24TH ANNUAL MEETING OF THE AANS/CNS SECTION ON DISORDERS OF THE SPINE AND PERIPHERAL NERVES

BACK TO THE FUTURE: LEGENDS IN SPINE AND PERIPHERAL NERVE SURGERY

FEBRUARY 27 – MARCH 1, 2008
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Dear Colleague,

“Navigating Change” was the theme of our 2007 Annual Meeting. The value of this time together is exceptional; we are experiencing changes in technology, patient management strategies, professional development, socioeconomics and other evolutionary forces that shape our practice. Two of these forces, ethics and research, are discussed by Drs. Ford and Friedlander, respectively, in our Features Section.

In this issue of the CNSQ we highlight the 2007 CNS meeting in San Diego, CA. A summary of the meeting is provided by our President and Meeting Chairs. This issue also includes annual reports from the secretary, treasurer, and the membership and education committees. Additional articles describe programs that exemplify the educational mission of the CNS, including the surgical anatomy course for senior residents, SANS Lifelong Learning modules, and the ever-growing number of web-based resources available to our members.

One of the major CNS initiatives is promoting collaboration with our international neurosurgical colleagues. A featured article in this issue reviews the various international neurosurgery efforts that the CNS is fostering. Our international members are highly regarded and respected colleagues and the CNS strives to be the global resource organization for neurosurgeons.

“Neurosurgery in the U.S. Military” is one of the best examples of neurosurgeons steering a steady course through adversity. This account by Dr. Leon Moores, a 27-year veteran of our armed forces, describes how he and his fellow medical professionals care for service personnel in the field and perform life-changing procedures in circumstances that would challenge even the most highly skilled among us. We are proud of our military neurosurgical colleagues and salute them for their dedication, sacrifice, and professionalism.

The CNS is privileged to be an ongoing resource to all our colleagues in our journey as neurosurgeons. As always, we welcome your comments on the CNSQ.

Sincerely,

Ali R. Rezai, MD

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info@1cns.org or 847.240.2500
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### FEATURES

- Neurosurgery in the U.S. Military: Leon Moores
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### MEMBERSHIP NEWS

- CNS Bylaws: Proposed Amendments, Applications in Progress, Nominating Committee: Alan Scarrow
Dear Colleague:

On May 10, 1951, a group of 22 visionaries founded the Congress of Neurological Surgeons (CNS) with the intention of developing an inclusive, global medical organization dedicated to educating neurosurgeons and the public in all aspects of our extraordinary craft. Over the last 57 years, the CNS has remained true to its core mission of enhancing health and improving lives worldwide through the advancement of education and scientific exchange. Consistent with our founders’ vision, our organization now provides global leadership in our specialty and maintains the vitality of our profession through the volunteer efforts of many individuals. Our members’ remarkable involvement in our operations has allowed our organization to lead and innovate while maintaining the outstanding value of our educational product.

The essence of our organizational mission is thus described by 3 qualities: education, innovation and service. These attributes define who we are and what we stand for. As we take stock of accomplishments and define priorities for the future, it is important to reflect on the basic philosophy that has effectively guided the CNS for over half a century.

What follows is a summary of the state of the CNS. We are very proud to report that the current status of affairs is excellent, and that the organization is experiencing unprecedented growth and success.

Membership
Our membership committee is chaired by Dr. Russell R. Lonser. Under his leadership, our organization has continued its steady growth. There are now over 6200 CNS Members, including 3000 Active Members, over 700 International Members and nearly 1000 Resident Members. The fastest-growing area is the category reflecting our international colleagues, which has increased 35% over the past 5 years and over 10% since the launch of the new International Vista membership category in January 2007. In addition, the Executive Committee has developed a membership for medical students to enhance their early neurosurgical development and education. The CNS hopes to launch this new category in the Fall of 2008.

Treasury
The financial picture of the CNS continues to remain robust under the leadership of CNS Treasurer Dr. Joel D. MacDonald. Total assets equal $17,983,194 with $11,756,833 held in the investment portfolio. Four years ago, the CNS created the CNS Endowment for Fellowships and Education, which now holds $4,657,832. Investments are managed by Crawford Investment Counsel, based in Atlanta, GA. The organization’s main income sources include revenues from publications, the Annual Meeting, and dues. For years, active member dues have remained unchanged at $335.00 annually, perhaps the lowest of any major medical organization. This year the CNS also created a Research and Development account to provide funds earmarked for the development of novel ideas that may occur outside the annual budget.

Annual Meeting
The 2007 CNS Annual Meeting in San Diego, CA introduced novel programs that have the potential to revolutionize medical education. This year’s meeting, themed “Navigating Change,” explored the integration of scientific discovery and innovation into clinical practice. The Annual Meeting and Scientific Program Committees, led by Drs. Anthony L. Asher, Gerald E. Rodts, and Nathan R. Selden, developed a unique and creative program that emphasized “student-centered” techniques which are transforming educational systems around the world.

The highlight of this meeting (and the best example of how the principles of modern learning theory are being integrated into our educational efforts) was the Integrated Medical Learning™ (IML) program. IML is a novel approach to advanced education that breaks down the temporal and spatial boundaries of the traditional lecture hall. IML is a continuous, learner-centered process that seeks to advance knowledge and education through a series of dynamic interactions between teacher and student. The principal component—a real time, interactive experience involving both educators and learners—was conducted during the Monday-Wednesday General Scientific Sessions. Each session was devoted to an area of clinical practice characterized by great variation in the application of techniques or technologies. The IML sessions were extremely well received and these digitally facilitated encounters generated thousands of demographically specific data points related to existing surgeon knowledge, attitudes, and clinical biases on topics of great general clinical relevance. These data will be analyzed and presented to the membership through the peer reviewed literature with the objectives of advancing both clinical science and...
Over the last 57 years, the CNS has remained true to its core mission of enhancing health and improving lives worldwide through the advancement of education and scientific exchange.

Advocacy
Advocacy remains an important area of interest for the CNS and we are working diligently along with our colleagues in the AANS and our joint Washington Committee to address multiple issues of concern for our neurosurgical patients as well as our neurosurgeon members. A full enumeration of the many simultaneous cooperative advocacy initiatives and projects is beyond the scope of this summary. Examples include the quality improvement workgroup of the Washington Committee, which is striving to keep up with, and positively influence, the quality indicator process which is moving forward at a seemingly precipitous rate. Our primary goal remains to ensure that P4P is not implemented before its purported utility and benefit can be demonstrated and its potential negative effects understood, while at the same time ensuring that proposed quality indicators are solidly based in EBM and focused on outcome measures, (rather than process measures) whenever possible. Pressures by the Centers for Medicare and Medicaid Services (CMS) to hold neurosurgery to poor quality consensus-based guidelines developed with inadequate clinician and/or multidisciplinary participation, such as the Appropriateness Criteria guidelines for imaging utilization and radiation therapy by the American College of Radiology (ACR), has re-focused attention to our own multidisciplinary EBM clinical practice guidelines “gap” for neurosurgery practice. The Joint Guidelines Committee (JGC) of the Washington Committee is working hard to try and close this gap through multiple initiatives as this report goes to press, including a new experimental pilot study partnering with professional Evidence Based Practice Centers to try and “fast track” high priority practice guidelines needs, and a multidisciplinary EBM clinical practice parameter guidelines for treating brain metastases. Recently, the JGC has been tasked with working with the various AANS/CNS Sections to address and respond to the ACR appropriateness criteria, specifically the impact on these imaging guidelines for each neurosurgical subspecialty. This will assist the Washington committee in responding to these new CMS initiatives.

This year the CNS, working with the AANS, has spearheaded the formation of a special Washington Committee subcommittee to explore ways of defining and quantifying the overall contribution of neurosurgeons and their practices to the financial solvency and prosperity of the hospitals where they maintain privileges and provide services. This heretofore unquantified contribution is likely to be substantial. We believe that enumerating, defining, and quantifying these contributions, as well as tracing our ongoing impact throughout the institutional structure, processes and systems, could be potentially very valuable in assisting our neurosurgery members in their negotiations with their hospitals for service support and assistance.

The Coding and Reimbursement committee continues its excellent and thorough work. One of its new initiatives is performing a detailed survey of stereotactic radiosurgery (SR) practice work and intensity among our neurosurgeon members to try and determine if 61793 should be considered for division into simple cranial, complex cranial and spine SR codes. We continue to press hard for any opportunity to support efforts with possibilities to positively reform the SGR. We remain vigilant as our general surgery trauma colleagues continue to refine and evolve in their concept of how they wish to attempt a roll out of their acute care surgery training and credentialing initiative. We continue to support optimal neurosurgical care by neurosurgeons for neurosurgical trauma patients integrated in a multidisciplinary team approach, and support further emergency medicine regionalization for neurological emergency care, effective tort reform, and reasonable neurosurgery emergency care remuneration as the most viable solutions for our ER call coverage issues across the country. Tort reform and evolving Emergency Medical Treatment and Active Labor Act (EMTALA) interpretations also remain extremely important issues where we maintain an active presence and careful vigilance for the sake of our patients and our member neurosurgeons.

Finally, the CNS and AANS have recently initiated a joint online practice database project. This newly created committee is charged with the development of a practical online clinical data collection instrument for neurological surgery. Potential applications of this important resource will include outcomes studies, benchmarking for individuals or groups, credentialing, device/procedure research, resource utilization and other uses.

SANS Lifelong Learning
SANS Lifelong Learning continues to be a major resource for neurosurgical practitioners and trainees who are preparing for the written or oral board examinations, for those participating in Maintenance of Certification (MOC), and for those interested in staying abreast of fast moving changes in our dynamic specialty. Ongoing updates of the SANS online modules and extensive peer peer review of all material assure the educational quality of the program. The commitment of SANS to
cover information important to modern neurosurgical practice, both medical and socioeconomic, has also grown. In May 2007, the SANS editorial board launched a new product: SANS Competencies, covering professionalism, communications, regulatory, medico/legal and socioeconomic issues. The module was a collaborative development of the Congress of State Neurosurgical Societies (CSNS) and the SANS editorial board. A pediatric neurosurgery (MOC-compatible) module is planned for December 2007 and a similar module for spinal neurosurgery is planned in 2008. The SANS committee continues under the dedicated leadership of Nathan R. Selden with a new editorial team led by Jason Sheehan and including Michael Steinmetz, Alan Scarrow and Hugh Garton.

**Education Committee**

The CNS Education Committee is the heart and soul of our organization, and remains the largest and most active standing committee. Under the leadership and energy of Dr. Daniel K. Resnick, this committee has continued to flourish, consistently producing novel and highly relevant educational programs for neurosurgeons in all practice settings and at all career stages. A full survey of the many activities of our education committee can be found elsewhere in this issue of the CNSQ.

Perhaps the most exciting new developments in our educational mission include the introduction of the CNS University and NeuroWiki. The CNS University of Neurosurgery, launched in January, 2007, offers online educational courses that may be taken to earn CME credits. The initial course offerings included largely non-clinical core competency content, much of which was developed in conjunction with the CSNS. By January of 2008, the University will include courses on minimally incisional spinal surgery, management of spinal trauma, controversies in epilepsy surgery, endovascular and open management of carotid stenosis, management of brachial plexus lesions, cervical arthrodesis techniques, and other clinically oriented courses. In addition, the non-clinical core competency curriculum will be bolstered with the inclusion of practical course content from the 2007 Annual Meeting.

The newly developed CNS NeuroWiki was launched at the 2007 Annual Meeting. This project is designed to create an online, ever-evolving repository of clinical and scientific information for the entire neurosurgical community. NeuroWiki already contains over 1000 entries from numerous contributors in our specialty.

**Fellowships**

The CNS fellowship program has experienced remarkable growth under the outstanding leadership of Dr. Linda Liau. CNS fellowships provide educational opportunities for young neurosurgeons from North America and abroad. Currently, fellowships offer expanded training and research opportunities in cranial and spinal neurosurgery, radiosurgery, endovascular neurosurgery, stereotactic and functional neurosurgery, brain tumor research, syringomyelia research, and clinical investigation. Funded either by the CNS Endowment for Fellowships and Education, or via corporate sponsorship, these competitive programs are of the highest quality. Over the past two years, we have acquired several new sponsors, such as MGI Pharma, Advanced Neuromodulation Systems, Medtronic, Boston Scientific, and Micrus. We would also like to thank the American Syringomyelia Alliance Project and the CINN Foundation for their continued dedication and support.

The CNS domestic fellowship awards are for residents, fellows, and established neurosurgeons in North America. The awards are meant to defer some of the costs fellows incur during their research and studies and also to enhance the education of neurological surgeons at all stages of their careers. In addition to several new subspecialty clinical fellowships funded by our recent corporate sponsors, we have added a new category for basic science and translational research. CNS international fellowships provide, on average, a 3 to 6 month visiting experience for a neurosurgeon outside of North America. Five fellowships will be offered this year. A new $20,000 international fellowship, funded through the CINN Foundation, will be offered in 2008.

In addition to the CNS fellowships for residents and fellows, the new category of CNS Medical Student Summer Fellowships will now also be offered. These provide summer stipends for medical students to pursue clinical preceptorships, basic/translational research in neurosurgical laboratories, or research into socioeconomic issues pertinent to the field of neurosurgery.

**Publications**

As we celebrate the 30th anniversary of our journal, Neurosurgery, we are proud of its standing in the scientific community, its high impact factor, and its role as the preeminent outlet for multimedia neurosurgical information (in formats such as the traditional paper journal, Neurosurgery Online, Operative Neurosurgery, and Podcasts). The CNS has created the CNS Publications and Media Conglomerate which will further integrate all of the organization's information-based initiatives into an even more cost-efficient and productive unit. This integration will bring forth the strengths of our superb journal editorial office, the CNS Headquarters, our publisher, and the CNS Publications Committee.

The CNS leadership wishes to acknowledge the efforts of Dr. Robert M. Friedlander, chair of the CNS Publications Committee, and Dr. Gerry Grant, the current editor of Clinical Neurosurgery. Our news magazine, CNSQ, under editor Dr. Ali R. Rezai was released last year and has received an enthusiastic response. Our journal editor, Dr. Michael L.J. Apuzzo, our managing editor, Mr. Rod Faccio, and their
We have begun the process of transforming our educational efforts to promote learner-centered experiences with the goal of optimizing the value and relevancy of medical education.

staff have been remarkably creative and efficient in their ability to put together and house the diversity of CNS publications. Dr. Apuzzo and his editorial team have established a new dimension in CNS publications through their keen eye for original ideas, their unique artistic style, their insatiable drive for internationalism, and their dynamic use of the Internet. Our publisher, Mr. James Mulligan, and his team at Wolters Kluwer provide an excellent partnership for the organization as we move forward with new initiatives.

International
The CNS is the global resource organization for neurosurgeons and we appreciate and value the contributions of our international colleagues. The CNS conducts a variety of educational programs and meetings and also sponsors fellowships for our international members. In addition we are focusing on increasing the foreign language capabilities of our educational products. The International Committee was chaired by Ali Rezai in 2007; this role will be transitioned to Charles Liu in 2008 with Dr. Rezai maintaining an active role as a senior advisor. The committee constantly seeks to develop new programs and initiatives for our international members.

The CNS has recently instituted a category of international membership: the International Vista Member. This category allows neurosurgeons across the world in good standing with their national societies to become members at a reduced fee, with benefits including attending meetings as well as access to all of the CNS educational products via the Internet.

We are honored to participate in joint international meetings and partnerships, collaborating on planning scientific programs and presentations. These gatherings also feature active social programs to facilitate interactions and friendships across the global community of neurosurgery. In 2007, the CNS formally partnered with the Congresses of the SINCh (Societa Italiana di Neurochirugia) and the EANS in Glasgow. For the 2007 CNS Annual Meeting in San Diego, the partner society was the Japanese Congress of Neurological Surgeons. The international partner for the 2008 CNS meeting in Orlando will be the Brazilian Society of Neurosurgery. In addition, the CNS is proud to partner with the Croatian Neurosurgical Society for a joint meeting in the beautiful city of Dubrovnik in September 2008. We will continue to collaborate with other major organizations worldwide at our Annual Meetings, and also at our colleagues’ meetings in their respective countries.

Headquarters
Since 1999, when the CNS developed its own Headquarters in Schaumburg, Illinois, Ms. Laurie Behncke has led the CNS as its Executive Director. Currently, the CNS Headquarters provides member service and support for all CNS projects and initiatives with a professional staff of twelve. Primary staff concentration is in accounting, information technology, membership development, meeting planning, and education and scientific program management. The CNS continues to proudly manage the Section on Spine and Peripheral Nerve Annual Meeting.

Currently, the CNS is expanding its Headquarters’ physical infrastructure along with hiring additional staff in key areas to complement the CNS primary strategic initiatives. This physical expansion is scheduled for completion by the end of 2007.

Nominating Committee
The CNS Nominating Committee met at the American Association of Neurological Surgeons’ Annual Meeting in Washington, DC, and a slate was recommended. This slate was then circulated to the CNS membership through the CNSQ and electronically in order to obtain the widest possible circulation. An electronic vote was then held in which the following individuals were elected:

President-Elect: P. David Adelson, MD (Pittsburgh, PA)
Vice-President: Christopher Getch, MD (Chicago, IL)
Member-At-Large: Ganesh Rao, MD (Houston, TX)
Member-At-Large: Jamie Ullman, MD (Elmhurst, NY)

In summary, 2007 has been another remarkable year in the life of our organization. The financial situation of the CNS remains strong. We continue to offer great value to our members through low membership dues, a capable and efficient central office and the volunteer efforts of thousands of our members. We promote advocacy through our ongoing support of the AANS/CNS Washington Committee and other important cooperative efforts with the AANS.

Our membership, education and publications efforts allow us to support the needs of our domestic and international membership. We have begun the process of transforming our educational efforts to promote learner-centered experiences with the goal of optimizing the value and relevancy of medical education.

In the coming year, we will continue to focus on our core mission, with an emphasis on using information technologies to minimize structural and temporal barriers to cooperative educational efforts. By creating more opportunities for interaction and shared experience, we hope to develop a dynamic community of learners and educators with the ultimate objective of further harnessing the collective wisdom of our membership for the benefit of our patients everywhere. CNSQ
Announcing a CNS International Vista Membership Opportunity ($135 US) offered online at www.cns.org.

The Congress of Neurological Surgeons proudly announces its International Vista Member category. Because of its commitment to education and innovation, the CNS is investing in the future of every International neurosurgeon worldwide, by offering this new internet membership option.

CNS INTERNATIONAL VISTA MEMBERSHIP BENEFITS

• Internet Access to all CNS Publications via the CNS Personal Assistant (PA) including:
  ◆ Internet subscription to NEUROSURGERY®, the CNS journal,
  ◆ Operative Neurosurgery,
  ◆ Clinical Neurosurgery, journal supplements, and the NEW Congress Quarterly.
• Internet access to the NEW CNS University of Neurosurgery and other selected CNS educational publications and products!
• Reduced CNS Annual Meeting Registration Fees!
• Opportunity to contribute to the CNS through volunteer service on CNS committees (such as the International Committee).
• Low annual fee of $135.00 US.

We Would Love for You to Join Us!

All eligible neurosurgeons must:
• Reside and practice outside North America (United States, Canada, and Mexico).
• Be a member of your local or regional Neurosurgical Society.
• Provide a verification letter from your local or regional society, confirming membership status.

Online applications for the CNS International Vista Membership are available online at the CNS Web site www.cns.org.
INTERNATIONAL
Internationalism continues to be a fundamental component of the mission and activities of the CNS. Our endeavors have extended far beyond North America in an effort to serve as a world resource for neurosurgeons. Indeed, our leadership envisions a truly international organization whose members all consider the CNS “theirs” irrespective of geographical borders.

This participation is encouraged at all levels. For example, over this past year, Past-President Douglas Kondziolka benefited from the input of Dr. Marc Levivier, of Lausanne, Switzerland, as an ex-Officio member of the CNS Executive Committee. The CNS has an outstanding record of participation in international neurosurgery, and the Editorial Board of Neurosurgery, our official journal, benefits from the service of neurosurgeons worldwide.

The International Committee is largely responsible for coordinating these efforts. The Committee’s membership consists of neurosurgeons from North America and worldwide, all with unique insights to help us realize our international goals. Over the past year, Ali R. Rezai has served as the Chair of the International Committee. In 2007-2008, the leadership role will be transitioned to Charles Y. Liu, with Dr. Rezai maintaining an active role as senior advisor.
CNS International Activities in 2006-2007

The past year has been exceptionally fruitful for the CNS. Official participation in international meetings has become a biannual event, with an international partner chosen for each CNS Annual Meeting in addition to a reciprocal CNS presence in an international venue. For example, the past Annual Meetings in San Francisco, Boston, and Chicago have involved partnerships with the Italian Society, the European Association of Neurosurgical Societies, and the German Societies (German Society of Neurosurgery and the German Academy of Neurosurgery), respectively. To reciprocate, in 2007 the CNS officially participated in the Annual Meeting of the SINCh in Rome as well as the Annual Meeting of the EANS in Glasgow, Scotland. These joint activities have resulted in enthusiastic participation from North American and international neurosurgeons alike. Their involvement consists of formal participation in the planning and presentation of the scientific program as well as the organization of social events and receptions to facilitate understanding, friendship, and identification of mutually beneficial initiatives.

For the 2007 Annual Meeting in San Diego, the partner society was the Japanese Congress of Neurological Surgeons, which is spiritually akin to the CNS. The Japanese CNS was founded in 1980 by Professor Keiji Sano with the goal of fostering postgraduate continuing education for board certified neurosurgeons. The organizing committee consists of neurosurgeons under the age of 50 years. The membership has grown progressively to form the second largest official body in Japan. As outlined in its mission statement: “The Japanese CNS exists for the purpose of promoting public human welfare through the advancement of neurosurgery by a commitment to excellence in life-long education and by dedication to research and scientific knowledge. The Japanese CNS maintain the vitality of our profession through the altruistic volunteer efforts of its members and the development of leadership in service to the public, to our colleagues in other disciplines, and to the special needs of our fellow neurosurgeons throughout the world at every stage of their professional lives.” Our Japanese colleagues participated actively in the San Diego meeting. Tuesday’s guest lecturer, Yoshinobu Iwasaki’s “Treatment Considerations in Cervical Ossification of the Posterior Longitudinal Ligament (OPLL) and Spondylosis,” drew a large audience. Current President of the JCNS, Professor Teiji Tominaga contributed a special lecture on Wednesday titled “Moyamoya Disease: New Insights Into its Etiology and Management.” The 2007 International Reception at the San Diego Museum, in the shadows of the exhibition of the Dead Sea Scrolls, was exceptionally well attended.

The CNS continues to provide fellowship support for international neurosurgeons. Competition for our International Fellowships was particularly keen this year, and Shenandoah “Dody” Robinson headed up the selection committee to identify the most deserving candidates from many qualified applicants. The recipients of the Fellowships were announced at the San Diego meeting. This included Diana Angius (Italy), Sabri Aydin (Turkey), Phuong Huynh-Le (Vietnam), Jean Oropilla (Philippines), and Manish Sharma (India).

Recognizing that the resources and economic milieu available to neurosurgeons globally can vary tremendously, the CNS launched the International Vista membership program to facilitate the accessibility to many CNS benefits at a low cost, including internet access to CNS publications, such as the Journal, Neurosurgery, products of the CNS University of Neurosurgery, SANS, and Integrated Medical Learning, and streamlining access for fellowships. There has been considerable enthusiasm for this new membership category.

CNS International Initiatives in 2007-2008

The CNS will strive to further its leadership role with respect to international membership participation, education, joint meetings, meeting region-specific membership needs, and improving access to global neurosurgical resources. Major initiatives for the upcoming year include promoting international participation via the new International Vista Membership category, increasing foreign language availability of CNS educational products, such as Neurosurgery, products of the CNS University of Neurosurgery, SANS, and Integrated Medical Learning, and streamlining access for fellowships. In addition, region-specific
products and educational curricula will be developed with the active participation of our intended target audience.

In January 2007, Neurosurgery launched complementary podcasts. Program content of the podcasts includes an overview of the issue followed by a summary of articles of the Editor's Choices and comments by recognized leaders. The podcasts are available on www.neurosurgery-online.com and can be viewed directly using media players, or alternatively, downloaded into any MP3 player.

Through most of 2007 podcasts were only available in English but in 2008, they will be expanded to include programming in other languages. The team providing these translations is headed by Charles Liu. Already, Alfredo Quiñones-Hinojosa from Johns Hopkins University is contributing a Spanish language version. Other contributing panelists include Sean Lavine from Columbia University (Special Supplements), Ying Mao from Shanghai Huashan Hospital (Mandarin Chinese), Felice Esposito from Federico II University of Naples (Italian), Kazuhiko Nozaki from Kyoto University (Japanese), Sun Ha Paek from Seoul National University (Korean), and Guilherme Ribas from the University of Sao Paulo (Portuguese). Work is ongoing to further expand the panel to possibly include offerings in French.

Over the years, the CNS has had extensive interactions with our colleagues in Europe and Japan. These interactions will be extended to include other world regions where neurosurgery is developing rapidly and robustly. Discussions are already ongoing with our colleagues in the Indian Subcontinent for possible reciprocal meetings. Two other regions that deserve special mention are South Korea and China.

At the end of the Korean War, the Republic of Korea was devastated after decades of turmoil and conflict. Since then, South Korea has experienced a remarkable renaissance, resulting in economic prosperity and an increased influence on the international stage. Concurrently, Korean neurosurgery has developed to contribute to the pool of clinical and scientific knowledge worldwide. The field has been largely organized through the Korean Neurosurgical Society which boasts 2000+ members; its Journal bears a remarkable physical resemblance to our Neurosurgery. Major training programs and academic centers are now in place, with Seoul National University perhaps serving as the leading example. In August 2007, the Department of Neurosurgery at the Seoul National University College of Medicine celebrated the 50th anniversary of its founding with a special symposium attended by international neurosurgical luminaries. In addition, Seoul has been voted to host the XVth Meeting of the WFNS.

China has also made amazing strides in economic development and concurrently in neurosurgery. China's gross domestic product for 2006 was $2.6 trillion and the magnitude of infrastructure development is truly astounding, as witnessed by Charles Liu and Past-President Richard Ellenbogen on a recent visit. Neurosurgery has evolved exponentially, with major organizations such as the Chinese Neurosurgical Society holding regular scientific meetings and publishing academic journals.

Estimates of the number of neurosurgeons in China range from 6000 to over 10,000. Hospitals with state-of-the-art facilities are being built, and considerable increases in international training and experiences are evident amongst the younger neurosurgeons. Due in large part to the size of the population, there continues to be major challenges facing the further development of neurosurgery in China, including heterogeneity of training and access. Nevertheless, under the leadership of major medical centers such as Beijing Tiantan Hospital and Shanghai Huashan Hospital, China is rapidly joining the first ranks of world neurosurgery regions.

In the coming years, the CNS International Committee will seek to solidify our existing friendships and partnerships, while expanding into these growing areas. Already planned are joint meetings with the Croatian Neurosurgical Society in Dubrovnik in September 2008 and a partnership with the Brazilian Society of Neurosurgery for the 2008 CNS Annual Meeting in Orlando, Florida. These valuable collaborations with our international colleagues will enhance our efforts to serve the needs of our North American members as well as those around the globe.
Thanks to your participation and the outstanding attendance of neurosurgeons from around the world, the 2007 Annual Meeting of the Congress of Neurological Surgeons in San Diego, CA, was a tremendous success. Under the leadership of President Douglas Kondziolka, we broke new ground by introducing a novel, interactive, educational paradigm: Integrated Medical Learning (IML™). IML has invigorated neurosurgical education by empowering both faculty and learners. The CNS has also transformed the Annual Meeting into a “workplace” where interactive participation allows neurosurgeons to identify and codify the key questions facing our specialty in order to assess practice, develop consensus and promote progress in our professional work and lives.
For 2007 and future meetings, the learning continuum will continue throughout the year. The direct input and participation of individual CNS members drive the meeting agenda. Data from your participation in interactive sessions is captured for review, analysis and presentation to the participating membership and to the neurosurgical community at large. Web-based interactive opportunities continue beyond the time of the meeting. The resulting meetings will incorporate these numerous accomplishments and innovations.

Nearly three thousand practicing neurosurgeons, residents, nurses, physician assistants and other guests attended our Annual Meeting. We welcomed our colleagues from the Japanese Congress of Neurological Surgeons and its President, Prof. Teiji Tominaga. Over thirty Japanese neurosurgeons played a vital role in the scientific program. The CNS bestowed its fourth Founders’ Laurel Award to Prof. Tetsuo Kanno from Fujita Health University for his contributions to the CNS and to neurosurgery around the world. It was an honor to have the Japanese Congress join us as our guests in San Diego and contribute in such a meaningful way.

The CNS 2007 Honored Guest L. Dade Lunsford, MD delivered four superb lectures on topics including acoustic neuromas, intraoperative imaging, radiosurgery for vascular malformations, and the future role of neurosurgery in oncology (“oncopolitics”).

Our meeting was enriched by a very diverse, entertaining and thought-provoking group of special guests. The Dandy Orator, Salman Rushdie, brought wisdom to his fascinating perspective on cultural change and conflict. Robert Ballard’s presentation on the prospect of discovery and navigating the ocean depths was simply dazzling. Sanjay Gupta, MD, neurosurgeon, writer and journalist, and Anthony L. Asher, MD, CNS President-elect, introduced the inaugural Julian T. Hoff Lectureship. The first Hoff Lecturer, Robert Sapolsky, gave a humorous and fascinating discussion of navigating change and the open mind. We also heard about exploration on the planet Mars from the director and intellectual father of the Mars Rover Project, Steve Squyres, PhD. Other excellent lectures were delivered by Jack El-Hai on some of the lessons from the first era of psychosurgery in the United States, and Paul Sanberg, PhD, DSc on navigating cellular repair for the nervous system. Famed conductor Michael Tilson Thomas hit all the right notes as the CNS Michael L. J. Apuzzo Lecturer on Creativity and Innovation.

The CNS commitment to fellowship education continues to grow. At the Annual Meeting, a record-setting twelve domestic fellowship awards were announced for studies ranging from basic and translational research, to research in spine surgery, syringomyelia, functional neurosurgery, radiosurgery, immunotherapy, and pituitary tumors. Five CNS International Fellowships were also awarded to surgeons from Italy, Turkey, Japan, India and the Philippines.
Once again, Operative Techniques with the Masters (3-D live cadaveric demonstrations) was very well-attended, organized and executed thanks to the efforts of our expert faculty and course director, Saleem I. Abdulrauf, MD. Superb audio-visual technology and clear presentations by our most accomplished surgical sub-specialists made for a very educational and enriching review of complex anatomy and surgical approaches.

Perhaps the most exciting aspect of the Annual Meeting was the introduction of Integrated Medical Learning (IMLSM), which changed the focus and format of the General Scientific Sessions. Other notable events included the expansion of the Select Abstract sessions in the Neurosurgical Forum on Monday afternoon and the introduction of interactive Consensus Conferences on Tuesday and Wednesday.

The topics “The Future of Neurosurgical Education” and “The Transition into Retirement” were explored in interactive sessions with recognized authorities. Each session focused on educating participants and also on identifying areas of consensus amongst them. The goal was to review the best information about our present condition, to propose options for the future, and to engage the CNS membership in the process of policy development and advocacy for our specialty. Both sessions were fascinating. The wealth of data accumulated through audience participation is currently being analyzed and summarized for presentation to the CNS membership, regulatory bodies and other stakeholders. The CNS is committed to tackling some of the most challenging and provocative policy issues for neurosurgeons in four interactive Consensus Sessions at the 2008 meeting in Orlando. We hope these sessions will allow all neurosurgeons the chance to help shape the direction of our specialty.

As at previous Annual Meetings, Monday afternoon was devoted to the presentation of the peer-reviewed Original Science Program. For the first time in CNS history, expanded panels of subspecialty-specific reviewers evaluated abstracts in order to provide the most fair and appropriate grading. Reviewers were selected by their subspecialty AANS/CNS Sections. The highest scoring abstracts were presented in separate meeting halls specific to each specialty interest. Following those initial presentations, attendees were invited out to the open space of the foyer where the Select Abstract Session allowed authors to present other high-ranking papers in small, interactive groups. These presentations were supported by high quality printed graphic displays (supplied by the CNS) and laptop presentations. This more casual, interactive setting was very well-attended and provided a wonderful chance to exchange ideas, network and collaborate.

In addition to the Original Science Program, highlights of every Annual Meeting include the General Scientific Sessions (GSS) each morning. Over the years, the CNS has utilized a variety of formats and topics. This year, one morning each was devoted to the fields of tumor, spine and vascular. After a series of brief didactic lectures exploring a focused topic, each GSS then explored a topic within the specialty that displayed “clinical equipoise” (i.e. a balance of diverse opinions between practitioners). To develop these sessions, interested CNS members were polled via email in the spring of 2007 about their attitudes, practice patterns, and understanding of the medical evidence related to the chosen topic. They also gave their opinions on the management of example cases. Important peer-reviewed literature...
pertinent to each topic was also electronically distributed. Organizers provided the results of all these polls and preparatory work to carefully selected topic experts, allowing them to feed forward information about prevailing knowledge, attitudes and practice into the design of their GSS presentations. Thus, every participant helped to determine the focus and content of the IML sessions within each GSS.

Each morning, these pre-meeting data were presented. After an informative review by the experts, live polling assessed the impact of the learning process on surgeons’ attitudes and opinions. Despite some minor technical challenges, participants used wireless handhelds, laptops and even personal cell phones to effectively respond to polls in real-time and to submit questions directly to the panel. Instantaneous reporting of the responses supported real-time discussion and feedback to participants.

The IMLSM topic for Monday was “Navigating Rational Treatment Strategies for Brain Metastases.” On Tuesday, the GSS employed the same IMLSM techniques to explore strategies for the treatment of lumbar spondylolisthesis. On Wednesday, the topic was the treatment of intracranial aneurysms: clip vs. coil. Thus, the actual GSS sessions represented just one important step in a year-round process of learning and exploration. Very meaningful information was derived about the uncertainty, opinion and actual practice in the treatment of these conditions. Some of these data have already been requested by the relevant specialty leadership to support policy initiatives, educational programs, and further clinical scientific study.

Perhaps even more interesting is what we learned about the potential of Integrated Medical Learning itself. In its first large-scale introduction, IML has proven to be a powerful and effective tool for bringing together teacher and learner. Furthermore, IML provides a vigorous means to critically evaluate our practice patterns prior to our annual meeting, live during the meeting itself, and in the months to follow. Currently, volunteer members of the CNS Scientific Program Committee are busy mining the data obtained through the IMLSM process for peer review and published presentation back to the community of neurosurgery.

Change is both challenging and demanding. Through the feedback of the CNS membership, the tireless efforts of volunteer surgeons on the Scientific Program Committee, and the creative imagination of contributors and participants, the process of neurosurgical education is changing for the better. Our meeting is no longer merely a block on the calendar marking the one-way transfer of information from faculty to student. Learning is becoming a continuum that extends throughout the year, engages the learner as participant, and captures the efforts of all neurosurgeons in the “meeting as workplace.”

It is an exciting time to be a member of the CNS. We look forward to seeing everyone in Orlando in September, 2008. Your continued participation in the cooperative, ongoing process of education that was initiated this year will help define the focus and structure of neurosurgical education in the next year and beyond. CNSQ

Dr. Rodts served as Scientific Program Chair, Dr. Selden as Vice-Chair, Dr. Asher as Annual Meeting Chair, and Dr. Kondziolka as President for the 2007 CNS Annual Meeting in San Diego, California.
How to Stay Ahead of the Curve: CNS University

As the leadership of the CNS Education Committee passes to Saleem I. Abdulrauf, it is my pleasure to provide a final report about our ongoing activities.

Several initiatives have grown from rough ideas into quality products. SANS Wired, first developed as an update to hard copy editions, has grown under the leadership of Anthony L. Asher and Nathan R. Selden into the premier online educational tool for neurosurgeons. The Education Committee still serves as the approving body for CME credit related to SANS; however, the development of new content, coordination with the American Board of Neurological Surgeons, and administration of the site are now performed by the SANS committee. Mike Steinmetz is the current liaison between the two committees and is responsible for submitting reports concerning CME activity at the site.

The CNS University of Neurosurgery began as an idea in early 2006 and is now a functional online educational resource. The University provides opportunities for online acquisition of CME via courses dealing with the non-clinical core competencies, topics in spinal neurosurgery, vascular and endovascular techniques, epilepsy surgery, and peripheral nerve surgery. Multiple surgeons have contributed to the site, most notably Ashwini Sharan, Michael Steinmetz, Richard Byrne, Michael Y. Wang, Elad I. Levy, Charles Rosen, and Holly Gilmer Hill. The Council of State Neurosurgical Societies (CSNS) has been exceptionally helpful in developing the non-clinical core competency curriculum. Thank you to Bill Bingaman and Allan Scarrow for coordinating the education Committee and the CSNS.

In addition to online courses, the University now contains “NeuroWiki,” which provides online access to a library containing image and text references available for member use, downloadable patient education brochures, and links to other relevant resources.

Russell R. Lonser, Holly Gilmer Hill, and Patricia Raksn have been instrumental in developing the latter two products. “NeuroWiki” is an interactive educational resource with over 1500 entries on topics covering the breadth of neurosurgical practice. Elad I. Levy and Ashwini Sharan have done an outstanding job in developing the infrastructure and recruiting new talent from the various sections to populate the site.

Holly Gilmer Hill has coordinated a remediation course for CNS members desiring a board review for the last three years. Approximately 2/3 of participants who have re-taken the examination have passed.

“NeuroWiki” is an interactive educational resource with over 1500 entries on topics covering the breadth of neurosurgical practice.

The CNS offers endorsement of outside CME activities (for ABNS MOC purposes) for a nominal fee. James Harrop has coordinated this process for the last two years. Another non-traditional CME opportunity offered is the ability for reviewers of manuscripts submitted to Neurosurgery to claim CME for the educational activity associated with critical review. Michael Y. Wang has coordinated the awarding of over 1500 hours of CME for the review of more than 2500 manuscripts since the project’s inception. Charles Y. Liu is currently working on developing the infrastructure to allow readers of Neurosurgery to claim CME credits after participating in online quizzes documenting the acquisition of new knowledge.

The Committee has also attempted to help clarify the role of various educational activities in resident education through the use of survey instruments. This project was spearheaded by Sharad Rajpal and has resulted in the publication of a survey concerning journal club activities nationwide. Further surveys regarding the role of morbidity and mortality conferences and other activities will help to provide a “snapshot” of what goes on at these conferences across the country.

New initiatives suggested this fall include assigning sub-categories of CME to certain educational activities which assist members in completing requirements for local certification (in areas such as trauma care, patient safety, etc.). Charles Rosen will be spearheading this project and will also be developing a mechanism for independent and perhaps competitive contributions to the CNS University by members.

Perhaps the largest task for the Committee is the development and review of the educational programs associated with the Annual Meeting. We have worked in conjunction with the Scientific Program Committee as well as the IML Committee to shape the CNS Annual Meeting into a model of an ongoing interactive educational experience so as to surpass the revised ACGME guidelines for CME activities. At the same time, we are charged with enforcing the guidelines for interaction with industry and for documenting the educational worth of the multiple educational activities offered by the CNS. Five current and two recent past committee members have participated in the “Orientation to the ACGME” course offered over the last several years. This provides a depth of expertise not previously enjoyed by any neurological organization. The committee looks forward to an upcoming ACGME review as an opportunity to showcase some of these educational initiatives. CNSQ
On August 10-13, 2006, the Congress of Neurological Surgeons inaugurated the Annual 3-D Surgical Anatomy Course for Senior Residents. This unique program, held at the historic Practical Anatomy Workshop on the campus of Saint Louis University Medical Center, hosted 57 senior residents from neurosurgery residency programs in the United States and Canada. Over four days, attendees participated in 3-D didactic sessions covering the spectrum of cranial anatomy, skull base surgical approaches, interactive 3-D case presentations, and anatomic dissections of surgical approaches. It is the vision of the CNS that this event will serve as an annual forum for neurosurgery chief residents (graduating class) to meet and spend time with renowned neurosurgical educators.

The Second Annual CNS Senior Resident Course was held August 9-12, 2007 at the Practical Anatomy and Surgical Laboratory at Saint Louis University. The St. Louis Ritz-Carlton served as the host hotel for the event and 65 senior residents attended the program. Dr. Albert Rhoton, Jr. was the honored lead faculty. Dr. Saleem I. Abdulrauf served as the course director. The senior faculty included: Drs. Issam A. Awad, Jeffrey Bruce, Paul Camarata, Ralph Dacey, Aaron Dumont, Christopher Getch, John Jane, Jr., Charles Y. Liu, Russell R. Lonser, Joel D. MacDonald, Nelson Oyesiku, Jon Robertson, Gerald Rodts, Ashwini Sharan, and Christopher Wolfla.

The course featured didactic 3-D anatomy lectures as well as hands-on cadaveric dissections emphasizing evolving anatomic and imaging knowledge of white matter fiber tracts. The course design was based on a “problem-solving” format in which the participants were, for example, shown a deep intra-axial tumor followed by a 3-D anatomic presentation of the deep white matter tracts and ventricular system, a discussion of surgical trajectories, and hands-on cadaveric dissection of the deep white matter tracts and ventricular system. Finally, the presenting surgeon reviewed operative video of the actual case and discussed surgical nuances. Evolving 3-D and simulation systems were used for these sessions. Problem-solving sessions included a carotid aneurysm, periventricular AVM, sphenopetrosal meningioma, skull base tumor, intraventricular tumor, acoustic schwannoma, pediatric fourth ventricular tumor, craniocervical junction lesion with craniocervical stabilization procedures, and anatomic topics focusing on white matter tracts. Evolving techniques (microsurgical and endoscopic) and technologies were reviewed and practiced in the laboratory.

The presentation by Dr. Rhoton, world-renowned neurosurgical educator and microneuroanatomist, was the highlight of the event. In a series of 3-D lectures based on his exceptional personal experience, Dr. Rhoton enlightened both participants and faculty on the intricacies of the organ that he has termed “the crown jewel of creation.”

This unique CNS program was provided free of charge, including transportation and hotel accommodations, to all participants. This could not have been accomplished without the generous support over the past two years of course sponsors Aesculap, Cardinal Health, Carl Zeiss Surgical, Depuy Spine, Integra Life Sciences, Medtronic Navigation, Medtronic Surgical Solutions, Synthes, and W. Lorenz Surgical, Inc.

The CNS is proud to announce that the Third Annual Senior Resident 3-D Anatomy Course will be held August 7-10, 2008 in St. Louis, Missouri.

CNSQ
The Congress of Neurological Surgeons’ membership continues to grow steadily and now includes a total of 6201 persons in 10 categories. Current categories include Active (3000 members), Active International (542 members), International Vista (160 members), Senior (897 members), Resident (970 members), Affiliate (52 members), Associate (21 members), Inactive (423 members), Transitional (124 members) and Honorary (12 members) (Figure 1). Total membership has grown over 25% in the past 5 years (Figure 2).

The most rapid rate of growth has occurred in the international membership categories (International Active and International Vista) (Figure 3). The number of international members has increased by 35% in the past 5 years and 12% in the past year alone.

The International Vista membership category (released in January 2007) is available to neurosurgeons that live and work outside of North America and reflects our desire to continue to expand the critical input of neurosurgical colleagues worldwide in our organizational activities. Benefits include internet-only access to Neurosurgery, Operative Neurosurgery and the CNSQ, as well as internet access to the new CNS University of Neurosurgery. In addition to these advantages, International Vista members can register for the CNS Annual Meeting and participate in committees. All these benefits are available at a reduced fee of $135 per year.

To offer a mechanism for medical students to learn more about neurosurgery and provide a more comprehensive information resource, C. Michael Cawley, M.D., and the Ad Hoc Committee for Medical Students have developed a Medical Student membership category, slated to be launched after the 2008 CNS Annual Meeting in Orlando, FL. It will be open to students in good standing who are enrolled in an accredited U.S. or Canadian medical school. Benefits will likely include internet-only access to publications as well as internet access to the new CNS University of Neurosurgery. The CNS believes that providing educational opportunities to our youngest potential colleagues will encourage their development and ultimately, the long-term success of our profession.

The CNS remains committed to providing excellence in education, and we are also dedicated to making research and scientific knowledge available to our worldwide membership. Based on the tenets of volunteerism and development of neurosurgical leadership for public service, our membership continues to grow and thrive worldwide. Additional information and applications can be found online at www.cns.org. Please feel free to contact us at any time with questions or comments at info@1cns.org. CNSQ
Treasurer’s Annual Report

The Finances

The financial health of the CNS remains robust. Presently, the organization’s assets are primarily held in cash and investments and are divided among three funds.

1. The Cash Reserve Fund is liquid in nature and is used for regular operating expenses and ongoing projects like the Annual Meeting. The current cash reserve is $4,240,898.
2. The Reserve Fund is a long-term investment that was designed to preserve capital and promote long-term growth so as to protect against inflation. Its current market value is $6,898,162 (as of September 30, 2007). During the last quarter, this fund returned 5.71%.
3. The Endowment Fund for Fellowships and Education is designed to provide income to support grants, research, and educational activities. The current balance is $4,657,832 (as of September 30, 2007) and it yielded 6.84% return during the recent quarter.

The CNS continues to enlist the services of Crawford Investment Counsel, Inc. (Atlanta, Georgia) for guidance and management of the investment funds. Due in part to the advice of Crawford, the CNS’ coffers have experienced sustained growth since 2003 in spite of fickle economic trends. Current total assets equal $17,983,194 with $11,756,833 in investments.

The Balance Sheet

The assets and expenditures of the organization over the last year are depicted in Table 1. Most of the assets of the CNS are held in cash or investments but a small portion are fixed. The sources of revenue include the Annual Meeting (50.2%), publications (27.9%), membership dues (8%), and other sources (13.9%). Membership dues are stable at $335 for active membership. Active members receive discounted registration fees at the Annual Meetings; subscriptions to Neurosurgery, Clinical Neurosurgery, and Congress Quarterly (CNSQ); and access to the CNS (online), Personal Assistant (CNS PA) and many other CNS programs.

Budget Performance

The 2007 fiscal year was a success from a budgetary standpoint. Budgeted income and expenses were $8,643,936 and $8,267,248 respectively, for an anticipated net revenue of $376,688. The 2006 Annual Meeting performed better than expected and monies were conserved elsewhere for an actual net revenue of $704,097. This represents a 53% increase in net revenue over expectations. The fiscal year 2008 budget stands at $9,510,524 in income and $12,102,047 in expenses for an anticipated deficit of $611,523. This deficit reflects both a conservative estimate of the Annual Meeting performance and a one-time cash outlay for expansion of the central office.

Other Activities This Year: R & D fund

The Executive Committee decided last summer to establish a Research and Development (R&D) fund. The purpose of this fund is to have readily accessible money that can be applied to novel education projects. It is anticipated that pilot projects would be funded through this vehicle but as they mature, they would transition to the annual operating budget. As the CNS delves further into the science of education and the evolution of the Annual Meeting experience, new ideas frequently emerge that require rapid development. The R&D fund is essentially a money market account and therefore its yield is tied directly to the interest rate. The current balance is $200,839.

Office Expansion

The CNS has experienced growth not only financially but also in the scope of its projects and membership. To serve the needs of the organization more effectively, the central office will undergo an expansion this year. The expansion will include both additional office space and several employees. The combination of build-out, rent, and added salaries/benefits will total approximately $400,000.

CANE

The Congress of Neurological Surgeons operates as a non-profit organization under the 501(c)-(3) election of the federal tax code. The activities of the organization are primarily focused on education but do include other activities to promote the specialty of neurological surgery. Approximately 2 years ago, the CNS formed a sister organization called the Congress of American Neurosurgical Education (CANE). This 501(c)-(4) organization has fewer federal constraints on the amount of money it can contribute for political purposes. CANE receives funds both from the CNS and other revenue sources that are currently under development. This structure provides a vehicle for the CNS and CANE to react rapidly to issues that require grassroots lobbying activity.

The CNS remains a healthy and vibrant organization from a financial standpoint. This prosperity continues to make it possible for our organization and its volunteers to develop creative and innovative resources that help serve our educational mission.
IT and WEBSITE NEWS

The Congress of Neurological Surgeons (CNS) Information and Technology and Web committees are dedicated to advancing education, disseminating information, and serving the changing needs of our members. The committee is structured into four groups:

• CNS Web (www.cns.org)
• Neurosurgical education
• Annual meeting
• Miscellaneous administrative functions

The following article highlights some of our recent additions.

CNS Web (www.cns.org)
The internet has become readily adapted into neurosurgical practices. Recent design changes have been implemented to make access through the CNS home page more efficient and functional and aesthetic changes have been made to the website. The basic color scheme and Congressional blue banner has been maintained. In order to facilitate ease of access, a new menu banner now appears atop the Congressional blue banner and provides quick access to the most popular and core CNS products, such as the Annual Meeting, CNS University of Neurosurgery, CNS Neuro Wiki, SANS Lifelong Learning, and Job Placement Services. Navigation under the previous headings with flash dropdown menus are still preserved for the Public, Meetings, Membership, Education, Publications, Political Issues, and the Residents. In the next few months, browsing the website will become even easier as we incorporate the Google™ Search Appliance tool to our products.

In addition, we have placed important news at the user’s fingertips. On the front page, the browser can easily access items they may have missed: articles identified as critical reading from our journal, other relevant articles pertaining to neurosurgery on the web, news of interest in medical and neurosurgical politics, and finally, items which reflect close attention to internationalism. The CNS.org front page will provide a portal for access.

Neurosurgical Education – CNS University of Neurosurgery (univ.cns.org)
The CNS University of Neurosurgery has been launched and is now visited by members from all over the world who are looking for neurosurgical education. Currently, the site hosts courses on the non-core clinical competencies, but in the near future over ten new courses with many links to other CNS educational products will be integrated into the university. Within the CNS U., there will be links to the journal, the CNS Neuro Wiki, the abstract center, and much more. This will add to the many membership benefits already offered by the CNS.

Furthermore, this year we introduced a popular web based concept, “the wiki,” as a means of compiling vast neurosurgical knowledge in a central repository. There are already over 1200 entries. We encourage all members to be part of this experience by adding to the neurosurgical knowledge base now (wiki.cns.org).

The annual meeting is highlighted in this issue; however, we realize that there are innumerable educational products and encounters which the membership would like to have access to continuously. With this in mind, we have maintained yearly access to all the posters and abstracts on line. Come and visit 2007.cns.org/posterbrowser.aspx and posters.cns.org and browse through any poster on any topic of interest to you.

The interaction between presenter and attendee now continues after the meeting. Scroll to the bottom of any poster to post a comment and be part of this ongoing interaction. We hope that the scientific dialogue continues far beyond what occurred at the meeting. Keep coming back to the “Meetings” part of the website, and you will be surprised to see what else is coming down the road.

Administrative (cnspa.cns.org)
The CNS PA is the tool by which a member can update his or her contact information and track CMEs. In addition, we have added a direct link from the CNS-PA to our premier journal — Neurosurgery. Now with just one login, a member can directly enter, search, and have access to any article in Neurosurgery. This has been one of the most utilized tools on our web site. Don’t miss it.

Again, these continue to be exciting times for organized surgery and advancing information technology. Continue looking to www.CNS.org to keep up with the changing faces of neurosurgery. We welcome your participation and will meet you on the web. CNSQ
Secretary’s Report

As we begin the 57th year of the Congress of Neurological Surgeons, it is my privilege to give the annual Secretary’s Report. The CNS remains the most effective, energetic and creative professional society in medicine and I would like to highlight a number of our recent activities.

The 2007 Annual Meeting (attended by representatives from the Japanese Congress of Neurological Surgeons) continues to be the single largest educational activity of the society. The meeting, themed “Navigating Change,” explored the integration of scientific discovery and innovation into clinical practice. Under the direction of Annual Meeting Chair and President-Elect Dr. Anthony L. Asher and Scientific Program Chair Dr. Gerald E. Rodts, Jr., this gathering continued the CNS tradition of capitalizing on new technology and responding to the educational needs of its members. In particular, the introduction of Integrated Medical Learning™ (IML) marked a new era in neurosurgical education by allowing learners to drive the agenda, interact with teachers, and carry the discussion forward. Combined with innovations like the Neurosurgical Forum, Select Abstract Sessions, Resident SANS Challenge, 3-D Live Demonstrations, and in conjunction with daily presentations by the 2007 CNS Honored Guest Dr. L. Dade Lunsford, this latest Annual Meeting has surpassed all previous efforts.

In addition the CNS continues to develop and implement innovative educational opportunities. SANS Lifelong Learning remains the premier online educational experience for neurosurgeons, and has recently incorporated modules on the non-clinical core competencies. SANS remains an integral part of the ABNS Maintenance of Certification program. In addition, the CNS Education Committee under the direction of Dr. Daniel K. Resnick has developed the online CNS University of Neurosurgery, a repository of images, videos, and podcasts covering the spectrum of neurosurgical practice. At the Annual Meeting the CNS also introduced “NeuroWiki,” a collaborative online encyclopedia of neurosurgery which already features more than 1000 entries. All CNS members are encouraged to contribute to this collaborative project.

CNS publications, including Neurosurgery, Operative Neurosurgery, Clinical Neurosurgery, and Congress Quarterly have continued to thrive. Under the direction of Publications Committee Chair Dr. Robert Friedlander, all four have been incorporated into the integrated CNS Publications Group. Under the leadership of Editor Dr. Michael L.J. Apuzzo, Neurosurgery and Operative Neurosurgery remain our field’s preeminent publications. In celebration of the 30th anniversary of the Journal, publication of a three-part supplement entitled “Surgery of the Human Cerebrum” has already begun. Clinical Neurosurgery, edited by Dr. Gerald Grant, has been significantly upgraded through the integration of peer review. Finally, Congress Quarterly, under the direction of Dr. Ali R. Rezaei, has undergone a complete metamorphosis into a timely and polished news magazine.

CNS membership continues to grow. At present, there are over 6200 CNS members, including over 700 International members and nearly 1000 Resident members. The newly-created International Vista membership has allowed hundreds of international neurosurgeons to become CNS members. In addition, the Executive Committee is developing a membership category that will allow medical student participation, including Standing Committee participation, in the CNS.

As a service to its Resident Members, the CNS recently held the Second Annual 3-D Surgical Anatomy Course for Senior Residents. Under the direction of Dr. Saleem I. Abdulrauf, over 60 North American senior residents participated in this four-day course, highlighted by spectacular 3-D presentations from former CNS President and Honored Guest Dr. Albert L. Rhoton, Jr. Under the direction of Fellowships Committee Chair Dr. Linda Liu, the CNS awarded a variety of Fellowships to both domestic and international neurosurgeons as applications reached an historic high. This year, the CNS introduced six new Medical Student Summer Fellowships to complement its enhanced commitment to medical student education.

In the current era of rapid change in technology and policy, it is essential that our organization be focused on the current needs of its members. Over the past year, the CNS has refined this focus through direct personal contact, member-needs surveys, extensive review of Annual Meeting evaluations, and during a Senior Member Think Tank meeting that took place in March, 2007. As a result of these efforts, we have developed a host of new initiatives, some of which will debut in the coming months, to satisfy the needs that have been identified.

One such need is for advocacy. Wherever and whenever policy decisions are made, the CNS, through the AANS/CNS Washington Committee, looks after the interests of all neurosurgeons. On a nearly daily basis, Ms. Katie Orrico and her capable staff at the Washington Committee office update the leadership of the CNS to facilitate timely and effective responses to developing opportunities and threats. Finally, the CNS Office, under the direction of Executive Director Laurie Behncke, capably and efficiently manages the day-to-day business of the organization. This efficiency, combined with the efforts of thousands of CNS volunteers, benefits all members through low membership dues and exemplary member service.

The above report highlights just some of the many efforts of the CNS. Please remember that the CNS is your organization. Your needs shape the agenda and your efforts define the results. Please take the time to explore and utilize all that you have created.
SANS Lifelong Learning: Residency Education to Maintenance of Certification

A little learning is a dang’rous thing;
Drink deep, or taste not the Pierian spring:
There shallow draughts intoxicate the brain,
And drinking largely sobers us again.

— Alexander Pope (1688–1744), British poet. Essay on Criticism (Fr. II).

O
ver the years, the Self Assessment in Neurological Surgery (SANS) and its online successors, SANS Wired and SANS Lifelong Learning, have evolved into comprehensive learning tools for neurosurgeons. SANS Lifelong Learning incorporates the work of over 60 editors and contributors with oversight from more than a dozen senior neurosurgical advisors. It also reflects the spirit of educational innovation at the heart of the mission of the CNS.

SANS Lifelong Learning is used both by individual neurosurgeons and by neurological surgery residency programs. At our own institutions, SANS plays a role in assessment pre- and post-exposure to various subspecialty experiences. It is also utilized during resident conferences as modules are appropriately integrated into the curriculum. Because SANS is learner-driven, allows for self-assessment, and provides immediate formative and summative feedback on performance, the program represents a validated educational tool for neurosurgical residency training.

Through collaboration with the American Board of Neurological Surgery (ABNS), SANS has also become a key part of learning beyond residency and fellowship training. SANS serves as a formal part of the maintenance of certification (MOC) process for board certified neurosurgeons. SANS material may also be used to review for the primary certification and maintenance of certification examinations. Additionally, the CNS awards MOC-eligible, Category I continuing medical education credits for participation.

A new SANS module for Competencies training has been launched and is now available online. The module contains 100 questions entirely devoted to professional, ethical, socioeconomic, legal and other issues. It may be useful for neurosurgeons required by their hospital or their local or state licensing authorities to participate in competency-based continuing medical education, and may also benefit Program Directors required to teach and evaluate the competencies as part of their periodic Accreditation Council for Graduate Medical Education program accreditation reviews. We also hope that the continuously updated SANS online curriculum will represent one way of rapidly disseminating important new information about patient safety, quality and other “best practices” to the community of neurosurgeons.

SANS also supports learning in subspecialty areas of training and practice. SANS modules for pediatrics, spine surgery, and critical care-anesthesia-neurotrauma are on the horizon. The launch of the MOC-compatible module, SANS: Pediatrics, is planned for early December 2007. Each of these new modules will emphasize subspecialty-focused materials, allowing residents and practicing neurosurgeons to focus learning in areas most related to their interests and practice.

As the field of neurosurgery evolves, SANS is well poised to evolve with it. Using a robust but highly adaptable, web-based learning interface and validated learning methodologies, SANS will continue to serve the educational needs of neurosurgeons in the future. In doing so, it will allow each of us to imbibe “deep learning from the Pierian spring.” CNSQ
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NEUROSURGERY IN
As I prepared to write an article on “Neurosurgery in the Military,” I was struck by how broad this topic has become. After 27 years in uniform I have witnessed many ways in which neurosurgeons contribute in our military. In these pages I will comment on personnel and assignments, deployments over the last six years, medical advances in military neurosurgery (especially those related to combat injuries), and then conclude with comments on medicine and the media, Base Realignment and Closure (BRAC), and where military neurosurgery may be headed.

**Personnel and Assignments**

As most are aware, the U.S. Military is divided into Active Component (AC) and Reserve Component (RC) service members. Those of us in the AC owe a great deal of gratitude to the RC members who are serving multiple missions away from their practices and families in order to assist as we are deployed or otherwise short-staffed. While I am not at liberty to print the numbers of AC neurosurgeons here, the overall numbers, and those in the Army in particular, are declining, making it difficult to fully staff our medical centers across the globe.

Recruitment and retention pose an ongoing challenge. Very few neurosurgeons enter active duty for reasons other than an existing service obligation due to an undergraduate or graduate educational scholarship program. Additionally, very few neurosurgeons remain on active duty, due in large part to the salary discrepancy between military neurosurgery and practice in the civilian community. A typical military neurosurgeon is paid between $140,000 – 185,000 per year in salary and bonuses, and the upper end of that spectrum is for board-certified neurosurgeons with over 10 years of experience. Recently, a new bonus program was instituted which adds an additional $64,000 per year in exchange for a four-year contract. It remains to be seen if this measure is sufficient to positively impact retention.

Geographic assignments for military neurosurgeons today are diverse. We are typically assigned to medical centers with a broad range of surgical and medical specialties that offer multiple training programs. Neurosurgeons in the continental United States (CONUS) are assigned to the National Naval Medical Center in Bethesda, MD; Walter Reed Army Medical Center in Washington, DC; Naval Medical Center in Portsmouth, VA; Brooke Army Medical Center and Wilford Hall Air Force Medical Center in San Antonio, TX; William Beaumont Army Medical Center in El Paso, TX; Madigan Army Medical Center in Tacoma, WA; and Naval Medical Center in San Diego, CA. Outside of the CONUS, neurosurgeons are also assigned to Tripler Army Medical Center in Hawaii, plus the Navy typically has neurosurgical
capability in Okinawa, Japan. And Landstuhl Regional Medical Center in Germany has been staffed with a neurosurgeon for the majority of Operation Iraqi Freedom. The U.S. Navy is currently covering this mission in Germany.

Deployments
Deployments into hostile fire zones began for neurosurgeons in 2002 in Afghanistan. Subsequently, neurosurgeons have deployed to Kuwait, the Persian Gulf on the hospital ship USNS Comfort, and Iraq. The most continuous presence has been in Iraq due to the larger number of troops. Currently the U.S. Army Reserve is covering the mission in Iraq and the U.S. Air Force is covering Afghanistan.

Physicians of all specialties typically describe their experience as tremendously rewarding. The opportunity to provide advanced medical and surgical care to our troops and to be part of the system which has lowered battlefield mortality and morbidity to far below previous levels is ultimately why we have trained in military medicine, and why we serve. Often, and neurosurgery is no exception, the majority of care provided is to patients from the host nation. Lacking the most basic medical care, the overwhelming majority of these patients are very grateful to have access to world-class services, even if they are provided out of a tent or the back of a vehicle.

Deployed surgery is a pure form of the art. Often practiced under austere conditions requiring detailed advanced planning (you can’t exactly call the instrumentation rep and have him bring something over from across town) and the ability to come up with a solution for a problem you have never seen before, it is also absent of the distractions of shareholders, insurance companies, endless committee meetings, and the struggle to balance personal and professional obligations. You are at work 100% of the time — if you are not taking care of patients you are reading, working out, or catching up on a backlog of movies you always wanted to see.

The severity of injuries, the pace of patient care, and the unpredictability of casualty arrival combine to maintain a level of hospital alertness and tension that permeates the unit and drives everyone to perform at his or her best. It is impressive to observe the transition that occurs in some of the providers who have never seen severe trauma. Initially anxious and tentative, within weeks they step up to the plate and become invaluable team members as they recognize the importance of every contributor’s duties.

Opportunities often arise that you would not expect. The pediatric cardiologist put in charge of restoring an entire regional healthcare system in Iraq, the general surgeon who hasn’t jumped for years and is told he is going to be parachuting in with his assigned unit, and the neurosurgeon tasked to develop the medical protocol for a hospital chemical protection system are great examples. With experience gained through medical and military training, resources available locally and throughout the system, and dedicated time to complete the task, these missions and more are completed every day.

There is down time, and it is often then that the magnitude of the sacrifice sinks in. A few more tears are shed, a few more heavy bags are beaten, a few more movies are watched as a means to escape — until the next helicopter or ground ambulance arrives and everyone snaps back into reality and focuses again on the job at hand, doing it better than ever before.

Advances in Military Medicine
It is said that medicine advances exponentially during war, and this war has certainly seen a number of innovations. Infectious disease research, point-of-need applications of behavioral health care, and far forward surgical capability have all brought advances to the battlefield which have resulted in a significantly improved outcome for our service members. The case fatality rate (CFR) in this conflict is 9.4% and the percent killed in action (KIA) is 13.8%. These numbers are less than 70% of the best recorded results in previous conflicts. During the past six years we have learned much about complex craniofacial reconstruction techniques, combat-related neurovascular injury, and the capabilities of aggressive neurosurgical trauma care.

Prior to the onset of this conflict, in the National Capital Region (NCR) we were using a fused-deposition modeling technique to create
full-scale models of spinal and cranial pathology. Models of degenerative, neoplastic, and vascular pathology gave the surgeon a preoperative three-dimensional form to aid in orientation during preoperative planning, and they could also be sterilized and used intraoperatively. After the onset of casualties we quickly realized that we could use this in-house fabrication technique to develop a mirror image of the uninjured side of the skull or facial bones and create a polymethylmethacrylate prosthetic implant. This implant would then provide an extremely precise “bony” scaffolding over which to drape the existing soft tissue or autograft coverage. With a multidisciplinary team of neurosurgeons, plastic surgeons, otolaryngologists, oral-maxillofacial surgeons, ophthalmologists, and prosthodontists we have been able to re-create complex multidimensional cranial implants which include orbits, zygomas, and/or midface bones to create an infrastructure which is indistinguishable from the contralateral side. We have extended this technology beyond trauma and are able to create preoperative implants for patients with tumors, congenital deformities, and fibrous dysplasia. We can then expose the pathology, remove it using a preplanned series of bony incisions, and replace the lost bone with a prosthesis which was made and sterilized preoperatively.

Our success with these techniques has resulted in a significant practice change in the combat theater, as we no longer implant the patient’s own skull into the abdominal wall after a trauma craniectomy. The prostheses fit better than the patients’ own bone, since there is no kerf. Additionally, the bone loss from penetrating trauma is often quite substantial, mandating some form of graft. Perhaps the most pressing issue is that many of the polytraumatized service members experienced fevers for an extended period of time, often without a clearly definable source. This led many to question whether the bone flap could be a potential source of infection or could be seeded in the presence of a major systemic infection, and these concerns were eliminated when the bone was discarded. All of these issues combined with insertion site morbidity have led us to abandon any attempt to preserve and reimplant the autologous bone.

Early work from Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) has been presented, demonstrating a higher than expected incidence of traumatic pseudoaneurysms and vasospasm. Incidence of penetrating head injury and its association with a mechanism of blast injury may create conditions which increase the risk of vasospasm and certainly increase the risk of traumatic pseudoaneurysm. Hybrid approaches to treatment combining endovascular coiling with observation and possible delayed open surgery for pseudoaneurysms and combining intra-arterial nocardipine with balloon angioplasty for vasospasm have shown early promising results. Improved angiography capabilities, innovative techniques such as cooling blankets, brain tissue oxygen sensing, and continually evolving techniques in neuroendovascular interventions will undoubtedly shed even more light on the intracranial vascular pathology we are seeing as well as the optimum treatment for these injuries.

In the deployed setting we have become very aggressive with neurosurgical resuscitation. While the presence of trauma involving overwhelming deep bilateral intracranial injury is clearly inconsistent with life and is diagnosed quite quickly, many factors combine to justify an aggressive neurosurgical approach for injuries which are of only slightly lesser severity. Pupillary examination may be inaccurate due to ocular trauma. In fact, in some instances both globes may be disrupted. The extremely high mechanism of injury with powerful improvised explosive devices creates a situation where the patient may be
rendered unconscious for a prolonged period of time. Extremely rapid aerial transport to a facility with neurosurgical capability may result in examination by a neurosurgeon within 1-2 hours of exposure to this extremely high-energy trauma. Therefore, performing a lifesaving surgical procedure on a patient with a GCS score of 3, 4, or 5 may be justifiable. Additionally, we have a very young, healthy patient population with a strong will to survive and a well-structured support network for rehabilitation. Extraordinarily large hemicraniectomies (sometimes bilateral), intracranial pressure monitoring in-flight with critical care teams on sophisticated ICU-equipped aircraft, and reassessment at each stop along the international evacuation route have provided the best possible care during a medical evacuation traversing one-third of the globe. Severe neurotrauma patients often arrive at Walter Reed or the National Naval Medical Center within three or four days of injury. Long-term outcome studies are pending from this patient group, but our early impression is that in this subset of trauma patients a low GCS score upon initial presentation may not predict an unsatisfactory outcome in a significant percentage of cases.

Physicians of all specialties typically describe their experience as tremendously rewarding. The opportunity to provide advanced medical and surgical care to our troops and to be part of the system which has lowered battlefield mortality and morbidity to far below previous levels is ultimately why we have trained in military medicine, and why we serve.

Medicine and the Media
It would be difficult to write about any aspect of military medicine, even neurosurgery, without commenting on recent media events. It is commonly accepted that the current media age emphasizes bad news over good, and it is also commonly accepted that the vast majority of Americans support the military regardless of their views on the war in Iraq. Bad news about treatment of our injured veterans, therefore, is a lock to win high ratings. Beginning in February 2007 and tapering off this summer, multiple media agencies highlighted process inefficiencies at Walter Reed Army Medical Center. These inefficiencies were linked to dissatisfaction in the administrative outcomes experienced by several interviewed service members and their families. The media took great pains in most cases to note that the medical care provided was outstanding. However, when the television segment is entitled “deplorable care for wounded veterans at Walter Reed,” many viewers across the nation and the world link this in their minds to medical care. This led to significant morale problems not only at Walter Reed but throughout military medicine.

Imagine the mindset of hard-working physicians, nurses, and medical professionals who, over the last six years, worked in our military treatment facilities, deployed into the combat zone where they are subject to the same and sometimes even greater hazards than the service members they care for, and then returned to the CONUS treatment facilities to perform the same mission on the other side of the ocean. This nonstop effort by these true medical heroes is made possible by an esprit de corps best expressed by the statement: “I will not quit, I will not leave a fallen comrade.” When the terms “deplorable care” and “cheating our wounded veterans” are broad-brushed across the spectrum of military medical care and the tenets of that esprit de corps are widely questioned — the tenets which are the very source of the strength keeping these providers going day after day — the situation has the potential to deteriorate very rapidly.

However, with the same fortitude that allows them to deploy multiple times into hostile fire zones, the majority of these folks have taken the blow, stood back up, dusted themselves off, and continued doing what they do best: saving the lives of the ill and injured service members and then doing the best possible job of rehabilitating them to allow them to return to as productive a life as possible inside or outside the military. Stories abound of people with head injuries returning to college, amputee patients remaining on active duty, and other seriously wounded service members finding meaningful and productive lives in front of them. This would not be possible without the combined efforts of every single one of the caregivers at military treatment facilities worldwide.

As an objective measure of outcomes during this entire struggle, the National Surgical Quality Improvement Program (NSQIP) data for the last two years (the first two full years of collection) for Walter Reed
demonstrate a risk-adjusted 30-day morbidity observed-to-expected ratio of .42 (FY05) and .58 (FY06). These remarkable numbers, both categorized as “low outliers,” are a lasting tribute to these tireless providers who are doing amazing work day in and day out in the face of all of the previously described challenges.

Base Realignment and Closure

The current BRAC, in combination with the Army Transformation program, is causing sweeping changes to the population and, indeed, the existence of many facilities throughout the world. However, the most significant impact on neurosurgical capability in the military is occurring because of the BRAC actions in San Antonio, TX and the NCR.

In San Antonio, TX the Wilford Hall Air Force Medical Center will realign and colocate with Brooke Army Medical Center. This new Military Medical Center will leverage the personnel and resources from two colocated medical centers into a single facility resulting in no loss of clinical activity, training program output, or research capability. Army and Air Force neurosurgeons will staff the medical facility and provide neurosurgical care for military beneficiaries and neurosurgical trauma care for both military and civilian populations in the region.

The biggest change in the NCR will involve colocation of the current Walter Reed Army Medical Center and the National Naval Medical Center at Bethesda into a new Walter Reed National Military Medical Center at Bethesda. Similar to the requirements for the realignment in San Antonio, BRAC law dictates that the consolidation will not negatively impact the services provided to the beneficiaries, health professionals’ education, or research capability. The colocation of the new National Military Medical Center on the same campus as the Uniformed Services University of the Health Sciences School of Medicine and across the street from the National Institutes of Health creates opportunities for collaboration across multiple levels of the federal health care spectrum. Additionally, we are committed to the continuation of close ties with the Washington Veteran Affairs (VA) and our other VA partners across the Nation.

In addition to a massive expansion of facilities on the Bethesda campus, a new community hospital at Fort Belvoir, VA will replace the existing Dewitt Army Community Hospital and provide a robust multispecialty community hospital in the southern portion of the NCR where over half of our beneficiaries reside.

Where are We Headed?

A historic curse states: “May you live in interesting times.” The challenges of recruitment and retention within the military healthcare system, an ongoing effort to combat terrorism resulting in the deployment of our beneficiaries and providers across the globe, extremes of injury and illness requiring the development and employment of state-of-the-art medical and surgical techniques, and substantial changes to personnel and structure due to BRAC and transformation programs make these interesting times, indeed. I have the opportunity and the privilege to work with some of the best people in the world. Every one of them can name improvements in the system and the science that they would like to see in order to better care for our service members, retirees, and dependents, and I am proud to know that they are constantly searching for and seeking to implement process improvements. Every one of them also speaks with great pride about the opportunity they have to serve both at home and overseas.

Tradition is what links the events of your future to the experiences of your past. As far as military medicine is concerned, the traditions of advancing the science of medicine for the benefit of all mankind, putting others’ lives before yours, and having gratitude for the privilege of serving illuminate a bright future. It is incumbent upon all of us as leaders, Americans, and members of a global community of free people to do what we can to encourage, commend, and support the medics of today as they carry on a centuries-old tradition of selfless service marked by worthwhile ideals and the highest of standards. CNSQ
Neurosurgical Ethics-related Articles in Neurosurgery Journals

The neurosurgical fraternity has become increasingly interested in neuroethical issues. These issues have a significant impact on our profession, and greater knowledge and awareness is critical in addressing complex dilemmas. Neurosurgeons employed in health care institutions will need to have the ability to participate in ethics consultations, understand their role, and be capable of mediating disagreements.

One way to expand knowledge of these issues is through articles, editorials, and reviews in neurosurgery journals. We decided to study the number and types of ethics-related articles that could be used for this purpose. We attempted to identify whether the high-impact neurosurgery journals are publishing more of these articles, and also to identify some of the trends in topics. In doing so, we hoped to develop a strong list of ethical issues faced by a range of neurosurgeons, and in addition provide resources for residency programs.

We determined the number of ethics-related articles in major peer-reviewed neurosurgery journals retrospectively. Seven neurosurgical specialty journals were selected based on their impact factor (greater than 1). They are:

- Neurosurgery
- Journal of Neurology
- Neurosurgery and Psychiatry
- Neurosurgical Review
- Journal of Neurosurgery
- Canadian Journal of Neurological Sciences
- Pediatric Neurosurgery

PubMed and Ovid search engines were used to identify articles dealing primarily with neurosurgical ethical issues published between 1995 and 2004. The following key words were used to search articles in the search engines: ethics committees, research ethics, nursing ethics, clinical ethics, consultation ethics, institutional ethics, pharmacy ethics, business ethics, principle based ethics, ethics research, ethics, ethics committees, codes of ethics, professional ethics, medical ethics committees, clinical ethics, and morals.

Titles and abstracts of articles were then independently reviewed by the authors to verify if they did indeed qualify as neurosurgery ethics-related. When there was disagreement about including an article, a third person reviewed it.

The articles determined to be ethics-related were analyzed for trends and classified into groups based on the type of article, including Journal articles, Case Reports, Editorial, Review/Tutorial, Comment/Letter, and Historical/Professional Addresses.

Of 36 unique articles, 24 were judged to be primarily ethics articles as listed in the references (a list of these references is available via e-mail: fordp@ccf.org). Of the 24...
If we had a difficult time finding ethics-related articles, we suspect that neurosurgeons and trainees also would be challenged to find them. In order to further increase awareness of these issues, more journal articles, editorials, and case reports need to be published in specialty journals in conjunction with reports of a scientific nature. These articles need to be indexed in a way that makes them readily accessible to those who wish to enquire further about ethics.

Although the number of articles we found is too low to show statistical significance it does suggest that neurosurgery ethics articles have not shown a significant trend of increase over the studied years (Fig.2). We were disappointed that the yield did not allow for an analysis of a trend in topics.

Uncovering ethics-related articles in the journals proved to be more difficult than expected. The numbers returned from the searches were unexpectedly low. Very few of the articles we found were indexed under the mesh term “Bioethics.” Because of the variability in the definition of “ethics,” articles may have been missed. Further, there may be a significant number of scientific articles that include a section of ethical reflection that would not show up in our analysis.

Articles in journals only act as a weak surrogate for awareness and interest in ethics. We do not assume that there is no increased awareness of ethical issues in the neurosurgical community because the number of articles has not increased over time. It may well be that the neurosurgical fraternity considers and discusses ethical issues but does not go so far as to publish on them.

The articles we found cover a variety of topics and no specific issue is discussed repeatedly. In addition there were very few duplicate contributing authors. In a bigger study covering all types of high impact journals we plan to analyze the concrete contents of the articles, review the points presented, and summarize the prospects of such a study.

If we had a difficult time finding ethics-related articles, we suspect that neurosurgeons and trainees also would be challenged to find them. In order to further increase awareness of these issues, more journal articles, editorials, and case reports need to be published in specialty journals in conjunction with reports of a scientific nature. These articles need to be indexed in a way that makes them readily accessible to those who wish to enquire further about ethics.

An increased pool of articles such as these can serve as an educational tool for teaching residents and fellows. Finally, sharing some of the ethically troubling cases in the literature provides a forum for helping to establish a dialogue. Relying on one or two mentors to teach ethics issues means we lose the opportunity to learn from the larger cohort of thoughtful neurosurgeons. CNSQ

Acknowledgment: The authors would like to thank Mark Luciano, MD for his input and guidance during the exploration of this project.
The Perfect Storm: Current Status of Research in Neurosurgery

Progress in neurosurgery comes about through translating novel ideas into practical use, and the future of neurosurgery is dependent on the advancement and evolution of clinical practice.

On behalf of patients, neurosurgeons must be involved in research—clinical, translational, or basic—to participate in and influence the process. We are at a critical crossroads where the variety of diseases that neurosurgeons treat is being encroached upon by other medical specialists. For example, tumors are treated by radiation oncologists; neurovascular diseases are treated by interventional radiologists, neurologists, cardiologists, and vascular surgeons; and diseases of the spine are treated by orthopedic surgeons. To remain the primary specialists in the treatment of these diseases, we need to be deeply involved in developing novel approaches to their management.

This article discusses the current situation, presents the results of a survey on the current status of research and training at neurosurgical programs, and provides a set of recommendations.

Background
With a decreasing work force, an increase in the clinical load, and limited training time due to restrictions in the work week, the time available for a neurosurgeon to be a principal investigator in clinical and/or basic science research is limited. Recent regulations have compromised the scientific training of residents. Residents in their research rotation are being pulled back into the clinic to cover the manpower gap. These developments will undoubtedly limit the number of practicing neurosurgeons with appropriate training to perform high-level scientific research and further compromise the competitiveness of the neurosurgeon in the current environment.

Time limitations for attending and resident neurosurgeons restricts them from developing research questions and generating high-quality publications in high-impact journals. Further restricting the time available for a neurosurgeon-investigator are, for example, the mandated, unfunded regulatory constraints imposed by Institutional Review Board (IRB), Institutional Animal Care and Use Committee (IACUC), and compliance training requirements.

Another issue is the decreasing number of research-oriented neurosurgeons who are appropriate role models and therefore effective mentors. Institutions must be sure to provide access to mentors and offer trainees a “road map” for the development of a successful research enterprise. Organized neurosurgery must implement a method of making mentorship available for institutions where it is not readily accessible.

Non-neurosurgeon reviewers might not have the expertise to accurately evaluate the research proposed by neurosurgeons and may underestimate its importance. The basic pathogenic mechanisms mediating neurosurgical diseases may not be properly studied, resulting in a lack of understanding of the pathophysiology of neurosurgical diseases and reduced development of novel therapeutic approaches.

Funding for research, from both federal and non-federal sources, is steadily decreasing. In the past, a significant component of the research budget was obtained through clinical revenue. However, progressively decreasing reimbursement rates have made such funding extinct. This funding was being used directly to fund research and indirectly to secure ancillary assistance for its execution, including grant management, data collection and analysis, and editorial help.

In summary, neurosurgeons today are faced with greater clinical demands, less time, less assistance in developing an infrastructure, less ancillary assistance, decreased financial resources, more competition in securing federal and private research funds, and less time and funding to properly train residents in scientific pursuits to potentially devote...
to neurosurgical research. Unless we can generate a more favorable environment, the future of academic neurosurgery, and of advancements in neurosurgery, is at significant risk and the progress needed to improve the treatment of neurosurgical patients now and in the future will be significantly delayed.

The Congress of Neurological Surgeons has formed a Committee on Research to evaluate the state of neurosurgical research and to aid in implementing changes. This committee surveyed academic neurosurgical programs to gather information on the current status of research within their departments and to identify relevant trends. We are grateful for the support and assistance provided by the Society of Neurological Surgeons for this survey. We agreed to maintain confidentiality about the responses provided by the specific programs, and are therefore presenting the data as a whole.

Results

Note: Because all of the information included in the returned forms was incorporated into the results, the total number of respondents tabulated will not always add up to the total number of forms. We did not seek to obtain information on trends over time. Our intention is to repeat this questionnaire at set intervals to ascertain and analyze trends.

The first sets of questions pertain to demographics. The total number of neurosurgeons in the departments ranged from 3 to 22; the average was 8.5. As expected, the total number of neurosurgery residents per program, 2–18 (range 8.2), closely paralleled the number of faculty.

The ability to obtain adequate scientific training is clearly related to the amount of time devoted to research and clinical responsibility required during the research time. Even though many of the residents entering neurosurgery have a significant amount of research experience and accomplishments, including PhDs from prestigious laboratories, a meaningful research experience during residency is critical.

The next set of questions pertained to the research experience during residency. Figure 1 provides the range of responses. Eighty-five percent of the responding programs reported 12 months or more research time, with most providing one year of research; and 15% provided 9 months or less of research time. The number of hours of call responsibility during the research period varied significantly (Figure 2). Only nine of the responding programs said their residents are completely protected from any clinical responsibility during the research period. Six programs had as much as 25 to 36 hours of clinical responsibility per week, and thirteen had 19 to 24 hours. Such call responsibility is extremely disruptive to the ability to perform meaningful research.

As may be expected for surgical departments, the bulk of reported research (53%) is identified as clinical. The balance of the reported research was 26% translational and 21% basic science (Figure 3).

The breadth and depth of research being conducted at different institutions varies significantly. The total number of investigators per institution ranges from 0 to 22. Fifty-nine percent of the programs reported having 0 to 3 investigators, 29% reported having 4 to 10 investigators, and 12% reported having more than 11 investigators (Figure 4). It is also important to have a balance between neurosurgeons and non-neurosurgeons; only a neurosurgeon can bring a clinically relevant insight to certain scientific and clinical projects.

Neurosurgeons need to be able to engage in a meaningful research experience following residency, either as independent investigators or in a mentored setting. Securing nonclinical sources of funding to cover part of the salary is an effective approach to securing protected time. One of the most effective funding mechanisms for a neurosurgeon

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**Figure 1.** Number of months assigned to research reported as range. The figure on the left represents the lower range and the one on the right the higher range as reported by the programs.

**Figure 2.** Hours/Week that residents are on call during the research rotation.

**Figure 3.** The percent focus reported of the type of research carried out at each neurosurgery program.

**Figure 4.** Number of independent investigators reported per neurosurgery program. This includes both neurosurgeons and non-neurosurgeons.
during the critical initial post-residency years is the mentored training award (KO8) from the National Institutes of Health (NIH). At the time of the survey, and with the assistance of Dr. Story Landis (director of the National Institute of Neurological Disorders and Stroke) we were able to identify 21 neurosurgeons who currently hold KO8 awards. The CNS research committee is working with these individuals to provide them with assistance and mentorship to increase the likelihood of their transitioning into independent investigators and securing RO1 funding.

Decreased revenue and increased costs have significantly reduced the funds available to support research efforts. Over half of the programs provide less than $100,000 per year of clinical revenue for research, with 30% of the programs providing no support. On the other end of the spectrum, 13% of programs provide more than $500,000 per year of research support from clinical finding (Figure 5).

The majority of research funding originates from the federal government in the form of grants from the NIH. Applications to the NIH are peer reviewed in a study section and then given a score. Funding levels have decreased significantly during the last several years; for fiscal year 2006 the decrease was 12%. Compounding the problem of low funding levels is the evaluation of most neurosurgery-related applications by non-neurosurgeons. Therefore, grants written by neurosurgeons on neurosurgery-relevant topics are often evaluated by non-neurosurgeons who might lack the appropriate level of expertise and might not fully understand the importance of the work.

An analysis was then performed to associate levels of research funding of neurosurgery departments with their research attributes. The departments were divided into four equal quartiles, depending upon total levels of funding. Each quartile represented 25% of the responding neurosurgery programs (Figure 6). For the most part, programs with the greatest funding were larger, had more attendings and residents, and had more neurosurgeons who conducted research.

Two critical factors in the quality of the research experience are the time the resident is able to spend in the laboratory and his or her clinical responsibilities during this period. Residents in funding level 3 and 4 programs had more time in the laboratory than those in funding level 1 and 2 programs. An arbitrary estimation of 50 hours/week of work during the laboratory period would indicate that residents in funding levels 1, 2, 3, and 4 programs work a total of 1755, 1724, 2934, and 3071 hours, respectively, during their whole residency. Therefore, the amount of time dedicated to research by residents in the upper half of funding levels is 42% greater than that of residents in the lower half of funding programs, which generates a significant variation in their ability to secure scientific training.

Adequate neurosurgical representation in application review study sections is critical for several reasons. First, an expert in the field is needed to evaluate an application fairly. Second, the experience a study section reviewer obtains is one of the best tools for understanding the process and its many intricacies. Participation in the review process enhances the reviewer’s grantsmanship strategies and his or her ability to advise peers in his or her neurosurgery department.

As expected, larger programs tend to be better funded. They have
more residents, more neurosurgeons, and more neurosurgeon investigators. Given this scenario, residents in the lower half of the programs have a significantly smaller likelihood of securing appropriate training and developing the ability to become a neurosurgical investigator.

**Recommendations**
1) Neurosurgery residents should have a minimum of 12 months of protected research time, but preferably 18 to 24 months.
2) The research period must begin at the time a resident enters a program.
3) Residents should be encouraged to apply and secure funding to cover, at least in part, their salary during the research time. This provides experience in the grantsmanship process, enhances the standing of the resident in academics, improves the possibility of having protected research time and reduces the financial burden to the department.
4) A clear curriculum will allow residents to become acquainted with various issues required during the research period, including a set of competencies analogous to the milestones required during clinical training. Required competencies should include grantsmanship and understanding regulatory issues pertinent to research. The Residency Review Committee must generate a set of objective requirements for the research period and neurosurgery residency programs must be committed to their implementation.
5) Junior faculty who demonstrate the ability to be involved in different components of scientific pursuits need protected time, financial assistance and help with academic advancement. Residency programs must advance neurosurgeons who are equipped with knowledge enabling them to pursue a productive and rewarding investigative career.
6) The bulk of funding in this country for research originates from the federal government. To help programs become more competitive in securing funding, neurosurgeons need a mentor, availability of didactic sessions on the subject and the time required to write a good grant application.
7) More neurosurgeons need to be incorporated into NIH study sections. This would have two immediate effects: it would establish a set of individuals who are likely to review grants on neurosurgical topics more authoritatively than a PhD or neurologist, and it would provide invaluable training in grant evaluation and for improving grant writing and advising peers on the process.

**Conclusions**
Events that will greatly influence the future of neurosurgery include:
1) **Scientific revolution**: We are in the era of molecular medicine and must participate in this revolution to initiate a fruitful period of molecular neurosurgery. Novel therapies in the treatment of cerebral ischemia, traumatic CNS injury, brain tumors, neurodegenerative diseases, and spinal disorders, among others, will define the future capabilities of neurosurgeons and determine who will implement these therapies.
2) **How to become players**: Neurosurgery has traditionally attracted some of the most brilliant graduates from medical schools. But unless our residents and junior faculty are provided with the appropriate training, support, and role models, the future of neurosurgery is extremely bleak. We must continue to advance our manual technical abilities and also be involved in generating new molecular technologies for the benefit of our patients.

**Acknowledgments:** I would like to thank Joanna Galoski who was instrumental in gathering the results of the survey; Dr. Story Landis, NINDS Director; and the members of the CNS Research Committee, including Dave Adelson, Peter Black, Nick Boulos, Nino Chiocca, Sander Connolly, Robert Dempsey, David Frim, Richard Ellenbogen, Murat Gunel, Julian Hoff, Douglas Kondziolka, Peter LeRoux, Linda Liao, R. Loch MacDonald, Robert Martuza, Guy McKhann, Nelson Oyesiku, Vincent Traynelis, and Edie Zusman.

Residents should be encouraged to apply and secure funding to cover, at least in part, their salary during the research time. This provides experience in the grantsmanship process, enhances the standing of the resident in academics, improves the possibility of having protected research time and reduces the financial burden to the department.
CNS Bylaws: Proposed Amendments

At the September 2007 meeting in San Diego, the CNS Executive Committee (EC) approved the following three proposals to amend the CNS Bylaws. These proposals are to be reviewed by the CNS membership prior to voting at the CNS business meeting in Orlando in September 2008. The proposed amendments focus on two separate issues: 1.) Allowing the CNS to send official communications to its members via electronic means; and 2.) Creating a new category of CNS membership for medical students.

The first three proposals would alter Articles IV and V of the CNS Bylaws to allow official communication to be distributed by electronic means. The members of the EC felt that because the preferred form of business communication has changed from print to electronic forms, the Bylaws should reflect that contemporary change. The EC noted that by communicating to CNS members in an electronic format, the mission of the CNS could be carried out more effectively by providing faster and timelier responses to issues affecting the organization.

The fourth proposal would alter Article IV and add a new section to create a medical student membership within the CNS. It was the sense of the EC members that medical student interest in a neurosurgical career may be enhanced by offering a hybrid form of membership (without voting or office holding privileges). This new category of membership would allow the CNS to provide students with information and publications regarding opportunities for clinical exposure to neurosurgery, mentorship by neurosurgeons, exploring research interests, participation in annual or section meetings, and committee activity.

Proposed amendment #1:

ARTICLE IV

Current language:

Membership
The Secretary shall publish a list of all such applicants for comment by the membership at least thirty days before the Chair of the Membership Committee plans to present such applicants to the Executive Committee for approval.

Proposed change:

The Secretary shall publish or disseminate via electronic communications, including, but not limited to, e-mails, facsimile, or similar methods to the members a list of all such applicants for comment by the membership at least thirty days before the Chair of the Membership Committee plans to present such applicants to the Executive Committee for approval.

Proposed amendment #2:

ARTICLE V

Meetings and Elections

Current language:

Section 1. Meetings of the Members. The annual business meeting and any other regular meetings of the members shall be held on such dates and at such times and places as are determined by resolution of the Executive Committee, upon at least forty-five days written notice to members. The presence at a meeting of a member without objection to the transaction of business shall constitute waiver of notice by such member.
Proposed Change:

Section 1. Meetings of the Members. The annual business meeting and any other regular meetings of the members shall be held on such dates and at such times and places as are determined by resolution of the Executive Committee, upon at least forty-five days written notice or dissemination via electronic communications, including, but not limited to, e-mails, facsimile, or similar methods to members. The presence at a meeting of a member without objection to the transaction of business shall constitute waiver of notice by such member.

Proposed amendment #3:

ARTICLE XII

Current language:

Amendments
These Bylaws may be altered or amended at any general meeting of the Congress, by unanimous vote of those present, at said meeting, provided a written copy of said amendment is filed with the Secretary and notice therefore is given in writing to the members at least 45 days before said meeting.

Proposed Change:

These Bylaws may be altered or amended at any general meeting of the Congress, by unanimous vote of those present, at said meeting, provided a written copy of said amendment is filed with the Secretary and notice therefore is given in writing or disseminated via electronic communications, including, but not limited to, e-mails, facsimile, or similar methods to the members at least 45 days before said meeting.

Proposed amendment #4: Creating a new category of membership for medical students.

ARTICLE IV

Current language:

Membership

Section 1. Members. There shall be eight classes of membership in the Congress: Active Membership, Honorary Membership, Senior Membership, Inactive Membership, International Membership, Resident Membership, Associate Membership, and Affiliate Membership.

Proposed Change:

Membership

Section 1. Members. There shall be nine classes of membership in the Congress: Active Membership, Honorary Membership, Senior Membership, Inactive Membership, International Membership, Resident Membership, Associate Membership, Affiliate, and Medical Student Membership.

The proposed addition to the Bylaws is:

ARTICLE IV

Section 11 (new). Medical Student Members. Medical Student Membership shall be available to any medical student in good standing enrolled in an accredited US medical school (allopathic or osteopathic) or accredited Canadian medical school. The student’s medical school dean, neurosurgery department chairman or surgery department chairman must sign the membership application or submit an accompanying letter verifying the student’s enrollment and expected date of graduation. Medical Student Membership applications will be approved by the Executive Committee. Medical Student Membership shall terminate automatically upon graduation from medical school. Medical Student Members shall pay annual dues and may serve on committees but may not vote or hold office.

Section 11 (previous “Professional Standing”) will become Section 12.
CNS Membership: Applications in Progress

M. Azzam Abdulrazzak
Edward Ahn
Michele Aizenberg
Ghazwan Al-Duliamy
Angel Alvarez
Kevin Ammar
Joshua Ammerman
Ajay Ananda
Henry Aryan
Farbod Asgarzadie
Michael Ayad
Hildo Azevedo-Filho
Peter Balousek
Asif Bashir
Peter Basta
William Benedict
Ronald Benveniste
Devin Binder
Carlos Botella Asuncion
John Brayton
Sergio Castillo
Ali Chahlavi
Mike Chen
Christopher Chittum
William Choi
Yu-Cheng Chou
Haroon Choudhri
Goncalo Costa
Daniel Couture
Ryan Denhaese
Eric Deshaies
John Drygas
Robert Dodd
Rose Du
Edward Duckworth
Aaron Dumont
Ahmed Elsawaf
Hazem Eltaahawy
Eric Eskioğlu
Teodoro Evans
Syed Fatmi
Vishal Gala
Chirag Gandhi
Jason Garber
Anand Germanwala
Enrico Ghizoni
Nestor Gonzalez
Frederick Harris
Shahid Gul
Bharat Guthikonda
Gerardo Hernandez
Eric Horn
Robert James
Francisco Jarufe
Andrew Jei
Jordan Jude
Tsutomu Kadekaru
Hamid Khoshab
Louis Kim
Stefan Kim
Jack Klem
Paul Klimo
Daniel Kueter
Anil Kumar
Michael Lim
James Liu
John Lopez
David Lundin
Gustavo Luzardo
Robert Mason
Stephen McCluskey
Natasha McKay
Yadolla Mohammadi
Eiharu Morikawa
Osterroth Norena
Juan Oviedo
Sameer Paltewar
Luz Pereira
Brian Ragel
Jean Regis
Bernarado Perez
Nicolas Phan
Alfi Piva
Erich Richter
Chanland Roopnarunt
Andres Rubiano
Fortino Salazar
David Sargent
Raymond Sekula
Lee Selznick
Mudit Sharma
Karl Sillay
James Silverthorn
Robert Sloan
Chris Sloffer
Deepa Soni
Julian Spears
Uddanapalli Srinivasan
John Steele
Florin Stefanescu
Jae Hoon Sung
Herminio Tao
Emilio Tayag
Ramesh Teegala
Charles Theofilos
Brad Thomas
Kelly Thynne
Minh Tran
Vladimir Tsikarishvili
Juan Uribe
Sanjay Vhora
Jean-Marc Voyadzis
James Wang
Joshua Williford
Kelvin Kwok Heng Woon
Benson Yang
Ronald Young
Fangyi Zhang
Yi Zhang
Boris Zurita-Cueva

Congress of Neurological Surgeons Nominating Committee

The following slate of officers was reached by unanimous consensus:

President-Elect: P. David Adelson, MD (Pittsburgh, PA)
Vice-President: Christopher Getch, MD (Chicago, IL)
Member-At-Large: Ganesh Rao, MD (Houston, TX)
Member-At-Large: Jamie Ullman, MD (Elmhurst, NY)

Respectfully submitted,

Richard G. Ellenbogen, MD
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