THE DIVINE VOCATION
BUILDING ON NEUROSURGERY’S FOUNDING PRINCIPLES
AANS PRESIDENT’S MESSAGE

Members of the American Association of Neurosurgical Surgeons:

My tenure as president of the American Association of Neurological Surgeons (AANS) came during a very turbulent time for American neurosurgery, and, while the organization moved forward to address the challenges and help structure the future, I found myself equally drawn to visit neurosurgery’s past.

The 2015 AANS Annual Scientific Meeting theme was Neurosurgery’s Founding Principles. While our specialty is still in its first century, the leaps forward in that time are nothing short of miraculous. Such major advancements were possible because of the specialty’s adherence to the principles of respect, autonomy, integrity, innovation and dedication.

Harvey Cushing, the founder of the specialty, was the first surgeon to perform these operations with a reasonable chance that they would do more good than harm to his patients. Today, thanks to all the patients and neurosurgeons who have gone before us, neurosurgeons perform cranial, spinal, peripheral nerve and extracranial vascular procedures using open and endovascular techniques. We use radiosurgery, focused ultrasound, neural stimulation and intradural infusion to treat neurological and neurobehavioral disorders. Today, our patients expect recovery, repair, a cure.

While trying to balance the needs and expectations of our patients with all of the external requirements we face or may soon be facing, I foresee a pressure for us to redefine neurosurgery. In the quest for efficiency and “patient safety,” we are encouraged to leave the care of our patients in the clinic to a physician’s assistant, the care of our patients on the floor to a hospitalist and the care of our ICU patients to an intensivist.

If we do this, we will become technicians, not physicians.

If we abandon the pursuit of innovation in surgical procedures and medical devices, we minimize the chance that neurosurgery can continue to invent miracles and diminish the future of the specialty we chose to embrace.

The Neurosurgery Research and Education Foundation (NREF) is neurosurgery’s best vehicle to foster neurosurgical research by providing a private, non-government source of funding for research training in neurosurgery. In addition to the classes, grants and fellowships offered by the NREF to help bolster education, the AANS is actively reaching out to medical students, setting up chapters and opening up medical student-specific forums during the Annual Scientific Meeting.
To further practitioner education, we publish the latest neurosurgical science through the *Journal of Neurosurgery (JNS)*, *JNS Spine*, *JNS Pediatrics* and *Neurosurgical Focus*. Our educational offerings have expanded to include *AANS Neurosurgeon* and many AANS and NREF offerings on YouTube and iTunes. We are active on Capitol Hill through the efforts of our Washington Committee and your ongoing support of PAC.

Much of Cushing’s influence on the new specialty of neurological surgery was due to his meticulous cataloguing of the outcomes of each of his patients. As we believe that research and innovation should not be the province of only a small number of academic neurosurgeons, the AANS supports this founding principle, now called data collection, through the work of NeuroPoint Alliance (NPA). NPA is devoted to gathering, analyzing and publishing data on the science of neurosurgical practice, which is the habitual and systematic collection, analysis and feedback of data, inseparable from practice, via audited registries.

The AANS, through NPA and its National Neurosurgical Quality Outcomes Database (N²QOD) program, will allow neurosurgery and neurosurgeons to prevail in this strange and hostile environment. Knowledge is power. Those specialties that can best collect, analyze and report data will prevail, and the AANS is determined to make sure that neurosurgery is one of these specialties.

I thank you for the opportunity to lead the AANS through these challenging times. I appreciate the opportunity to reflect on our history while helping to steer our course into the future.

All the best,
Robert E. Harbaugh, MD, FAANS
2014–2015 AANS President

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For, if a doctor’s life may not be a divine vocation, then no life is a vocation, and nothing is divine.”

—Stephen Paget, *Confessio Medici*
This annual report that you and your fellow members of the American Association of Neurological Surgeons (AANS) and the Neurosurgery Research and Education Foundation (NREF) are reading highlights the expanding and increasingly dynamic impact that your organizations have had on neurosurgery over the past year.

As you have read in 2014-15 AANS President Dr. Robert Harbaugh’s introduction, the past year’s successes were accomplished in a time of disordered transition in American health care. As this report will show, the AANS nevertheless continued to expand its scope of service to its members and their specialty, operating from a strong foundation today while secured by firm links to the rich history of neurosurgery’s past.

Author Pearl S. Buck wrote that if you want to understand today, you have to search yesterday. The influential solutions that the AANS and NREF increasingly offer to neurosurgeons, their specialty and their allied health-care practitioners and partners should be viewed by AANS members as part of a progressively evolving continuum of planned growth, prudent fiscal planning, unrestricted strategic vision and passionate volunteerism, all built upon the founding principles of Dr. Harvey Cushing and the leaders who have carried forth his visions in the society that bears his name.

In the pages that follow, you will read of progress made in established programs of the AANS and NREF, as well as the early phases of strategic initiatives undertaken more recently to meet your rapidly changing needs in a chaotically evolving health-care environment.

For example, the AANS is quickly establishing its outreach and influence internationally, in order to be a more significant resource to its international members and colleagues whose universal needs and practice environments are as varied as the many cultures of patients who inhabit the planet. From collaborating with international neurosurgical organizations to providing support and assistance where appropriate, the AANS, like its many allied partners, understands that quality health care resists any definition merely by geographic borders.

The state of North American neurosurgery and meeting members’ needs was a primary concern of the AANS at its founding, and is still a priority today, as the specialty continues to be buffeted by workforce issues, increasing focus on patient safety and escalating urgency for both sophisticated resident and continuing education delivered via enhanced, 24/7 technologies.

You will see how the AANS is addressing these and dozens of other priorities born of its mission statement with a broad-front strategy, from the remarkable impact of its Washington advocacy to its involvement with allied neurosurgical associations involved in the SNS Portal Initiative, a large-scale collaborative project that promises to be the most comprehensive resource for neurosurgeons’ educational needs from “cradle to grave,” yet undertaken by separate organizations focused on enhancing neurosurgeons’ knowledge at every stage of their careers.

The rapid success of NeuroPoint Alliance (NPA), AANS’ not-for-profit corporation, is also outlined in this report. Established in 2008, NPA’s growth and expansion is perhaps the best example of the AANS process of addressing members’ needs.
Anticipated outcome needs were identified years ahead of being a prerequisite for practitioners; AANS resources were allocated ahead of the health-care industry’s provisional demand for data; AANS physician leaders and management formed committees and task forces to develop and implement production; and the AANS member was ultimately provided with a significant resource available to her/him as hospital, industry and government increasingly require measurement of competencies and patient outcomes to benchmark effectiveness.

You will also read of the remarkable progress of the reorganized and revitalized NREF. Directed by leadership to undergo a comprehensive audit and assessment in 2011, the resulting model approved by the AANS featured a foundation to be governed by its own dedicated board of directors and committee governance structure and by its own bylaws, as well as to be given more discretionary management in how it achieves the strategic goals of its parent association.

Since then, the research and education foundation of the AANS has seen a more focused approach taken to enhance its value both to members and the public. As a result, the NREF has developed new opportunities to engage donors, while still providing the enhanced education and research methodologies evolving in the specialty today.

With voting board representation by the AANS, the Journal of Neurosurgery Publishing Group, NeuroPoint Alliance, the AANS/CNS Joint Sections, the Society of Neurological Surgeons, the American Academy of Neurological Surgery and one voting director from the general public, the NREF is a truly representative body of the significant stakeholders interested in achieving new levels of giving, scholarly research and support for state-of-the-art, cutting-edge education for you and the practitioners of your specialty.

Also highlighted in this report are vignettes of just a very few of the hundreds of AANS members whose tireless and passionate volunteerism are truly the heart and soul of the AANS’ and NREF’s achievements.

The more than 500 board, committee and various task-force volunteer AANS members who serve in its governance systems all have “full time jobs,” yet find the time and dedication to take the senior leadership’s vision and, using the stable and fiscally sound resources of the AANS, transform them into programs, services and outcomes that enhance their colleagues’ and partners’ needs tenfold. It is an honor for the AANS management team to work with these leaders; their work on behalf all AANS and NREF constituent members, publics and partners could never be adequately acknowledged, rewarded nor understated.

Of course, none of these achievements by its physician leaders and members could be realized without the sound, reliable and diversified financial stability the organizations enjoy. As recently as spring of this year, the AANS leadership reinforced the long-standing strategic fiscal policy that excess profits beyond a reserve fund, assuring “safe harbor” in the event of unexpected downturns be routinely reinvested in expanding programs, services and initiatives to enhance AANS members and the specialty. As you will read later in this report, the stability of the organizations’ finances are very sound, and the measured investment of growth and expansion are closely monitored and audited.

The leaders and members of the AANS and the NREF have much to be proud over the past year. As Dr. Harbaugh pointed out in his overview to this report, this past year continued the current era of seismic challenges for American health care and its practitioners. The pages that follow highlight how one professional medical association representing a specialty of highly skilled surgeons has continually adapted and reformed itself not only to meet yesterday’s challenges confronted by neurosurgery’s forefathers, but also to rely on that historical perseverance to provide innovative solutions that its members need today in order to provide new horizons of care tomorrow.

I continue to be grateful for the opportunity to participate in your organizations and am particularly honored to present this report to you. Thank you most sincerely for your membership in the AANS.

Thomas A. Marshall
Executive Director
Washington, D.C., was the perfect setting for the 83rd AANS Annual Scientific Meeting, which explored neurosurgery’s founding principles through lectures and presentations, while also presenting robust and forward-looking educational content.

The event’s opening speakers, Peyton Manning and Bill Walton, spoke of their own guiding and foundational principles, linking the training and intensity of professional sports to the world of neurosurgery.

Manning delivered his thoughts on the process of being a successful professional football player and spoke about managing fan expectations, noting that he feels those expectations in a very real way, and shared that he knows that awareness can complicate his on- and off-field decisions. His solution? Coaching. Despite his years of experience and his own leadership position, he is always looking for coaching support. To be his best, and to deliver his best for the fans, Manning relies on coaching. He drew the connection between his fans and neurosurgical patients, as both rely on professionals to actively strive to stay on top of their game, whether through extra practices or participation in scientific meetings.

Walton, who paced the stage during his entire presentation, also gave much credit to his own coaches for his success in the NBA. Walton’s personal experiences with pain and injury, including spine issues, were a recurring theme, as he talked about the hopelessness of chronic pain and the inestimable change he experienced in his life when surgery was able to eliminate his pain and give him his life back. Walton also put an interesting spin on learning. According to Walton, what really counts is what you learn after you “know it all,” a theory he applied to his basketball and broadcasting career, as well as to the venue of the 2015 AANS Annual Scientific Meeting.

Robert E. Harbaugh, MD, FAANS, and Regis W. Haid Jr., MD, FAANS, joined Manning and Walton on stage for a question and answer session, followed by a Skype appearance of Benjamin S. Carson, MD, FAANS, who spoke to the group from Detroit where he was preparing to launch his bid for the 2016 presidential election. The evening concluded with the 2016 AANS Annual Scientific Meeting Opening Reception, held at the Smithsonian’s National Museum of American History.
Cushing Orator, Charles Krauthammer, MD
Charles Krauthammer, MD, who referred to himself as a “psychiatrist in remission,” provided his interesting insider perspective on the issues in Washington, D.C., where he says it is possible to subsume all current political arguments under a multi-faceted umbrella issue: What is the proper size, scope, reach and power of government? What is the nature of the American experiment? What is the nature of the social contract between America’s citizens and the state?

Hunt-Wilson Lecture, Jonathan Turley
Prof. Jonathan Turley began his remarks speaking about the 83rd AANS Annual Scientific Meeting theme, Founding Principles. He expressed his belief that founding principles tether those who follow to something essential and true. In his case, the area of constitutional law, these principles came from the framers of the Constitution. According to Turley, current practices in the government are departing from the founding principles and changing American politics in dangerous ways, without debate or discussion. Turley suggested that these changes are taking away individual rights, and that “if you let liberty go, it rarely comes back.”

Rhoton Family Lecture, Spencer Wells, PhD
Wells believes we are in another massive extinction period, though this time we are losing cultures. While globally we currently have 6,000 languages, we are losing one every two weeks. As a species — biologically — we “really don’t have much going for us,” but that change in our highly adaptable brain allowed humans to create responsive, novel cultures. As cultural diversity is a large part of what defines us as Homo sapiens, “losing a culture is like losing a chapter in the story of humanity.”
83rd AANS Annual Scientific Meeting
Distinguished Honorees

AANS Cushing Medal
Arthur L. Day, MD, FAANS

AANS International Lifetime Recognition Award
Andrew H. Kaye, MD, IFAANS

AANS Distinguished Service Award
Kim J. Burchiel, MD, FAANS

AANS Cushing Award for Technical Excellence and Innovation in Neurosurgery
Ossama Al-Mefty, MD, FAANS

AANS Humanitarian Award
Michael M. Haglund, MD, PhD, FAANS
83rd AANS Annual Scientific Meeting
Neurosurgical Top Gun Competition

Each year, since 2006, the AANS Neurosurgical Top Gun Competition has provided a forum for residents and fellows to test their skills at various surgical simulation stations and be awarded a score for their efforts. The top scorer at each station is awarded a cash prize. The participant with the best overall score receives a cash prize as well as a prize for his or her residency program.

Top Honors—2015 Neurosurgical Top Gun
Timur Urakov, MD
Jackson Memorial Medical Center

Lumbar Pedicle Screw
Michael Sawvel, DO
Virginia Tech Carilion School of Medicine

Trigeminal Rhizotomy
Timur Urakov, MD
Jackson Memorial Medical Center

Endovascular Simulator
Scott Zuckerman, MD
Vanderbilt University

Ventriculostomy
John F. Morrison, MD
Brown University

Top Medical Student
Aurora S. Cruz

Building on the success of last year, the team competition continued in 2015, with top honors going to Methodist Hospital in Houston.

First Place in the Team Competition
Methodist Hospital
Brandon D. Liebelt, MD
Sean Barber, MD

Supported by:
Medtronic, Inc.
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Immersive Touch
University of Florida
NEUROSURGERY AROUND THE WORLD

The AANS continued to further its commitment to advancing the specialty of neurosurgery around the world this past year through its collaborations with various international societies. AANS international initiatives brought together neurosurgeons from varying neurosurgical realities to share their research with one another and consider the possibilities for future collaborations.

A highlight this year was the participation of continental and regional society leaders in the 2015 AANS Annual Scientific Meeting in Washington, D.C. Participants included:

- Andrew H. Kaye, MD, IFAANS, Asian Australasian Society of Neurological Surgeons (AASNS)
- A. Graham Fieggen, MD, IFAANS, Continental Association of African Neurosurgical Societies (CAANS)
- J. André Grotenhuis, MD, IFAANS, European Association of Neurosurgical Societies (EANS)
- Edgardo Spagnuolo, MD, Federación Latinoamericana de Sociedades de Neurocirugía (FLANC)
- Amr El Shawarby, MD, Pan Arab Neurosurgical Society (PANS)

The participation of these leaders in the AANS leadership meetings and throughout the 83rd AANS Annual Scientific Meeting was valuable and built a strong foundation moving forward.

This year was characterized by a collaboration between the AANS and AASNS. The AASNS is comprised of neurosurgeons from more than 28 societies representing approximately 60 percent of patients in the world. Many months of preparation culminated in the 14th Asian Australasian Congress of Neurological Surgeons on Jeju Island, South Korea, and the 83rd AANS Annual Scientific Meeting in Washington, D.C. At both meetings, the societies joined to showcase important thought leaders and advancements within each society.

A very important component of this collaboration was AASNS’ 2011–2015 president, Andrew H. Kaye, MD, who was recognized with the AANS International Lifetime Recognition Award. The AANS’ most prestigious international award 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.

Dr. Kaye is the head of the department of surgery at the University of Melbourne and director of the department of neurosurgery at the Royal Melbourne Hospital. He graduated from The University of Melbourne in 1973 and, subsequently, trained in neurosurgery at The Royal Melbourne Hospital and The Royal Children’s Hospital in Melbourne. Dr. Kaye undertook further neurosurgery training in Oxford, London and at The Cleveland Clinic in Cleveland. Upon returning to Australia, in 1983, he was appointed neurosurgeon at The Royal Melbourne Hospital and began research on neuro-oncology at the Ludwig Institute for Cancer Research. He was appointed professor of neurosurgery at The University of Melbourne in 1992, and the James Stewart Professor of Surgery and head of the department of surgery at The University of Melbourne, Royal Melbourne Hospital in 1997. His main clinical and research interests are neuro-oncology, pituitary tumors and cerebrovascular disease.

Attendees at the 83rd AANS Annual Scientific Meeting in Washington, D.C., had the opportunity to learn from their colleague at the International Symposium, along with thought leaders from 14 other countries, and later enjoyed a spectacular view of the National Mall at the International Reception.
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 83rd AANS Annual Scientific Meeting. In 2015, this honor went to Jeffrey V. Rosenfeld, MD, MS, IFAANS, from Melbourne, Australia, for his abstract, *The Development of a Wireless Multi-electrode Cortical Prosthesis for Restoration of Vision in Blind Individuals.*

**International Travel Scholarship:** This scholarship provides $1,500 to support the attendance of a neurosurgeon from a developing country to the 83rd AANS Annual Scientific Meeting. The 2015 recipient was Dwarakanath Srinivas, MD, from Bangalore, India, for his abstract, *Differential expression levels of Collagen 1A2, Tissue inhibitor of metalloproteinase 4 and Cathepsin B in intracranial aneurysms and their clinico-radiological correlation.*

The AANS also creates fellowship opportunities for neurosurgeons in developing countries to travel to North America for educational experiences.

The 2015 recipients of the AANS International Visiting Surgeon Fellowships:

**Bach Xuan Bui, MD, Ho Chi Minh City, Vietnam:**
Dr. Bach visited Indiana University School of Medicine in Indianapolis under the observation of Aaron Cohen-Gadol, MD, FAANS. Dr. Bach gained experience with advanced neurosurgical instruments and operating devices. He not only wants to share this knowledge with his colleagues back in Vietnam, but he also wants to share his observations of strong teamwork and high-quality patient care that he witnessed during his fellowship.

**Mugisha Clement Mazoko, MD, Dar Es Salaam, Tanzania:**
Dr. Clement visited the University of Washington in Seattle and worked under the observation of Laligam N. Sekhar, MD, FAANS. His main focus was advanced training in skull base surgery and cerebrovascular microsurgery. He hopes to share this training with colleagues in his country and grow the field of neurosurgery in Tanzania where there are currently five practicing neurosurgeons serving a population of more than 40 million.

The AANS also offers a fellowship supporting a postneurosurgical resident traveling 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 restrictions usually imposed by many research grants and fellowships. Read more about the Van Wagenen Fellowship on page 27 of this annual report.

Other accomplishments in the advancement of international initiatives included AANS participation at the following continental society meetings:

- ISMINS 2014 - International Society of Minimally Invasive Neurosurgery, X’ian, China
- EANS 2014 – 15th European Congress of Neurosurgery, Prague
- 10th Pan Arab Neurosurgical Society Congress, Abu Dhabi, United Arab Emirates
- NSICON 2014 – 63rd Annual Conference of Neurological Society of India, Coimbatore, India

Additionally, 2014-2015 AANS president, Robert E. Harbaugh, MD, FAANS, was chosen as the 2014 Dr. Jacob Chandy Orator by the Neurological Society of India (NSI). His Chandy Oration was delivered at the NSI meeting, held December 2014.
2015 AANS Annual Scientific Meeting
Commercial Supporters

The AANS wishes to thank the following companies for their support of the 2015 AANS Annual Scientific Meeting:

**Platinum Level**
Medtronic, Inc.

**Gold Level**
Codman Neuro & DePuy Synthes, companies of Johnson & Johnson
Stryker

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Elekta
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NuVasive, Inc.
Siemens Healthcare

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Varian Medical Systems

The AANS wishes to thank the following companies for providing educational grants to support the 2015 AANS Annual Scientific Meeting:

Arbor Pharmaceuticals, LLC
Boston Scientific Corporation
Codman Neuro & DePuy Synthes, companies of Johnson & Johnson
Elekta
Jazz Pharmaceuticals, Inc.
Medtronic, Inc.
MicroVention, Inc.
St. Jude Medical
Stryker
Varian Medical Systems

The AANS wishes to thank the following companies for providing gifts in kind to support the 2015 AANS Annual Scientific Meeting:

Ad-Tech Medical Instrument Corporation
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Codman Neuro
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Medtronic Spinal and Biologics
Medtronic Surgical Technologies
MicroVention, Inc.
MRI Interventions, Inc.
NeuroLogica Corporation
NuVasive, Inc.
Penumbra Inc.
RAUMEDIC, Inc.
Spine Wave Inc.
St. Jude Medical
Stryker Navigation
Stryker Neurovascular
Synthes CMF
TrueVision Systems, Inc.
Varian Medical Systems
Zimmer Spine
The Journal of Neurosurgery Publishing Group (JNSPG) continues to publish 48 issues per year (36 print and 12 electronic). In 2014, we received a grand total of 5,480 submissions, compared to 4,235 submissions from 2013. This includes the three print journals, Neurosurgical Focus and the video supplements.

I would like to recognize these outstanding chairmen: John Sampson, MD, PhD, FAANS; and Roberto Heros, MD, FAANS(L) (JNS); Atul Goel, MD; Mark Hadley, MD, FAANS; and Robert Heary, MD, FAANS (JNS: Spine); and John Kestle, MD, FAANS (JNS: Pediatrics). They have dedicated many hours to reviewing manuscripts and have provided our authors with timely, thorough and insightful reviews.

Martin Weiss, MD, FAANS(L), continues to do a superb job as associate editor of Neurosurgical Focus. Douglas Kondziolka, MD, FAANS, was appointed associate editor January 2015, and is helping with manuscript triage and strategic planning. We thank Edward Oldfield, MD, FAANS, for his term as associate editor and his valuable insights. Sander Connolly Jr., MD, FAANS, does wonderful work as the editor of our Neurosurgical Focus Video Supplements.

This was my second year as editor-in-chief of the JNSPG. In 2014, we celebrated 70 years of continuous publication of the journal, the longest of any neurosurgical journal in the world. In the summer of 2014, we celebrated 30 years of service to the journal with a special party held in the honor of John A. Jane Sr., MD, PhD, FAANS(L). We also launched our new Strategic Plan — Tradition-Transition-Transformation (2015–18) — and published the document, which was sent to all Editorial Board and Advisory Committee members. We published Guidelines on Pediatric Hydrocephalus in November 2014.

The re-design of the journals was accomplished with a release date of January 2015. I wrote an editorial on the new look for the JNSPG publications, titled “A new look for JNSPG publications: the anatomy of redesign” (J Neurosurg 122:1–3, 2015). We have developed web-linking tools to enable elements of the Rhoton Collection to be associated with certain JNSPG anatomy articles in a way that will enhance the functionality of the journal. Special thanks to University of Tennessee’s Jeffrey Sorenson, MD, FAANS, for his interest in this particular project.

Neurosurgical Focus continues to be highly successful, with more than twice the number of manuscripts submitted per volume of published works. Finally, I am delighted to share our most recent impact factors: Journal of Neurosurgery: 3.737; Journal of Neurosurgery: Spine: 2.383; Journal of Neurosurgery: Pediatrics: 1.482; Neurosurgical Focus: 2.105.

I am pleased that our journal continues to thrive and flourish at a time of rapid change in association journal publishing.

James T. Rutka, MD, PhD, FAANS
Editor-in-Chief, JNSPG
Neurosurgery is recognized as a specialty with a high bar of entry. Yet while neurosurgeons begin practice after a decade or more of training, nurse practitioners (NPs) and physician assistants (PAs) often have little experience in neurosurgery. Consequently, advanced practice providers (APPs) in a neurosurgical setting face a steep learning curve. This challenge is compounded by a lack of time and resources for APP-specific education.

“New NPs and PAs do not get a lot of exposure to the complex field of neurosurgery in their training,” explained Joseph S. Cheng, MD, MS, FAANS, chair of the AANS Educational and Practice Management (EPM) Committee. “And, most of us are too busy to dedicate a lot of time for formal neurosurgery training on the job.”
In 2010, the AANS addressed this gap in training by launching the inaugural *From Cranial to Spine: An Overview of Neurosurgical Topics for the Advanced Practice Provider*. With an expected attendance of 50, course directors were surprised when the course quickly filled with nearly 200 participants.

In fiscal year 2015, the course reached a new milestone, educating more than 300 APPs and offering an expanded selection of breakout sessions and practical clinics. By filling this educational gap, the AANS helps APPs at neurosurgical practices perform more quickly at a higher level and with less need for on-the-job training.

Much of the course’s success can be attributed to the cooperation within a diverse faculty. Current course co-directors Twyila Lay, NP; Josh Beardsley, PA; and Erol Veznedaroglu, MD, FAANS, lead a faculty comprised of NPs, PAs and neurosurgeons. From these diverse perspectives, APPs receive training geared towards their level of practice and with a deep understanding of their day-to-day challenges.

In September 2015, attendees at the *From Cranial Spine* course can look forward to new content, including a hands-on practical clinic with training in common techniques related to cerebrovascular, spine, trauma and tumor subspecialties. “Every year it gets better,” said *From Cranial to Spine* attendee, Christine Gray, NP. “Having the talks geared specifically towards NPs and PAs and what they deal with, more than physician-based, is excellent.”

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**AANS Education by the Numbers**

- **11** Live Courses
- **8** Resident Education Courses
- **19** Jointly Provided CME Programs
- **3** Society of Neurological Surgeons (SNS) Junior Resident Courses
- **More than 100** Total Educational CME Activities in FY15, including Online Courses, Webinars and Enduring Materials
Much of Harvey Cushing’s legacy came from his impact on the next generation of surgeons. Physicians who trained under Cushing created a tree of influence that extended across generations. Without his deliberate instruction, passing on surgical techniques and principles, neurosurgery could look far different today.

In the same tradition, the American Association of Neurological Surgeons (AANS) and the Neurosurgical Education and Research Foundation (NREF) work to pass on critical knowledge to the neurosurgeons of tomorrow. Through a series of advanced resident courses, the AANS and the NREF offer training in topic areas not always covered within residency.

In the 2015 fiscal year, the AANS and NREF offered this advanced training to 232 neurosurgical residents and fellows, at no cost to the residents or their programs.

**Exit Strategies for Chief/Senior Residents**
July 24-25, 2014 | Rosemont, Ill.
Course Director: William T. Couldwell, MD, FAANS
Industry Supporter: Leica Microsystems
Number of Residents Educated: 25

**Stereotactic Radiosurgery for Neurosurgery and Radiation Oncology Residents**
Offered in Collaboration with American Society for Radiation Oncology (ASTRO)
August 1-3, 2014 | New York
Course Co-Directors: Jason P. Sheehan, MD, PhD, FAANS; and John Suh, MD
Industry Supporters: BrainLab, Elekta and Varian
Number of Residents Educated: 30

**Fellows Course in Neuroendovascular Techniques**
In Collaboration with the Society of NeuroInterventional Surgery (SNIS) and the Society of Vascular and Interventional Neurology (SVIN)
September 12-14, 2014 | Memphis, Tenn.
Course Co-Directors: Adam S. Arthur, MD, MPH, FAANS; Erol Veznedaroglu, MD, FAANS; and Alejandro Berenstein, MD
Industry Supporters: Codman; Covidien; Methodist Hospital, Memphis; MicroVention; Penumbra and Stryker Neuro
Number of Fellows Educated: 30

**Fundamentals in Spinal Surgery for Residents**
October 2-4, 2014 | Houston
Course Co-Directors: R. Patrick Jacob, MD, FAANS; and Praveen V. Mummaneni, MD, FAANS
Number of Residents Educated: 36

**Endovascular and Vascular Techniques for Residents**
November 13-16, 2014 | Memphis, Tenn.
Course Co-Directors: Adam S. Arthur, MD, MPH, FAANS; Michael T. Lawton, MD, FAANS; and Erol Veznedaroglu, MD, FAANS
Industry Supporters: Aesculap, Inc. USA; Biomet Microfixation; Carl Zeiss Meditec, Inc.; Codman Neuro; Covidien; Leica Microsystems; Medtronic; Methodist Hospital, Memphis; MicroVention; Mizuho America, Inc.; Penumbra; Stryker Neuro and Surgical Solutions
Number of Residents Educated: 27
Skull Base for Senior Residents  
March 19-24, 2015 | Memphis, Tenn.  
Course Director: Jon H. Robertson, MD, FAANS  
Industry Supporters: Biomet Microfixation; Carl Zeiss Meditec, Inc.; DePuy Synthes CMF; Integra LifeSciences; Karl Storz; Leica Microsystems; Medtronic; Methodist Hospital, Memphis; Stryker CMF; Symmetry Surgical and TrueVision  
Number of Residents Educated: 27

Spinal Deformity for Residents  
March 27-29, 2015 | Baltimore  
Course Co-Directors: Robert F. Heary, MD, FAANS; and Justin S. Smith, MD, FAANS  
Industry Supporters: DePuySynthes Spine, Globus, K2M and Medtronic  
Number of Residents Educated: 32

Science of Neurosurgical Practice  
June 12-14, 2015 | Rosemont, Ill.  
Course Co-Directors: Michael Glantz, MD; and Robert E. Harbaugh, MD, FAANS  
Industry Supporters: Leica Microsystems and Novocure  
Number of Residents Educated: 25
"My involvement with the AANS MOC/CME Committee, charged with assisting members through the American Board of Neurological Surgery’s (ABNS) maintenance of certification (MOC) process and ensuring the content, quality and timeliness of all continuing medical education (CME) offerings by the AANS, evolved from my role as course director for the MOC Preparation and Neurosurgical Update course. I am honored to be the current chair.

"My career has spanned private practice and academics, so I appreciate the different challenges of these two career paths; I’ve tried to reflect this sensibility in my role as chair. In the committee’s interface with the ABNS, we are focused on the MOC process, hoping for positive changes. The committee continues to monitor MOC and the CME offerings, striving to provide valuable educational opportunities to members, colleagues and those in training.

"For many years, I had the pleasure of working with Julius Goodman, MD, who was dedicated to continuing education, lifelong learning, mentoring and collegiality. He envisioned the first Weekend Update course (the predecessor of MOC Preparation and Neurosurgical Update) as a means to engage and challenge an audience of experienced practitioners without the intimidation of the ‘hot seat’ format used in the board review course. With the development of the audience response system and the initiation of the MOC examination, he saw an opportunity to continue education on a case-based format. I watched his constant work to improve the Oral Board Preparation course and develop this new course.

"Since I became course director for the AANS MOC Preparation and Neurosurgical Update course eight years ago, course improvements are constantly on my mind. My goal is to make this course a great experience for everyone who attends, regardless of their MOC status,” added Leipzig.

When asked about Leipzig’s contributions to the AANS, Joni Shulman, AANS associate executive director, commented, "Dr. Leipzig has been invaluable in the AANS’ ongoing review of our learner’s change data that is analyzed annually as part of the reaccreditation process for Accreditation Council for Continuing Medical Education (ACCME). Dr. Leipzig is keen to hone in on the changes learners say they’ll make in their respective practices based upon the education AANS provides. Course development is a cycle: review changes, close gaps in learning, see new gaps arise, communicate these gaps to the course directors/ moderators to incorporate within their curricula and measure again. Dr Leipzig understands how much the process helps us be better educators and provide better learning, while also assisting us with our CME requirements.”

Leipzig shared, “This year, the ABNS approved the AANS MOC Course to fulfill all of the 25 hours of self-assessment required in a three-year mini-cycle. I think this validates the great work of our faculty. I am especially pleased when an attendee tells me it was a great course and that his or her partner needs to attend. We want it to be informative, fun and challenging for every neurosurgeon. I hope attendees find it to be of value in their practices.”

Course faculty member, Michael Wang, MD, FAANS, noted, "The AANS MOC Course has benefitted many neurosurgeons preparing for this important milestone. The course is successful, in large part, due to Dr. Leipzig’s dedication to improving neurosurgical education. The course was fantastic because Dr. Leipzig has put phenomenal effort into it. We are all super-busy and, for a volunteer organization like the AANS, folks like Dr. Leipzig are vital. He makes me proud to be a member.”

Thomas J. Leipzig, MD, FAANS, received his medical degree from the University of Chicago (U of C) Pritzker School of Medicine. Since completing his neurosurgical training under Dr. John F. Mullan at the U of C Medical Center, he has been in practice with Goodman Campbell Brain and Spine (Indianapolis). Leipzig has a special interest in patients with neurovascular disorders. He joined the clinical faculty at the Indiana University School of Medicine in 2012, after being an affiliate member for many years, and is a past president of the Indiana State Neurosurgical Society. Leipzig is currently director of the AANS MOC Preparation and Neurosurgical Update course and has been a long-standing faculty member for the Goodman Oral Board Preparation course. He has also served as faculty for several other courses and currently serves as a member of the AANS Education and Practice Management Committee and as chair of the AANS MOC/CME Committee.
The Neurosurgery Research and Education Foundation (NREF) has had a very productive year.

The NREF board of directors focused on establishing new opportunities for contributing to the foundation. We have encouraged donors to view their gifts given to the NREF as valued personal investments. The program that most exemplifies this approach to giving is the Honor Your Mentor program, in which donations honor individuals who have personally impacted the lives of fund donors. The monies collected within these named funds are used to support the mentor’s field of interest or specialty by establishing grants or fellowships within the identified areas.

Beyond Honor Your Mentor, the NREF has seen growth among our Cushing Circle-level membership, a level of giving that was celebrated this year at a reception during the 2015 AANS Annual Scientific Meeting and thanked with a private suite, available to members during the meeting.

Additionally, there was an increase in the money provided to the NREF through the annual Columbia Softball Tournament. Indeed, even the NREF’s private supporters contributed at levels that allow the foundation to move forward with our mission to enhance lives by advancing neurosurgical care, allowing the NREF to preserve its annual funding of Resident and Young Investigator grants and to expand the Medical Student Summer Fellowship grants to include the Rhoton Medical Student Fellowships.

Our industry partners continue to support the post-residency clinical fellowships (PRCF). The generosity of both industry and neurosurgery is allowing the planning of new international and mid-career educational courses, which will continue our mission-fulfilling efforts.

The Bagan Family Fellowship was awarded for the first time this spring. When Merwyn Bagan, MD, MPH, FAANS(L), presented the Bagan Family Fellowship, he spoke of his family’s decision to create the fund. They hoped it would set an example that would be embraced and followed by others involved in neurosurgery. As both NREF chair and donor, I hope that more members of the neurosurgical community choose to echo Bagan’s words, mission and generosity.

Those of us involved with the NREF appreciate the support of all who have helped us achieve and, indeed, exceed our goals during this past year, and we most humbly request your continuing support in coming years.

Jon H. Robertson, MD, FAANS
NREF Chair
Sometimes the requests attached to membership in the AANS can be surprising.

*U.S.A. Today* reached out to staff at the AANS about a program it was running for middle-school students. Seventh and 8th grade students were asked to write an essay about their career aspirations, detailing their thoughts on the professions they hoped to enter into as adults. Part of the prize for winning the essay contest included a day shadowing someone in that dreamt-about profession.

One of the winning essays, submitted by Alahji Barry, a middle schooler from Atlanta, concluded his essay with the following paragraph:

*My decision to become a neurosurgeon did not come in a moment of blinding revelation, but as a result of an interest in science. Through future experiences I will encounter, I can think of no other profession that is so fulfilling and rewarding as that of a neurosurgeon. The road to becoming a brain surgeon is necessarily a long one. But with the sufficient amount of dedication, and my strong passion to learn, I will be able to achieve my dream. In addition, I will not allow anything to interfere with the attainment of my goal.*

Alahji’s goal created a slight dilemma for the contest organizers: where could they find a neurosurgeon willing to spend time with a teenager? Enter the AANS and Regis W. Haid Jr., MD, FAANS, who took time out of his busy schedule to meet with Alahji and show him the neurosurgical ropes.

“I really enjoyed meeting with Alahji, hearing about his hopes for his future and sharing some of my professional experiences with him. The founding principles of neurosurgery have always included taking time for the next generation, and, while Alahji is younger than most, his interest, inquisitiveness and intelligence created a day that was as memorable for me as I hope it was for him,” said Dr. Haid. “You don’t often get to spend the afternoon with the future. I highly recommend the experience.”
Since 1980, the Neurosurgery Research and Education Foundation (NREF) has served as a premier funder of neurosurgical research and education in North America. NREF secures nearly $1 million each year to produce preeminent training courses for neurosurgical residents, fellows and practicing surgeons. NREF provides an additional $1 million annually in research grants to help launch the careers of medical students and young surgeons.

Education Courses
Since 2006, the generous contributions of industry partners have allowed more than 1,400 senior residents, fellows and practicing surgeons to learn critical surgical skills, quantitative analysis and career planning from expert faculty from leading academic institutions across the country.

2014-2015 NREF Courses
- Endovascular and Vascular Techniques for Residents
- Endovascular Techniques for Fellows in collaboration with SNIS and SVIN
- Exit Strategies for Chief/Senior Residents
- Fundamentals in Spinal Surgery for Residents
- Science of Neurosurgical Practice (Quantitative analysis for clinical trials)
- Skull Base for Senior Residents
- Spinal Deformity for Residents
- Spinal Disorders: A Comprehensive Hands-on Course (Bangalore, India)
- Stereotactic Radiosurgery for Neurosurgery and Radiation Oncology Residents
Clinical Fellowships

Since 2010, the NREF has supported more than 70 post-residency clinical fellowships (PRCF) at more than 25 neurosurgery training programs in North America.

Funding for post-residency fellowships is made possible by industry supporters. Applications are accepted in areas such as spine, endovascular, pediatric, stereotactic and tumor neurosurgery. PRCF awardees are independently chosen by a committee of surgeons.

The NREF gratefully recognizes corporate support for funding of the 2014-2015 PRCFs from the following organizations:

- DePuy
- Medtronic, Inc.

2014-2015 Awardees

In 2014-2015, the NREF granted funding for eight post-residency clinical fellowship programs in the area of spine. The foundation is pleased to announce the following institutions received funding:

- Cleveland Clinic Center for Spine Health
- Duke University Medical Center
- Johns Hopkins University
- Rush University
- Toronto Western Hospital
- University of California, San Francisco
- University of Miami
- University of South Florida, Tampa
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 $7.72 million in grant funding has been awarded to nearly 200 residents and young clinician investigators at 65 academic institutions.

NREF would like to thank the following organizations that helped support NREF Research Grants and Young Clinician Investigator Awards in fiscal year 2015:

- 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
- Annual Neurosurgery Charity Softball Tournament sponsored by Columbia University and The New York Yankees
- Medtronic

**Research Grants and Young Clinician Investigator Awards**

Kurtis Birch, MD  
*NREF Research Fellow*  
Cedars Sinai Medical Center  
**Project Title:** The Role of Sleep in Memory Formation and Consolidation: A Neurophysiological Study in Humans Undergoing Invasive EEG Monitoring for Intractable Epilepsy

Eyiyemisi Damisah, MD  
*NREF and AANS/CNS Cerebrovascular Section Research Fellow*  
Yale New Haven Hospital  
**Project Title:** Role of Branched Chain Amino Acids and Mitochondrial Dysfunction in Post Stroke Epileptogenesis

Courtney Rory Goodwin, MD, PhD  
*NREF and Academy of Neurological Surgery Edward H. Oldfield, MD Research Award*  
Johns Hopkins University  
**Project Title:** Phospho–proteomic and Genomic Profiling of PTEN–Akt Signaling in Malignant Gliomas

**2014–2015 Research Fellows and Young Clinician Investigator Awards**  
($40,000 for one year)

Kurtis Birch, MD  
*NREF Research Fellow*  
Cedars Sinai Medical Center  
**Project Title:** The Role of Sleep in Memory Formation and Consolidation: A Neurophysiological Study in Humans Undergoing Invasive EEG Monitoring for Intractable Epilepsy

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Johns Hopkins University  
**Project Title:** Phospho–proteomic and Genomic Profiling of PTEN–Akt Signaling in Malignant Gliomas
Seunggu J. Han, MD  
NREF and AANS/CNS Joint Section on Tumors Research Fellow  
University of California, San Francisco  
Project Title: Impact of Honokiol in PI3 Kinase Pathway Mediated Immuno-resistance in Glioma

Nelson Moussazadeh, MD  
AANS/CNS Section on Disorders of the Spine and Peripheral Nerves Research Fellow  
Sloan-Kettering Cancer Center  
Project Title: Genomic Characterization of Spinal Metastases and Paired Primary Tumors to Identify Patterns of Spinal Tropism and Clonal Evolution

Ciaran James Powers, MD, PhD  
NREF Young Clinician Investigator  
The Ohio State University Wexner Medical Center  
Project Title: MiR-92a Sensitizes the Brain to Ischemia After Subarachnoid Hemorrhage by Down-regulating Krüppel-like Factor 2

Katie Pricola, MD  
NREF and AANS/CNS Section of Pediatric Neurological Surgery Research Fellow  
Massachusetts General Hospital  
Project Title: The Role of Axonal Guidance Factors (AGFs) in the Development of Medulloblastoma

Teresa Purzner, MD  
NREF/Medtronic Research Fellow  
Stanford University School of Medicine  
Project Title: Combining Mass Spectrometry and Development Genetics to Develop Targeted Brain Tumor Therapy

Jayesh P. Thawani, MD  
NREF/Columbia Neurosurgery Softball Research Fellowship in Neuro-Oncology  
University of Pennsylvania  
Project Title: Engineering a Nanoparticle-based Contrast Agent to Delineate Brain Tumors Both on Magnetic Resonance Imaging and in the Operating Room Using Diffuse Optical Imaging

Jessica Wilden, MD  
NREF Young Clinician Investigator  
Louisiana State University Health Sciences Center  
Project Title: The Preclinical Investigation of Deep Brain Stimulation in Intravenous Methamphetamine Abuse
SUPPORTING FUTURE NEUROSURGICAL LEADERS

Medical Student Summer Research Fellowship Program

Now in its eighth 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 2015 Fellowship awardees:

Tej Deepak Azad
Stanford University School of Medicine

Lawrance Chung
Devid Gegggen School of Medicine at UCLA

Harrison Farber
Duke University Medical Center

Sameer Farooq
New York University

Megan Hermann
University of Texas Health Science Center San Antonio

Zachary Hopkins
University of Utah

Dhruv Kumar Jain
University of Toronto, Faculty of Medicine

Joseph Juliano
University of Southern California

Michael Kader
NYU Langone Medical Center

Jason Kirschner
University of Rochester School of Medicine & Dentistry

Sneha Konda
Texas A&M Health Sciences Center College of Medicine

Brandon Lucke-Wold
West Virginia University School of Medicine

Erin Patricia McCormack
The George Washington University School of Medicine and Health Sciences

Robert Rudy
Harvard Medical School

Adam Russak
University of Rochester School of Medicine & Dentistry

Sanjit Shah
University of Cincinnati

Eugene Vaios
Massachusetts General Hospital

Philip Yee
Toronto Western Hospital

Jacob Stewart Young
The University of Chicago

Yin Zhao
University of Pittsburgh

Best 2014 MSSRF Abstract Presented at 2015 AANS Annual Scientific Meeting

Michael Zhang
MD Candidate, Class of 2016
Stanford University

Project Title: M1 Macrophages Demonstrate a Superior Phagocytic Response Against Glioblastoma Multiforme Following Anti-CD47 Treatment
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 the living expenses and other costs, while an additional $25,000 is awarded to the host university lab or program to help offset research, education and investigation costs for the fellowship.

The recipient of the 2015 Van Wagenen Fellowship is Lisa Anne Feldman, MD, PhD, a resident in neurological surgery at Virginia Commonwealth University.

Dr. Feldman will travel to New Zealand, where she will be hosted by the University of Auckland and Victoria University in Wellington. Under the mentorship of Mr. Edward Mee, Dr. Feldman will pursue her research topic of “Perfluorocarbons as a Novel Treatment for Radiation Necrosis.” Dr. Feldman plans to study stereotactic radiosurgery (SRS), an important treatment option for numerous neurosurgical diseases, including skull base tumors, metastatic brain tumors and arteriovenous malformations.

“I am deeply honored to be awarded the Van Wagenen Fellowship. This award will provide me the opportunity to conduct exciting neurosurgical research abroad, while also fostering long-lasting international collaborations for future research,” commented Dr. Feldman.
CORPORATE PARTNERS

Pinnacle Partners: Committed to Supporting Neurosurgery

Spanning the breadth of neurosurgical subspecialties, NREF’s Pinnacle Partners share a common corporate commitment to advancing research, education and training in neurosurgery.

The NREF gratefully acknowledges the following companies for their contributions as Pinnacle Partners in Neurosurgery in fiscal year 2015.

- Biomet, Inc.
- Brainlab, Inc.
- Carl Zeiss Meditec, Inc.
- Codman Neuro
- DePuy Synthes Companies of Johnson & Johnson
- Globus Medical, Inc.
- Integra LifeSciences
- Leica Microsystems
- Medtronic, Inc.
- Siemens Medical Solutions, USA, Inc.
- Varian Medical Systems, Inc.

NREF Corporate Leadership Council

The NREF Corporate Leadership Council is an annual forum bringing together the leaders in organized neurosurgery with key industry leaders. The mission of this gathering is to strengthen ties through a forum for discussion and collaboration on issues related to the specialty.

The NREF Corporate Leadership Council convened in Chicago on July 26, 2014. Representatives from a dozen companies were joined by members of the NREF leadership for 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 presented developments in key program areas such as the NeuroPoint Alliance (NPA) and the activities of the AANS/CNS Washington Committee.
HONOR YOUR NEUROSURGICAL MENTOR

Neurosurgeons have demonstrated tremendous generosity to the profession by paying tribute to the luminaries of the specialty who helped build their careers. Once donations to a fund total $50,000 or more, the permanent Honor Your Mentor accounts generate ongoing support for a designated educational or research purpose. Currently, 18 named Honor Your Mentor funds represent nearly $700,000 received of the nearly $1,200,000 in current pledges:

A. Leland Albright Fund
To support neurosurgery resident and fellow education in Africa

Roy Bakay Fund
To be utilized for research in Stereotactic and Functional Neurosurgery

Ulrich Batzdorf Fund
To be utilized for basic science research in spinal cord injury

Dr Warren C. Boop Jr. Family Fund
To support Resident Education and Research within the department of Neurosurgery at the University of Arkansas for Medical Sciences.

Edward S Connolly Fund
To be utilized for clinical outcome studies, clinical or basic science research and fellowships in spine

Charles Drake Fund
To honor the memory of the late Charles Drake, Professor and Chairman Emeritus of the Department of Surgery at the University of Western Ontario.

Stewart B. Dunsker Fund
To be utilized for clinical or basic science research and fellowships in spine.

Regis W. Haid Jr. Fund
To be utilized for spinal clinical outcomes studies, fellowship research projects

Charles Kuntz IV Fund
To be utilized for spinal clinical outcomes studies, fellowship research projects

Sanford J. Larson Fund
Award for best spine research paper at the AANS Annual Scientific Meeting

Edward R. Laws Fund
To support resident education and research within the Department of Neurosurgery at the Brigham and Women’s Hospital.

Anthony Marmarou Fund
To support a Section on Neurotrauma named lectureship

Andrew Parsa Fund
To fund a fellowship or research grant in Dr. Parsa’s name for brain tumor research

Albert Rhoton Jr. Fund
To support the maintenance and future development of The Rhoton Collection and to provide funding for grants restricted for micro neuroanatomical research fellowships

James T. Rutka Fund
To support the Tumor Section in its area of greatest need

Volker K.H. Sonntag Fund
To be utilized for IRB clinical outcome studies, clinical or basic science research and fellowships in spine

Philip E. Stieg Fund
To fund a skull base research fellowship at the Weill Cornell Medical College Department of Neurological Surgery

Charles Tator Fund
To be utilized for basic science research in spinal cord injury
Leading by Example: The Bagan Family Funds Research for Pediatric Brain Tumors in 2015–2016

During his tenure as president of the AANS, Merwyn Bagan, MD, MPH, FAANS(L), made a significant donation to the Neurosurgery Research & Education Foundation (NREF). Through his close work with the organization, he was inspired to support its goals as well as to lead by example. Dr. and Mrs. Carol Bagan dedicated their donation to further the progress of the specialty, and their hope was that if one family endowed a fellowship, others would follow.

While the benefit of the Bagan’s example continues to echo through both the AANS and the NREF, the benefits of that particular gift began to bear fruit at the 2015 AANS Annual Scientific Meeting, when the inaugural Bagan Family Fellowship was conferred. The new, Young Clinician Investigator Award will exist as a permanent tribute to the Bagan’s global dedication to medicine, neurosurgery and neurosurgical education. It will further the progress of the specialty, as the award supports junior faculty who are pursuing careers as clinical investigators. Applicants must be neurosurgeons within two years of the end of their clinical training, who are full-time faculty in a teaching institution located in North America.

Dr. Bagan chose to be very involved in the selection process. Both Dr. and Mrs. Bagan enjoyed getting to know fund awardee, Amanda Muhs Saratsis, MD. Dr. Saratsis is assistant professor of neurological surgery at Northwestern University Feinberg School of Medicine and an attending physician at Ann & Robert H. Lurie Hospital of Chicago. Dr. Saratsis’ award funds her examination into the underpinnings of pediatric brainstem glioma. She hopes to identify potential therapeutic targets and biomarkers of this disease that will improve clinical diagnosis and management.

“The Bagans’ support means that applications made to the National Institutes of Health and other funding sources on behalf of this project have a better chance of being accepted. I’m hopeful that this project can really make a difference for children diagnosed with diffuse intrinsic pontine glioma (DIPG), which currently has the highest mortality rate of all pediatric solid tumors,” commented Dr. Saratsis.

Dr. Bagan’s own illustrious career began with an undergraduate degree from Dartmouth College and a medical degree from Boston University. He completed his neurosurgical training at the National Institutes of Health and The Johns Hopkins Hospital. He was in private practice until 1993, and in 1995, Dr. Bagan received a master’s degree in public health from Boston University School of Public Health.

From 1995 to 2000, the Bagans lived in Nepal, and furthered the specialty of neurosurgery in that country. Dr. Bagan worked as a volunteer at the Tribhuvan University Teaching Hospital (TUTH) and was named visiting professor at the Tribhuvan University Institute of Medicine’s department of surgery in 1997. He established a neurosurgical unit there, and trained two general surgeons to become neurosurgeons. Dr. Bagan was instrumental in obtaining more than $1 million in medical equipment for the hospital. In recognition of his contributions, his Majesty King Birendra Bir Bikram Shah Dev of Nepal presented Dr. Bagan with the Suprabal Gorkha Dakshina Bahu Award.

In honor of his accomplishments and outstanding service to the development of neurosurgery and care of needy patients in Nepal, the AANS honored Dr. Bagan with the 2000 Humanitarian Award.

“The idea was that if one family-endowed fellowship was created, others would follow.”

Merwyn Bagan, MD, MPH, FAANS(L)
OUR DONORS: LEGACIES OF PHILANTHROPY

Cushing Circle of Giving

The Cushing Circle is comprised of philanthropists who are passionate about helping patients through the specialty of neurosurgery by supporting neurosurgical research, education and outcome studies. Members demonstrate this passion with cumulative (lifetime) giving of $25,000 or more.

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

Individuals
Anthony Asher, MD, FAANS
John L. D. Atkinson, MD, FAANS
Merwyn and Carol Bagan
Timir Banerjee, MD, FAANS
Dr. and Mrs. Nicholas M. Barbaro
Frederick G. Barker II, MD, FAANS
H. Hunt Batjer, MD, FAANS
James R. Bean, MD, FAANS
Mitchel S. Berger, MD, FAANS
Mrs. E. Laurie Bittner
Dr. and Mrs. Gary Bloomgarden
Dr. and Mrs. Frederick A. Boop
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Drs. Robert E. and Kimberly S. Harbaugh
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Tennessee State Neurological Society
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University of Utah Department of Neurosurgery
Western Neurosurgical Society
DONOR REPORT 2014-2015

The board of directors of the Neurosurgery Research and Education Foundation (NREF) is grateful to the many individuals, groups, medical practices, corporations and neurosurgeon members who offered their generous support to the NREF from July 1, 2014, through June 30, 2015.

Summa Cum Laude—$5,000 and above
John L. D. Atkinson, MD, FAANS
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Luis Manuel Tumialan, MD, FAANS
Michael Y. Wang, MD, FAANS
Lynda B. Williams
Lynda Jun-San Yang, MD, PhD, FAANS

Magna Cum Laude - $2,500 to $4,999
Anthony L. Asher, MD, FAANS
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Charles L. Branch Jr., MD, FAANS
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The following contributions were made in memory of colleagues, family members and friends:
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The Clifford Family Charitable Gift Fund in memory of Robert Hanchey, MD, FAANS; Joseph Nadell, MD, FAANS; and Edward Connolly, MD, FAANS
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THE DIVINE VOCATION
BUILDING ON NEUROSURGERY'S FOUNDING PRINCIPLES
Our specialty has been extremely well-positioned to provide the kind of infrastructure support our members need to succeed in a very new health-care environment. All surgical fields are being confronted with an absolute requirement to document the value added by the procedures they perform. The stakeholders challenging us for such information include patients themselves, licensing boards, hospital credentialing processes, third-party payers and the federal government.

To optimally position our members, the AANS created NeuroPoint Alliance (NPA) in 2008. NPA was created as a not-for-profit 501(c)(6) corporation designed to allow neurosurgery to carry out a variety of national projects that involve the acquisition, analysis and reporting of clinical data from neurosurgical practice using online technologies. NPA is designed to meet the quality care and research needs of individual neurosurgeons and practices, national organizations, health-care plans, the biomedical industry and government agencies. This corporation is run by a board of directors who are appointed from the AANS, American Board of Neurological Surgery (ABNS), Congress of Neurological Surgeons (CNS), Society of Neurological Surgeons (SNS) and the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves.

For the last several years, NPA has been involved with data collection for the ABNS primary certification and maintenance of certification processes, as well as numerous registries for neurosurgical procedures. Collaborations also exist between NPA and the Vanderbilt Institute for Medicine and Public Health (VIMPH), Quintiles/Outcomes and Acesis.

**Major Milestones**

As of April 2015, NPA has received the final acceptance required from the Centers for Medicare and Medicaid Services (CMS) to officially identify the National Neurosurgery Quality and Outcomes Database (N2QOD) as a Qualified Clinical Data Registry (QCDR) for 2015. NPA submitted its application on Jan. 31, 2015, and on April 3, 2015, obtained final approval on 21 novel, “non-PQRS” (i.e. not existing Physician Quality Reporting System (PQRS)) measures developed by leading quality experts in our specialty. Importantly, these measures are the first specialty-specific measures for neurosurgery approved for public reporting and will provide a meaningful method for neurosurgeons to use in programs such as PQRS. It is important to note that numerous individuals contributed...
to the development of this successful application, including a group of young surgeon-scientists (principal residents and their attendings) who will be an important part of NPA’s future leadership. We are most indebted to Anthony L. Asher, MD, FAANS, for his leadership on this initiative.

The NPA’s largest effort, the N2QOD is a prospective clinical registry designed to generate high-quality neurosurgical patient outcomes data. Participation in N2QOD 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. In February 2012, the N2QOD lumbar spine module was piloted in three academic centers. This program has rapidly expanded. As of May 31, 2015, 66 centers are participating, and contracts are in final stages for five additional sites. Seventy-one centers have achieved institutional review of the project, nearly 16,000 patients are currently enrolled in the lumbar module, and 5,000 are enrolled in the cervical module. Fourteen groups are now participating in the spinal deformity module.

New Ventures
A number of new projects have also been launched since our last Annual Report. The ECIC Bypass Study is a prospective registry evaluating bypass for carotid occlusion with persistent or unstable symptoms failing medical management. Carlos A. David, MD, FAANS, is the lead investigator. The Cervical Spondylotic Myelopathy Surgical Trial is designed to determine optimal surgical approach for patients with multi-level cervical spondylotic myelopathy. Partnering with Acessis, Inc., NPA will provide data-collection services for this six-year study of 300 patients from 20 centers. Zoher Ghogawala, MD, FAANS, is the lead investigator. A new cerebrovascular module has been launched with six pilot sites entering data and an additional seven in the process of training and/or contracting with NPA. Seven centers are now involved with QCDR measures and are entering data.

Collaborations have developed between the AANS, NPA, Neurosurgery Research and Education Foundation (NREF) and other organizations, including the Stereotactic Radiosurgery Registry with the American Society of Radiation Oncology and supported by Brainlab and Elekta. The AANS and the American Academy of Physical Medicine and Rehabilitation are involved in the development of a business plan to create a collaborative clinical data registry serving patients suffering from a variety of spinal disorders.

Clearly, NPA has gotten great traction and has an outstanding future. Embedded in its success is the collaborative nature of our neurosurgical organizations speaking with one voice in support of our patients. The AANS and NPA look forward to continued and rapid growth in support of our membership.

H. Hunt Batjer, MD, FAANS
2014-2015 NPA Chair
NeuroPoint Alliance (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, the biomedical industry and government agencies, such as the U.S. Food and Drug Administration. 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.

**Stereotactic Radiosurgery Registry**

NPA's newest project in fiscal year 2015 was the Stereotactic Radiosurgery (SRS) Registry. A joint collaboration between the AANS, the American Society for Radiation Oncology (ASTRO) and the Neurosurgery Research and Education Foundation (NREF), the SRS Registry will establish national benchmarks for SRS treatments that provide clinicians and patients the data they need to make informed treatment decisions. The project will gather data from 30 diverse, high-volume centers, tracking the SRS treatment information of thousands of patients affected by brain metastases, benign brain tumors and arteriovenous malformations (AVMs).

“The AANS and ASTRO SRS registry should help to refine indications and techniques for radiosurgery. In the process, it should make radiosurgery safer and more effective for patients,” said Jason P. Sheehan, MD, PhD, FAANS, and co-director of the SRS Registry.

Developing a registry of this scope would not have been possible without the financial support and collaboration of companies that recognized the value of the registry. Major sponsorship for the registry has been provided by Brainlab, who in addition to financial support has also donated custom software that extracts data from source documentation and transfers it into the registry’s database, including image and DICOM RT treatment plan data.

“It is very exciting that after years of planning and preparation, we are now finally registering patients. I expect the pace of data collection to snowball over the next six months as more centers become active, and within a short time we should have a valuable mass of information about practice patterns and quality indicators for radiosurgery,” commented Brian Kavanagh, MD, MPH.

In April 2015, the SRS Registry welcomed Elekta as a registry supporter. Elekta is working with NPA to customize software for the initiative and will be enrolling patients in centers in summer of 2015.
National Neurosurgery Quality and Outcomes Database

With more than 20,000 patients in its database at the end of FY15, N2QOD is the largest spine registry in North America. As a prospective registry designed by neurosurgeons and committed to long-term patient follow-up with patient-reported outcomes, N2QOD produces detailed, longitudinal data that is not possible for other registries. NPA works with the Vanderbilt Institute for Medicine and Public Health (VIMPH) to manage the collection and analysis of N2QOD data.

VIMPH has provided descriptive benchmarks and risk-adjusted variables in N2QOD reports to participating centers since 2013. In early 2015, VIMPH began providing individual-level surgeon reporting to participating centers that met patient enrollment requirements.

Working in collaboration, NPA and VIMPH finished phase one development of the N2QOD Online Spine Predictive Calculator. The calculator will be further refined and offered to participating centers by the end of 2015. Based on the predictive model for outcomes after lumbar surgery for degenerative disease, the calculator will take input of patient details, such as age, gender, employment, comorbidities, baseline pain, etc., and return histogram curves demonstrating and predicting the disability, pain and quality of life outcomes for the patient. The tool will be used in clinic by participating registry surgeons.

The N2QOD Lumbar Spine Registry is now in its fourth year. The Lumbar Spine Module was launched on Feb. 22, 2012, in three academic sites. By fiscal-year end, N2QOD had more than 21,000 patients enrolled in the Spine registry, across 50 participating sites.

In September 2014, after an 18-month maturation process, the N2QOD aggregate data was made available to participating centers. Data proposals are reviewed and evaluated by the N2QOD Data Use and Access Committee (DUAC) for scientific merit, analytic rigor, feasibility, clinical relevance and potential conflicts of interest. Manuscript development and scientific analyses of the N2QOD data has been a primary focus of the N2QOD Scientific Priorities Group who have several manuscripts in progress for publishing in late 2015. NPA expresses appreciation to the NREF for grant funds supporting the analytics of this work.
The NQOD spine registry was rounded out in December 2014 with the addition of the NQOD Deformity Module. The NQOD Deformity Module was developed jointly with the AANS/CNS Joint Section on Disorders of the Spine and Peripheral Nerves and the Scoliosis Research Society. It is currently offered as an extension to the NQOD Lumbar Module and is focused on non-complex deformity cases. In 2015, the NQOD Deformity module will be further expanded, serving as a standalone, comprehensive module that will include radiographic imaging. By June 30, 2015, there were 14 centers participating in the Deformity Module.

Also in December 2014, the NPA introduced its first subspecialty module outside of spine, the NQOD Cerebrovascular (CV) Module. The CV Registry, developed with the AANS/CNS Cerebrovascular Section, was launched first to existing registry centers and then opened to new centers in January 2015. The registry collects data on treatment for aneurysm, arteriovenous malformation, carotid stenosis, intra-arterial thrombolysis or mechanical thrombectomy and intraparenchymal hemorrhage. At the end of fiscal year 2015, there were six centers participating in the CV module.

As the NQOD registries grow, NPA continues to focus on ways to optimize data collection through data automation and data integration with the electronic medical record (EMR). Pilot projects that began in 2014 moved into phase 2 testing in 2015, investigating automated data entry from the EMR and methods for longitudinal data collection, including patient portals.

Currently in development is a Brain Tumor Module for NQOD. Recognizing that not all practices have the resources to participate in extensive longitudinal registries, NPA continues to work on developing a module to provide basic safety and quality data to the individual neurosurgeon, while also satisfying public reporting requirements, including MOC and PQRS.
In April 2015, the N2QOD became an approved Centers for Medicare & Medicaid Services (CMS) 2015 Physician Quality Reporting System (PQRS) Qualified Clinical Data Registry (QCDR), marking NPA’s third year as a PQRS registry vendor and its first as a QCDR. NPA obtained final approval on 21 novel, “non-PQRS” (i.e., not existing PQRS) measures. Importantly, these measures are the first specialty-specific measures for neurosurgery approved for public reporting and will provide a meaningful method for neurosurgeons to use in programs such as PQRS.

“Securing QCDR status for N2QOD is a tremendously important accomplishment for our specialty. This exciting development gives neurosurgeons, for the first time, a set of specialty-specific measures for use in public quality reporting programs. This will ensure that data collected through our registries and used for PQRS is meaningful for neurosurgeons, their patients and other stakeholders,” commented Anthony L. Asher, MD, FAANS, N2QOD director and vice-chair of NeuroPoint Alliance. Asher added, “Neurosurgery is ‘all in’ with the goal of substantively advancing the health-care quality paradigm.

“What we’re really looking forward to is applying the information gleaned from the registry to positively impact outcomes,” continued Asher. “Beyond clinical data collection, there has to be a commitment to quality improvement. As a specialty, we are dedicated to practical application of N2QOD data to encourage iterative improvements in care and facilitate enhanced patient outcomes.”

Other notable projects conducted by the NeuroPoint Alliance in 2015 include the EC–IC Bypass Study and the Cervical Spondylotic Myelopathy (CSM) Surgical Trial. The ECIC Bypass Study is a prospective registry evaluating EC–IC bypass for carotid occlusion with persistent or unstable symptoms failing medical management. The study is accruing 80 patients from 11 centers, over three years with 24-month follow-up. Investigators are completing the testing period and expect to begin to accrue patients by summer 2015. Funds for the project were donated by a patient and matched by the Wallace Foundation. The purpose of the CSM-S study is to determine the optimal surgical approach for patients with multi-level cervical spondylotic myelopathy. There are no established guidelines for the management of patients with CSM, which represents the most common cause of spinal cord injury and dysfunction in the U.S. and in the world. The study will include 300 patients from 20 centers, over six years. The NPA has partnered with Acesis, Inc., for data collection for both of these projects.

Efforts of the data coordinators from N2QOD participating centers are instrumental to the registry’s success. This group forms the Practice Based Learning Network (PBLN), which collaborates with surgeons and VIMPH in the development of education and training materials, mentoring to new data coordinators and assisting in the recruitment of new participating centers. This year the PBLN was led by Jennifer Beswick (University of Louisville), Darlene Brewer (Semmes Murphey), Melissa Mehrlich (Carolina Neurosurgery & Spine Associates), Cita Read (Winchester Medical Center–Valley Health) and Bonnie Weiss (Atlantic Neurosurgical Specialists).
“Early in my career, I was encouraged to take a course on quality as it relates to medical outcomes, and my interest in the idea of quality has only grown since then,” said John Joseph “Jack” Knightly, MD, FAANS. “When NeuroPoint Alliance (NPA) was formed it seemed like the right venue for neurosurgeons: NPA, through the National Neurosurgical Quality Outcomes Database (N2QOD), provides us a platform to collect clinical data proving what we do, as neurosurgeons, is beneficial for our patients’ quality of life.

“Why is real data so important? The popular press cycles through ‘spine surgery doesn’t work’ stories with frightening regularity. The real truth about the majority of spinal surgical procedures is glossed over as an ‘inconvenient truth.’ Surgically, when done on the right patient at the right time for the right procedure, we are improving patients’ quality of life in the majority of cases. As individual surgeons, working with our own patients, we know this. We see what we can do for our patients. The power of NPA is that we, as a collective of surgeons, can aggregate information about surgeries and outcomes all across the country. This allows us to empirically prove our procedures work out there in the real world.

“Beyond showing the success, the data shows us where we need to improve. We can benchmark how we do at an individual, group or hospital level. Benchmarking to a norm shows the opportunities for improvement.

“The other side of this equation is what the data means to our patients. I find that when patients participate in decision-making regarding their treatment, we see a better clinical result. Accurate patient outcome percentages is the goal. With 16,000 patients already in the lumbar module, we can create a tool that allows me, as a surgeon, to sit with a patient, review the data that matches his or her profile and manage expectations.”

Ralph Bobroski has been Knightly’s patient twice and is part of the NPA patient outcome registry. Bobroski revealed, “I was more than comfortable going back to see Dr. Knightly when I needed a second surgery. He is very patient. He has a really great rapport with patients. I’ve been very pleased with my results and I’ll continue to recommend him to family and friends. The seven years between my surgeries made for two very different kinds of recoveries; I hadn’t realized what a difference I’d see in recovery having aged from 64 to 71.”

“As powerful as the patient tool will be at an individual level, helping patients like Mr. Bobroski understand outcomes before experiencing outcomes, it will be even more powerful with regard to the profession. N2QOD will help with the new reality of medicine, managing experiences and costs,” added Knightly.

“I think we are moving from today’s pay-for-procedure model to a pay-for-performance reality,” he continued. “Because of this, I liked helping to write neurosurgery’s own report card, which was successfully submitted to CMS Physician Quality Reporting System (PQRS). Working with NPA to generate the first neurosurgery-specific reporting measures has been an objective, thoughtful and collaborative process. The data we collect through the NPA registries meets Qualified Clinical Data Registry (QCDR) requirements and is meaningful for neurosurgeons and our patients.”

Another registry patient, Joanne Matina, had surgery at the age of 76 to address chronic and near debilitating back pain. She celebrated four months post-surgery by purchasing a trike motorcycle. “Dr. Knightly is the reason I’m on a motorcycle, even though he made me wait a few more months than I thought I needed. He relieves so much pain for people. Unless you’ve lived with that kind of chronic pain, I don’t think you can really understand what it means to have it go away,” said Matina.

Knightly, while pleased that Matina got the results they both hoped for, is less than pleased with her latest purchase.

John Joseph "Jack" Knightly, MD, FAANS, received his Bachelor of Arts from Franklin and Marshall College, Lancaster, Pa., and his medical degree from The University of Medicine and Dentistry of New Jersey, Newark, N.J. He completed his post-graduate training and residency training at the Bethesda Naval Hospital, Bethesda, Md. Dr. Knightly completed a research fellowship in the surgical neurology branch of the National Institutes of Health and in pediatric neurosurgery at The Children's Hospital in Boston. He completed advanced training in trauma at the Shock-Trauma Center in Baltimore. In addition, Dr. Knightly completed a fellowship in complex spine with Volker Sonntag, MD, FAANS(L), at The Barrow Neurological Institute in Phoenix. He is the director of neurosurgery at Morristown Memorial Hospital and the vice-chairman of Atlantic Health Institute in Morristown, N.J., where he also serves as the medical director of the neuro-spine team.
Through advocacy, policy development and public relations, the AANS/Congress of Neurological Surgeons (CNS) Washington Committee and Washington Office have worked tirelessly to protect the ability of neurosurgeons to practice medicine freely and ensure the continued advancement of the specialty of neurological surgery for the benefit of neurosurgical patients. The AANS has played a fundamental role on a number of health policy fronts — including advocating for adequate reimbursement, pushing for medical liability reform, streamlining quality improvement initiatives and obtaining relief from the morass of government regulations. Through these efforts, organized neurosurgery’s Washington Office and leaders continue to be at the forefront of the health policy debates to promote the highest quality of patient care and to create a system that offers greater value tomorrow than it does today.

Throughout the year, the AANS leaders and Washington Office staff are in the halls of Congress and 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 & Medicaid Services (CMS), Food and Drug Administration (FDA), Institute of Medicine (IOM), National Institutes of Health (NIH) and the Medicare Payment Advisory Commission (MedPAC). Advocacy activities extend to third-party payers, state and national medical associations and patient and consumer organizations. As a result of these interactions, organized neurosurgery has achieved a variety of advocacy successes.
Fighting for Fair Reimbursement

For more than a decade, physicians have faced a significant annual Medicare payment cut — the result of a flawed sustainable growth rate (SGR) formula. After nearly 14 years of lobbying and 17 temporary “patches,” on April 16, 2015, President Obama signed into law the Medicare Access and CHIP Reauthorization Act (MACRA), which repealed Medicare’s SGR physician payment system and prevented a 21 percent pay cut. The bill passed the House and Senate by overwhelming margins. In addition to repealing the SGR, the legislation:

- Consolidates the current Physician Quality Reporting System (PQRS), Electronic Health Record (EHR) and Value-Based Payment Modifier (VM) programs, and eliminates the penalties associated with these programs;
- Includes positive incentives for quality improvement payment programs that allow all physicians the opportunity to earn bonus payments;
- Enhances the ability of physicians — rather than the government — to develop quality measures and clinical practice improvement activities;
- Clarifies that quality improvement program requirements do not create new standards of care for purposes of medical malpractice lawsuits; and
- Reverses the CMS decision to eliminate the 10- and 90-day global surgery payments.

The estimated financial impact of preventing the 2015 SGR and global surgery-related cuts is $276 million or $69,000 per neurosurgeon. In addition, although difficult to precisely estimate, at a minimum, when MACRA’s incentive program becomes operational, in 2019 this legislation will prevent penalties totaling $46 million or $11,500 per neurosurgeon. Individual neurosurgeons will also have the opportunity to earn significant bonus payments of up to $23,000 in 2019 and even higher amounts in future years.

Over the course of the next several years, organized neurosurgery will focus on guiding this legislation through the implementation process to ensure that the CMS develops the new Medicare physician payment system as directed and intended by Congress.

The AANS has also aggressively challenged third-party payer coverage policies, which often limit reimbursement for many common neurosurgical procedures. The Coding and Reimbursement Committee, along with representatives from the Quality Improvement Workgroup, Joint Guidelines Committee, the Joint Sections and Washington Committee work together to respond 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 to lead these efforts, and working with the Council of State Neurosurgical Societies (CSNS), utilized 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.

Throughout the past year, the AANS provided comments on a variety of proposed coverage policies from Medicare and other payers, including Aetna, United, Cigna, various Blue Cross-Blue Shield plans, Noridian, Washington State Health Care Authority, Wellpoint and others. These comments involved topics such as cervical, thoracic and lumbar spine fusion; lumbar artificial disc; epidural steroids for low back pain; intraoperative electromyographic monitoring; carotid artery stenting; intracranial stenting; mechanical embolectomy; thrombolysis; stereotactic radiosurgery; responsive neurostimulation for epilepsy and deep brain stimulation.
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. To this end, the passage of MACRA was a meaningful step forward in the consolidation of Medicare’s quality improvement programs. MACRA replaces the SGR with a new streamlined value-based incentive payment system, the Merit-based Incentive Payment System. Known as MIPS, the new program consolidates the three existing Medicare incentive programs and allows physicians to opt-out of the fee-for-service system in favor of participating in alternative payment models (APMs), such as accountable care organizations, payment bundles and other similar arrangements.

Until such times as the new MIPS program is implemented, the AANS continues to press Congress and CMS to minimize the burdens from Medicare’s quality-related programs, particularly the EHR meaningful use requirements. On that front, due in part to AANS advocacy efforts, Congress is considering several bills. The “Flexibility in Health IT Reporting (Flex-IT) Act” (H.R. 270) would permit the use of a three-month quarter EHR reporting period to demonstrate meaningful use without regard to the payment year or the stage of meaningful use criteria involved. Another bill, the “Further Flexibility in HIT Reporting and Advancing Interoperability (Flex-IT 2) Act,” (H.R. 3309) would delay implementation of stage 3 of meaningful use until at least 2017, harmonize the reporting requirements across Medicare’s quality programs and would institute a 90-day, rather than one year, reporting period. Similar efforts are underway in the Senate.
Another top priority for neurosurgery was easing the burdens of implementing the new ICD-10-CM diagnoses coding system. While further delays of ICD-10 were not likely, the AANS worked with Congress to urge CMS to smooth the transition to the new system. Due to ongoing advocacy pressure from medical societies, including the AANS, CMS shifted course and announced that it would implement a one-year grace period for transitioning to ICD-10. Beginning on Oct. 1, 2015, Medicare claims will not be denied solely on the specificity of the ICD-10 diagnosis codes provided, as long as the physician submitted an ICD-10 code from an appropriate family. In addition, Medicare claims will not be audited based on the specificity of the diagnosis codes as long as they are from the appropriate family of codes. To avoid potential problems with mid-year coding changes in CMS quality programs for the 2015 reporting year, physicians using the appropriate family of diagnosis codes will not be penalized if CMS experiences difficulties in accurately calculating quality scores. CMS will also establish an ICD-10 Ombudsman to help receive and triage physician problems. Finally, in certain circumstances, CMS may also make advanced payments to providers if challenges arise during the ICD-10 grace period. Studies have shown that the ICD-10 costs ranged from an estimated $83,290 for a small practice up to $2,728,780 for a large practice so progress on this issue is an enormous financial benefit to neurosurgeons.

Reforming the Reform

While the Affordable Care Act (ACA) is the law of the land, the AANS has not ceased in advocating significant changes to this landmark health-care reform law. A top priority remains abolishing the Independent Payment Advisory Board (IPAB). 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 was instrumental in getting the “Protecting Seniors’ Access to Medicare Act” (H.R. 1190/S. 141) introduced in Congress. This legislation passed in the House of Representatives on June 23, 2015 and support for this bill continues to grow in the Senate. This bill, which has significant bipartisan support, repeals the IPAB. Action on this bill is currently pending in the Senate.

America has a long tradition of excellence and innovation in patient care, and neurosurgeons have been on the cutting-edge of these advancements. However, American medical innovation is at serious risk. 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. 160) passed the House of Representatives on June 18, 2015. The “Medical Device Access and Innovation Protection Act” (S. 149) its companion bill in the Senate, also enjoys significant support. In fact, Senate leadership has started a process to allow the Senate to consider the House-passed bill without first sending it to committee. If ultimately enacted, the bill would eliminate $24.4 billion in taxes over the 2015-2025 period.

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 the AANS, policymakers are beginning to understand that there are significant shortages of physicians in both primary and specialty care. Due to federal budget constraints, funding for graduate medical education (GME) remains at risk, particularly following the release of the Institute of Medicine’s report “Graduate Medical Education That Meets the Nation’s Health Needs.” Collaborating with the Society of Neurological Surgeons (SNS) and the American Board of Neurological Surgery (ABNS), the AANS developed a response to the IOM report, which is serving as the framework for organized neurosurgery’s advocacy on this topic. So far, cuts have been prevented, and working with the Association of American Medical Colleges (AAMC), the Alliance of Specialty Medicine and others, the AANS has successfully advocated for the introduction of legislation to provide additional Medicare funding for GME. The “Resident Physician Shortage Reduction Act” (H.R. 2124/S. 1148) would increase the number of Medicare-supported residency positions by 3,000 each year for the next five years. This bill continues to pick up momentum.
Medical Liability Reform

Neurosurgery is the specialty that faces the highest premiums, the most lawsuits and the largest average indemnity payments. As such, 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 (HCLA), and in collaboration with the trauma community and others, Washington Office staff have worked to secure the passage and introduction of several important liability reform bills. First and foremost, the passage of MACRA incorporated the “Standard of Care Projection Act,” which ensures that any care standards and practice guidelines derived from the Affordable Care Act (ACA), Medicare or other federal programs — including PQRS, EHR and other quality incentive programs — cannot be used to establish a standard of care in medical malpractice actions. The “Health Care Safety Net Enhancement Act of 2015” (H.R. 836/S. 884) would provide crucial medical liability protections to neurosurgeons providing EMTALA-related care. The “Saving Lives, Savings Cost Act” (H.R. 2603/S. 1475) would provide certain protections for physicians following clinical practice guidelines. Finally, the “Sports Medicine Licensure Clarity Act” (H.R. 921/S. 689) would provide protections for certain sports medicine professions that provide certain medical service in a secondary state.
NeurosurgeryPAC/Grassroots
Organized neurosurgery has established a tried-and-true formula for working inside the Washington Beltway to have an impact on health policy. During the last year, 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 Legislative Action Center, neurosurgeons from all across the country communicated with members of Congress on such topics as Medicare payment, medical liability reform, graduate medical education, healthcare reform and trauma care. Additionally, neurosurgeons attended advocacy conferences, such as the Alliance of Specialty Medicine Annual Legislative Conference. Lastly, in the 2014 election cycle, hundreds of neurosurgeons donated a total of $425,000 to NeurosurgeryPAC. With this support, 94 percent of NeurosurgeryPAC-backed candidates won their general election bids. More information about NeurosurgeryPAC, including the current complete list of donors, candidates receiving NeurosurgeryPAC support and the 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 Office’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 Office has generated 116 traditional media hits reaching a circulation/audience of over 9 million. In addition to traditional media, the AANS digital media platforms continue to see a significant expansion and have garnered over 45 million individual impressions.

Furthermore, these media platforms have amassed a subscription audience of 40,000. 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, through which the AANS offers insights and perspective on contemporary health issues as they relate to organized neurosurgery.

- The [@Neurosurgery](https://twitter.com/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 on health policy updates and provides links to positive stories about neurosurgery.

- The newly-launched [YouTube](https://www.youtube.com) channel features clever animations designed to engage the public in a fun, visually appealing manner, while providing clear-cut, high-level facts centered on neurosurgery’s top legislative issues.

- [Facebook](https://www.facebook.com), [LinkedIn](https://www.linkedin.com) and [Google+](https://plus.google.com) 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.

Visit the blog and subscribe to it, read the monthly e-newsletter [Neurosurgeons Taking Action](https://www.aans.org) and connect on the various social media platforms to keep up with the many health-policy activities happening in the nation’s capital and beyond the Beltway.
The American Association of Neurological Surgeons (AANS) finished the year slightly in the black, despite an original budget that anticipated a loss in FY15. There were several contributors to the success. The 83rd AANS Annual Scientific Meeting performed better than forecast, enjoying record-breaking attendance. Despite a challenging investment environment, the AANS investments exceeded forecast. And, in anticipation of the budget challenges, management worked to reduce spending in administrative areas.

NeuroPoint Alliance (NPA), which had operated at a loss since its inception, enjoyed its’ first year of profitability, albeit a modest one. With its performance in FY15, the NPA is beginning to move into the role of financial contributor. The NPA has solidified and grown its NQOD base and moved into contract studies, such as the $3 million three-year Stereotactic Radiosurgery (SRS) Registry. Now, in addition to the AANS’ and NREF’s ongoing efforts to add value to the science of neurosurgery, the NPA is making a significant foray into the area of medical outcomes, supporting the science of practice.

The Neurosurgery Research and Education Foundation, in its second year as a stand-alone corporation, experienced a loss on its books of approximately $137,000. In great part, the loss can be attributed to the rapid expansion of the new Honor Your Mentor (HYM) fundraising initiative. Gifts to the HYM funds are restricted in nature and, therefore, are not included as a part of the NREF’s financials. A fuller picture of the NREF’s performance in FY15 reveals that the first full year of the HYM program saw pledges of nearly $1.2 million, $700,000 of which has already been collected.

This report reflects the financial statements of the AANS, the NREF and the NPA covering the period of July 1, 2014 to June 30, 2015.

While the year-end financials 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 06/30/2015

### ASSETS 2014-2015

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<tr>
<th>Description</th>
<th>AANS</th>
<th>NREF</th>
<th>NPA</th>
<th>Consolidated</th>
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<td><strong>$5,512,160</strong></td>
<td><strong>$1,861,773</strong></td>
<td><strong>$42,714,010</strong></td>
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### LIABILITIES AND EQUITY

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<th>NREF</th>
<th>NPA</th>
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<tr>
<td>Liabilities</td>
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<td>Accounts Payable</td>
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<td>Beginning Net Assets</td>
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<td><strong>TOTAL LIABILITIES AND EQUITY</strong></td>
<td><strong>$35,340,077</strong></td>
<td><strong>$5,512,160</strong></td>
<td><strong>$1,861,773</strong></td>
<td><strong>$42,714,010</strong></td>
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### AANS AND RELATED ORGANIZATIONS INCOME STATEMENT For the Year Ended 06/30/15

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<th>NREF</th>
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<td><strong>Revenue</strong></td>
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<td>Dues/Contributions Income</td>
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<td><strong>$586,750</strong></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 promote and support appropriate clinical and basic science to expand the scope of neurosurgical practice.

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Jamie S. Ullman, MD, FAANS
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Blas Ezequiel Lopez Felix, MD
Fredric B. Meyer, MD, FAANS
Daniel K. Resnick, MD, FAANS
Brian D. Toyota, MD

AANS Executive Office
Executive Director
Thomas A. Marshall
Deputy Executive Director
Kathleen T. Craig
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Peter B. Kuhn

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