large events like the CNS Annual Meeting Opening Reception, even within the context of the Annual Meeting, a company sponsoring an invitation-only dinner, where attendees are easily identified, would be required to report the cost of the food and beverage for all physicians in attendance. As such, you should anticipate receiving requests from the manufactures, GPOs and in some cases, from the CNS and other organizations, to provide your NPI for reporting purposes.

The Sunshine Act was intended to bring potential conflicts of interest to light with the goal of driving down healthcare costs. As a surgeon, you undoubtedly understand that your interaction with medical device and biopharmaceuti-
cal companies is essential to improving patient care, and it is critical that you to take steps today to ensure the accuracy of disclosures associated with your NPI and that your interactions are presented in the appropriate context. We can anticipate that many issues raised by the Sunshine Act will be related to miscommunication and resulting mismatching information between surgeons and companies. The following steps are recommended:

1. **Update Your Disclosures** – If you have not already done so prior to August 1, ensure that all financial and conflict of interest disclosures required by employers, accrediting bodies, and organizations funding research are current and regularly updated.

2. **Update Your NPI Information** – Ensure your contact information and specialty designation are accurate by updating your NPI information or obtaining an NPI through the NPPES website: (https://nppes.cms.hhs.gov/NPPES/Welcome.do).

3. **Be Proactive with Industry** – If you have existing financial relationships with any relevant medical device, biologics or pharmaceutical companies, proactively provide them with your NPI number, state licensure information, business address, and specialty. You should also begin tracking your own payments from these companies and clarifying reportable data with company representatives on an ongoing basis to ensure the accuracy of reports. If you are unsure whether funding, in-kind contributions, or any other item received from a company or company representative is reportable, ask them prior to accepting the gift or payment.

4. **Check and Double Check** – Advise your industry contacts that you would like ongoing notice of what they report to the government and ask that they provide you with notice and an opportunity to review and, if necessary, correct all information that they intend to report before it is submitted to the federal government. Manufacturers will begin reporting the 2013 data to CMS in March 2014. It is anticipated that sometime between this reporting date and the September 2014 publication of all data to the public, physicians will have 45 days to review the data and dispute the information that will be published about them online. If a physician disagrees with the information submitted, they can dispute it and—after the end of the 45-day period—manufacturers and GPOs will have an additional 15 days to resolve any remaining disputes and submit updated, finalized information to CMS. If a dispute cannot be resolved during this period, the claim will be published as submitted and remain in dispute.

It is also important for surgeons to anticipate the implications of the public disclosures. Patients may begin to ask questions about financial interactions with industry, and it is our responsibility to discuss the topic candidly to help patients understand the importance of physician/industry interactions, without compromising trust or the patient-physician relationship. The Congress of Neurological Surgeons has joined the Partners for Healthy Dialogues Campaign (PFHD), with the goal of increasing these proactive, positive conversations about how collaboration between physicians and industry improves patient care and drives medical innovation. You can find a number of great resources to aid you in dialogues with your patients on the PFHD website at www.healthydialogues.org.

When surgeons take responsibility for ensuring the accuracy of data reported under the Final Rule and for proactively communicating with their patients, the Sunshine Act will help to promote ethical interactions between industry and physicians and to maintain patient trust. For more information regarding the Sunshine Act and your practice, you can contact the CNS Development Committee at info@1cns.org.
OPEN ACCESS: WHAT DOES IT MEAN?

With the success of PLOS ONE and the release of the Finch Report in 2012, Open Access (OA) is a topic of frequent discussion for almost every editorial office, scientific publishing society, and publisher. A major issue facing any organization seeking to develop an OA strategy is that the term OA is routinely misused, and the perception of OA is likely based on a very narrow view of how it has been previously applied. To counter misrepresentations, conversations about OA must often begin with a discussion of what it is not, before its implementation can be reasonably discussed.

Open Access is Not...
OA does not mean “free.” OA does not mean “online only.” OA does not mean “vanity press.” OA does not mean “not peer reviewed.” While some or all of these elements may be true of some OA publications, OA is not defined by these terms. Conversely, a publication may have all these elements without being OA. For example, Neurosurgery® selects a number of articles per issue to be “free,” i.e., not behind the subscriber firewall. However, these articles are not strictly OA, since the copyright to those articles is still retained by the society and publisher, limiting the rights of others to distribute and republish the work.

Open Access Defined

Open Access – Gold (journal)
An article published is entirely and permanently free of any access controls. The costs of publication are borne by an institution, funding agency, grants, or by the authors themselves. Public Library of Science journals (eg, PLOS ONE) are an example of an OA-Gold publication.

Open Access – Gold (article)
Often referred to as the hybrid model, a journal may allow for Open Access – Gold privileges to be extended to an individual article. An article processing charge (APC) is paid by the author, and the article is subsequently placed beyond the journal’s normal access controls from the time of publication.

Open – Green (article)
An author may choose to self-archive a version of the accepted paper in a public repository, such as PubMed Central. Increasingly, institutions are creating their own repositories to serve their own faculty.

Delayed Open Access
A journal may allow for content to be deposited in a public repository, but only after an established embargo period has passed.

Licensing
In addition to the access terms above, OA policies must also define licensing terms, as control over distribution is as essential to a journal as the control over access. In particular, it is important to note that secondary rights licensing is a significant revenue source for journals and publishers. One option, the Creative Commons license referred to as CC-BY (or attribution alone) effectively eliminates this source of revenue by providing that “Licensees may copy, distribute, display and perform the work and make derivative works” as long as proper attribution is provided. Some publishers have proposed use of the CC-BY-NC-ND (Attribution + Noncommercial + No Derivatives) license, which provides unlimited noncommercial use of articles, but blocks the generation of derivative works.

Even with the variety of licensing options available, further issues with incompatibility (materials under already existing copyright arrangements) and enforcement of new licensing policies will introduce a new layer of complexity to any publishing operation.

Neurosurgery® and Open Access
Neurosurgery® currently provides Delayed OA to authors whose work has been funded by agencies that mandate OA. Following a 12-month embargo period, Neurosurgery®'s publisher, Lippincott, Williams and Wilkins, submits such articles to PubMed Central. Authors are then responsible for ensuring that the submission procedure is completed.

Though this policy has historically provided the minimal level of OA necessary to guarantee author’s compliance with funding agency requirements, it is becoming more apparent that Neurosurgery® must offer authors greater flexibility in order to maintain its position as a premier destination for content, regardless of the author’s funding source.

To this end, Neurosurgery® has been working closely with our publisher to develop a policy that would introduce an OA-Gold hybrid model. Under this policy, authors of accepted manuscripts would be able to opt for the release of their article from any access controls, in return for the payment of an APC. The APC amount is to be determined, but would be based on the journal’s competitive position in its specialty. As long as Neurosurgery® is supported by subscriptions and society membership, a careful analysis of the APC is required so that it is acceptable to authors, while satisfactorily compensating for any revenues lost to OA content (eg, reprint sales).

This adoption of an OA policy does not mean that Neurosurgery® is to become an OA journal, and the goal of this policy is not to create an environment in which all articles published in Neurosurgery® are freed from the society’s and the publisher’s controls.

The journal’s purpose in developing an OA policy is to ensure that no roadblocks exist that would prohibit the publication of the highest impact work in Neurosurgery®. Additionally, the policy must make no compromises of Neurosurgery’s peer review, and the perception of the journal’s content must remain unsullied.
Engage and connect with hundreds of your exhibitor contacts in San Francisco at the 2013 CNS Annual Meeting Exhibit Hall. Take advantage of this exciting opportunity to learn more about the most cutting-edge products and services in the field of neurosurgery!

**DISCOVER**

**EXPERIENCE**

**CONNECT with your corporate contacts through**

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- In-booth Demonstrations
- Tuesday Afternoon Wine and Cheese Reception
- Daily Beverage Breaks
- Digital Poster Center
- CNS Member Services Booth
DEEP BRAIN STIMULATION FOR THE TREATMENT OF EARLY PARKINSON’S DISEASE

The use of deep brain stimulation (DBS) of the subthalamic nucleus (STN) has been established as a highly-effective therapy for advanced Parkinson’s disease (PD). This treatment modality is particularly effective for levodopa-sensitive OFF symptoms, levodopa-induced dyskinesias, and tremor. Therefore, DBS of the STN is typically considered in patients with idiopathic PD whose symptoms improved with levodopa, but have refractory motor fluctuations, side effects from increasing doses of levodopa or worsening symptoms secondary to disease progression. Such motor complications occur at a rate of 50-75% within the first 7 years of medical therapy and have been associated with not only higher doses of levodopa, but also longer durations of medical treatment.

Given the indication of DBS for the treatment of only advanced PD, the average interval between diagnosis and treatment with DBS has been approximately 12 years. Unfortunately during this period, motor complications accumulate and patients’ overall quality of life becomes severely impaired. In addition, increasing patient age has been negatively correlated with improvement of motor function after DBS and associated with higher rates of perioperative complications.

Therefore, recent efforts have investigated the benefit of surgical intervention at earlier stages of the disease. Early utilization of a disease altering therapy such as DBS may potentially provide more benefit to patients by preventing the accumulation of significant disability. Nevertheless, such benefits must be weighed against the risk of subjecting patients to surgical procedure in an early disease state that is adequately managed with medication.

Small case series performed in the United States have helped to expand the volume of evidence for this theoretical benefit. In a retrospective review, a group from the University of Pittsburgh found that a statistically significant proportion of PD patients who had been treated with DBS within 10 years of diagnosis had improved rigidity when evaluated at 1 year.1 Following this retrospective analysis, a prospective pilot study of DBS in 30 patients with early PD was conducted at Vanderbilt University. Thirty patients with levodopa-responsive PD diagnosed within 4 years, but for more than 6 months were randomized to stimulation or to optimal medical therapy alone. While no statements regarding the efficacy of each treatment paradigm have been made, the authors have reported on the safety and tolerability of stimulation in this patient population. Specifically, only 1 of the 15 implanted patients had any long-term (>3 month) complications. While too small to be statistically significant, this study suggests that the safety of DBS in this population is comparable to implantation in patients with advanced disease.2,3

This avenue of research has recently culminated in the European EARLYSTIM trial.4 This multi-center study involved 251 patients with a diagnosis of PD for at least 4 years, but with a Hoehn and Yahr severity rating below stage 3 of 5 and with motor complications for less than 3 years. As a result, patients entered into this trial had PD for a mean of 7.5 years with levodopa-induced motor complications for a mean of 1.7 years. Study participants were randomized to receive neurostimulation and concurrent medical therapy (n = 124) or optimal medical therapy alone (n = 127) and followed for 2 years. In terms of their primary outcome measure of overall quality of life, patients in the early DBS cohort demonstrated an average improvement of 26% from baseline as assessed by the Parkinson’s Disease Questionnaire (PDQ-39). Meanwhile, patients treated with medical therapy alone actually had a 1% decline in PDQ-39 scores after 24 months. These contrasting outcomes were seen as early as 5 months after randomization and persisted for the duration of the study. In addition, the reported improvement in PDQ-39 of 26% is comparable to the 24% improvement previously reported for patients with advanced PD. Patients receiving early DBS also demonstrated significantly greater improvements in motor symptoms, number of hours with good mobility, and overall disease severity relative to their medical therapy counterparts. Furthermore, the early DBS cohort achieved a 39% decrease in their daily levodopa-equivalent dose while the medical therapy cohort required an average dose increase of 21%. There were no significant differences in cognition, mood, or serious adverse events. Study strengths include its large sample size with low crossover and withdrawal rates.
strict adherence to designated protocols, independent expert validation of both DBS and medical treatment paradigms, and blinded evaluation of the UPDRS-III motor scores. Ultimately, this multicenter prospectively designed randomized control trial provides level I evidence for the treatment of early PD with DBS. Such evidence has generated a great deal of enthusiasm and is likely to alter treatment paradigms for this disease. Previously, the obvious surgical risks and conception of brain surgery as a drastic measure had limited neurosurgical interventions to patients with only the most intractable or severe forms of the disease. The emerging data presented here is now allowing us to consider the therapy in select patients earlier in their disease states. As always, patient selection remains paramount, as a movement towards earlier surgical intervention may increase the likelihood of capturing patients with atypical PD.

> THE EMERGING DATA PRESENTED HERE IS NOW ALLOWING US TO CONSIDER THE THERAPY IN SELECT PATIENTS EARLIER IN THEIR DISEASE STATES.

AS ALWAYS, PATIENT SELECTION REMAINS PARAMOUNT, AS A MOVEMENT TOWARDS EARLIER SURGICAL INTERVENTION MAY INCREASE THE LIKELIHOOD OF CAPTURING PATIENTS WITH ATYPICAL PD. <

### References


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<th>First Author</th>
<th>Institution(s)</th>
<th>Study Design</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>Parent</td>
<td>United States</td>
<td>Retrospective Cohort Study</td>
<td>Patients with no more that 10 years disease duration demonstrated a 45% reduction in rigidity and a 64% reduction in dyskinesia (UPDRS)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Pittsburgh</td>
<td>46 patients undergoing DBS for PD</td>
<td>Patients with more that 10 years disease duration demonstrated a 31% reduction in rigidity and a 70% reduction in dyskinesia (UPDRS)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12 months follow-up</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>Kahn</td>
<td>United States</td>
<td>Prospective Cohort Study (Pilot Study)</td>
<td>No report of efficacy of DBS for early PD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vanderbilt University</td>
<td>15 patients undergoing early stimulation</td>
<td>14 of the 15 patients did not sustain any long term complications</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>24 months follow-up</td>
<td>1 stroke resulting in cognitive changes and right arm and face weakness</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Complication rates comparable to reported rates for advanced PD</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>The optimal contact used for stimulation was statistically no different than that used in the treatment of 47 advanced PD patients</td>
</tr>
<tr>
<td>2013</td>
<td>Schuepbach</td>
<td>Europe</td>
<td>Multicenter Prospective Randomized Control Study</td>
<td>Improvement in quality of life by 26% in the stimulation group, compared to a worsening of 1% in the medical therapy group (PDQ-39)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9 German Centers</td>
<td>251 patients (124 stimulation; 127 medical therapy)</td>
<td>Improvement in motor score by 26% in the stimulation group, compared to a worsening of 1% in the medical therapy group (UPDRS-III)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8 French Centers</td>
<td>24 months follow-up</td>
<td>Improvement in time with good mobility by 20% in the stimulation group, compared to an improvement of 2% in the medical therapy group</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Decrease in levodopa-equivalent doses by 39% in the stimulation group, compared to an increase of 21% in the medical therapy group</td>
</tr>
</tbody>
</table>
In the Congress Quarterly Winter 2013 issue, Drs. Colen and Zalatimo provided a review of smartphone applications in neurosurgery by subjectively using the survey responses of a group of neurosurgery fellows. The purpose of this article is to review the clinically relevant iPhone® applications in neurosurgery using an equation based on rating scores, years since release, and total number of ratings received in the application store for applications solely related to neurosurgery to supplement the work presented in the Winter 2013 issue.

A search was performed in April of 2013 in the iTunes® Application store for all applications related to neurosurgery. The iTunes® App store was queried with a combination of the following terms: neurosurgery, neurosurgery, surgery, neurology, and brain. Inclusion criteria included applications based in the English language, applications which had direct relation to neurosurgery or indirect relation to neurosurgery (e.g., Neurological Exam, GCS Grading Systems, NIHSS grading systems). Exclusion criteria included applications not based in the English language, applications related to meetings or conferences, applications related to private physician practices, or applications that were solely related to basic science or neuroscience research.

Articles were ranked according to a formula that accounted for the application rating, total number of ratings, and years since release on iTunes®. The application rating is a reported score ranging from 1 (lowest) to 5 (highest) stars that iTunes® users can evaluate applications with. In order to control for applications that may have high ratings but very few total numbers of ratings the total number of ratings was multiplied by the square of the rating value. The squared value of the rating value allows for control over ‘negative rating bias.’ It is widely known that apps often get more negative than positive ratings, therefore we consider an app with 5 ratings of 4 greater than an app with 20 ratings of 1, although both yield the same number of rating points. Since ratings occur over time, we placed the years since an application was published in the denominator of our equation to compare apps with different release dates. The applications were then ranked in descending order based on this scoring system. The following equation summarizes how each unique application score was determined.

\[
\text{Application Score} = \frac{(\text{iTunes® Rating})^2 \times \text{(# of Ratings)}}{\text{Years since release}}
\]

The initial search returned 43 iPhone® applications. Of these 43 applications, there were 31 applications educational in nature, 4 scoring systems, 4 multifunctional applications, 2 board review applications, and 2 applications related to peer reviewed journal applications (e.g., JNS, SNI). Of the 43 applications 14 had at least one rating in the iTunes® application store. The overall application score was 106±409 with a median of 0. The top 10 applications in our evaluation are shown in Table 1. The average cost of an application was $14 ± $28.6 with a median of $2.99 (range $0.00 to $149.99). The average overall rating of an application was 1.23±1.74 stars with a median of 0 and the average number of ratings was 13.2±45.7 (range 0 to 299) with a median of 0. The average rating of applications that had at least one rating was 3.4±0.94 with a median of 3.5. There was no significant correlation between application rating and the cost of an application in using a bivariate analysis (r=0.241, n=43, p = 0.115).

Brief descriptions are given for each of the top 5 applications determined by our scoring system. These descriptions provide the reader with a descriptive list of the iPhone® applications that are currently both the highest rated and most used applications related to neurosurgery in the iTunes® store.

**Rank #1: Neuromind**

Neuromind is an application developed by Pieter Kubben in 2010 that is now in its 2nd version (v. 2.1). This free application has a very broad list of scoring systems, anatomical images, decision-making tools, and anatomical images. This application has consistently been one of the highest ranked iPhone® applications on iMedicalapps.com. This application has the highest number of ratings out of all applications analyzed and is one of the most widely used and accepted iPhone® applications within neurosurgery. The survey performed by Dr. Colen and Dr. Zalatimo reported that most respondents may have had this application but did not use it frequently. Our results show that this application is the overall most rated and highest rated application out of all applications reviewed in this study.

**Rank #2: Neurosurgery Survival Guide**

Neil Roundy released the Neurosurgery Survival Guide in 2011. The latest version of this application at the time of this study is v. 1.14. This application is similar in nature to Neuromind, consisting of 8 categories as follows: Basics, Neurocritical Care, Procedures, Protocols, Pediatrics, Trauma, Learning, and In the OR. This application lists various graphics, scoring systems, and practical guides for physicians at all levels of training. The cost of this application is $7.99.
Table 1. Top 10 iPhone® applications related to Neurosurgery

<table>
<thead>
<tr>
<th>Application</th>
<th>Release Date</th>
<th>Version</th>
<th>Cost</th>
<th>Author</th>
<th>Rating</th>
<th># of Ratings</th>
<th>Category</th>
<th>Rating Score</th>
<th>Rank</th>
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</thead>
<tbody>
<tr>
<td>Neuromind</td>
<td>2010</td>
<td>2.1</td>
<td>$0.00</td>
<td>Pieter Kubben</td>
<td>3</td>
<td>299</td>
<td>Multiple</td>
<td>2691</td>
<td>1</td>
</tr>
<tr>
<td>Pocket Brain</td>
<td>2013</td>
<td>2.2</td>
<td>$9.99</td>
<td>eMedia</td>
<td>4</td>
<td>19</td>
<td>Educational</td>
<td>28</td>
<td>3</td>
</tr>
<tr>
<td>SLIC</td>
<td>2012</td>
<td>2.00</td>
<td>$0.00</td>
<td>Pieter Kubben</td>
<td>2.5</td>
<td>46</td>
<td>Scoring System</td>
<td>288</td>
<td>4</td>
</tr>
<tr>
<td>NIH Stroke Scale from Stat Coder</td>
<td>2010</td>
<td>1.30</td>
<td>$0.00</td>
<td>Austin Physician Productivity, LLC</td>
<td>3.5</td>
<td>14</td>
<td>Scoring System</td>
<td>172</td>
<td>5</td>
</tr>
<tr>
<td>Neuro Tool Kit</td>
<td>2010</td>
<td>2.99</td>
<td>$2.99</td>
<td>Kent Ellington</td>
<td>4</td>
<td>30</td>
<td>Scoring System</td>
<td>40</td>
<td>6</td>
</tr>
<tr>
<td>iSpine Care</td>
<td>2010</td>
<td>1.4.1</td>
<td>$59.99</td>
<td>Anatomate Apps</td>
<td>4</td>
<td>28</td>
<td>Multiple</td>
<td>149</td>
<td>8</td>
</tr>
<tr>
<td>Helsinki Microneurosurgical Atlas</td>
<td>2012</td>
<td>1.6.7</td>
<td>$0.00</td>
<td>B. Braun Melsungen AG</td>
<td>4.5</td>
<td>5</td>
<td>Educational</td>
<td>101</td>
<td>9</td>
</tr>
<tr>
<td>Anatomy of the Brain</td>
<td>2009</td>
<td>1.0.4</td>
<td>$2.99</td>
<td>Simpaddico, LLC</td>
<td>2.5</td>
<td>42</td>
<td>Educational</td>
<td>66</td>
<td>10</td>
</tr>
</tbody>
</table>

**Rank #3: Pocket Brain**
Pocket Brain is a neuroanatomical educational application. This application has several layers of 3D animations, clinical cases, cross-sections, and nerve-pathway animations. This application has received several positive reviews from iMedicalapps.com. This application could have benefit in describing anatomy and pathology to patients in clinical practice. The cost of this application is $9.99.

**Rank #4: SLIC**
SLIC is a scoring system for the commonly used Sub-axial Cervical Spine Injury score. This free application is a simple scoring system using the SLIC system first proposed by Vaccaro et. al. in 2007. This application walks the user through each of the criteria described by this scoring system.

**Rank #5: NIH Stroke Scale from Stat Coder**
Austin Physician Productivity, LLC, released the NIH Stroke Scale application in 2010. This free application presents a succinct and well-organized and detailed application to calculate the NIH Stroke Scale.

The applications listed in our ‘Top List’ are dependent on the amount that iTunes® users rate the applications. The most frequently used iPhone® apps within our institution are Neuromind and the Neurosurgery Survival Guide. The SLIC scoring system and NIH Scoring system applications (Rank # 4 and 5) while helpful, provide no additional information or use outside of either the Neuromind or Neurosurgery Survival application packages.

The iPhone® is currently the most widely used smartphone platform in the healthcare setting and has the greatest number of literature reports regarding the medical use of this technology. As other smartphone platforms become more mature and are used more widely in a clinical setting, an objective evaluation of the medical and neurosurgical focused applications for these platforms may be warranted.

The study of medicine in the 21st century brings with it a unique set of problems. There has been an exponential rise in biomedical information and resources. There now often exists too much information rather than too little information to address our questions. Methods for addressing the large amount of resources efficiently, timely, and accurately are essential as we move into the future of evidence-based medicine. This study evaluates the resources available for one of the most commonly used technologies within neurosurgery, the iPhone®.

Caution must be used when correlating the cost of an application to its practicality. The results of our study show that on average applications that are free often provide more and higher user ratings than the paid applications and no significant relationship between cost and rating exists.

The list of highest rated applications are stratified by factors that include ratings on the App Store. It is not possible to identify which applications may have artificially inflated scores due to developers attempting to create false reviews in their favor, however, the App Store has policies which attempt to prevent, or at the very least limit, this activity.

It is worth noting that the regulatory nature of medical-oriented smartphone applications has not yet been established. None of the applications described have United States Food & Drug Administration 510k approval.

Tools like the ones mentioned in this study are valuable to the future and current generation of physicians who need not only the mastery of surgical skill and knowledge, but also the mastery of technology and digital information as it relates to the practice of evidence based medicine.
Very two years, in the Spring, the Council of State Neurosurgical Societies (CSNS) holds new elections and starts a new two-year cycle. In my first Chair message to the CNSq, I wish to start by congratulating my predecessor, Deborah Benzil, on a job well done in her productive two-year term as CSNS Chair. While Dr. Benzil was not the first woman officer of the CSNS, she was the first to rise to the Chair position, which is historically significant. I think everyone will agree that she brought her own style and a new grace to the position that will serve as a legacy for those who follow. I will certainly do my best to hold on to, and continue the best of her ideas and initiatives.

Our Spring CSNS meeting saw fourteen resolutions presented before the plenary session, of which seven passed in original or modified form, with an additional one referred to committee for study. A terrific example of the importance and power of the CSNS resolution process, and the utility of public house of delegate debate was the vigorous discussions over Resolutions VI and VII 2013S proposing one annual neurosurgery meeting, and one neurosurgery organization, respectively.

The testimony and debate process over two days allowed newer delegates to hear the results of the earlier CSNS Medical Practice Committee survey of 2000-01 (published in the AANS Bulletin Fall 2001) as well as the results of the attempted formal arbitration process between the AANS and CNS that followed. It allowed delegates in private practice to relate the utility of two meetings per year in terms of practice cross-coverage requirements and fair and expanded opportunity for partners to attend at least one meeting per year. It allowed the actual financial facts relating to AANS and CNS dues to come forward showing that ~50% of each society’s dues went towards journal subscriptions and joint AANS/CNS activities such as the Washington Office, Washington Committee and the CSNS, thus severely blunting any expectations of major dues cost savings through society merger.

After thorough education, vetting and debate, both resolutions overwhelmingly failed. Not surprisingly, in AANS President William Couldwell’s June 3rd message to AANS membership regarding merger, the importance, and result of the CSNS resolution process and subsequent debate was strongly emphasized as an example of how grassroots neurosurgery should present new initiatives, as well as an
example of how grassroots a priori opinion can shift once formal debate takes place, perspective is achieved, and apparent mis-information is dispelled.

Our Spring CSNS meeting also saw thirteen new CSNS Resident Fellows elected from the four quadrants and the Joint Military Neurosurgery Committee. These new fellows were chosen from thirty-nine applicants. Our residency fellowship remains extremely desirable and competitive. We also heard a final report from our 2012 CNS/CSNS Medical Student Socioeconomic Fellow, Steven Vidrine from LSU Shreveport, on the socioeconomic impact of time to arrival at tertiary care centers for head trauma. Further details regarding our Spring meeting can be found on the CSNS website http://www.cnsnonline.org/ or in our Spring CSNS Newsletter https://cnsnonline.org/files/newsletters/CSNS%20Spring%202013.pdf.

Thinking about the upcoming two years, there are really six things that I hope to accomplish:

1. To develop the CSNS, working with our parent organizations (AANS and CNS) as well as the AANS/CNS Washington Office, and our state neurosurgery societies, into a truly integrated state and regional advocacy platform, with enhanced communication to-and-from our state neurosurgery societies, direct executive support to our state neurosurgery societies, and expansion of our current national and federal advocacy and health policy efforts into the state and regional arena.

2. To reinforce and expand our own Communications and Education Committee as well as our Young Neurosurgeons Representative Section to better support our growing national neurosurgery needs and prepare them to take on new initiatives.

3. To emphasize and develop neurosurgery-specific patient safety as an area needing development and neurosurgery input at the national educational and quality assessment levels.

4. To add at least one more Representative Section to the CSNS to better serve specific growing demographic interests within the profession of neurosurgery and allow them a voice in our resolution process as well as direct access to our parent organizations through the CSNS organizational structure and mechanisms.

5. To re-establish and re-invigorate the original relationship between the CSNS and our offshoot organization, the Neurosurgery Executive resource, Value and Education Society (NERVES).

6. To leave the CSNS stronger and even more relevant to the needs and aspirations of the average neurosurgeon in practice when I leave my post, as when I found it in May 2013.

None of these goals and objectives can be hoped to be achieved without the active help and participation of a dedicated leadership team. I am truly blessed to be able to work with a superlative group of smart, dedicated and hard-working individuals who have committed themselves to help me in achieving these goals. Our 34 member Executive Committee by 2014 will include 2 new officers, 4 new Quadrant Chairs, 1 new Caucus Chair, 5 new standing committee chairs, 1 new Subcommittee Chair, 2 new Ad Hoc Committee Chairs, 2 new AANS Regional Directors, and 2 new liaisons. All told our 34-person new CSNS EC will have had a 56% turnover from the CSNS EC of 2013.

The CSNS is the main socioeconomic arm of our parent organizations, the AANS and CNS. We are responsible for the core socioeconomic and health policy content of the national meetings of both organizations. We are major contributors to the socioeconomic and practice components of all major organized neurosurgery educational initiatives and efforts. We have become the site and the crucible for identifying, developing, and testing neurosurgery talent for future organizational and leadership roles in our parent organizations and beyond. We provide major intellectual, personnel, and leadership development support for our AANS/CNS Washington Committee and our Neurosurgery PAC. Indeed since 2008, all six voting members of the Washington Committee have been current or previous leaders within the CSNS, and every Neurosurgery PAC Chairperson, since its inception, has been a leader from the CSNS. For the last 15 years, we have been the main avenue, and mechanism for introducing neurosurgery residents to the workings of organized surgery while still in training through our highly competitive resident fellowship program, and our CSNS Washington Committee Resident Fellowship Program.

Most importantly, we are the only representative grassroots access avenue for local and regional neurosurgery concerns and ideas to be brought forward to the leaders of organized neurosurgery. Through our democratic resolution process, every neurosurgeon has a voice and can be heard. Every neurosurgeon can raise a concern or issue, introduce a new idea, or make a proposal. If it has merit and passes our resolution process, the resolution must be forwarded to, and responded to, by the AANS Board and the CNS Executive Committee. This degree of access is both a tremendous privilege as well as a significant responsibility.

I look forward to working with each and every one of you over the next 24 months in trying to achieve these six major goals. Please know that you have direct access to me for any concerns or issues you might have through our Executive Administrative Assistant, Mrs. Sandy Meyer at sjm@aans.com. We also welcome any and all ideas as well as offers of support and assistance in our efforts. The CSNS is an inclusive, grassroots, organization, and all input and participation is welcome. Please step up and participate. Neurosurgery is our profession, neurosurgeons are the best advocates for our patients, and we need everyone involved.
n keeping with its mission, the Congress of Neurological Surgeons offers innovative and high impact online education. Among the numerous CNS initiatives on this front, a dynamic high-quality series of webinars was initiated four years ago with the aim of covering a wide spectrum of neurosurgical topics in all subspecialty areas. The objective has been to provide the neurosurgical community — medical students, residents and faculty — with informative topic reviews and current updates. Two pillars of this initiative have been the generous volunteerism of a large panel of distinguished moderators and faculty and the tireless efforts of CNS staff. The webinars have been received enthusiastically with growing attendance and improving feedback each year.

Based on a careful review of past webinar series’ evaluations, this year, three categories of webinar series are being offered: a Guidelines series, Topic Review series, and Board Review series. Moreover, the Oral Board review series was expanded to cover all subspecialty areas of neurosurgery. Additionally, prominent faculty from pathology, neurology and neuroradiology were recruited to create written board review webinars in these important areas. Guideline webinars have aimed to provide updated reviews of recently published guidelines including the highly-anticipated Cervical Spine Trauma Guidelines. As in previous years, participants were given the option to interact with the moderators by sending messages through the WebEx™ system, and the questions were posed live to the presenting faculty. A significant number of international members and non-members have attended the live webinars.

Since the main drive behind the webinars has been to provide high-value education, their impact should be measured and critically analyzed to assure compliance with ACCME standards and to better understand how improvements can be made. To gain insight into the impact of webinars on neurosurgical education and practice, our previously established pre- and post-test questions and a robust evaluation process have been further expanded and refined to gather data before and after each webinar.

Thus far, 698 candidates have participated in this year’s webinars. Pre- and post-test question data collected thus far suggests significant improvement and retention of knowledge. Eighty-four percent of participants thought that the ‘webinars’ objectives were met and
91.39% rated the webinars as either excellent or good. Ninety-seven percent of participants thought they would recommend the webinar to their colleagues and 84% thought that knowledge from the webinar could be useful in clinical practice. Finally, 50% of attendees said they would change their practice as a result of their participation in the webinar. This data suggests a very positive impact of the webinars on neurosurgical education and practice.

The guidelines and topic review webinar sessions presented so far this year included a pediatric myelomeningocele update, a trauma guidelines update, a vascular guidelines update, and an acute cervical spine guidelines update. Board Review Sessions included Neurology written board review, Neuroradiology written board review, Neuropathology written board review, Functional oral board review, Neurooncology oral board review, Peripheral Nerve oral board review, Spine oral board review and Cerebrovascular oral board review. Upcoming webinars for this year include a second session of the above mentioned oral board reviews just before the November 12-15 oral examination as well as the lumbar fusion guidelines update webinar and the treatment paradigms for spinal metastases webinar (table 1). In addition, plans for an international webinar in conjunction with the Neurological Society of India on the topic of tuberculosis are underway.

CNS webinars attendance has steadily increased over the past four years. There has been a 116% increase in average attendance since the program inception in 2009. Average attendance has also increased 15% over the same period of time since last year. Board review webinars have been particularly well received. Despite the importance of live attendance, content from each webinar is always available online at http://w3.cns.org/university/webinar/library.asp. These archived versions are available free to CNS members.

Online education is proving to be a key component of modern medical education. Online delivery of high-quality interactive webinars brings neurosurgical education into the modern digital era and gives neurosurgeons in North America and around the world the opportunity to receive clinically relevant and robust educational material and the unique opportunity to interact with leaders in the field. Currently, the CNS is working to make webinars available using mobile devices and tablets. Don’t miss your opportunity to learn interactively at your own pace and in your own environment. Sign up for future webinars today at: http://w3.cns.org/university/webinar/index2.asp

Table 1: Upcoming 2013 Webinars

<table>
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<tr>
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<th>TOPIC</th>
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</thead>
<tbody>
<tr>
<td>9/4/13</td>
<td>Lumbar Fusion Guidelines Update</td>
</tr>
<tr>
<td>10/2/13</td>
<td>Treatment Paradigms for Spinal Metastases</td>
</tr>
<tr>
<td>11/5/13</td>
<td>• Neuro-Oncology Board Review</td>
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<tr>
<td></td>
<td>• Functional Neurosurgery Board Review</td>
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<tr>
<td>11/6/13</td>
<td>• Spine Board Review</td>
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<tr>
<td></td>
<td>• Peripheral Nerve Board Review</td>
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<tr>
<td>11/7/13</td>
<td>• Pediatric Neurosurgery Board Review</td>
</tr>
<tr>
<td></td>
<td>• Vascular Neurosurgery Board Review</td>
</tr>
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</table>

REFERENCES
1. Neurosurgery, March 2013 - Volume 72 - supplement
2. Guidelines for the Management of Acute Cervical Spine and Spinal Cord Injuries
MEMBERSHIP COMMITTEE REPORT

The CNS makes a difference!
CNS has produced a video (http://cns.org/membership) to show you how we help advance the specialty of neurosurgery, why we are unique and what we bring to our members that no other organization does. The CNS helps neurosurgeons at all career stages, offering free or deeply discounted access to world-class online and traditional CME resources and leading-edge practice guidelines. We also provide a powerful presence for neurosurgery on Capitol Hill, issue the esteemed journal Neurosurgery, and provide half the budget for The Council of State Neurological Societies. Visit www.cns.org to view the video and see why the CNS is the global leader in neurosurgical education.

As your new Membership Chair, I am honored to serve the CNS in this critical role, and I thank you for your continued support of our international organization. The CNS continues to have a robust membership. The current number of Active Members is now 3,474 with a total of 8,364 individuals in all categories.

As you know, the CNS is a voluntary service organization and exists singularly for the benefit of its Members. Under the leadership of CNS President Ali Rezai, we are making substantive changes to my role in an effort to provide you with the most value possible for your support.

As the CNS becomes increasingly diverse and inclusive, it will be critical to have a streamlined point of access to hear your concerns. This will be especially important in this time of great change to the American Healthcare System. Later this year we will be opening a portal to allow you to contact our newly formed Membership Committee to directly address any specific concerns or suggestions you might have. You will be able to access us directly through a link at the CNS website later this year. I will be sending you an email link to this site when it is open. It is only through your input that the CNS can continue to evolve to meet the unique challenges we face as neurological surgeons. In addition, you can feel free to email me directly at mwang2@med.miami.edu.

Michael Y. Wang, MD, FACS

<table>
<thead>
<tr>
<th>Current CNS Membership by Category</th>
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<td>Active</td>
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<td>Active International</td>
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<td>Resident</td>
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<td>Transitional</td>
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<td>492</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>8,444</strong></td>
</tr>
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</table>

as of June 24, 2013

> AS THE CNS BECOMES INCREASINGLY DIVERSE AND INCLUSIVE, IT WILL BE CRITICAL TO HAVE A STREAMLINED POINT OF ACCESS TO HEAR YOUR CONCERNS. <
The foundation of CNS publications is the official journal of the CNS, Neurosurgery®. This has been successfully guided and directed by Editor-in-Chief, Nelson M. Oyesiku, M.D., who took the helm of the journal in 2009. Dr. Oyesiku has had an exceptional staff and guidance from his Managing Editor, Duncan MacRae. This journal continues to be one of the leading neurosurgical media, as illustrated by its high impact factor.

This journal has improved over the last several decades with the use of supplemental electronic media such as podcasts, videos, and commentaries. The advancement of video has been exceptionally helpful to the instructional and operative manuscripts. Therefore, Dr. Oyesiku has decided to transition Neurosurgery®’s supplement, Operative Neurosurgery®, into its own standalone journal. This will allow Operative Neurosurgery® to be indexed separately, as well as provide greater opportunities for further development of electronic-based media. However, the change of Operative Neurosurgery® being a separate or freestanding journal will not change its overall high quality and most likely will not be noted by its readership.

Neurosurgery® has had a strong history of meeting members’ needs through the addition of supplement journals. The recently completed Cervical Spine Guidelines (Guest Editor Mark Hadley) and Augmented Reality Supplement (Guest Editor, Garnette R. Sutherland) have been shipped and are available for review on the CNS website. The latest Neurosurgery® supplement, which is available at this year’s Annual Meeting, is dedicated to neurosurgical simulation. I was fortunate to be the Guest Editor for this supplement as a Co-Chairman of the Simulation Committee with Darlene Lobel, M.D. We encourage you to review this publication, as it illustrates the CNS’ strong commitment in simulation and our expanded growth in this area. Further information about the simulation program can be seen in the separate article in this issue of the CNSQ.

Clinical Neurosurgery® was one of the first publications of the CNS and serves as an official record of the proceedings of the CNS Annual Meeting. Gerald Grant has been the Editor for this successful publication. Recently, it was decided by the CNS Executive Board to transition the Congress Quarterly into an electronic meeting. This allows the CNS to reduce cost and subsequently increase distribution of the Annual Meetings proceedings. In addition to Clinical Neurosurgery® containing the proceedings of the Annual Meeting, there is hope to further expand this journal’s role. One possibility is the transition of this journal into a vehicle for other societies with neurosurgical educational goals to be also distributed. This may enable the CNS to further broaden our international exposure.

The CNS has been a strong advocate of guidelines in medical education and optimization of patient care. This evidence-based technique provides an overall foundation for which neurosurgery can grow and expand patient care. The Publications Committee is proud of the accomplishments the CNS Guidelines Committee has achieved and has dedicated our resources in order to provide these important manuscripts to you, thus improving overall neurosurgical care.

The CNSQ, or Congress Quarterly, is the third major product of the Publications Committee. I have been fortunate to be the Editor over the last several years. Credit for this journal should be directed at Ali R. Rezai, who started the publication in 2006 as an improvement to the former CNS Neurosurgery News. The CNSQ is distributed quarterly with a spring, summer, fall, and winter issue. This fall issue, as is done annually, is dedicated to the 2013 CNS Annual Meeting, as one can see as a review of this issue. As all these publications are products of the CNS Membership, we strongly encourage you, the readers, to provide us with comments and guidance on issues you wish to review. This can be accomplished by sending comments to info@1cns.org.
The CNS awards fellowships annually for research and advanced training in Functional, Spine, Tumor, Vascular, and Socioeconomic sections, and sponsors the CSNS-CNS Medical Student Fellowship. Additionally, the CNS awards the Christopher C. Getch Fellowship. This year, the CNS is pleased to announce the following recipients of Fellowship Awards for 2013-2014 (see below):

The Christopher C. Getch Fellowship is intended to help post-residency neurosurgeons and fellows obtain advanced training in the clinical application of scientific knowledge related to neurosurgical practice. Consistent with the CNS Mission to advance health and improve lives worldwide, the Christopher C. Getch Fellowship is granted to a neurosurgeon or fellow engaged in clinical research that promises to have a significant impact on the field of neurosurgery.

**Eligibility**
The Christopher C. Getch Fellowship is open to all senior neurosurgical residents, attending neurosurgeons and post-residency neurosurgical fellows in the United States, Canada or Mexico. The fellow will spend one year in formal clinical training under the direction of a specific sponsor. The amount of support will depend on the location and duration of the fellowship. Budget support of up to $100,000 is available. Detailed budget justification and an account of expenses incurred following completion of the fellowship are required. Fellows will not be paid extra salary support that is already covered by the clinical residency program. Fellowship funds may not be used

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<tr>
<th>Fellowship</th>
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<tr>
<td>Christopher C. Getch Fellowship</td>
<td>Kristopher Kahle</td>
<td>$100,000</td>
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<tr>
<td>Functional Fellowship</td>
<td>Jonathan Riley</td>
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<tr>
<td>Spine Fellowship</td>
<td>Andrew Healy</td>
<td>$15,000</td>
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<td>Tumor Fellowship</td>
<td>Wajd Al-Holou</td>
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for indirect costs. Indirect costs represent the expenses of doing business that are not readily identified within a fellowship, but are necessary for the general operation of the fellowship. Examples include but are not limited to: administrative staff, rent, utilities, equipment rental, telephone, postage and printing, and miscellaneous office supplies. In addition to the budgeted expenses, the CNS will extend complimentary CNS Annual Meeting registration. Look for details on the 2014-2015 Fellowships in the coming weeks online at www.cns.org!
The first two Global and Rural Neurosurgery Fellows funded by Centra Neuroscience Institute and supported by the CNS has named our first two fellows. Fellows are US BE/BC neurosurgeons who will spend four months in an underserved area of the US (in this case rural Virginia), and six months in a profoundly underserved area of the world (at Muhimbili University Hospital in Dar es Salaam Tanzania for an urban experience and at Haydom Hospital in rural Manyara District of Tanzania).

The first two fellows are Girma Makonnen, currently the graduating Chief Resident in Neurosurgery at Ohio State University and Janet Lee, Chief Resident at University of Missouri. Their fellowship began July 1, 2013 with time spent in both Virginia and Tanzania.

Clinical databases and developing world neurosurgical research are incorporated as part of the fellowship and academic output is expected.

This fellowship will expose young US neurosurgeons to the challenges of working, living and teaching in the developing world as well as the challenges of working in rural portions of the US with the hope that this will become a lifelong part of their careers.

The fellowship will further strengthen ties between East African and US neurosurgery.

Fellows will be trained in MIS techniques including neuroendoscopy and MIS spine and will be helping to train counterparts in Dar es Salaam and in Haydom.

This is a partnership with the Government of Tanzania, Muhimbili University, Haydom Hospital, Centra Neuroscience Institute, Madaktari Africa, and the CNS.
A 71-year-old woman with a history of a partially resected large facial and scalp vascular malformation presented with several months of progressive pulsatile frontal headaches and significant facial and periorbital swelling with inability to open the right eye. After embolization with Onyx, the patient experienced resolution of headaches with normal eye opening.

Submitted by:
Christine L. Hammer, MD
Chengyuan Wu, MD, MSBme
Aaron S. Dumont, MD
Thomas Jefferson University Hospital

**Figure 1.** Reconstuction of a head CTA showing a large facial and scalp vascular malformation.

**Figure 2.** Angiogram post embolization, injection of the Left Common Carotid Artery (LCCA)
Save the Date for these Upcoming Educational Initiatives from the CNS!

SANS MOC Board Review Course  
March 8-9, 2014  
The Walt Disney World Swan and Dolphin Resort  
Orlando, Florida

Spine Complications Course  
January 13-15, 2014  
Four Seasons Hotel and Resort  
Jackson Hole, Wyoming

Look for registration and details about these courses in the coming weeks online at www.cns.org!