On behalf of the American Association of Neurological Surgeons (AANS), the Neurosurgery Research and Education Foundation (NREF) and NeuroPoint Alliance (NPA), it is my pleasure to present the 2014 Annual Report to Membership and Stakeholders.

In the pages that follow, it is our hope that the growth, commitment, service and visions for the future that all three dynamically robust organizations demonstrate make vividly clear to you why your support and involvement is so vital.

The highlights of the past year that you are about to read are at the same time a revealing look ahead to the future visions of the AANS, NREF and NPA. The leadership and management of each organization view accomplishments not as summits reached but waypoints achieved. Each successful objective is not an end, but another step forward.

The successes of each passing year are our foundations for creatively meeting today’s new challenges, as we create tomorrow’s opportunities.

Thus, through your support and with your involvement, the three organizations have become true pathfinders in leading the specialty toward its future in medicine, science and healthcare. Among the many innovations and successful achievements of this past year’s strategic visions, this report’s highlights are:

- The 2014 AANS Annual Scientific Meeting generated a record number of abstracts and established new horizons for technological education, provocative and challenging analysis, ongoing advancement of the most innovative meeting delivery systems, and dynamic speakers from around the neurosurgical world.

- The newly structured NREF, AANS’s foundation, began its initial year under the direction of its own board of directors, and with a renewed mission to support the AANS’s strategic vision by expanding the foundation’s multidimensional scope of addressing neurosurgeons’ educational needs at every stage of their careers, while funding advanced treatments in neurosurgical care.

- NPA, now at the forefront of medical specialty registries providing dynamic national clinical data from an increasing number of neurosurgical practices and subspecialties, continued its rapid growth. The National Neurosurgery Quality and Outcomes Database (N’QOD) national registry is now the largest national spine registry yet created in North America. NPA and the NREF introduced a Stereotactic Radiosurgery Registry, secured through an educational grant from Brainlab. And, exploratory collaborations were initiated with the Scoliosis Research Society, the Cervical Spine Research Society, the American Academy of Physical Medicine and Rehabilitation and the International Society for the Advancement of Spine Surgery, in addition to other related health-care organizations.
The expansion of AANS’ international collaboration with the specialty’s providers and allied partners around the world, as AANS implemented a dedicated and consistent program of strategic outreach and opportunity to our international colleagues.

The strengthening and active participation of the three organizations’ collaborations and support of our allied specialty organizations.

A proactive and multi-dimensional representation of the specialty and its memberships’ socioeconomic interests in Washington, D.C., collaboratively advocating on behalf of all aspects of neurosurgery and health-care reform for all of medicine in this time of rapidly evolving change in U.S. health care.

Ongoing focus on promoting appropriate interaction with related neurosurgical industry partners, and actively collaborating together to ensure both superior care as well as safety for patients.

Along with the AANS’, NREF’s and NPA’s physician leaders, professional association management staff, all members and related partners, it is with the greatest anticipation of the achievements ahead that we submit this report to you. The portraits of dedicated service, proactive advancement, financial stability and cutting-edge innovation are truly a mirror of the neurosurgeon and allied health-care providers and partners in our vital and rapidly evolving health-care environment.

We continue to look forward to aggressively anticipating, identifying and serving the needs of our members and partners, their patients and all stakeholders. The successes of each passing year are our foundations for creatively meeting today’s new challenges, as we create tomorrow’s opportunities.

Thomas A. Marshall
Executive Director
Expanding Neurosurgery

It has been my pleasure and privilege to serve as the American Association of Neurological Surgeons (AANS) President this past year. I am proud that during my tenure the association saw the launch of important new initiatives that truly serve to expand neurosurgery — by this I refer to expanding the depth and breadth of our specialty to embrace the opportunities that we help create.

We saw a new, expanded role for the Neurosurgery Research and Education Foundation (NREF). The NREF is a well-established institution in neurosurgery; for more than 30 years, it has been funding seed grants for promising work by young investigators. This remarkable vision was initiated in 1980 by AANS leadership, under the initial direction of the late Dr. Robert King. The core mission of the NREF includes the provision of private, non-governmental sources of funding for research training in the neurosciences. We are now leveraging the strengths of the NREF and expanding this mission. We transformed the NREF into a more robust, independent 501(c)(3) (tax-exempt nonprofit) entity, with its mission to have a much broader impact for all of neurosurgery. The NREF now has an independent board, which includes members (in addition to the AANS representatives) from the Society of Neurological Surgeons (SNS, or Senior Society) and the American Academy of Neurological Surgery, as well as a public member.

The practice of neurosurgery is changing rapidly. We must embrace new technology and refinements in surgical treatments. We will need to lead the process.

The enhanced mission of the NREF now includes clinical research funding, by way of clinical registry and outcome studies. The NeuroPoint Alliance (NPA) serves this patient registry function as the strategic arm of the NREF and provides the platform for comparative effectiveness research, by facilitating study group research and clinical consortia to perform outcome analysis and clinical trials vital to the growth and validation of our mission.

We also recognize the importance of developing a strong group of medical students with an interest in neurosurgery to carry our field forward. This recognition has led to the goal of establishing a Medical Student membership to the AANS. The vision of this category is to introduce all medical students from any institution to the basics and principles of neurosurgery, to help promote their involvement in neurosurgical research and to introduce them to role models to facilitate their later careers in neurosurgery. Early involvement and introduction to neurosurgery in the medical student curriculum is the key to attracting medical students to the specialty, and this section will fill in a current void of exposure to neurosurgery seen in most medical school curricula. This will be accomplished through the creation of a medical student community with nationwide chapters.
We all can recall one or a few key individuals in our career who made that game-changing difference on our path to becoming a neurosurgeon. To promote the importance of mentorship in the development of a successful neurosurgical career, we established the inaugural Osler Lectureship. The Osler name was chosen for two important reasons — first, because William Osler was an important mentor for Harvey Cushing during the early part of his career (in fact, Cushing wrote the definitive biography of Osler, for which he won the Pulitzer Prize in 1926), and, second, because Osler was the consummate mentor for generations of physicians and surgeons. From his humble beginnings as a junior faculty at the Montreal General Hospital, where he conducted student teaching sessions weekly by a wood fire, to his later career at Oxford, he impacted the lives of countless students.

Thanks in no small part to the AANS staff, under the leadership of Tom Marshall, the 82nd AANS Annual Scientific Meeting, with its theme, “Expanding Neurosurgery,” was a tremendous success. Several special lecturers who have demonstrated great leadership in their respective subspecialty areas and pushed the envelope to provide innovative treatment for the patients we serve and new opportunities for our trainees presented unique insights. Such speakers included Dr. Chris Shaffrey from the University of Virginia, who spoke on surgery of spinal deformity; and Dr. Robert Rosenwasser from Jefferson University, who provided a model for neurosurgeon involvement in the treatment of stroke. Dr. Kim Burchiel from the Oregon Health and Science University talked about the neurosurgeon as a pain specialist, while Kevin Foley, our Schneider Lecturer, discussed the neurosurgeon and industry. Significantly, Clayton M. Christensen spoke as the Cushing Orator. The Kim B. Clark Professor of Business Administration at the Harvard Business School, Christensen is best known for his study of innovation in commercial enterprises. Christensen was a timely orator in this era of significant change in the delivery of health care in the United States. These are but a few of the presenters who shared how neurosurgery continues to transform the field of medicine — and offer new opportunities for those willing to explore all of its boundaries.

The practice of neurosurgery is changing rapidly. We must embrace new technology and refinements in surgical treatments. We will need to lead the process.

William T. Couldwell, MD, PhD, FAANS
2013-2014 AANS President
The 82nd AANS Annual Scientific Meeting

From April 5-9, 2014, San Francisco was home to 3,300 medical attendees as they gathered in the city’s Moscone Convention Center for the 2014 AANS Annual Scientific Meeting. The theme of this year’s meeting, “Expanding Neurosurgery,” permeated the entire event — including the guest lecturers’ and featured speakers’ talks, scientific presentations and programming, practical clinics, breakfast seminars, 3D sessions and exhibits. Overall, the 2014 program emphasized the importance of innovation not only in the neurosurgical field, but throughout the entire health-care industry, as well as in society.

Couldwell Focuses on Future Growth of Neurosurgery

The 2013-2014 AANS President William T. Couldwell, MD, FAANS, focused on the future growth of the neurosurgical field and the importance of developing new technology during his presidential address on Sunday, April 6. Noting the recent slow growth of neurosurgery as a subspecialty, Couldwell stressed the importance of expanding the field, displaying data from a five-year trend chart, and illustrating how neurosurgical residency positions have risen less than seven percent from 2009-2013. In comparison, neurology rose 19 percent during the same time period. “What is clear from an analysis of market demand, which remains robust, is that we can definitely employ more neurosurgeons,” Couldwell stated, citing an increased demand for neurosurgical services, despite both physician and specialist shortages.

“The current reconfiguration of residency training offers us a great opportunity,” added Couldwell. “The Next Accreditation System is a new paradigm in residency training.” This system will enable well-functioning training programs to innovate, he explained, allowing for sub-specialty exposure without increasing the length of training — a significant factor in allowing neurosurgery to evolve. He also stressed the importance of tapping into new and/or upcoming markets, such as neurocritical care. With thriving neurocritical care programs, and 81 positions offered in last year’s residency matching program, “This career path offers a significant opportunity for our residents,” Couldwell revealed.

Continuing with the importance of embracing innovative technology, Couldwell discussed the advent of Google’s driverless car technology, and how it has the potential to negatively impact the professional driving industries, such as trucking and taxis. In 2012, the Google team announced it had driven more than 300,000 miles accident-free by using a range-finder mounted on top of the car that generates a detailed 3D map of its environment. As of December 2013, four U.S. states had passed laws permitting the use of autonomous vehicles, further threatening the future of professional driving careers.
Couldwell related Google’s innovation to the story of the cardiothoracic field — how its inability to accept and implement new technologies has caused it to become nearly obsolete. “Cardiac surgery did not embrace the radical new technology of endovascular surgery,” Couldwell stated, explaining how it resulted in the cardiovascular disease specialty’s growing much larger and becoming more competitive, in comparison to cardiothoracic surgery programs, which are dwindling.

To conclude his presidential address, Couldwell stated, “The rapid technological advances that impact much of our core neurosurgery will enable those with less experience and training in their own residencies to master what we have in less time. These advances will make the precise work in which we pride ourselves more accessible to other specialties."

**Concussion and Sports-injury Prevention Highlighted in Plenary Session**

The 2014 AANS Annual Scientific Meeting offered four different plenary sessions, one of which, held on Sunday, April 6, was specifically geared toward advanced practice providers. Among the various topics covered, which included management of incidental image findings, spinal radiosurgery, advanced strategies for neurosurgical practices, applications of 3D technology in neurosurgery, and brain-mapping and awake-mapping techniques, one session that stood out was the concussion and sports-injury-oriented program led by Gail L. Rosseau, MD, FAANS; Joseph C. Maroon, MD, FAANS (L); and Julian E. Bailes Jr. MD, FAANS.

Topics discussed by the expert faculty included concussion-prevention strategies, resources and advocacy measures, and novel directions and research for future concussion education. Rosseau began the discussion by noting how recent articles in lay literature have been saturated with sports-related head-injury information, with the best statistics indicating that there are anywhere between 1.5 and 4 million traumatic brain injuries in the United States per year, and they are a contributing factor in deaths in nearly one-third of injury-related deaths. Although these numbers are specific to a young demographic, Rosseau noted that they have the most to lose from their injuries at such an early stage of life. Furthermore, nearly 20 percent have a prolonged recovery (defined as longer than 21 days), indicating that there are between 320,000 and 760,000 people in the United States per year who suffer from persistent symptoms of concussion.

Football, in particular, has become the “poster child” for sports-related concussion prevention and advocacy. In high school football — which recently has been in the limelight with regard to concussion prevention — 10 percent of the team will suffer from a concussion per year. “As I say to high school coaches when we run programs at Northwestern [University],” added Rosseau, “How many athletes do you have? If it’s 200, you are going to have 20 concussions this year. It’s not a matter of if — it’s when. You want to be able to prevent, recognize and properly treat them.”
Opening Ceremonies Program Showcases Digital Technology, World Hunger

“Brain surgery has replaced rocket science as an expression of the almost-miraculous and the impossibly difficult for humans to do, thus conveying an almost god-like stature to those who do it,” stated Sir Bob Geldof, musician, activist and founder of the Live Aid concerts, in his speech during AANS’ second annual Opening Ceremonies program, which took place the evening of Sunday, April 6.

Geldof, well-known for his anti-poverty efforts in Africa, discussed how he became so impassioned about conquering hunger and poverty and how his career in rock-and-roll led him there. “Of the ten fastest growing economies in the world, seven are African,” Geldof said, commenting on the current state of Africa’s economic progress; stressing the burgeoning continent’s dire need of assistance in developing their technology and social infrastructure.

After decades of charity work, the next step in his journey to combat poverty, Geldof noted, is to close the gap between humanitarianism and government, in order to promote and develop the necessary infrastructural changes. “If you want change, then you must engage with the agents of change, who in our society are the elected leaders,” stated Geldof, going on to describe his policy, research and lobbying efforts in Washington, D.C., London, Berlin, Paris, Brussels and Africa. “Along with the miracles that seem to be occurring in your business and in other areas,” Geldof added, referring to neurosurgery, “Africa will be one of the economic centers of the 21st century.”

Keeping in step with the theme of technology development, Jaron Lanier, musician, computer scientist and virtual-reality pioneer also spoke at the Opening Ceremonies program on Sunday, April 6. Discussing the role of the emerging interaction between digital technology and economics, Lanier described how the two have transformed the practice of medicine and how future improvement is needed.

“Computation has become the arbiter of wealth and power,” stated Lanier, describing how the world’s wealth is no longer dominated by those in the oil or shipping industries, as it was a few decades ago; rather, the world’s wealthiest now are those who own or control some kind of digital network, whether it be a mobile phone network, social network, etc.

Lanier then went on to describe how computation affects the field of medicine and the future of our society in relation to giant-scale computing, big data and its potential to shrink various markets through disruption. Lanier cited a useful example of how the technology behind automatic language translation via the Internet has almost entirely replaced language translation as a profession.
Further noting how this phenomenon affects physicians, Lanier delved into an explanation of how insurance companies, hospital chains and pharmaceutical companies all are playing a part in information collection as well, which, he stresses, has become the dominant dynamic for the allocation of power, money and influence. Therefore, Lanier continued, “Physicians’ status, prospects and autonomy start to be governed by the big data systems run by pharmaceutical companies and hospital chains that are analyzing their behavior. It’s a losing game for the future of medicine, for the future of all human activity; we have to rescind the economics around the people who actually do the work.”

**Neurosurgical Advocacy and Scientific Research at the Forefront**

On Monday, April 7, John A. Wilson, MD, FAANS, chair of the Washington Committee, gave a brief update on some neurosurgery advocacy efforts. One issue in particular that has taken the forefront of the Washington Committee’s efforts over the past year is Medicare Physician Reimbursement under the Medicare Sustainable Growth Rate (SGR). Wilson discussed the tremendous amount of work that has been done to create a bill that would replace the SGR with a sustainable formula for physician reimbursement. However, the leadership in Congress instead came up with a short-term patch to prevent the 24-percent pay cut through March 31, 2015. Additionally, the patch resulted in delaying the ICD-10-CM implementation until at least Oct. 1, 2015, as well as the delay of the “two-midnight” rule, which extends the “probe and educate” program through the first six months of 2015. Wilson stressed the need for continued efforts, urging attendees to talk to their state legislators and show their support by volunteering and by contributing to the NeurosurgeryPAC.

In addition to health-care updates from the legislative perspective, attendees also heard about a variety of exciting neurosurgical research studies. One, presented by Gary K. Steinberg, MD, PhD, FAANS, discussed a clinical study that utilized intraparenchymal transplantation of human bone marrow stem cells (in patients with ischemic stroke in the subcortical region of MCA or lenticuloistriates with or without cortical involvement) in order to help improve neurological function. Steinberg provided two notable case examples. Although a larger, Phase 2 study is needed, Steinberg noted that the neurologic improvements of the patients involved in the initial study were still present six months following transplant, with some patients sustaining improvements up to two years.

Continuing in the vein of scientific research, on Tuesday, April 8, Jeffrey M. Sorenson, MD, FAANS, presented an overview of The Rhoton Collection, AANS’ new online repository of the teaching materials of Albert L. Rhoton Jr., MD, FAANS(L), that illustrate anatomy — and that represent more than 40 years of work by more than 100 neurosurgical fellows. Rhoton himself was not able to attend the meeting in San Francisco, but stated via video, “I’m so completely appreciative of the beautiful, digital platform that the AANS has developed. Over the years, we’ve had more than 100 fellows that have joined us for this training. Our goal in this is to make all of them Michelangelos of microsurgical anatomy and create some of the most exceptional, precise surgical artwork.” There are now thousands of drawings, videos and operative cases available in the online collection, with the remainder of Rhoton’s images to be added over the coming year.
Neurosurgical Top Gun Competition

The AANS Neurosurgical Top Gun Competition began in 2006 as a project of the AANS Young Neurosurgeons Committee. Each year, the competition and stations have evolved. In the past, this three-day event included stations such as an image-guided lumbar pedicle screw, bone scalpel, virtual ventriculostomy and thoracic vertebroplasty simulators. Each participant has one opportunity at each intricate and demanding surgical station, and is scored on his or her performance. The resident or fellow with the best combined score was awarded the distinct honor of being the Neurosurgical Top Gun and a price of $1,000, as well at $1,500 for his or her residency program. Top scorers at each individual station won a prize of $200. The 2014 Neurosurgical Top Gun Competition drew medical students, residents and interns from around the world to participate in simulation sessions. The competition winners:

Top Honors—2014 Neurosurgical Top Gun
Chine Logan, DO
Virginia Tech Carilion School of Medicine (2008-2014)

Lumbar Pedicle Screw
Chine Logan, DO
Virginia Tech Carilion School of Medicine (2008-2014)

Trigeminal Rhizotomy
Eric Sribnick, MD
Emory University (2008-2014)

Endovascular Simulator
Shaheryar Ansari, MD
Indiana University School of Medicine (2013-2018)

Ventriculostomy
Tene Cage, MD
University of California San Francisco (2010-2016)

For the first time, the 2014 Neurosurgical Top Gun competition included a head-to-head match-up, pitting teams of residents from three of the highest-performing neurosurgical training programs in a winner-takes-all competition to decide once and for all whose program is the strongest. This year, based on aggregate individual scores, the Cleveland Clinic earned the 2014 Overall Residency Program Top Gun Award.

Cleveland Clinic represented by:
Andrew Healy, MD (2010-2016)
Sumeet Vadera, MD (2008-2014)
Kevin Michael Walsh, MD (2011-2017)

The 2014 Neurosurgical Top Gun Competition is supported by:
Medtronic
Immersive Touch
MicroVention, Inc.
Neurosurgical Luminaries: 2014 Award Winners

**Cushing Medalist** — Troy M. Tippett, MD, FAANS

**Distinguished Service Award** — Sir Graham Teasdale, FRCP, FRCS

**Humanitarian Award** — Anselmo Pineda, MD, FAANS(L)

**AANS International Lifetime Recognition Award** — Nicolas de Tribolet, MD

**Distinguished Lecturers**

**Cushing Orator** — Clayton Christensen

**The Rhoton Family Lecturer** — Christopher I. Shaffrey, MD, FAANS

**The Hunt-Wilson Lecturer** — Robert Gates

**The Ronald L. Bittner Lecturer** — Frederick F. Lang Jr., MD, FAANS

**The Richard C. Schneider Lecturer** — Kevin T. Foley, MD, FAANS

**The Theodore Kurze Lecturer** — Vinko Dolenc, MD, PhD

**The Louise Eisenhardt** — Anne Marie Slaughter, M.Phil, D.Phil, JD

**The Van Wagenen Lecturer** — Ian F. Pollack, MD, FAANS

**New! The Osler Lecturer** — Donald Quest, MD, FAANS(L)

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2014 AANS Annual Scientific Meeting Commercial Supporters

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**Paradigm Spine**
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In fiscal year 2014, the AANS was resurveyed by the Accreditation Council for Continuing Medical Education (ACCME) and awarded accreditation with commendation for six years as a provider of continuing medical education for physicians.

ACCME reaccreditation is an intensive, multi-month process, which was spearheaded by MOC Committee Chair, H. Hunt Batjer, MD, FAANS, in coordination with AANS staff. Earning the Accreditation with commendation is the highest level of accreditation bestowed by the ACCME, and reflects the AANS’ commitment to providing the highest quality of educational materials.

“One of AANS’ primary goals as a provider of exceptional continuing medical education is to continually improve and expand our robust educational programing,” said AANS Executive Director, Thomas Marshall. “Earning full accreditation with commendation is an affirmation of our mission to advance the specialty in the promotion of the highest quality of patient care.”

The ACCME employs a rigorous, multilevel process for evaluating institutions’ CME programs, requiring dutiful compliance from all those involved in AANS education courses. Fifteen AANS courses were selected at random to be evaluated by the ACCME, and through a process of reporting and interviewing, the AANS demonstrated compliance with the 20 criteria for accreditation with commendation.

“Achieving commendation is extremely gratifying,” said Joni Shulman, AANS Associate Executive Director, Education and Meetings. “We have worked effectively to create processes that meet the needs and close the gaps for our learners and have fulfilled our CME program mission through demonstrated success in advancing ‘physician competence’ with activities built upon evidence-based medicine and supported by adult learning principles. To be recognized for this by our CME colleagues is the highest honor.”

This commendation from the ACCME lasts until March 31, 2020 — the longest period possible. The reaccreditation sets the stage for the AANS to continue providing neurosurgical education to meet member needs for the next six years, and reinforces AANS commitment members’ educational needs.
Expanding Neurosurgery through Collaboration

In April of 2014, AANS Board of Directors member, Christopher I. Shaffrey, MD, FAANS, co-directed a new hands-on cadaver course, Spine Deformity Solutions: A Hands-On Course. Presented as a collaborative educational offering between the AANS and the Scoliosis Research Society (SRS), the course was able to expand influence beyond the reach of past AANS courses. The course brought together some of the top spinal deformity surgeons in the country, with a collaborative faculty comprised of both neurosurgeons and orthopaedic surgeons. Registration was limited to preserve the intimate small-group nature, ensure access to faculty, and to maximize opportunities for hands-on surgical technique in the cadaver labs. Ten hours of the course was devoted solely to lab work, with a high faculty-to-learner ratio to allow for each attendee to receive personalized guidance. Topics and lab sessions covered all areas of deformity correction and a discussion on a variety of complex conditions and current trends in surgical technique. The intimate nature of the course included small-group “fireside chats” with faculty during the evenings. Lab work was supplemented with didactic presentations, video demonstrations and hands-on cadaveric learning. The Spine Deformity Solutions course was well-received by both attendees and faculty, and the AANS plans to offer the course again in 2015.

Being a solo practitioner in a general neurosurgery practice, I’m very selective in the courses I attend due to time away from the office. This was one of the best courses I have ever attended! The combined neuro/ortho faculty were among the brightest stars in spine surgery and they spent time going through their thought process for how they approach and treat scoliosis. The hands-on lab was great but the “Fireside Chats” and the case discussions with faculty were awesome!

Richard W. Broderick, MD, FAANS
Solo Practice
Surgical Neurology Associates
Arlington Heights, IL
Educating the Next Generation of Neurosurgeons

Neurosurgical residency programs are among the lengthiest, most intensive training programs of any medical specialty. This is due to the breadth and depth of knowledge and skills required to become a practicing neurosurgeon. The AANS, in cooperation with the NREF, offers free Resident Education Courses to provide hands-on training and didactics in areas not always covered within a neurosurgical residency.

In fiscal year 2014, the AANS/NREF Resident Education Courses educated 179 participants, each selected by their program directors according to criteria for this advanced training. The courses consist of several intensive days of lectures and lab work on a specific neurosurgical topic, giving residents greater understanding and tactile experience in that area. Since the program’s inception in 2006, the AANS and NREF have provided free resident training to 1,272 residents.

In the 2014 fiscal year, with the support of the NREF Development Committee, the AANS helped expand the scope of resident education in these eight areas:

- **Fellows Course in Endovascular Techniques**: Oct. 4-6, 2013, in Memphis (in collaboration with Society of NeuroInterventional Surgery and Society of Vascular and Interventional Neurology)
  
  **Course Co-Directors**: Adam S. Arthur, MD, MPH, FAANS; Alex Berenstein, MD; and Erol Veznedaroglu, MD, FAANS
  
  **Industry Supporters**: Blockade; Codman; Covidien; MicroVention; Penumbra; Siemens; and Stryker
  
  **Number of Fellows Educated**: 38
- **Endovascular and Vascular Techniques for Residents:**
  Nov. 7-10, 2013, in Memphis
  
  **Course Co-Directors:** Adam S. Arthur, MD, MPH, FAANS; and Michael T. Lawton, MD, FAANS
  
  **Industry Supporters:** Aesculap; Biomet Microfixation; Codman; Covidien; Leica Microsystems; Medtronic Midas Rex; MicroVention; Mizuho America; Penumbra; and Stryker
  
  **Number of Residents Educated:** 24

- **Fundamentals in Spinal Surgery for Residents:**
  Nov. 14-16, 2013, in Houston
  
  **Course Co-Directors:** R. Patrick Jacob, MD, FAANS; and Praveen V. Mummaneni, MD, FAANS
  
  **Industry Supporters:** Biomet Spine; DePuy Synthes Spine; Globus Medical; K2M; Medtronic; NuVasive; Orthofix; and Paradigm Spine
  
  **Number of Residents Educated:** 36

- **Skull Base for Senior Residents:**
  March 6-9, 2014, in Memphis
  
  **Course Director:** Jon H. Robertson, MD, FAANS
  
  **Industry Supporters:** Biomet Microfixation; Carl Zeiss Meditec; DePuy Synthes CMF; Integra LifeSciences; Karl Storz; Leica Microsystems; Medtronic; Stryker CMF; and Symmetry Surgical
  
  **Number of Residents Educated:** 24

- **Peripheral Nerve for Residents:**
  May 15-16, 2014, in Baltimore
  
  **Course Director:** Allan Belzberg, MD, FAANS
  
  **Industry Supporters:** AxoGen and Integra LifeSciences
  
  **Number of Residents Educated:** 32

- **Spinal Deformity for Residents:**
  May 16-18, 2014, in Baltimore
  
  **Course Co-Directors:** Robert Heary, MD, FAANS; and Justin S. Smith, MD, FAANS
  
  **Industry Supporters:** Biomet; DePuy Synthes Spine; K2M; Medtronic; and NuVasive
  
  **Number of Residents Educated:** 32

- **Science of Neurosurgical Practice:**
  
  **Course Co-Directors:** Michael Glantz, MD; and Robert E. Harbaugh, MD, FAANS
  
  **Industry Supporters:** DePuy Synthes and Leica Microsystems
  
  **Number of Residents Educated:** 25
In 2014, Christopher I. Shaffrey, MD, FAANS, was instrumental in the introduction of a new cadaver course. A member of the AANS board of directors, Shaffrey channeled his active research interest and expertise in spinal surgery, and, working with Larry Lenke, MD, helped create and present the AANS’ latest educational offering, *Spine Deformity Solutions: A Hands-On Course*. The course is a combined effort of the AANS and the Scoliosis Research Society (SRS) and educated both neurosurgeons and orthopaedic surgeons.

“Many of the patients I treat are referred by other spine surgeons. It is gratifying that many of my peers refer their complicated patients and many of their family members for treatment,” Shaffrey said. “I thought that a course of this type — hands-on, practice on actual spines and with lots of time for small group discussions — would help both students and faculty refine and improve the strategies spine surgeons use to treat and manage scoliosis.”

“So much of the process of learning neurosurgery benefits from having a mentor,” explained Shaffrey. “We designed this course to provide the mentorship experience to attendees in many ways, from the work on cadavers, to the class time, to the more casual — yet still neurosurgically focused — time in the evenings, when we could talk over the day, our cases and our specialties.”

Shaffrey was named one of North America’s top 28 spine surgeons in 2013. The list, generated by *Orthopedics This Week*, working with thought leaders in the field, described Shaffrey as the “go-to-guy on the East Coast” who is thought of as a true innovator. As the *Spine Deformity Solutions: A Hands-On Course* demonstrates, his innovations don’t stop at the surgery door, but expand beyond his practice setting, into the education of new and practicing neurosurgeons.

Christopher I. Shaffrey, MD, FAANS, received his medical degree from the University of Virginia and completed both neurosurgical and orthopaedics residencies at the University of Virginia, followed by a spine fellowship in pediatric and adult reconstructive spine surgery. After his post-graduate training, Shaffrey completed a scholarship obligation to the United States Navy at Portsmouth Navy Medical Center. In 1997, he was appointed to the senior staff in the departments of neurological surgery and orthopaedic surgery at Henry Ford Hospital. In 1999, Shaffrey was appointed associate professor of neurological surgery and adjunct associate professor of orthopaedic surgery and sports medicine at the University of Washington in Seattle, and in 2003, he returned to the University of Virginia as professor of neurological surgery and director of the neurosurgery spine division. The recipient of the Counsel of State Neurosurgical Societies Young Neurosurgeons Award, Shaffrey has been named to “Best Doctors” and “Top Doctors” lists numerous times. In addition to sitting on editorial boards for neurosurgical journals and serving as editor for several textbooks on spinal surgery, he has authored more than 100 publications and given more than 500 national and international presentations.
It was an honor and a privilege to be the president of the Neurosurgery Research and Education Foundation (NREF) during this momentous year. As you may know, over the past year, the NREF has undergone a complete restructuring of the composition of the board of directors to include representation from the Joint Sections, the Society of Neurological Surgeons, and the American Academy of Neurological Surgeons. In addition, for the first time in its 34-year history, the NREF has a seat on the board for a public member. The NREF has been reinvigorated not only by the new board structure but in its mission as well.

Going forward, the NREF is dedicated to providing education to neurosurgeons at all stages of their careers, as well as funding research into new and existing neurosurgical treatments in order to identify links between best practices and improved outcomes in patient care. The NREF is now closely aligned with NeuroPoint Alliance (NPA) and will seek funding for data registries and outcomes studies such as the new Stereotactic Radiosurgery Registry (SRS) project, which is a groundbreaking patient registry aimed at establishing national benchmarks for care. As you can see, this reorganization of NREF has been the result of rethinking and broadening the scope of NREF to meet the challenges of an evolving health system and to preserve and strengthen our specialty and establish the NREF as the philanthropic arm for neurosurgery.

Our ability to impact and advance the specialty through research support and registry project development is directly related to the generosity of the individuals and organizations that believe and share our vision. We are thankful to all of our supporters that help us achieve our goals. The NREF board of directors is grateful for you, our donors, friends and volunteers, whose support over the past year helped further our important initiatives.

I am pleased to share the many success stories in this annual report, and I look forward to more to come.

Sincerely,

Troy M. Tippett, MD, FAANS
2013-2014 NREF President
Since 1980, the Neurosurgery Research and Education Foundation (NREF) has served as the premier funder of neurosurgical research and education. Each year, the NREF provides fellowship funding for training in the neurosciences to neurosurgical programs in North America. Since 2010, the NREF has provided funding for more than 71 post-residency clinical fellowships in more than 40 neurosurgery training programs.

Funding for fellowship training is made possible by industry supporters and may be available in areas such as spine, endovascular, pediatric, stereotactic and tumor neurosurgery. The NREF Educational Grants Committee, composed of AANS member neurosurgeons, reviews applications from training institutions, makes funding determinations and is responsible for all aspects of this grants program. The neurosurgeons on the Educational Grants Committee do not receive financial or other support from the medical-device industry; these committee members review and approve the grant applications in an independent and unbiased manner. These individuals do not receive compensation for their efforts. Corporate supporters have no role in the selection of fellows or training institutions that receive fellowship funding.

Clinical Fellowships
The NREF gratefully recognizes corporate support for funding of the 2013-2014 post residency clinical fellowships from the following organizations:
- DePuy Synthes Spine, Inc.
- Medtronic, Inc.

2013–2014 Awardees
In 2013-2014, the NREF granted funding for six post-residency clinical fellowship programs in the area of spine. The foundation is pleased to announce the following institutions that received funding:
- Cleveland Clinic Foundation
- Thomas Jefferson University
- Johns Hopkins University
- Medical College of Wisconsin
- University of Virginia
- University of Washington
NREF Research Fellowships
The mission of the NREF is to enhance lives by advancing neurosurgical care. The NREF is dedicated to providing education to neurosurgeons at all stages of their careers, as well as funding research into new and existing neurosurgical treatments, in order to identify links between best practices and improved outcomes in patient care.

Through public donations, corporate support, and donations from allied neurosurgical groups, the NREF supports endeavors that impact the lives of those suffering from epilepsy, stroke, brain tumors, spinal disorders, sports-related head injuries, lower back pain and Parkinson’s disease. Since 1980, more than $7 million in grant funding has been awarded to more than 200 residents and young clinician investigators in more than 50 academic institutions.

NREF research grant funding is made possible by matching funds from allied surgical groups. These grants help provide support for young researchers working on potential treatments and cures for neurosurgical diseases and conditions that affect millions. The NREF would like to thank the following groups that helped support NREF Research Grants and Young Clinician Investigator Awards in fiscal year 2014.

- American Academy of Neurological Surgery
- AANS/CNS Joint Cerebrovascular Section
- AANS/CNS Joint Section on Pediatric Neurosurgery
- AANS/CNS Section on Tumors
- AANS/CNS Joint Section on Disorders of the Spine and Peripheral Nerves

The NREF is proud to present the recipients of the 2013-2014 NREF Research Grants and Young Clinician Investigator Awards.
2013-2014 Research Fellows and Young Clinician Investigator Awards
($40,000 for one year)

Vijay Agarwal, MD
NREF Spine and Peripheral Nerve Section
Research Fellow
Duke University
Project Title: Gait, Nerve Receptor Upregulation and Cytokines in Model of Radiculopathy Versus Discogenic Pain

Zarina Ali, MD, MS
NREF Research Fellow
University of Pennsylvania
Project Title: Peripheral Nerve Regeneration Using Tissue Engineered Nerve Grafts

Luis E. Kolb, MD
NREF/ Pediatric Section Research Fellow
Yale-New Haven Hospital
Project Title: Whole Genome Analysis of Malformations of Cortical Development

Daniel Orringer, MD
NREF/ Tumor Section Young Clinician Investigator
University of Michigan
Project Title: Coherent Raman Scattering Microscopy of Human Gliomas

Rory Petteys, MD
NREF Research Fellow
Georgetown University
Project Title: Animal Model of Thoraco-Lumbar Induced Acute Spinal Cord Injury

Analiz Rodriguez, MD, PhD
NREF Research Fellow
Wake Forest University
Project Title: The Role of Tumor Associated Macrophages in Directing Glioma Cell Invasion

Nicholas Szerlip, MD
American Academy of Neurological Surgery/NREF Young Clinician Investigator
Wayne State University
Project Title: Autocrine and Paracrine Effects of Neuregulin on Glioma

Michael Tso, MD, PhD
NREF/Cerebrovascular Section Research Fellow
University of Calgary
Project Title: Immunological mechanisms of brain injury after SAH

Kristin Weaver, MD, PhD
NREF Research Fellow
University of Florida
Project Title: Optimizing Neural Repair Following Cervical Spinal Cord Injury Using a Multi-Modal Cell Transplant Strategy

Jon T. Willie, MD, PhD
NREF Young Clinician Investigator
Emory University
Project Title: Local Field Potential Signal-Based Closed-Loop DBS of Amygdala for Cataplexy
An avid supporter of the Neurosurgical Research and Education Foundation (NREF), Praveen Mummaneni, MD, FAANS, has been selected annually from 2005 as one of the Best Doctors in America. When asked what inspires his career and his continuing support of the AANS and the Neurosurgical Research and Education Foundation (NREF), Mummaneni shared the following thoughts.

“My inspiration is my patients,” Mummaneni revealed. “My spinal neurosurgery patients continuously amaze me; their drive to recover from their pathologies and to resume their previously active lives always takes me by surprise, and I find my role in helping them recover to be so very rewarding.”

Discussing how he found his professional calling, he explained, “I initially chose academic neurosurgery because it was the only discipline that interested me during rotations in medical school. I found the neurosurgical patients challenging to treat; their management and outcomes — whether good or bad — were always memorable. I knew that, in neurosurgery, I had found the specialty where I could make my contribution.”

He contributes to the specialty not only through his academic work but also through his involvement with organized neurosurgery. “Becoming more involved with the specialty, I learned about the NREF,” Mummaneni said. “I personally choose, both as a volunteer and philanthropically, to support NREF because I understand how important it is to provide both financial support and real-world opportunities for those who are in the early stages of their careers and who want to engage in research for the advancement of spine surgery.

“Over the years, NREF has provided unique opportunities for advancement in neurosurgical research to a wide variety of neurosurgical trainees. It has becomes a key avenue of funding for many who are starting their careers, and I see many of our residents and junior faculty at University of California at San Francisco (UCSF) applying for the grants that NREF offers. Furthermore, NREF has been funding fellowships for neurosurgical subspecialty training over the past several years, and fellows at UCSF and other institutions have had opportunities to enhance their training directly as a result of NREF’s grants. I believe that there is undoubted advancement in the neurosurgical field as a direct result of NREF’s research support, infrastructure and support of subspecialty training.

“Additionally, I believe that the work that NeuroPoint Alliance (NPA) and NREF are doing through the N2QOD is essential to the future of neurosurgery,” Mummaneni added. “I became involved with N2QOD through the AANS/CNS Joint Section on Disorders of the Spine and Peripheral Nerves. As chair-elect of the section, I want to help ensure that we, as a specialty, track outcomes of our patients so that we can demonstrate the true benefits of neurosurgical interventions for spine disease.”

Praveen V. Mummaneni, MD, FAANS, earned his undergraduate and medical degrees from Boston University, completed his general surgical internship at the University of California at Irvine and his neurosurgical residency at the UCSF. Following residency, Mummaneni completed fellowship training in complex spine surgery at Emory University. During his spine fellowship, he received advanced subspecialty training in adult spinal deformity surgery at Northwestern University and at Washington University in St. Louis. He was the first neurosurgeon to be awarded the Edgar Dawson Scholarship from the Scoliosis Research Society. He was also the first neurosurgeon to be awarded the Scoliosis Research Society’s European Traveling Fellowship Award. Mummaneni served as an assistant professor of neurosurgery and orthopedics at Emory University from 2002 to 2006. In 2006, he returned to UCSF as an associate professor, co-director of the UCSF Spine Center, and director of the Minimally Invasive and Complex Spine Fellowship. In 2012, he was promoted to professor and vice-chairman of the UCSF department of neurosurgery.
NREF Medical Student Summer Research Fellowship Program
Now in its seventh year, the NREF Medical Student Summer Research Fellowship program is designed to expose neurosurgical curriculum to first- and second-year medical students — with the hope of piquing their interest in the specialty and selecting neurosurgery when they make their decisions about residency training. The fellowship is open to medical students in the United States or Canada who have completed one or two years of medical school and wish to spend a summer working in a neurosurgical laboratory, mentored by a neurosurgical investigator sponsor who is a member of the AANS. The NREF supports up to 20 awards, with each award totaling $2,500. The 2014 Fellowship awardees:

Abdul-Kareem Ahmed  
Brown University – Alpert Medical School

Malcolm Dombrowski  
University of Pittsburgh Medical Center

Sarah Dooley  
University of Iowa Hospital and Clinics

Mark Ehlers  
University of Wisconsin - Madison

Paul Gamble  
Washington University in St. Louis, School of Medicine

Ranjit Ganguly  
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University of California, San Diego

Terence Verla  
Duke University

Justin Wang  
Queen’s University

Michael Zhang  
Stanford University School of Medicine
2013 Best MSSRF Abstract Presented at 2014 AANS Annual Scientific Meeting

**Stephen Miranda**  
MD Candidate, Class of 2016  
School of Medicine and Dentistry  
University of Rochester  

*Project Title: A dose-dependent response of neuroinflammation after repetitive mild traumatic brain injury.*  

**Investigator Awards.**

**William P. Van Wagenen Fellowship**  
The Van Wagenen Fellowship was established by the estate of Dr. William P. Van Wagenen, who was one of the founders of the Harvey Cushing Society (now known as the AANS) and its first president. The fellowship was designed to provide freedom in scientific development without the restrictive limitations usually imposed by many research grants and fellowships.

Awarded annually since 1968, the Van Wagenen Fellowship is offered for post-residency study in a foreign country, for a period of 12 months. The awardee receives a $120,000 stipend to cover living expenses and other costs, while an additional $15,000 is awarded to the host university lab or program to help offset research, education and investigation costs for the fellowship.

The recipient of the 2014 Van Wagenen Fellowship was Ausaf Bari, MD, PhD, a resident in neurological surgery at the University of California, Los Angeles, who will commence his fellowship in July 2014.

Bari will travel to Toronto, where he will be hosted by the department of stereotactic and functional neurosurgery at the University of Toronto. Under the mentorship of Andres Lozano, MD, PhD, FAANS, Bari plans to study distinct parts of the ventral striatum and accumbens that may mediate different aspects of addiction. Bari’s research project is titled *Neuronal Activity in the Human Nucleus Accumbens and Reward Processing.*
A LEGACY OF PHILANTHROPY

The Cushing Circle
We gratefully acknowledge our distinguished members of the Cushing Circle, a society for cumulative (lifetime) giving of $25,000 or more. The Cushing Circle is comprised of philanthropists who are passionate about helping patients through the specialty of neurosurgery by supporting neurosurgical research, education and outcomes studies.

The NREF is grateful to the following generous individuals and groups who comprise the NREF Cushing Circle:

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Mayo Clinic Department of Neurologic Surgery
Penn State University Department of Neurosurgery
Semmes-Murphey Neurologic and Spine Institute
University of Tennessee
University of Utah Hospital Department of Neurosurgery
ABOVE and BEYOND
Pinnacle Partners Commit to Supporting Neurosurgery

Despite the variety of our Pinnacle Partners’ funding interests, they all share one common goal: Each gift provides not only support for resident education, but also support of the specialty of neurosurgery as a whole. Sponsorship of the Pinnacle Partners in Neurosurgery program is a corporate commitment to support and advance neurosurgery in important areas, such as research, education and training. Since 2006, the generous contributions of these partners in programs, such as the AANS/NREF Resident Education Courses, have allowed more than 1,400 residents and fellows to learn from expert faculty on a breadth of topics, including endovascular neurosurgery, spinal deformity, stereotactic radiosurgery and resident exit strategies.

The NREF gratefully acknowledges the following companies for their support of the Pinnacle Partners in Neurosurgery program in fiscal year 2014:

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NREF Corporate Leadership Council

The NREF Corporate Leadership Council is an annual forum that brings together the leaders in organized neurosurgery with key leaders from NREF’s Pinnacle Partner supporters. The mission of this gathering is to strengthen ties between industry and the field of neurosurgery by providing a forum for discussion and collaboration on issues related to the specialty.

The NREF Corporate Leadership Council convened its annual meeting in July 2013 in Chicago. Senior representatives from 15 Pinnacle Partners companies were joined by members of the NREF board of directors and the NREF Development Committee. Industry leaders and key opinion leaders in neurosurgery provided updates on market trends, ethical and legal issues in the current health-care environment, philanthropic issues and opportunities for patient advocacy. NREF and AANS leaders provided updates on key program areas, such as the NeuroPoint Alliance (NPA) and the activities of the AANS/CNS Washington Committee.
Donor Report 2013-2014

The board of directors of the Neurosurgery Research and Education Foundation (NREF) is grateful to the more than 597 individuals, groups, medical practices, corporations and neurosurgeon members who offered their generous support to the NREF from July 1, 2013, through June 30, 2014.

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Marc H. Friedberg, MD, PhD, FAANS
Robert M. Friedlander, MD, FAANS
Emily D. Friedman, MD, FAANS
David M. Frim, MD, PhD, FAANS
Stanley W. Fronczak, MD, JD, FAANS
Takamitsu Fujimaki, MD, PhD
Steven C. Fulop, MD
George Fredrik Gade, MD, FAANS
Clifford Miles Gall, MD, FAANS
William F. Ganz, MD, FAANS
Stephen R. Gardner, MD, FAANS
Lynn M. Gauvin, MD, FAANS
Grant E. Gauger, MD, FAANS
Alisa D. Gean, MD
Frank L. Genoves, FAANS
Richard E. George Jr., MD, FAANS
Subratra Ghosh, MD, FAANS
Michael Gienger, MD, FAANS
Craig Robert Goldberg, MD, FAANS
Stuart Glenn Goodman, MD, FAANS
Judith L. Gorelick, MD, FAANS
Jeffrey P. Blount, MD, FAANS
John A. Boockvar, MD, FAANS
Lawrence F. Borges, MD, FAANS
Bikash Bose, MD, FAANS
Nicholas M. Bouli, MD, FAANS
Melford Richard Boulton, MD, PhD, FAANS
Kevin L. Boyer, MD, FAANS
Robert H. Bradley, MD, FAANS
Graeme Alexander Brazenor, FRACS
Murat Gunel, MD, FAANS
Lee R. Guterman, PhD, MD, FAANS
Bharat Guthikonda, MD, FAANS
Walter John Hader, MD, FAANS
Michael M. Haglund, MD, PhD, FAANS
Michael V. Hajjar, MD, FAANS
Edward George Hames III, MD, PhD, FAANS
Mark G. Hamilton, MD, FAANS
Daniel Kirby Harmon, MD
David J. Hart, MD, FAANS
Chad Edward Hartley, MD
Richard C. Hartwell, MD, PhD, FAANS
Neal G. Haynes, MD
Michael D. Heafner, MD, FAANS
Heather A. Hedstrom-Lara, MD, FAANS
Gregory Kapinos, MD, MS
Iain H. Kalfas, MD, FAANS
Chikafusa Kadowaki, MD, DMSc
Ammar Hadi Kadhim, MBChB, FIBMS (NS)
Jeffrey K. Kachmann, MD, FAANS
Stephen D. Johnson, MD, FAANS
Robert R. Johnson II, MD, FAANS
Craig H. Johnson, MD, FAANS
Randy Lynn Jensen, MD, FAANS
Ramin J. Javahery, MD
Randi Lynn Jensen, MD, PhD, FAANS
Craig H. Johnson, MD, FAANS
Robert R. Johnson II, MD, FAANS
Stephen D. Johnson, MD, FAANS
Jeffrey K. Kachmann, MD, FAANS
Ammar Hadi Kadhim, MBChB, FIBMS (NS)
Chi Kai Kao, MD, DMSc
Iain H. Kalfas, MD, FAANS
Gregory Kapinos, MD, MS
James Kevin Kaufman, MD, FAANS
F. Donovan Kendrick, MD, FAANS
David G. Kennedy, MD, FAANS
Richard L. Kern Jr., MD, FAANS
Hitham H. Khalil, MD
Stanley H. Kim, MD, FAANS
Daniel L. Kitchens, MD, FAANS
Laurence I. Kleiner, MD, FAANS
David G. Kline, MD, FAANS(L)
Andrew J. Kokkino, MD, FAANS
Leonid Kravetz, MD
Mark D. Krieger, MD, FAANS
David C. Y. Kung, MD, FAANS(L)
John A. Kusske, MD, FAANS(L)
Michel Lacroix, MD, FAANS
John A. Lancon, MD, FAANS
Martin L. Lazar, MD, FAANS(L)
Jody Leonardo, MD, FAANS
Allan B. Levin, MD, FAANS(L)
Adam I. Lewis, MD, FAANS
Tye Lidman
Jason I. Lifshutz, MD, FAANS
Matt John Likavec, MD, FAANS
Franklin Lin, MD, FAANS
Shih-Chun Lin, MD, PhD
Ying-Chao Lin, MD
Kenneth M. Little, MD, FAANS
Andrew Scott Little, MD, FAANS
Charles Y. Liu, MD, PhD, FAANS
Erwin Lo, MD, FAANS
John A. Lopez, MD, FAANS
Blas Ezequiel Lopez Felix, MD, FAANS
Juan Alberto Lourido, MD
Walter X. Loyola, MD, FAANS
Alex R. MacKay, MD, FAANS
Dimitrios Magafossis, MD
His S. Majzoub, MD, FAANS
Jacek Marian Malik, MD, PhD, FAANS
Patricia Ann Mancuso, MD, FAANS
Robert F. Mann, MD, FAANS
Jeffrey C. Margetts, MD, FAANS
Philip J. Marr, MD, FAANS
Joseph Martinez, MD
Jeffrey E. Masiocianto, MD, FAANS
Taras Masnyk, MD, PhD, FAANS
James Z. Mason, MD, FAANS
Brian Mason, MD
Robert L. Masson Jr., MD, FAANS
Marlon Stephen Mathews, MD
Thomas K. Mattingly III, MD, FAANS
Paul K. Maurer, MD, FAANS
Edward E. Maurin, MD, FAANS
Phillip V. McAllister, MD, FAANS
J. Gordon McCombs, MD, FAANS(L)
Dennis E. McDonnell, MD, FAANS
Gerald T. Mcgillicuddy, MD, FAANS
John E. McGillicuddy, MD, FAANS(L)
John M. McGreggor, MD, FAANS
Thomas D. Meek, MD, FAANS(L)
Robert C. Meredith, MD, FAANS(L)
L. Madison Michael II, MD, FAANS
Rajiv Midha, MD, MS, FAANS
Ronnie I. Mimran, MD, FAANS
Gautam Moise, MD
Timothy R. Monroe, MD
James A. Moody, MD, FAANS
Michael K. Morgan, MD
Howard Morgan, MD, FAANS
John (Jack) LeRoy Moriarity, Jr., MD, FAANS
Thomas John Morrison III, MD, FAANS
Delmore J. Morsette, MD
Debraj Mukherjee, MD
Bradford B. Mullin, MD, FAANS
Kevin J. Mullins, MD, FAANS
Wael Yacoub Musleh, MD, PhD, FAANS
Satoshi Nakasu, MD
Emilio M. Nardone, MD, FAANS
Gregory B. Nazar, MD, FAANS
Paul B. Nelson, MD, FAANS(L)
Bradley R. Nicol, MD, FAANS
Misao Nishikawa, MD
Eric Oberlander, MD
Hugh D. T. O’Donnell, MD, FAANS
Gregory M. Oetting, MD, FAANS
Stephen K. Ofori-Kwame, MD, FAANS
Chima Osiris Ohaegbulam, MD, FAANS
Jeffery G. Ojemann, MD, FAANS
William C. Olivero, MD, FAANS
Jeffrey H. Oppenheimer, MD, FAANS
Donald M. O’Rourke, MD, FAANS
Rod J. Oskouian Jr., MD, FAANS
Aleksey Ovchinnikov, MD
M. Chris Overby, MD, FAANS
Luis R. Pagan, MD, FAANS
Susan C. Pannullo, MD, FAANS
Christopher G. Paramore, MD, FAANS
Anant I. Patel, MD, FAANS
Joel T. Patterson, MD, FAANS
Nettleton S. Payne II, MD, FAANS(L)
Troy D. Payne, MD, FAANS
Matthew M. Pearson, MD, FAANS
Stig E. Peitersen, MD, FAANS
Stan Pelofsky, MD, FAANS(L)
Mick J. Perez-Cruet, MD, FAANS
Noel I. Perin, MD, FAANS
Richard G. Perrin, MD, FAANS
Chris A. Philip
John G. Phillips, MD, FAANS(L)
Andy Hugo Pierre, MD, FAANS
Ronald P. Pokruba, MD, FAANS
Phillip J. Porter, MD, FAANS
Ashtosh Ashok Pradhan, MD, FAANS
Charlotte J. Prestigiacomo, MD, FAANS
Donal J. Prolo, MD, FAANS(L)
Thomas G. Pesaros, MD, FAANS
Morris Wade Pulliam, MD, FAANS(L)
Tanya M. Quinn, MD, FAANS
Corey Rafel, MD, PhD, FAANS
Ruben Ramirez Del Toro, MD, FAANS
Jeffrey B. Randall, MD, FAANS
Thomas F. Rapacki, MD, FAANS
Corey Raffel, MD, PhD, FAANS
Armed A. Rawanduzy, MD, FAANS
Deme Raja Reddy
John D. Reeves, MD, FAANS
Patrick Julian Reid, MD
Juan Carlos Reina Gama, MD, FAANS
Richard B. Rhiew, MD, PhD, FAANS
R. L. Patrick Rhoten, MD, FAANS
Stuart Glen Rice, MD, FAANS
Thomas W. Rigsby, MD, FAANS
Kyoo S. Ro, MD, FAANS
Fabio Roberti, MD, FAANS
Robert D. Robinson, MD, FAANS
Rafael Rodriguez-Mercado, MD, FAANS
Annual Report

Memorials

The following contributions were made in memory of colleagues, family members and friends:

Jacques N. Farkas, MD, FAANS, in memory of Linda Regenfuss
Katie Orrico, JD, in memory of Betty Kubala
Donald O. Quest, MD, FAANS(L), in memory of Ilona M. Quest
Gail L. Rosseau, MD, FAANS, in memory of Yvonne Ehrenberg Hurwitt
Beth S. Stein, in memory of Marcia B. Solomon
Shelly D. Timmons, MD, PhD, FAANS, in memory of James Gaydos
Shelly D. Timmons, MD, PhD, FAANS, in memory of Judith Schafernek
Shelly D. Timmons, MD, PhD, FAANS, in memory of Patrick Donnelly
Shelly D. Timmons, MD, PhD, FAANS, in memory of Robert Alexander Sanford, MD
Women in Neurosurgery (WINS) in memory of Roy A. E. Bakay, MD, FAANS

Tributes

The following contributions were made in honor of colleagues, family members and friends:

Eli M. Baron, MD, FAANS, in honor of Josh Heller and Leslie Lawton
Robert E. Harbaugh, MD, FAANS, in honor of Richard L. Saunders, MD
James S. Harrop, MD, FAANS, in honor of Joshua Heller and Leslie Lawton
Robert F. Heary, MD, FAANS, in honor of Reynolds Family
Michael G. Kaiser, MD, FAANS, in honor of Regis W. Haid Jr., MD
Gregory Kapinos, MD, MS, in honor of Cushing Neuroscience Institute – NSLU
Catherine Anne Mazzola, MD, FAANS, in honor of Leland Albright, MD; Ian Pollack, MD; and P. David Adelson, MD
Mary Louise Spencer, in honor of David W. Roberts, MD
Shelly D. Timmons, MD, PhD, FAANS, in honor of Clarence B. Watridge, MD
Shelly D. Timmons, MD, PhD, FAANS, in honor of James T. Robertson, MD

Women in Neurosurgery (WINS)
There is an ever-increasing demand from patients, licensing boards, hospitals, third-party payers and the federal government for neurosurgeons to document the quality and value of their treatments. In this kind of environment, only those organizations that can collect, analyze and deploy clinical and economic data will prosper. In anticipation of this, the AANS created the NeuroPoint Alliance (NPA) in 2008. NPA is a not-for-profit 501(c)(6) corporation that was created to allow organized neurosurgery to carry out a wide variety of national projects involving the acquisition, analysis and reporting of clinical and economic data from neurosurgical practice, using online technologies. The corporation is run by a board of directors who are appointed by the AANS, ABNS, CNS, SNS and the AANS/CNS Spine Section. NPA projects include investigator initiated multicenter studies, data collection for the American Board of Neurological Surgery’s primary certification and maintenance of certification processes and registries of neurosurgical procedures. NPA collaborates with various data management groups, including the Vanderbilt Institute for Medicine and Public Health (VIMPH), Quintiles/Outcome and Acesis, in order to provide the highest quality data collection, analysis and feedback.

The NPA’s largest effort, the **National Neurosurgery Quality and Outcomes Database (N\textsuperscript{2}QOD)** is a prospective clinical registry designed to generate high-quality neurosurgical patient outcomes data. Participation in N\textsuperscript{2}QOD requires centers to purchase access to the database, commit to at least three years of data collection and employ a data manager who has at least 50-percent commitment to this project. This national registry program, done in collaboration with VIMPH, has been active for almost 30 months. In February 2012, the N\textsuperscript{2}QOD Lumbar Spine Module was piloted in three academic centers. The program has expanded rapidly and as of June 30, 2014, 50 programs in academic and community settings across the United States are participating in the program. A total of 53 sites have achieved complete institutional review of the project and the NPA is activating new sites weekly. More than 11,000 patients have been enrolled in the N\textsuperscript{2}QOD lumbar and cervical modules, making the N\textsuperscript{2}QOD the largest spine registry in North America. The infrastructure of the N\textsuperscript{2}QOD has been designed to allow us to greatly expand the number of participating sites over time. A detailed methodological description of the N\textsuperscript{2}QOD project and the rationale behind the structure of this surgical registry are described in papers in the January 2013 issue.
of the Journal of Neurosurgery, Neurosurgical Focus, which is dedicated to the “Science of Practice.” The N^2QOD was also featured at the AANS Annual Scientific Meetings in 2013 and 2014. An N^2QOD vascular neurosurgery module is also being beta tested and will become available for use in the near future. Centers that have already purchased access to the N^2QOD database for their spine cases will be able to add the vascular module without additional cost. Centers that purchase the vascular module will also have access to the lumbar and cervical spine modules. An N^2QOD Deformity Module will round out the spine registry and will be available in Fall 2014. We hope to continue to enlarge the menu of neurosurgical procedures included in the N^2QOD database.

NPA and the Neurosurgery Research and Education Foundation (NREF) will also be introducing a stereotactic radiosurgery registry in January 2015. This registry, identified as a priority by functional neurosurgeons and industry, was brought to NPA through the NREF Development Committee. The NREF has secured an educational grant from Brainlab to develop and administer the registry. Additional funding is expected through educational grants from other companies. The SRS Registry will consist of 30 centers in the United States entering patient data for a minimum of three years. This project is an excellent example of the kind of things we can accomplish when the AANS, NPA and the NREF work seamlessly together.

Robert E. Harbaugh, MD, FAANS
2013-2014 NPA President
NeuroPoint Alliance (NPA) was established in 2008 by the American Association of Neurological Surgeons to collect, analyze and report on nationwide clinical data from neurosurgical practices. It is supported by other neurological societies, including the Congress of Neurological Surgeons (CNS), Society of Neurological Surgeons (SNS) and the American Board of Neurological Surgery (ABNS). NPA is a not-for-profit 501(c)(6) corporation that coordinates a variety of national and international projects.

NPA is designed to meet the quality care and research needs of a broad range of health-care stakeholders, including individual practitioners, practice groups, national professional organizations, health-care plans and the biomedical industry. Industry-sponsored studies can include randomized trials, registries and post-marketing surveillance of new devices. NPA’s capabilities include outcomes research, universal data reporting requirements for maintenance of certification (MOC), maintenance of licensure (MOL) and the physician quality reporting system (PQRS) and local and national quality improvement efforts.

NPA, partnering with Outcome/Quintiles, serves as the data collection agency for the ABNS candidate case logs and Maintenance of Certification (MOC) part 4 key case reporting requirements. NPA continues working with the ABNS regarding refinements to its existing MOC program.

The NPA’s most significant initiative in fiscal year 2014 continued to be the National Neurosurgery Quality and Outcomes Database (N²QOD), a prospective clinical registry designed to address the need for high-quality patient outcomes data related to care of patients with neurosurgical disorders. The N²QOD tracks, analyzes and reports on the quality of surgical care for the most common neurosurgical procedures. It is the first and currently only nationally coordinated registry in the United States to measure one-year effectiveness of care using validated patient centered measures. NPA works with the Vanderbilt Institute for Medicine and Public Health (VIMPH) to manage the collection and analysis of N²QOD data. In 2013, VIMPH began providing descriptive benchmarks and risk-adjusted variables in N²QOD reports to participating centers.
The N²QOD Lumbar Spine Registry is now into its third year. The Lumbar Spine Module was launched on February 22, 2012, in three academic sites. By fiscal-year end, N²QOD had more than 11,000 patients enrolled in the Spine registry, and by July, had more than one million independent variables collected across 40 participating sites. At the end of fiscal year 2014, there were 50 contracted sites. NPA obtained determination from the U.S. Department of Health and Human Services’ (HHS) Office for Human Research Protections (OHRP) that N²QOD program activities do not constitute as human subject research and therefore informed consent is not necessary, at least by OHRP guidance. To date, 53 institutions have completed all phases of IRB and internal quality review. Of these, only one center has a requirement for written consent, while all other N²QOD sites are participating with waiver of written informed consent for obtaining patient-reported outcomes.

The N²QOD Lumbar Module presented one-year predictive data on April 9, 2014, at the AANS Annual Scientific Meeting in San Francisco. The presentation, titled, “National Neurosurgery Quality and Outcomes Database (N²QOD): Interim Results and Predictors of Persistent 12 month Disability Following Lumbar Surgery,” is available on the NPA website.

With the rapid growth of the N²QOD spine registry, NPA began to focus on ways to optimize data collection through data automation and data integration with the electronic medical record (EMR). N²QOD’s data integration initiative was highlighted in the June 2014 issue of AANS Neurosurgeon. N²QOD was also featured in Becker’s Spine Review, and in Spine Surgery Today.

The N²QOD Cerebrovascular (CV) Module began its pilot phase in February 2014 within two centers. The pilot will expand to three additional centers in July 2014, and it is expected the CV Module will be available for all sites by end of summer 2014. The N²QOD Spinal Deformity Module was developed with the Scoliosis Research Society (SRS) in May 2014 and is undergoing review by the N²QOD Scientific Committee. It is anticipated that the Spinal Deformity Module will be available in early Fall 2014. A Brain Tumor module is in development intended for piloting by fall of 2015. The highly anticipated Essentials Module will provide basic safety and quality data to the individual neurosurgeon, while also satisfying reporting requirements including Maintenance of Certification (MOC) and Physician Quality Reporting System (PQRS). The Essentials Module is a high priority for 2015.

In May 2014, the N²QOD became an approved Centers for Medicare and Medicaid Services (CMS) 2014 Physician Quality Reporting System (PQRS) registry vendor, marking NPA’s second year as a PQRS registry vendor. The N²QOD reports quality data to CMS on behalf of participating physicians through the Perioperative Care Measures Group.

A notable project in opinion research was conducted by the NeuroPoint Alliance in 2013. The NeuroPoint Alliance was approached by Oslo University Hospital in Norway with a request for an expert committee to evaluate its use of a procedure, Intracranial Pressure (ICP) amplitude. The NPA convened a panel that included experts in cerebrovascular surgery, neuro-critical care and neuro-engineering. The panel conducted a review of 12 journal articles on the use of monitoring ICP wave in specific neurosurgical patients, and provided an evaluation in a final manuscript to Oslo University in May 2014.
EXPANDING NEUROSURGERY BY TRACKING LONGITUDINAL OUTCOMES

Jason Sheehan, MD, PhD, FAANS, spearheads the creation of a new stereotactic radiosurgery registry

In the six years since its inception, NeuroPoint Alliance (NPA) has seen overwhelming success with its National Neurosurgery Quality and Outcome Database (N²QOD), a continuous national clinical registry tracking practice patterns and patients outcomes for neurosurgical and spine procedures. It recently marked the launch of a new registry project for stereotactic radiosurgery, and central to its creation was Jason Sheehan, MD, PhD, FAANS.

That Sheehan arrived at a career in neurosurgery and showed a keen interest in stereotactic procedures seems like a principle of electromagnetism at work: “Neurosurgery was a natural attraction. The instant gratification of performing a neurosurgical procedure appealed to me. Prior to medical school, I studied engineering and biological physics. Applying engineering and mathematical solutions to neurosurgical approaches has interested me the most. Hence, my perspective in engineering and physics is illustrated well in the field of stereotactic radiosurgery (SRS). SRS allows neurosurgeons to use physics and engineering principles to deliver minimally invasive treatments to patients with complex intracranial and spinal disorders.”

Yet, beyond the science, the people element also factors into his love of profession. “While I still conduct basic science and translational research,” he revealed, “I find the surgical approaches and the patient encounters very rewarding.” He further credits his mentors with “helping to foster [his] passion for neurosurgery.”

As a testament to how networking within the specialty can generate exciting new developments, a conversation with his brother, Jonas Sheehan, MD, FAANS, also a neurosurgeon, ultimately led to the development of this unique, industry-sponsored registry. Dr. Jonas Sheehan works with Robert Harbaugh, MD, FAANS, the 2013-2014 NPA president, at Penn State Medical Center. Sheehan explained, “Jonas had mentioned to me about Dr. Harbaugh’s ideas for scientific advancement in neurosurgery through the use of prospective registries.” Interested, Sheehan learned more from Harbaugh and Anthony Asher, MD, FAANS, N²QOD director, about the successes and challenges of the lumbar spine registry, he said. Then, some of his colleagues at the University of Virginia, Christopher Shaffrey, MD, FAANS, and Mark Shaffrey, MD, FAANS, were some of the early adopters of N²QOD’s lumbar registry, he said, affording him an opportunity to observe registry participation from a practical perspective. The success of that inaugural registry eventually encouraged the creation of others. “Over the past couple years,” Sheehan recounted, “[other neurosurgeons] and corporate partners gradually came to realize that SRS would be a good field for a prospective, quality registry. With time, concerted effort and a bit of luck, the SRS registry became a reality.”

NPA’s new SRS registry represents a collaboration between the American Association of Neurological Surgeons (AAANS) and the American Society for Radiation Oncology (ASTRO). “As SRS is performed in a multidisciplinary fashion,” Sheehan said, describing the organizations’ working relationship, “the partnership between AANS and ASTRO on this registry makes a lot of sense. Working together, the AANS and ASTRO could perform better science to improve quality and patient outcomes. Moreover, corporate partners truly wanted us to work together on a single national SRS registry. The data elements, acquisition of the data, data analysis, data governance and dissemination of findings are overseen by the SRS registry board, and I am a member of this board.”

Explaining how this new registry differs from its counterparts, Sheehan noted, “Unlike past NPA efforts, the SRS registry is funded in large part through educational grants from corporate partners. There is also financial, administrative and intellectual support and governance given by the parent professional societies. The registry is truly a national effort. In year one, 30 high-volume SRS sites will begin to accrue patients to the registry. Data is collected prospectively and stored in a data repository housed by Quintiles, a national company with extensive experience in medical trials and analytics.

“I am truly excited about this launching of the SRS registry,” Sheehan shared. “Radiosurgery is a rapidly growing field for neurosurgery and radiation oncology. It has broad indications in the treatment of benign and malignant tumors, vascular malformations and functional disorders. The registry will give us the ‘big data’ that we need to refine the current techniques and indications and improve patient outcomes. Such data can only be derived in a prospective fashion from large patient cohorts and in real life clinical situations not hindered by clinical equipoise.”

In summary, he added, “I believe that the SRS registry is just the tip of the iceberg for future specialty-specific national registries in neurosurgery.”

Jason Sheehan, MD, PhD, FAANS, completed undergraduate and graduate studies, as well as his residency at the University of Virginia, and he performed fellowships at the University of Pittsburgh Medical Center and at the University of Auckland in New Zealand. In addition to his work on the SRS registry, Sheehan is the Harrison Distinguished Professor and vice chair of neurological surgery at the University of Virginia. A member of the American Association of Neurological Surgeons (AANS), the American College of Surgeons, Leksell Gamma Knife Society, Neurosurgical Society of the Virginias, AANS/CNS Tumor Section, and the American Society of Stereotactic and Functional Neurosurgeons, he is the author or co-author of more than 250 peer-reviewed papers.
Engaging the World of Neurosurgery

The neurosurgical specialty has an ever-widening global reach, and the AANS is committed to being at the forefront. Collaborating with international organizations, engaging international members and including the best international speakers at educational events are some of the many ways the AANS’ global reach brings value to the membership.

This year, the AANS presented the AANS International Lifetime Recognition Award to Nicolas de Tribolet, MD. The AANS’ most prestigious international award, it recognizes an international neurosurgeon or other international dignitary for his or her lifetime of contributions to advancing the field of neurosurgery in a country outside the United States and Canada. de Tribolet studied at the medical school of Lausanne, Switzerland, as well as in Paris. After completing medical school, he started an internship in neurosurgery, clinical electro-physiology and neuropathy in Lausanne. It was during his one-year fellowship at Massachusetts General Hospital that Dr. de Tribolet began his research on brain tumors, which, in the following years, developed into a laboratory that currently employs 12 full-time researchers. As a visiting neurosurgeon at the University of California San Francisco, he was inspired by Charles B. Wilson’s ability to run a very busy surgical practice, as well as the brain research laboratory, a model he strove to emulate. Appointed professor of neurosurgery and chairman of the department of neurosurgery of the University of Lausanne in 1984, in 1994 the government asked him to merge the two neurosurgical departments at the Universities of Geneva and Lausanne. Currently professor and chairman of the department of neurosurgery at the University of Geneva and head of the neurosurgical programme of Lausanne and Geneva, in July 1999, de Tribolet was also appointed director of the department of neurosciences at the University Hospital of Geneva. AANS Annual Scientific Meeting attendees met de Tribolet at the AANS International Reception, held this year at the Asian Art Museum in San Francisco. Guests enjoyed the beautiful atmosphere and the chance to visit this lovely collection of art.
In addition to the AANS International Lifetime Recognition Award, other AANS International Awards included:

**Best International Abstract Award:** This honor is awarded to the author of the highest-ranking international abstract submitted to the 82nd AANS Annual Scientific Meeting. In 2014, this honor went to Jan Coburger, MD, from Günzburg, Germany, for his abstract, titled *Aminolevulinic acid fluorescence exceeds Gd-DTPA enhanced intraoperative MRI in tumor detection at the border of glioblastoma multiforme: A prospective study based on a histopathological assessment.*

**International Travel Scholarship:** This scholarship provides $1,500 to support the attendance of a neurosurgeon from a developing country to the 82nd AANS Annual Scientific Meeting. The 2014 recipient was Sumit Sinha, MD, from New Delhi, India, for his abstract, titled *Effect of IL-6-174 G/C polymorphism in predicting disability and functional outcome in patients with severe Traumatic Brain Injury (STBI).*

The AANS also creates fellowship opportunities for neurosurgeons in under-served countries to travel to North America for educational experiences. The 2014 recipients of the AANS International Visiting Surgeon Fellowships:

**Shabal Sapkota, MD,** from Biratnagar, Nepal. Sapkota visited Louisiana State University in Shreveport, La., under the observation of Anil Nanda, MD, MPH, FAANS. Sapkota gained experience in neurotrauma and neurocritical care, as well as pediatric neurosurgery and neurooncology. He observed the latest skills and instruments to deal with diseases of the brain and spinal cord.

**Dang Do Thanh Can, MD,** from Ho Chi Minh City, Vietnam. Can visited Children’s Hospital of Alabama, Birmingham under the observation of W. Jerry Oakes, MD, FAANS. His main focus was pediatric neurosurgery, with special emphasis on brain tumors, hydrocephalus, spina bifida and spasticity.

The AANS also offers a fellowship supporting a post-neurosurgical resident travelling overseas for scientific enrichment, prior to beginning an academic career in neurological surgery. The William P. Van Wagenen Fellowship was designed to give freedom in scientific development without the restrictive limitations usually imposed by many research grants and fellowships. Read more about the Van Wagenen Fellowship on page 24 of this Annual Report.
Through advocacy, policy development and public relations, the AANS/Congress of Neurological Surgeons (CNS) Washington Committee and Washington Office have worked vociferously to defend and protect the ability of neurosurgeons to practice medicine freely, and help to ensure the continued advancement of the specialty of neurological surgery. The Washington Committee has played a fundamental role in a number of health policy developments, including advocating for adequate reimbursement, pushing for medical liability reform, streamlining quality improvement initiatives and relief from the morass of government regulations. This work is critical, and organized neurosurgery’s Washington Committee and leaders continue to be at the forefront of the health policy debates to advance the specialty of neurological surgery in order to promote the highest quality of patient care to create a system that offers greater value tomorrow than it does today.

Throughout the year, the Washington Office staff are in the halls of Congress or working with government agencies and other health-care stakeholders advocating on behalf of neurosurgery. In this role, the AANS frequently interacts with members of Congress, key government entities including the Centers for Medicare and Medicaid Services (CMS) and U.S. Food and Drug Administration (FDA), third-party payers and other state and national medical associations. As a result of these interactions, neurosurgery’s Washington Committee has achieved a variety of advocacy successes.
Fighting for Fair Reimbursement

Year after year, because of Medicare’s flawed sustainable growth rate (SGR) formula, physicians face significant cuts in Medicare reimbursement. As in years past, without congressional intervention, on April 1, 2015, physicians face a 24-percent cut in Medicare payments. Eliminating the sustainable growth rate (SGR) payment formula is, therefore, a top priority for neurosurgery. The AANS, through the Washington Committee, is steadfast in its commitment to working with Congress to pass a long-term solution to avert these significant cuts and identify innovative approaches for reforming the Medicare payment system. To this end, throughout the year, neurosurgery’s Washington Office staff worked with leaders of the key health committees in both the U.S. House and Senate as they crafted bipartisan, bicameral legislation to repeal and replace the SGR. This bill, the “SGR Repeal and Medicare Payment Modernization Act” (H.R. 4015/S. 2000), passed the U.S. House and awaits Senate action. As an interim measure, Congress passed H.R. 4302, the “Protecting Access to Medicare Act of 2014,” which postponed the 24-percent pay cut through Mar. 31, 2015. Both actions prevented $175 million in cuts to neurosurgery, which translates to approximately $44,000 per neurosurgeon. Organized neurosurgery continues to collaborate with the Alliance of Specialty Medicine and the Surgical Coalition to press Congress to fix the physician payment system and once-and-for-all.

Organized neurosurgery has also been aggressively challenging other third-party payer coverage policies, which limit reimbursement for many common neurosurgical procedures — particularly in the area of spine and cerebrovascular disease. The Coding and Reimbursement Committee (CRC), in conjunction with the Quality Improvement Workgroup, Joint Guidelines Committee, Joint Sections and Washington Committee, is responding to these coverage issues to provide a balanced assessment of the current literature and experience with procedures under review. The CRC’s “Rapid Response Teams” are organized lead these efforts and have provided comments on a variety of proposed coverage policies from Medicare and other payers, including Aetna, various Blue Cross Blue Shield plans, Noridian, Washington State Health Care Authority, Wellpoint and others. These comments involved topics such as cervical spine fusion, carotid artery stenting, intracranial stenting, lumbar spine fusion, pain management, percutaneous image-guided lumbar decompression, stereotactic radiosurgery, and thrombolysis.

Going forward, the AANS, working with the Rapid Response Teams and the Council of State Neurosurgical Societies (CSNS), will utilize new tools to track and respond to proposed coverage policies to ensure that neurosurgical patients get access to the full range of treatment options of neurosurgical care.
Regulatory Relief

Faced with an ever-growing morass of regulations with which neurosurgeons must comply, the AANS, through the Washington Committee and Washington Office, has been working with Congress and regulators to reduce the burdens associated with practicing medicine. A top priority for Fiscal Year 2014 was the repeal of the ICD-10 coding system. Working with the Alliance of Specialty Medicine, the American Medical Association (AMA) and others, the AANS was successful in halting implementation of ICD-10 for an additional year. The AMA estimates that the implementation of ICD-10 will cost physicians anywhere from $56,639 to $226,105 (for small practices) up to $2,017,151 to $8,018,364 (for large practices). Thus, while implementation is now set for Oct. 1, 2015, neurosurgery continues to press Congress and the Obama Administration to scrap ICD-10 in favor of ICD-11, which is right around the corner.

Under current law, neurosurgeons face Medicare care cuts totaling more than $325 million over the next seven years if they fail to comply with Medicare’s quality-related incentive programs. Unfortunately, these programs are primarily oriented towards primary care and provide very little opportunity for neurosurgeons to successfully participate. For the past several years, organized neurosurgery has been pressing Congress and CMS to delay and revise Medicare’s Electronic Health Care Record (EHR) Incentive Program. This ongoing advocacy has resulted in CMS extending Stage 2 of the meaningful use (MU) program. Originally, CMS planned for Stage 2 to end after 2015, but now it will remain in place through the end of 2016. Failure to comply with the MU requirements could mean Medicare cuts of $22 million over the next two years, so neurosurgery continues to push for changes to this burdensome program to allow more flexibility for physicians to meet all states of MU. Additionally, due to the advocacy efforts of organized neurosurgery, Congress directed the Centers for Medicaid and Medicare Services (CMS) to allow physicians to satisfy Physician Quality Reporting System (PQRS) requirements by participating in clinical data registries. This will allow neurosurgeons participating in the National Neurosurgery Quality Outcomes Database (N‘QOD) or other similar initiatives to qualify for PQRS, thereby avoiding Medicare payment cuts of $25 million over the next two years.

Joining with colleagues at the AMA and American Hospital Association (AHA), the AANS helped secure a delay of the “two-midnight” inpatient-hospital admission policy. In addition, legislation passed Congress (H.R. 4302), permitting the Department of Health and Human Services (HHS) to suspend the Recovery Audit Contractors (RAC) program through March 2015. The AANS continues to oppose the two-midnight policy due to concerns about increased physician hassles and audit exposure, as well as increased beneficiary financial liability.
Medical Liability Reform

As the specialty facing the highest premiums, most lawsuits and largest average indemnity payments, the AANS recognizes the need for improving the medical liability climate for neurosurgeons. While federal medical liability reform legislation remains elusive, the Washington Committee continues to lead efforts to pass reform. Serving as vice-chair of the Health Coalition on Liability and Access, and in collaboration with the trauma community and others, Washington Office staff have worked to secure the introduction of several important liability reform bills. The “Health Care Safety Net Enhancement Act” (H.R. 36/S. 961) would provide crucial medical liability protections to neurosurgeons providing EMTALA-related care. The “Standard of Care Protection” (H.R. 4750/S. 1769) would clarify that any care standards and practice guidelines derived from the Affordable Care Act, Medicare or other federal programs — including PQRS, EHR and other quality incentive programs — cannot be used to create new causes of actions against physicians. Due to the advocacy efforts of the Washington Committee, this legislation was also included in the “SGR Repeal and Medicare Payment Modernization Act.” The “Saving Lives, Savings Cost Act” (H.R. 4106) would provide certain protections for physicians following clinical practice guidelines. Finally, the “Good Samaritan Health Professionals Act,” (H.R. 1733/S. 2196), which previously passed the House of Representatives in 2012, was reintroduced and is gaining momentum.

Graduate Medical Education

An appropriate supply of well-educated and trained physicians is an essential element to ensure access to quality healthcare services for all Americans. Through the continued advocacy of organized neurosurgery, policymakers are beginning to understand that there are significant shortages of physicians in both primary and specialty care. Working with the Association of American Medical Colleges (AAMC), the Alliance of Specialty Medicine and others, the AANS, through the Washington Committee, successfully advocated for the introduction of legislation to provide additional Medicare funding for graduate medical education (GME). The “Resident Physician Shortage Reduction Act (H.R. 180/S. 577) and the “Training Tomorrow’s Doctors Today Act” (H.R. 1201), would increase the number of Medicare supported residency positions by 3,000 each year for the next five years. These bills continue to pick-up momentum.
Reforming the Reform

While the Affordable Care Act (ACA) is the law of the land, organized neurosurgery has not ceased in advocating significant changes to this landmark health-care reform law. A top priority remains abolishing the Independent Payment Advisory Board. The IPAB is a 15-member unelected and unaccountable government board, whose principal responsibility is to cut Medicare. In leading the Physician IPAB Repeal Coalition, the AANS, through the Washington Committee, was instrumental in getting the “Protecting Seniors’ Access to Medicare Act” (H.R. 351/S. 351) introduced. This bill, with hundreds of bipartisan cosponsors, would repeal the IPAB.

America has a long tradition of excellence and innovation in patient care, and neurosurgeons have been on the cutting edge of these advancements. To ensure continued forward progress with medical innovations, the AANS has joined the fight to repeal the 2.3 percent excise tax levied on the sales of medical devices. Bipartisan legislation to repeal this tax, the “Protect Medical Innovation Act” (H.R. 523) in the House, and the “Medical Device Access and Innovation Protection Act” (S. 232) in the Senate, enjoys significant support in Congress.

NeurosurgeryPAC/Grassroots

Organized neurosurgery has established a tried-and-true formula for working inside the Washington Beltway to have an impact on health policy. In 2013, the AANS actively engaged its members in the political process through grassroots activities, calls to action, and participation in NeurosurgeryPAC. Whether in person or through the AANS/CNS Legislative Action Center, neurosurgeons from all across the country communicated with members of Congress to on such topics as medical liability reform, Medicare payment, graduate medical education, and trauma care. Additionally, neurosurgeons attended advocacy conferences like the Alliance of Specialty Medicine Annual Legislative Conference. Lastly, hundreds of neurosurgeons donated to NeurosurgeryPAC, thus far bringing total contributions to $375,000 for the 2014 election cycle. More information about NeurosurgeryPAC, including the current complete list of donors, candidates receiving NeurosurgeryPAC support and your PAC in action, is available on the AANS website.
Communications Outreach

In addition to its direct lobbying and grassroots advocacy in Washington, D.C., the Washington Committee garners support for neurosurgery’s health policy positions by carrying out a nationwide earned media campaign, and by providing the media with timely information that can be used for their reporting. The Washington Committee’s traditional media/communication efforts include Op Eds, letters to the editor, radio “tours” and desk side briefings with reporters from the Wall Street Journal, Washington Post, CBS, NBC, Politico and others. Since December 2012, the Washington Committee has generated 83 traditional media hits reaching a circulation/audience of more than 6.3 million.

In addition to traditional media, the Washington Committee’s digital media communications platforms — including Neurosurgery Blog, Twitter, Facebook and LinkedIn — now total more than 12 million individual impressions. By using these social media platforms, organized neurosurgery has continued to reach opinion-influencers in the media, on Capitol Hill, and in various health policy circles that would not have been easily achieved through more traditional means. These communication tools include:

- **Neurosurgery Blog: More Than Brain Surgery**, a Web-based opinion and perspective column, which offers insights and perspective on contemporary health issues as they relate to organized neurosurgery.

- A [@Neurosurgery](#) Twitter feed that is used to gain greater visibility for neurosurgery’s advocacy efforts. Neurosurgery’s followers are made up primarily of media, congressional and health policy communities. The Twitter feed focuses primarily health policy updates and provide links to positive stories about neurosurgery.

- [Facebook](#) and [LinkedIn](#) sites that help drive health policy influencers to information on Neurosurgery Blog and the Twitter feed, while also spotlighting AANS news-making successes and initiatives.
While fiscal 2014 was a profitable year financially for the American Association of Neurological Surgeons (AANS), it also was a year that included a significant change in fiscal process and financial record-keeping. Fiscal 2014 saw the creation of a new legal entity — the Neurosurgery Research and Education Foundation (NREF). Prior to its incorporation, the activities of the NREF were conducted directly within the auspices of the AANS; however, during fiscal 2014, activities and assets were divided between the AANS and the newly incorporated NREF.

This change creates multifaceted channels for the AANS that can better serve its members and their patients. Through the member association (AANS), its philanthropic arm (NREF) and its data collection and reporting group, NeuroPoint Alliance (NPA), the AANS — taken as a whole — specializes in a variety of activities that benefit neurosurgery: from advocacy to publishing, from research to education and from data collection to outcomes studies.

Strong investment yields benefited the AANS and the NREF, which helped them both to finish with a profitable year. NPA finished fiscal 2014 with its smallest-ever deficit, and it is anticipated that fiscal 2015 will see NPA operating as a profitable organization.

This report reflects the financial statements of the AANS, the NREF and the NPA, covering the period of July 1, 2013, through June 30, 2014.

While the year-end financial statements of the AANS, the NREF and the NPA are audited by outside auditors, this annual report is being prepared prior to a completed audit and contains unaudited final numbers. Any material differences between a published financial statement and the auditor’s report will be communicated to AANS members in AANS Neurosurgeon. Copies of the most recent audit are available to members by writing to: AANS Accounting Department, 5550 Meadowbrook Drive, Rolling Meadows, IL 60008-3852.
## AANS AND RELATED ORGANIZATIONS

### Statement of Financial Position 06/30/2014

#### ASSETS 2013-2014

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<thead>
<tr>
<th>Category</th>
<th>AANS</th>
<th>NREF</th>
<th>NPA</th>
<th>Consolidated</th>
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<tr>
<td>Cash and Investments</td>
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<td>$3,290,299</td>
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<td>Other Current Assets</td>
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<td>Property and Equipment, net</td>
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<td><strong>TOTAL ASSETS</strong></td>
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#### LIABILITIES AND EQUITY

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<th>Category</th>
<th>AANS</th>
<th>NREF</th>
<th>NPA</th>
<th>Consolidated</th>
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<tr>
<td>Liabilities &amp; Equities</td>
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<td></td>
<td></td>
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<td>Accounts Payable</td>
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<td>Deferred Revenues</td>
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<td><strong>TOTAL LIABILITIES</strong></td>
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#### Equity

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<td>Beginning Net Assets</td>
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<td>Net Income</td>
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<td><strong>TOTAL EQUITY</strong></td>
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<td>(197,050)</td>
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<td><strong>TOTAL LIABILITIES AND EQUITY</strong></td>
<td>$33,801,830</td>
<td>$3,976,518</td>
<td>$250,492</td>
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#### AANS AND RELATED ORGANIZATIONS INCOME STATEMENT For the Year Ended 06/30/14

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<thead>
<tr>
<th>Category</th>
<th>AANS</th>
<th>NREF</th>
<th>NPA</th>
<th>Consolidated</th>
<th>% of total revenue</th>
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<td>Annual Meeting Income</td>
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<td>Publications</td>
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<td>EPM</td>
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<td>8%</td>
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<td>Fundraising</td>
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<td>8%</td>
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<td>Resident &amp; Clinical Courses</td>
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<td>923,883</td>
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<td>923,883</td>
<td>5%</td>
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<td>Investments</td>
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<td>797,843</td>
<td>0</td>
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<td><strong>Total Revenue</strong></td>
<td>$16,344,601</td>
<td>$3,346,098</td>
<td>$586,750</td>
<td>$20,277,449</td>
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### CONSOLIDATED REVENUE SOURCES

- Dues/Contributions Income
- Annual Meeting Income
- Publications
- EPM
- Fundraising
- Resident and Clinical Courses
- Investments
AANS Mission Statement
The American Association of Neurological Surgeons (AANS) is the organization that speaks for all of neurosurgery. The AANS is dedicated to advancing the specialty of neurological surgery in order to promote the highest quality of patient care.

AANS Vision Statement
- The American Association of Neurological Surgeons will ensure that neurosurgeons are recognized as the preeminent providers of quality care to patients with surgical disorders that affect the nervous system.
- The American Association of Neurological Surgeons will work to expand the scope of neurosurgical care as new technologies and treatments of neurological disorders become available.
- The American Association of Neurological Surgeons will be the organization speaking for neurosurgery through its communications and interactions with the public, media, government, medical communities, and third-party payers.
- The American Association of Neurological Surgeons will be its members’ principal resource for professional interaction, practice information and education.
- The American Association of Neurological Surgeons will promote and support appropriate clinical and basic science to expand the scope of neurosurgical practice.

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Aviva Abosch, MD, PhD, FAANS
Anthony L. Asher, MD, FAANS
Blas Ezequiel Lopez Felix, MD, FAANS
Frederic B. Meyer, MD, FAANS
Daniel K. Resnick, MD, FAANS
Brian D. Toyola, MD

AANS Executive Office
5550 Meadowbrook Drive
Rolling Meadows, IL 60008-3852
Phone: 847.378.0500
Toll-free: 888.566.AANS (2267)
Fax: 847.378.0600
Email: info@AANS.org
www.AANS.org

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