Leadership: Navigating Evolving Challenges

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Young Leaders Embracing Role

Congress of Neurological Surgeons

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In this issue of the Congress Quarterly (CNSQ), we explore the essential and multi-faceted influence neurosurgeon leaders have in the development of future neurosurgeons and organizational behavior.

While many debate the question if leaders are born but not made, a few would argue leadership skills cannot be acquired, enhanced, or cultivated. As former General Electric CEO Jack Welch explains, “Before you are a leader, success is all about growing yourself. When you become a leader, success is all about growing others.” In this issue of the Congress Quarterly, this ethos is espoused and depicted through diverse experiential pathways.

In a poignant and personal piece by Dr. David Langer, he describes the pitfalls often encountered during the “transition from elite surgeon to elite leader.” Dr. Langer has devoted the last decade to understanding leadership cultivation, and as someone who voluntarily changed career paths late in his development as a cerebrovascular surgeon, his insights are personal and layered.

Dr. Nick Hopkins details a nuanced journey of decades of leadership, driven by the singular passion to change the field of neurovascular surgery. The challenges were many, but through stoic determination, he and others led “from the front” to inspire generations of disciples that created the field we now know as endovascular neurosurgery.

Dr. Julian E. Bailes has shown us how neurosurgeon leaders can effect cultural and institutional change on a national level. He has led the charge to increase awareness around CTE and concussion, and through education and awareness, has enhanced the safety for youth athletes in contact sports. In addition to understanding cultural change around youth sports, Buffalo Bill’s head coach Sean McDermott answers questions about evolving leadership styles in the NFL and how a young leader may transform organizational culture.

Education and the cultivation of the next generation of clinicians, academics, and leaders is mission centric to the Congress of Neurosurgeons. Dr. Judy Huang shares her insights on resident education as a program director, while resident leaders provide their perspectives as young trainees. Dr. Brian V. Nahed explores the CNS Leadership in Healthcare course, which is a growing value-add for our youngest members. The course serves to fill the unmet need of mentoring and educating precocious leaders by exploring the skillsets required in the areas of professionalism and communication.

As the title of executive coach Michael Haugen (partner at ghSMART) suggests, there are desired traits that can be attributed to successful leaders and leadership styles. Using the knowledge and findings from his firm’s article in the Harvard Business Review, Mr. Haugen describes characteristics that are critical for leadership success.

As you read this issue dedicated to leadership, I am reminded of a phrase I hear often: Effective leaders often believe they are “the least important people in the room,” which is a testament to the selfless sacrifice true leadership requires.
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Images in Neurosurgery
According to legend, on December 29, 1913, an ad was placed in the London Times. It read, “Men wanted for hazardous journey...[s]mall wages, bitter cold, long months of complete darkness, constant danger. Safe return doubtful. Honor and recognition in case of success.” After an overwhelming response to the ad, 28 men were chosen to begin preparing the ship Endurance for the Imperial Trans-Antarctic Expedition.

Over the next two years, what followed was a journey led by Sir Earnest Shackleton that many consider to be one of the most harrowing in human history. More than 100 years later, Shackleton’s actions during that journey are considered the ultimate example of people-centered leadership. Following his death, Shackleton’s remarkable capacity as a leader was described by his well-regarded British contemporary, Sir Raymond Priestley, who stated, “...when disaster strikes and all hope is gone, get down on your knees and pray for Shackleton.”

This edition of the Congress Quarterly is dedicated to leadership. This theme was not chosen at random. The most common response on more than 5,000 blinded surveys of our members, focus groups, and in-depth interviews about CNS member needs over the last few years centered on developing business and leadership skills.
telephone interviews about CNS member needs over the last few years centered on developing business and leadership skills.

Initially, this came as a bit of a surprise. After all, the daily practice of most neurosurgeons revolves around the diagnosis and surgical treatment of disease, not the challenges and difficult decisions of running a business or leading a team. However, upon reflection, I suspect many of us are struck by the rather stark reality that medicine has become something that feels unfamiliar and requires a different set of skills in order to succeed.

Once upon a time, medicine was the province of individuals. In the era of Shackleton and his predecessors, physicians were single, independent professionals trying to diagnose a handful of mostly infectious maladies and provide treatment primarily with supportive care. As time passed and our knowledge improved, the mystery of disease began to unravel while the treatments we could provide, both medical and surgical, multiplied. More treatment options created a need for more resources—specialists, hospitals, drugs, and devices. The infusion of public tax dollars into medicine to cover rising costs accelerated research, innovation, and the provision of care to millions in ways few could have anticipated.

What ensued was what many refer to as the golden age of medicine. Individual achievement was celebrated throughout the formal education and subsequent medical career via high standards for grades, test scores, numbers of patients and cases, salary, job titles, scientific publications, and single patient outcomes. But then, like in all things, the eternal force of change continued to exert itself. Celebrations of what was being made possible by contemporary medicine began to be replaced by concerns about costs that exceeded what was affordable. New realities shifted the focus away from individual achievement onto team-oriented measures such as population outcomes, cost per patient, all cause readmission, health care acquired infections, case mix index and net operating income. These measures leave many scratching their heads, wondering how we are to succeed in this era when individual measures of performance have been replaced by team measures of value, systems of care, panels of patients, and management of risk.

I suspect this explains the results of our member surveys and the need for business and leadership skills. Thankfully, as neurosurgeons, we tend to be a group that is self-reflective, insightful, adaptive to change, and ready to lead, especially when still waters become rough. This is our nature—to assess difficult situations, take responsibility for creating plans to solve those problems, remain resilient during the inevitable setbacks, and hold ourselves accountable for the consequences. From the times of Shackleton, Cushing, and Dandy, neurosurgery has drawn to it those who wanted to be relied on for such things. It is where we fit. Yet just as there are similarities to that bygone era and now, there are also recognizable differences.

While Cushing and Dandy created legacies based on personal effort and achievement, leaders in a contemporary system of care emerge because they are able to get things done through the people they inspire and the teams they create. More than what they do, today’s leaders are being defined by who they are, those that are inspired to follow them to meet a common, meaningful challenge, and their ability to get their teams to believe in something bigger than themselves.

I would argue that is the great message of hope in our profession today. Just as Shackleton put out the call in 1913 for a very special group of people who were capable of facing unimaginable risk in the service of a cause greater than themselves, so today we also put out an annual call to young men and women to join our ranks to do something with us that is physically and emotionally very difficult. The care of patients with life-threatening illnesses affecting God’s most guarded real estate is demanding even under the best of circumstances. While arctic historians may not put such demands on the same level as Shackleton’s push to the south pole, our calling is nonetheless noble and worthy of our very best.

I encourage you read through this edition of the CNSQ and consider your role as a neurosurgical leader, whether that be in your practice group, department, hospital or health system. Collaborate with like-minded individuals, improve your leadership skills, and create a better system of care for your patients and your community. As you do so, please know the CNS is here to help you build those skills through our courses, publications, and online resources.

Please enjoy and thank you for a wonderful year!
Be a Pioneer: Forge New Paths as a Leader

Health care in the era of the Affordable Care Act has evolved into a substantially different environment from which our mentors and teachers trained and worked. Physicians are tasked with taking on new roles in health care organizations that require performance in areas in which they have little formal training or preparation. Neurosurgical leaders must adapt to these new roles, and must define new goals not only for their organizations, but for themselves.

Health care has changed rapidly over the last 30 years as hospitals have increasingly become parts of health systems into larger and larger networks. This organizational growth has led to an explosion in the number of administrators compared to the number of physicians (Figure 1).¹ This structural change radically altered not only health care delivery, but the goals of these large organizations and their leadership.

Neurosurgeons have trained since early in medical school to focus on themselves and their own distinctive skill set. They push themselves to work as hard as possible to master a unique set of procedures and surgical techniques with little thought given to the notion of “leadership.” In the past, a “neurosurgical leader” was defined by case volume, technical skill, and financial productivity. However, as health care evolved, so has the very definition of what it means to be a neurosurgical leader.

Today, leadership requires focus upon creating, guiding, and elevating teams. One must define a vision and the requirements to fulfill it. Teams of people must be supported and nurtured, while the individual goals of the leader often must be secondary. No neurosurgical leader can be primarily focused on his or her own best interests at the expense of the team. Ego and selfishness need to be held in check, as a leader works to elevate those around him or her.

The transition from elite surgeon to elite leader is not guaranteed. In fact, the best leaders may not necessarily be the best surgeons. Too often, leadership as a surgeon is defined by title alone. Titles confer the optics of leadership, but does little beyond defining an opportunity to lead. Once given the title, the work begins. Leadership requires hard work in an entirely different way, with a skill set that vastly differs from what could be considered the “leading surgeon.” Where the surgeon focuses upon a research project or surgical procedure, the leader focuses upon putting into place the pieces that will allow the group to achieve scientific and/or clinical success.

In the book *Ego is the Enemy*, Ryan Holiday suggests the transition to leadership requires a revaluation and updating of one’s identity.² It requires a certain humility in which you put aside some of the more enjoyable and satisfying parts of your previous job, and accept others might be more qualified or specialized in areas in which you consider yourself competent—or at least, their time is better spent on those areas than yours.

Holiday also points out that seeing the big picture ought to be the focus, and less time spent on the little things that in the past may have made us feel important. These activities may have been endlessly engaging, flattering, or made us feel powerful, but they actually need to be de-emphasized as one embraces the mantle of true leadership. Managing this transition can be remarkably difficult, due to

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Figure 1


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Physicians Administrators


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the methods of feedback and incentives, both financial and personal, accorded to leading neurosurgeons, and which often run counter to the ideal goals of leadership. Managing this transition requires that one identify and recognize the differences between being a talented leading surgeon, and an outstanding leader.

The pathway to transformative leadership requires patience, mindfulness, selflessness, and vision. It is often a slow process, with ill-defined feedback mechanisms. John Quincy Adams said, “If your actions inspire others to dream more, learn more, do more, and become more, you are a leader.” In order to achieve success, one must make a concrete commitment to leading and must work diligently to avoid common pitfalls.

The earliest struggles often involve compensation and the existing financial structure. Leaders must address this issue directly, and help to create a compensation arrangement that allows them to lead effectively without fear of financial conflict. Leaders must not be in financial competition with their teams. It is remarkably difficult to be inspirational when you are competing for the same dollar as those you lead.

This early issue may be unique to health care in that department compensation models historically were inherently individually driven by cash or RVU contracts. Leaders cannot be as effective if success is measured by these metrics. With an appropriate financial feedback system in place, leaders then must confront their own inner wiring. As mentioned above, neurosurgeons are programmed to make themselves successful, and by definition, this requires competing with others. Leaving behind instinctive and longtime behaviors can be stressful and difficult.

The rewards of vision and day-to-day leadership are very different from the rewards received from surgical volume or research publications. Celebrating the success of our teams is what needs to be the focus. Success as a leader needs to be felt internally, with the usual mechanisms of external validation not relevant.

Success as a leader with achievement of vision can take years. Consistent daily sacrifice and constant internal patience, mindfulness, and self-awareness are essential to achieving a long-term goal.

Becoming a neurosurgical leader has some inherent differences from leadership in other, particularly nonsurgical, fields. It is somewhat important, but not necessarily essential, that the leader “leads from the front.”

As one supports the clinical volume development of the service at the expense of his own, a slippery slope can occur, resulting in diminished personal volume, which can also cause anxiety. In addition, staff surgeons can lose confidence in the leader if he or she loses respect as a surgeon.

Leading from the front allows for observations regarding care, patient experience, and workflow that are more difficult as one pulls away from the point of care. An “undercover boss” concept is necessary for the leader to be able to not only make observations regarding points of pain, but to make good decisions from his or her own perspective in order to rectify them. Managing this transition can create anxiety that must be addressed. Many organizations use the services of executive coaches and mentorship programs to help alleviate some of the psychological strain that can occur during these transitions.

Maintaining skills and success in the operating room should be an essential goal. Being a supporter of the team’s volume, success, and aptitude is even more essential. Increasingly we see leaders who completely pull away from the clinical area, focusing entirely on administrative or educational metrics. These positions differ substantively from those of a clinical leader. Clinical leaders often need to wear two “hats” as they navigate both the clinical and administrative environments. Balancing these two very different arenas requires a structure that allows the neurosurgeon to be equally comfortable in both settings.

Medical care also becomes increasingly challenging as neurosurgeons are asked to do more and more with diminishing resources. Leadership in health care, neurosurgical or otherwise, requires new approaches and concepts that were inconceivable less than a decade in the past. New metrics, new forms of payment, and new goals of care have radically altered the medical landscape, and are likely to continue changing in the foreseeable future. Expansion of our field into subspecialty divisions with new areas of focus, technological advancement, and increased competition adds an additional layer of complexity which did not exist in prior generations of leaders.

Leadership is evolving in areas outside medicine as well. Nelson Schwartz explored the evolution of corporate CEO in a New York Times article this summer. “The Decline of the Baronial CEO” illustrates the changes that have impacted corporate leadership. New business and technological change radically altered the C-suite landscape, resulting in CEOs with less power and more diverse challenges that didn’t exist for the previous generation of chief executives.

Medicine has its own new challenges and stressors putting new, unique demands upon its leaders. Transcendent leadership in health care will require each leader to firstly commit to and identify leadership as a unique skill, while at the same time altering their sense of self as he or she moves into a new way of behaving and thinking. Becoming a “leading neurosurgeon” is wholly different from becoming a neurological leader, and our field depends on our finding and nurturing this new breed of neurosurgeon. The success of our field depends upon it.

References:
Lead Change Outside of the Operating Room

O ccasionally in life, as well as in one’s career, there emerges an opportunity to get involved in endeavors which concern our society and the communities in which we live. I am a former football player and father, and serve as the Chairman of the Medical Advisory Committee for Pop Warner Football, the nation’s largest and oldest youth football organization. I’ve also been involved on several NCAA sports safety committees, and as a member of the NFL Players’ Mackey White Health and Safety Committee. As a neurosurgeon who has been a sideline team physician at the NFL and NCAA levels for the last 25 years, two decades ago it became apparent there was much more that we needed to learn and in which to become engaged, concerning neurological injuries in sports.

The causes, incidence, and severity of concussion, or the potential for brain injury, are some of the hottest topics in sports media today. These issues have created a storm in youth sports—especially football. During the past decade, league officials, coaches, school administrators, medical researchers, concerned parents, and others, worked for the introduction of refinements in practice styles, rule changes, training techniques, and protective equipment. These include such alterations as limiting the type and amount of contact in practice, eliminating open field hits on defenseless players, checking in hockey and heading in soccer, and improved tackling techniques in football education of athletes, coaches, and parents, among other changes. In the near future, equipment innovations such as energy-dispersing technology, telemedicine, and improved protective equipment should enhance safety for all athletes.

But it is important that the public not misunderstand widely publicized research and media reports concerning sports injuries, particularly at youth and high school levels. As neurosurgeons, we are integral in shaping and informing the changes we can and should make, while leading the effort to help the community better understand the true meaning of these findings.

Increased levels of public and private investment in concussion prevention and management research should be a national priority. In addition, the media and the public have an opportunity to re-focus their attention away from apprehension and fear towards a more balanced approach, preserving the physical and character-development benefits of sports.

Changes in the styles of practice and play, such as decreasing the use of the head in blocking and tackling in football, and reduction of overall contact exposure have also improved instances of concussion. Five years ago, Pop Warner was the first football league to legislate against head-to-head contact in practice and implemented Heads-Up Football, an education and safety program. These changes resulted in Pop Warner football players sustaining 100 or fewer head contacts every season, and a less than one percent annual concussion rate.

Due to these changes, contact sports are safer than they’ve ever been. The answer is not to eliminate contact sports by prohibiting youth from full participation, but rather to work to find a solution which would allow youth and high school athletes to continue to enjoy the innumerable benefits of these sports, which include physical activity, teamwork, leadership, sacrifice, and achievement.

We, as neurosurgeons, have the opportunity and capability to continue to evolve football, ice hockey, lacrosse, soccer, and other collision sports regarding the style of play, safety rules, and the introduction of such modern technology as “smart helmets” with sensors, medical sideline evaluation, and telehealth. Specialized concussion care providers and physicians can be available and extend the level of medical expertise to the point-of-care where and when it is needed so that the game and all its benefits can extend to youth and high school players. Exertional heat stroke is the third leading cause of fatalities in sports at the high school and college levels. Education, early recognition, proper management, and prevention are paramount to reduce this terrible modality. This is another example of how neurosurgeons can have an impact.

For football, in particular, our mission should be to figure out how to make the game safer, but at the same time, retain all the challenges, competition, health benefits, and personal rewards in a sport which is uniquely American. Preventing concussions, recognizing symptoms, seeking medical evaluation, and following concussion guidelines are all essential for full recovery, proper return-to-play procedures, and the prevention of more serious effects. Certainly, we have made significant progress in gaining a better understanding about concussions, but given the knowledge gaps, there is more that needs to be done.

Neurosurgeons’ participation, engagement, and contributions to their local youth sports leagues, school districts, universities, and professional teams will represent a contribution to all those individuals as well as raise their profile for recognition of their practice. Neurosurgery’s leadership in sports concussions is but one example of how involvement in our community can be rewarding and further efforts to provide better futures for our local youth and young adults. I encourage you to seek out ways to extend your expertise to applications beyond the relative comfort of what we know best, and truly make a difference in your community, whether by volunteering your services to a local sports team, or providing your skills in a way that is unique to you and your community.
A neurosurgery residency program epitomizes the intersection of past, present, and future leaders of our field. Within each program lies the amalgamation of established expertise, current innovation, and promising advances in the practice of neurosurgery. Building upon the foundations of laboratory investigation advanced by Dr. Harvey Cushing and of surgical innovation promoted by Dr. Walter Dandy, the traditions of our past leaders remain evident with present-day faculty members who master their craft, advance the field, and disseminate their insights.

Training residents is a distinct chance to impact future generations of neurosurgeons and their innumerable patients, and Dr. Henry Brem, Johns Hopkins University School of Medicine neurosurgery department chairman, leads our extraordinary faculty in fully embracing this incredible opportunity. It is an honor to serve as Program director, charged with creating a productive environment that supports each resident in their singular quest to transform from surgical novice to skilled neurosurgeon.

Since residency training is a crucial time of experiential learning and exploration, a training environment encouraging fundamental appreciation of innovation and discovery primes the creation of future neurosurgical leaders.

Leading by example is paramount. Although initially tough for some residents to fully appreciate, technical skills must harmonize with numerous other abilities in order to develop into a successful neurosurgeon. Our duty as current leaders is to inspire and influence by modeling integrity, fortitude, teamwork, resilience, the highest standards of professionalism, and excellent communication and interpersonal skills.

Trainees are impressionable, and our obligations to our patients and the public encompass more than teaching residents clinical knowledge and operative skills, but should also extend to fundamental values, as neurosurgeons are bestowed with relative societal influence by virtue of our capabilities to significantly impact human lives. It is our responsibility to consistently uphold and represent our professional ideals.

Neurosurgery residents are among the hardest-working individuals at any institution, constantly problem-solving and strangled by demands from interdisciplinary team members, most of whom do not recognize the full extent of the residents’ workload. Serving as resident advocate, the Program director is in a unique position to represent the residents’ perspective to others.

Although resident conflict and stress may be inevitable, such pressures can be lessons for understanding wide-ranging organizational issues and practice demands that will be relevant in their futures. Maintaining the highest standards of excellence regardless of external forces is appreciated by the public, and striving for clinical excellence is essential throughout residency. Reinforcing the value of resident contributions to patient care and scholarly activity, and how these efforts relate to their future career path is beneficial in preventing burnout.

Helping to offer broader perspectives extending beyond the immediate hospital setting to neurosurgery at large assists trainees in formulating their individual vision of personal goals and how to accomplish them. Although demanding in time and effort, constant attention to widening their perspective and providing constructive criticism throughout their progression in the program is essential for their professional growth.

Certainly, serving as a sounding board for their ideas and aspirations in longitudinal career development, providing guidance to appropriate resources, and celebrating accomplishments are among the most rewarding aspects of serving as Program director. I am always thrilled to witness the achievements of graduates of our residency and medical school, and in addition, delighted to provide helpful advice in various challenging situations.

As each individual resident brings a unique background, personality, experiences, aptitudes, and priorities, it is important to recognize a residency program may not be “one-size-fits-all,” if you want to build upon individual strengths. This is strategic for both the residents and the program.

Furthermore, vital to the continued strength of the program is success in recruiting outstanding future residents. By nurturing learners of various levels, including undergraduates and medical students from around the world, Program directors’ interactions with residents and faculty can be highly productive. The prospect of mentoring enthusiastic early learners and developing future independent neurosurgeons is indeed enormously rewarding.

I am immensely proud of the remarkable achievements and tremendous potential of our program’s graduates and current residents.
As neurosurgery residents at academic and tertiary medical centers, we regularly serve as first-responders for some of the most severe and debilitating diseases in medicine. Many times we have seen trauma patients in conjunction with a team of specialists, including trauma, general surgery, orthopedics and anesthesia. However, the final decision about whether the patient goes to surgery or requires further supportive care regularly lies on the neurosurgical resident and his/her attending. The significance of caring for extremely sick and tenuous patients can weigh heavily on a resident, especially when his or her neurological assessment can alter the course of patient’s life and their families’ lives. During family meetings, the patient’s prognosis is often deferred to the neurosurgical team’s assessment of the severity of the injuries and to the prospect of neurologic improvement. As a result, neurosurgery is often seen as a leader in the hospital amongst surgical specialties; a status that applies both to the department and its individual physicians. Moreover, resident leadership need not be limited to clinical service and can extend from hospital policy to global health. We believe becoming a successful neurosurgery resident consists in accepting one’s role as a leader and conducting oneself accordingly.

**Being a Resident Leader**

We believe characteristics of good leadership include having compassion, integrity, respect, accountability, and responsiveness. As residents, we are expected to master these qualities in order to work effectively as a leader within our healthcare team. As neurosurgery residents, we are often involved in many situations where having these qualities is key in successfully working as a team member. One leads as a resident by demonstrating to other members of the team how to take on challenging tasks and situations in a professional and considerate way. Leading by example is an effective way to model a high standard and work ethic.

An impressive example of this came in 1997 at the University of Michigan. Dr. Nicholas Boulis, then a second-year neurosurgery resident, responded to a dire need for pediatric neurosurgery in the developing world. He recognized the opportunity to provide relief for pediatric patients with untreated hydrocephalus and neural tube defects. In the midst of a stressful junior residency, Dr. Boulis founded a relief project aptly named Project Shunt. The project was met with support from Dr. Karin Muraszko, anesthesiology department chairperson, and operating room staff for its ambitious goal and noble cause. Working with Healing the Children and Pediatric Foundation of Guatemala, the group provides much-needed neurosurgical care to children in Guatemala. Dr. Boulis continues to accompany the team from Emory University, and serves as one of Project Shunt’s neurosurgeons. To date, more than 300 Guatemalan children received free operations as a result of this inspiring example of resident leadership.

Neurosurgeons also play a critical role in local hospital organization. Staff at our institution are included in surgical committees encompassing those involved in systems, quality, and purchasing. The ability to guide purchasing in the O.R. and influence quality control can allow neurosurgeons to guide the acquisition of new technologies, such as stereotactic platforms, robots, etc., to dramatically alter the levels of care provided to patients. Most recently in our institution, the department of neurosurgery took the lead on the consultant response to Emergency Room consultation, stratifying the urgency of consultation and defining response times. The goal is to improve communication between providers, and improve access to specialist care teams. This has improved compliance with benchmark response times to urgent consults, and allowed the sickest patients to be triaged appropriately.

Neurosurgery leadership can evidently play a strong role in defining care standards at a national and international level. Resident leadership allows residents to directly influence the management of patient care, develop experience in the leadership roles that they will take on in transition to independent practice, and is an important part of complete resident training.

**How does one develop their leadership skills?**

While undoubtedly a challenging task for junior residents, being an effective leader often defines your success as a chief resident. With an entire cohort of residents and their training needs behind you and the demands of patient care and attending scrutiny ahead of you, gifted hands alone are unlikely to absolve you of poor leadership skills. As a result, a considerable
amount of time and effort goes into training and developing a neurosurgery resident. In addition to clinical and operative skills, neurosurgery departments are also required by the Accreditation Council for Graduate Medical Education (ACGME) to demonstrate residents’ competency in several areas of leadership; including professionalism, interpersonal, and communications skills. Interestingly, despite the importance of leadership in our training, most neurosurgery residents never receive formal instruction in leadership or management during residency. What training we do receive is generally from observation, mentorship and life experiences.

Many programs use an apprentice model for training that generally relies heavily on leadership from senior and chief level residents. As such, many of these higher-level residents tend to teach by example and from their own personal experiences. Some of these teaching moments occur during morning rounds and in the operating room, but also on many different occasions in between. Sharing these experiences can provide a better understanding to the junior level residents to allow them to learn and ultimately grow.

Our department has recognized the importance of instilling leadership among residents and, more importantly, a lack of leadership training. Inspired by military leadership training, he devised a leadership curriculum, wherein all sixth year residents meet bimonthly with Dr. McGillicuddy to discuss the traits of a good leader and how to apply them to residency. The curriculum covers a range of topics that include the role of the leader, leadership styles, motivating team members, and camaraderie. The resident leadership training has been received with unanimous praise from both the residents and faculty.

Future Directions
Neurosurgeons increasingly need advanced skills in business, finance, organizational management, strategic and tactical planning, conflict resolution, team-building, negotiation, and leadership. Residents in neurosurgery see these nontraditional topics as an important part of professional education, but they do not necessarily feel confident or competent in these areas. Therefore, leadership and learning are inextricably interconnected. Further, more deliberate efforts should be made to include the aforementioned skills in neurosurgical training in order to prepare the next generation of neurosurgeons for the challenges that lie ahead.
Putting the Future of Neurosurgery in the Hands of Young CNS Leaders

On May 19, 14 young neurosurgical leaders gathered in Chicago for the second annual CNS Leadership in Healthcare Course, where they spent two days immersed in discussions about value-based health care, as well as applying new leadership skills to their own projects and challenges. Their focus, commitment, and openness to the new concepts presented make it clear that the future of neurosurgical leadership is promising indeed.

The CNS Leadership in Healthcare program began in 2016 to address the growing need for neurosurgeons to understand and lead discussions in health care beyond those learned in residency. In exploring these concepts, the CNS identified a unique opportunity to leverage our expertise in surgical leadership with the tremendous resources Medtronic, our Ambassador level partner, invested in leadership training and coaching resources for its executives and managers. We envisioned a new kind of course that would empower junior attending neurosurgeons with the information and skills needed to shape their own careers and lead their departments, groups, hospitals, and health systems in this time of rapid change.

Working with experts in leadership and health care delivery from the CNS and Medtronic, a two-day pilot course was launched in May 2016, offering a practical overview of the nuts and bolts of health care finance, along with interactive small-group training in critical leadership skills like change management and building influence. Our inaugural class of 13 leadership fellows went on to address major challenges in their home institutions, and several have taken on new leadership roles, leading cross-functional committees and working groups.

I was honored to take over this program in 2017, as the CNS aimed to expand the program’s reach and refine the curriculum. Given the success of the program in its first year, there was a significant interest in, resulting in over 35 outstanding applicants nominated by leaders in neurosurgery. The program is tailored to junior faculty members and, as such, applicants must be within seven years of graduation from residency. Applicants were tasked with proposing a leadership project, which they would focus on implementing during the fellowship year.

Before heading to Chicago, each of this year’s fellows submitted to a “360 evaluation,” in which their colleagues rated them on several key leadership qualities. The results of these evaluations, along with the content presented this May in Chicago, have informed each leadership fellow’s approach to his or her individual project.

Over the past few months, these leadership fellows have been working with their peer mentor groups to address and overcome the obstacles that arise as they pursue their projects. The CNS also offered them a series of exclusive supplemental webinars on topics like professional presentation skills, which will continue through the spring.

This October, during the CNS Annual Meeting in Boston, the fellows will gather to report on the status of their projects, and get feedback from the group on their strategies and challenges. Having already spoken to several of the fellows about their projects, I am excited to hear them share their progress with the group.

The CNS has long been focused on developing the next generation of leaders in neurosurgery, and the Leadership in Healthcare program is proving to be a logical extension of that mission. Through this program, the CNS aims to lay the foundation for future leadership roles locally, regionally, nationally, and internationally. While we are only halfway through the cycle with this group of 2017 leadership fellows, it is already becoming clear this has been another successful year and we are already planning to expand the program in 2018.

If you are interested in learning more about this unprecedented opportunity for emerging leaders in our specialty, please be sure to visit cns.org/leaders for information.
The CNS Resident Leadership Fellowship is a two-year fellowship for senior neurosurgery residents to experience the leadership and administrative opportunities offered by the Congress of Neurological Surgeons (CNS). The goal of this fellowship is to engage young physicians early in their careers in organized neurosurgery, and create interest in a path to volunteerism throughout their careers. Dr. Krystal Tomei founded the fellowship in fall 2015, and it is coordinated by Angela Taylor, CNS director of member engagement, and myself, the chair of the CNS resident committee. In January 2017, we had 24 residents from across the United States start their two-year fellowships. Over the next two years, these fellows will participate and be active members in various CNS committees, including the education committee, resident committee and the Congress Quarterly committee. The fellowship is also an introduction to the organization and structure of the CNS.

To date, the fellows contributed to many projects and generated new ideas for future ones. For instance, the CNS Resident Leadership Fellows are hard at work assisting the education committee achieve their goals of innovation and progress. The group is generating content for an online case study and gaining an operative knowledge base platform as part of their assignment to assist the education committee. They also have been very involved in the development of a new application for smartphones geared toward residents that could help them more quickly access facts, data and classifications systems, and guidelines useful in the hectic day-to-day life of a resident. One can really say, “For the resident by residents!” Another group of residents reviewed available online educational content and is working closely with the resident committee to develop new content specifically for residents. Some of the CNS Resident Leadership Fellows chose to be on the Congress Quarterly committee, and you will be able to read their contributions in this issue.

The unique aspects of working with this talented group of young neurosurgeons is that residents bring a new perspective to the status quo and also deal with highly unique challenges: For example, how to get outstanding education in the setting of restricted work hours, how to establish a research career in a difficult funding environment, how to cope in the age of digital information overload, and how to incorporate new technologies in the practice of patient care. This helps the CNS to stay fresh and relevant, and develops distinctive opportunities for neurosurgery residents.

The next cohort of CNS Resident Leadership Fellows will start in the fall of 2017. The first class of CNS Resident Leadership Fellows graduated at the end of 2016. Many of them stayed on and now are part of the CNS resident committee. Hopefully, they will continue to serve on other CNS committees and shape organized surgery. We are excited to host them at the first CNS Resident Leadership Fellows reception for alumni and current fellows at the Annual Meeting in Boston.

Anyone interested in becoming a CNS Resident Leadership Fellow should please visit cns.org/leadershipfellows.
Publishing is a competitive business. Each year, journals jostle for the highest quality manuscripts from across the specialty—manuscripts that will challenge accepted dogma, drive innovation in patient care, and advance our understanding of disease and treatment through scientific advances.

Traditionally, our journal’s stiffest competition comes from three sectors: General medicine journals, publications in the broad neurosurgical space, and journals serving the various subspecialties within neurosurgery. The general medicine journals promise wide exposure with their large readerships, brand recognition, and focus on content with broad, cross-disciplinary relevance. NEUROSURGERY® Publications (consisting of Neurosurgery, Operative Neurosurgery, and Clinical Neurosurgery) and its peers target the latest advances and trends from across the neurosurgical profession, and provide a window into the field.

The subspecialty journals focus on pediatrics, spine, functional neurosurgery, etc. Naturally, every journal seeks to publish only the highest-quality and most relevant content within its scope. In this regard, Neurosurgery and Operative Neurosurgery share a similar mission with several journals; therefore, to maintain our position as the registrar for the profession, we must strive to keep the journals not merely relevant but indispensable—goals we achieve through a commitment to excellence and innovation.

Over the past eight years, we have worked very hard to move the journals forward while honoring the legacy and tradition established by Neurosurgery’s founding editor-in-chief, Dr. Robert H. Wilkins, and so ably looked after by the other editors-in-chief emeriti, Dr. Clark Watts, Dr. Edward Laws, Jr., and Dr. Michael Apuzzo.

The foundation of any scholarly publication is editorial policy. This policy governs a wide array of issues including authorship, conflict of interest, and publication ethics. This policy is not static, but must be continually updated as the field of neurosurgery and the best practices of the publishing industry evolve and new challenges appear. To that end, we made several significant updates to the editorial policy, the most meaningful of which includes a more explicit elaboration on ethics regarding human subjects and patient consent, an endorsement of the Equator Network Reporting guidelines, and the formalization of an anti-plagiarism policy. These updates, in addition to the countless others formulated and revamped over the years, ensure the content published in Neurosurgery and Operative Neurosurgery remains rigorous and of the highest structural quality.

While at their core Neurosurgery and Operative Neurosurgery are journals whose primary objectives are to convey knowledge, we would be remiss if we were not willing to provide our readers with a variety...
of media through which to engage that content. Since the beginning of my term, we have made a conscious effort to utilize established and emerging multimedia applications and platforms. Over these past eight years, readers will have seen the journals employ such technology as QR codes and Layar. They will have seen our presence on social media platforms such as Facebook, YouTube, and our NEUROSURGERY Report blog. As the wider world of technology has evolved, so too has the journals’ engagement with and use of these tools. Some, like QR codes and Layar, have been adopted but ultimately surpassed. We are currently in the midst of relaunching our multilingual audio abstract series, now referred to “Neurosurgery Speaks” and “Operative Neurosurgery Speaks” and the multilingual text abstract series “Neurosurgery and Operative Neurosurgery Babel,” both available in 10 languages. We are convinced this will make journal content much more accessible to our international colleagues. As with all things, the adoption or discontinuation of technology requires awareness of the zeitgeist, careful analysis, and reanalysis from year to year. It is only through this attentiveness that we can keep the journals relevant and useful to their readers.

As mentioned previously, actively shepherding the journals into the 21st century while honoring the legacy and traditions of Neurosurgery is a prime concern. Our greatest accomplishment in this arena has perhaps been the development of Operative Neurosurgery. Originally conceived by my predecessor, Dr. Michael Apuzzo, Operative Neurosurgery was created to serve the practicing surgeon by providing him or her with the most timely and relevant literature on operative practice, instrumentation, and technique. More than 12 years passed since its inception as a supplement to Neurosurgery, and it has since flourished to a fully independent, PubMed-indexed publication offering its readers a wide variety of content and rich multimedia. A pivotal extension of Operative Neurosurgery’s emphasis on utility was the development and launch of The Surgeon’s Armamentarium. As a custom-designed digital content delivery platform, The Surgeon’s Armamentarium brings the sheer weight and wealth of NEUROSURGERY® Publications and the Congress of Neurological Surgeons (CNS) to the user’s fingertips by allowing him or her to quickly call upon this ever-growing archive in order to access the desired operative content when and where they need it most—the OR.

The horizon of opportunity is far and wide, and with vision, resources, and strong leadership, we can capitalize and realize the potential before us.
Strength Through Leadership: Weathering Challenges in Endovascular Neurosurgery

“You never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete.”

— R. Buckminster Fuller

Leadership can be a difficult task for those involved in periods of rapid change and paradigm shifts. Leaders must demonstrate adaptability to change and willingness to approach problems from different vantage points during these situations to maintain ongoing growth. Neurosurgery was no stranger to the challenges confronting cerebrovascular specialists amidst the neuroendovascular revolution.

The visualization of the vasculature of various organs by direct puncture became possible with the discovery of angiography by Portuguese neurologist Egas Moniz in 1927. However, Moniz’s encouraging innovation was fraught with risk. In 1953, Swedish radiologist Sven-Ivar Seldinger developed a technique to access the vascular system via the femoral artery. The improved technique was a development that made angiography safer and launched the future of endovascular methods.

Neurosurgeons began using carotid punctures in the 1950s to perform angiograms. In 1960, American neurosurgeons Alfred Luessenhop and William Spence reported the first embolization of an arteriovenous malformation (AVM) using pellets introduced into the cervical portion of the internal carotid artery. Then in 1964, Luessenhop and Velasquez succeeded in catheterizing intracranial cerebral vessels. However, radiologists resumed the lead as the demands of neurosurgery increased. With the exception of a few prominent neurosurgeons like Guido Guglielmi and Fedor Serbinenko, radiologists directed the movement toward minimally invasive catheter-based approaches to vascular pathologies throughout the 1960s and 1970s.

Neurosurgeons traditionally favored open and very invasive approaches to intracranial aneurysms, AVMs, and fistulas. It is no mystery that young residency applicants of the past, and perhaps some today, were and are drawn to neurosurgery because of a preference for open cranial procedures rather than coiling or embolizing lesions through catheters from small access sites in the groin. The challenges of clipping aneurysms, resecting AVMs, and anastomosing cerebral vessels for surgical bypass undoubtedly attracted neurosurgeons whose affinity for an open view of the cerebrum often outweighed the growing trend toward minimally invasive methods.

In the 1970s, a handful of neurosurgeons began treating central nervous system (CNS) diseases such as carotid-cavernous fistulas and AVMs with emerging endovascular approaches. Technology such as balloons and catheters were made or borrowed from other specialties and adapted to neurovascular problems. Advances in technology and improved methods would catalyze endovascular approaches to brain pathologies in the 1980s. Given their control of catheter angiography, neuroradiologists took the early lead in developing catheter-based approaches to the brain. Considering their familiarity with open approaches to cerebrovascular abnormalities and the complications associated with catheter-based approaches, neurosurgeons needed to learn catheter skills to participate in this growing field. However, there were significant challenges in crossing the bridge to learn catheter-based approaches with radiologists.

Neurosurgical endovascular training began in Buffalo, New York, in the early 1980s. The first neurosurgical endovascular fellowship program was established there in 1991. Today, endovascular neurosurgeons (ENS) are a dominant force in catheter-based therapies for brain and spine pathologies. This advancement was largely due to neurosurgeons’ clinical skills and penchant for treating complex vascular lesions of the CNS. Other specialists, such as neurologists and even interventional cardiologists, have entered the field. Each specialty has a unique perspective and contributes to this rapidly expanding field.

The neurosurgical vascular community leadership initially eschewed reconsideration of the traditional approach to vascular disease. Progress in developing neurosurgical endovascular centers was slow and required dedication and perseverance.
By comparison, spinal surgery was traditionally a neurosurgical field. But as spinal reconstruction techniques evolved, orthopedic surgeons entered the field and made significant contributions. At several centers, combined neurosurgical-orthopedic programs have further advanced the field. Unlike spinal surgery, which occurred in an operating room and was familiar to neurosurgeons, endovascular treatments were not considered standard or routine for neurosurgeons during the 1990s. However, a number of neurosurgical centers began performing and teaching endovascular approaches. National neurosurgical meetings were rife with debates over endovascular versus open surgical approaches to the treatment of vascular diseases of the CNS. At the same time, radiology experts questioned whether neurosurgeons were skilled to perform endovascular procedures. Other specialties faced similar dilemmas as catheter-based therapies gained acceptance. An example can be observed in the history of cardiothoracic surgery. Cardiothoracic surgeons have seen their patients opt for less-invasive revascularization procedures performed by interventional cardiologists because they did not adopt progressive catheter-based approaches.

The senior author of this piece, despite doubt from some of his contemporaries, felt neurosurgeons ought to be involved in the leadership of endovascular therapies field because neurosurgeons have unique experience in open and intravascular approaches to vascular abnormalities of the CNS and are therefore capable of anticipating the complications associated with either approach. From teaching the first endovascular courses at annual meetings of the Congress of Neurological Surgeons to participating in clinical trials at our home institution, leadership from neurosurgeons was a necessity. Leadership meant much more than simply telling people “what to do” or “how to do it;” leadership required constant innovation and action in addition to building strategic partnerships.

Collaboration and cross-pollination with industry and other specialties has driven the neuroendovascular space forward. Headway began with publishing our data on carotid artery stenting and challenging the old mindset that endarterectomy was the only option. After pushing the endovascular envelope by participating in early trials for stroke stenting and thrombectomy, we continued to publish our findings and helped to lay the foundation for trials such as Solitaire with the Intention for Thrombectomy as Primary Endovascular Treatment (SWIFT PRIME) and Clinical Mismatch in the Triage of Wake Up, and Late Presenting Strokes Undergoing Neurointervention with Trevo (DAWN). Trials such as these have significantly advanced stroke intervention. Today, endovascular neurosurgery is one of the most sought-after subspecialties within neurosurgery, and the next generation of neurosurgeons is leading the cerebrovascular field. Some of the largest clinical trials in stroke and aneurysm treatment are led by neurosurgeons across the country. Thirty years ago, some would reject the notion of a neurosurgeon spending time in an angiography suite and treating vascular pathologies through femoral or radial access, but now neurosurgeons are leading the way in endovascular therapies.

“When envisioning the technologic process, we must ‘think young’ and consider the impossible. The mindset is best achieved in an environment where innovators consider the unachievable as being possible.”

— Thomas J. Fogarty

References
Neurosurgeons often find themselves leading a strong, qualified group of professionals with their own expertise, experience, and styles of practice and communication. Leading a diverse team can be a challenge, and few people are as familiar with this balancing act as a coach of a professional football team. We’re honored to have Buffalo Bills coach, Sean McDermott, share his insight into making a large group of talented and unique individuals work together for success.

On January 11, 2017, the Buffalo Bills named McDermott the 20th head coach in team history. Coach McDermott took time to expand on his views on leadership in a Q & A conducted by Chris Brown of BuffaloBills.com for the Congress Quarterly.

Q: What makes a successful leader?
SM: A successful leader is one who may not have the success or get the results all the time, but they know they’re doing the right things to set themselves and the team up for success—maybe not now, but down the road. I feel that’s huge, in terms of leadership.

Q: What is the most important component of leadership?
SM: Self-awareness. Knowing yourself is highly important to leading people. For me, it’s knowing when I’m on edge. I have a tendency to blow up, and being able to manage that and knowing when I need a workout to clear my mind are important from a leadership standpoint.

Q: How does one lead a team of varied personalities, with individual goals and ambitions that might extend beyond what’s best for the team?
SM: Everyone has to understand we all win when the team wins first, and we all are here to make each other better. When we do that and take that type of approach, the team benefits.

Q: How do you lead those who are considered leaders of their peers?
SM: As a leader of people, developing leaders is an important quality for our football team. I take opportunities to find different points in time to point out things to our leaders of where they really did well and really gave us the standard we were looking for from a leadership standpoint, and other times when there were opportunities to lead in a different way.

So within the context of the vision of the standard, we celebrate when we get what we’re looking for and correct in the context when we don’t. That’s important.

Q: How do you define and describe leadership from a personal perspective?
SM: Leadership begins with leading by example. After that, it starts with shaping and crafting a vision, and building alignment around it and championing the execution of that vision on a daily basis.

Q: In what ways has your leadership style changed or evolved over the years?
SM: It has changed a lot. I used to think just the term “leadership” was something you had or you didn’t. It was something born in you. I think that’s still true to a point, but I think leadership can be developed. You have to develop the leader within. I’ve experienced that first hand in the different places I’ve been.

I’ve cultivated my own leadership skills by investing in a leadership coach. I read, and I get online and find best practices from other leaders of other teams, other organizations, other businesses, and just spend time on it. I’m intrigued by leadership, but I don’t think you ever know everything there is to know about it.

Q: Is there a noted difference in leading Millennials, or are the principles the same?
SM: I think the core principles of leadership remain the same, yet the details of it change because you’re leading a different age of people. This includes positive reinforcement, which was something I didn’t know a whole lot about. When I was growing up, it was constructive criticism. With Millennials, it’s got to be the sandwich technique: Positive, negative, and positive. I think they benefit more from that these days than the other way around.
The person at the top of any organization has an oversized impact on their enterprises, and top leadership changes, along with their root causes and related fall-out, can have a massive negative effect on an organization and its customers, employees, patients, etc. Unfortunately, when things go wrong in the operating suite, often the damage cannot be undone. The practical reality is that today’s medical leaders are forced to optimize across two (often-conflicting) variables, specifically quality and volume. As a surgical leader, how does one inspire their teams to do the right thing when it might be at odds with the financial incentives? How can they espouse and live a value that might go against the bottom line?

While my company hasn’t directly studied surgical leaders, we have spent more than 20 years advising boards, administrators, and executives on senior leadership transitions, and have found the core reason that leaders falter is the gap between what boards believe the perfect candidate looks like and what actually leads CEOs to be successful in their roles.

In the recently published Harvard Business Review article “What Sets Successful CEOs Apart”, my colleagues Elena Botelho, Kim Powell, Stephen Kincaid, and Dina Wang present the findings from a decade-long CEO Genome Project. During this time, we accessed our database of over 17,000 executive assessments and analyzed approximately 1,000 CEO’s education, career history, behavioral patterns and results, with the help of economists from the University of Chicago, the Copenhagen Business School, and experts at SAS, Inc.

We learned a lot and busted many myths along the way. For example, you might expect highly successful CEOs to be Ivy Leaguetrained gurus with perfect track records. But 8 percent of the CEOs studied never even graduated from college, while only seven percent had an undergraduate degree from an Ivy League school. Almost all CEOs studied have made major mistakes, almost half of them so significant that they either lost their job or significantly damaged their business.

Now what does lead to success? Botelho, et al., identified four key behaviors that successful CEOs demonstrate. More than half of the top ranked CEO candidates spiked high on more than one of these four behaviors, while only five percent of weaker candidates did:

1. **Deciding with speed and conviction.** It turns out that decisiveness is more important than being right the first time, with successful CEOs making decisions faster and with a good deal of conviction. Our study showed candidates who were viewed as decisive were 12 times more likely to be successful. Further, among lower-performing CEOs, only 6 percent of the time their issues were linked to making decisions too quickly, with the other 94 percent due to taking too long, or simply not deciding at all.

2. **Adapting proactively.** When the macro environment changes, or your decision on specific actions turns out to be sub-optimal, they key is adapting, and doing so rapidly. Successful CEOs consider the future, think through possible scenarios, and keep a finely tuned eye out for signals that will show when change is necessary. CEOs who can adapt well are more than seven times more likely to be successful. Meanwhile, CEOs who dwelled on failures, rather than seeing them as learning opportunities, were 50 percent less likely to be successful in the long-term.

3. **Reliably delivering.** Even more important than delivering desired results is doing so reliably. Of the four success behaviors identified through the CEO Genome Project, delivering results consistently was the only one that correlated with being selected as a CEO, in addition to performance in the role. In fact, we found that CEOs who reliably delivered were fifteen times more likely to be successful overall.

4. **Engaging for impact.** A successful CEO cannot, and should not, try to do everything themselves. The best CEOs achieve buy-in from their employees, their boards, and other stakeholders by understanding their needs and drivers and aligning them with the goals of the organization. In our data set, being able to engage stakeholders and get them focused on results made CEOs 75 percent more likely to be successful.

While there is no one combination of skills that works for all top leaders across all markets and industries, focusing on these four behaviors will improve any leader’s likelihood of success. If you wish to someday lead an organization yourself, then you will be well served by focusing on building out your capabilities in these key areas.

To learn how you rate on the four behaviors, visit [http://ceogenome.com/quiz/](http://ceogenome.com/quiz/) and take our CEO Genome 5-minute assessment.
Preparing for the ABNS written exam is a daunting task. I wasn’t gifted with talent for standardized tests, and this was the year I needed to pass. With little guidance on board preparation courses and a program requirement to get at least 50th percentile or higher on the exam, I used the kitchen-sink approach and went to three separate board review courses. In retrospect, this was excessive, time-consuming, and very expensive. Sharing my experience will hopefully allow future examinees to use a more targeted approach based on their individual needs, while saving valuable time and money.

Chicago Review Course
The Chicago Review, spearheaded by the dedicated Leonard Kranzler of the University of Chicago, is one of the longest running neurosurgery review courses in the U.S. Course participants included neurosurgery residents taking the exam for the first or second time, foreign physicians looking to pass their American boards, and licensed neurosurgeons wanting a comprehensive practice update. The course provides value for each group. Spending 10 days in Chicago in January is far from a tropical vacation, but the 12-hour lecture days will keep participants occupied.

The course benefits from many exceptional lecturers such as Dr. Thomas Naidich, whose anatomy lectures were the course highlight, as well as eminent professors such as Dr. Edward Benzel, Dr. Ossama Al-Mefty, and Dr. Thomas Mizen, among many others. Dr. Ernesto Coscarella delivers an excellent set of 3D lectures with frequent questions to the audience and appropriate repetition of key points. Each lecture is delivered by an expert in his or her field, including neurosurgery, radiology, neuropathology, and neuro-ophthalmology. Other lectures were weaker, with fewer clinical vignettes to circle back into the clinical relevance of the material. There was at least one lecture dedicated to a proprietary surgical planning and navigation system that would have been more appropriate at an industry-sponsored course.

Another strength of the course is its emphasis on repetition, both within individual lectures and between lecturers. The course directors understand repetition is the key to adult learning and also allows participants to identify recurring themes likely to be seen on examination day.

This course was the most comprehensive of the three I attended. Every boards-testable topic was covered, along with additional material relevant for practicing surgeons needing to update their knowledge. Those needing a from-the-ground-up approach to their preparation will be hard-pressed to find a more thorough course, but the course length and steep tuition fee ($2375 for residents, $2650 for practicing surgeons) may make attending the Chicago Review impractical for many residents and surgeons. Attendance dropped precipitously after the second day of lectures, reflecting the difficulty many participants had with the very long days of didactics. Removing several lectures that did not address board review material or practice-relevant information could potentially shorten the course by at least a day, which may make it more accessible to some participants.

The Kenneth M. Earle Neuropathology and Washington Neuroradiology Review Courses
Boasting the longest history of the three courses, with 50 years of neuropathology review and 30 years of neuroradiology review, the Kenneth M. Earle Neuropathology and Washington Neuroradiology Review courses provide an in-depth series on current understanding and practice in neuropathology and neuroradiology. Due to scheduling constraints, I was only able to attend the neuropathology arm of the course. Its outstanding faculty includes Dr. Arie Perry and Dr. Greg Fuller, neuropathologists integral in the development of the WHO 2016 criteria. The faculty was able to provide a more updated discussion of molecular markers in central nervous system tumors than any of the other courses. There was emphasis placed on multidisciplinary integration in a manner unique to this course. During the neuropathology course, Dr. James Smimiotopoulos provided exceptional radiology correlations to the pathology material, tying the pathology slides to the imaging neurosurgeons will see in their patients.

The all-volunteer faculty of the course shows an unparalleled dedication to course participant education, and clear enjoyment of every moment of their time at the course. There is the traditional mix of lecture styles, but many of the lectures are lively, engaging, and occasionally laugh-out-loud funny. The case correlation sessions at the end of each day are the strongest clinical relevance offerings among all the courses, challenging participants to apply concepts and discussions from early in the day to real patient scenarios.

For neurosurgery residents preparing for board exams, the course focus may be too narrow to be useful. The level of detail provided far exceeds what is likely to be encountered on the written board exam. For neurosurgeons with particular interest in these fields or even those focused on tumor surgery, these courses are a great opportunity to improve fund of knowledge more profoundly than any of the other offerings.
Though much of the material has been presented for many years at the MOC SANS course, 2017 was the first year the CNS offered a dedicated ABNS board review course. The provision of this course demonstrates the CNS’ strong commitment to resident education. Running from Saturday afternoon to Sunday afternoon in Las Vegas, it is a rapid-fire foray into high-yield topics put together by dedicated faculty, many of whom are authors of the ABNS exam questions.

Lectures are fast-paced, highly interactive, and provided by a star cast of all-volunteer faculty spearheaded by Dr. Michael McDermott and Dr. Nader Pouratian. Covering the breadth and depth of the ABNS exam topics in less than 24 hours is a challenging task, but the course performs exceptionally well in this regard, including both basic science and clinical neurosurgery requirements. The material presented was more updated than that presented at the Chicago Review, which is largely reflective of the updates to the ABNS exam and the WHO 2016 CNS tumor criteria. The lecture format incorporates SANS questions throughout to highlight key points and the SANS question modules are included in course tuition.

To get the most out of this course, plan to have studied for several weeks prior to arriving. There is a good amount of review in the course, but it is designed to test your mastery of the subject matter and identify your weakest areas, not to teach you the material. The course offers the most abbreviated board preparation available, which may be an advantage for residents and physicians who are unable to get away from their programs for more than a weekend. The inclusion of all available SANS online question modules makes this the most economical board review option of the three, by far.

**Conclusions**

Each of these three courses are ideally suited to accomplishing different goals. All are useful in their own right and represent the hard work and dedication of many faculty members in neurosurgery, neurology, radiology, and pathology. This review of the reviews is written to give an assessment of how these courses can be best used depending on your goals. Whatever your choice of exam prep, good luck studying!

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**CHICAGO REVIEW COURSE**

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<tr>
<th>COURSE LENGTH</th>
<th>10 days</th>
<th>Pathology – 4 days</th>
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<td></td>
<td>$575 neuroradiology</td>
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**INova REVIEW COURSE**

**CNS SANS BOARD REVIEW**

**LECTURES ARE FAST-PACED, HIGHLY INTERACTIVE, AND PROVIDED BY A STAR CAST OF ALL-VOLUNTEER FACULTY SPEARHEADED BY DR. MICHAEL MCDERMOTT AND DR. NADER POURATIAN.**
Medical Tourism in India — A Perspective (Part II)

Medical tourism has an enormous impact in delivering affordable health care to needy patients across borders. It challenges effective treatment modalities in being “low-cost” and “value-based,” rather than “poor-quality” or “cheap.” It leverages local health care, tourism, transport, logistics, food, language, and a host of deliverables, and generates tremendous value for the host country.

Indian healthcare is poised to be at the forefront of the medical tourism industry. Indian consumer spending is anticipated to be $4 trillion by 2025, with an estimated $500 billion spent on health care. In 2016, worldwide medical tourism generated $100 billion, but is projected to be $200 billion a decade later.

Twenty percent of the Indian population had health insurance coverage by 2015, up from around 2 percent in 2006, with a CAGR of 30 percent. The health economy is reshaping through a shift in demographics, with villagers moving to larger towns and cities. Tier 3 cities have become Tier 2 cities in a short period of time, with Tier 1 cities set to become “Megalopolises.” For example, the population in the city of Bengaluru rose from 4.13 million in 1991 to 5.10 million in 2001. According to population projections based on those numbers, Bengaluru should have reached 9.72 million by 2025 and 15.62 million by 2050. But the reality is quite different. The population of Bengaluru exploded to 11.5 million in 2015, and is now estimated to grow to 25 million by 2025! This is an extraordinary growth, applying stress on planning, resources, and delivery of health care. Similar patterns are emerging in other major cities in India.

There is a shift also in disease patterns, from “communicable” to “lifestyle” diseases. India had teetered on starvation in the 1960s, but has become self-sufficient in food production. There is a remarkable change from a picture of a skinny, half-naked “native” to an obese, globe-trotting executive in a matter of a few decades. Diabetes is the future scourge of this pattern shift, with 300 million people to be affected by 2020. Such a dramatic change offers huge scope for new treatment modalities.

Public spending on health care initiatives by the government of India has hovered around 4 percent of GDP compared to 15 percent in the USA. There is increasing private sector involvement, to about $100 billion in 2015. World-class health facilities are being built in many cities, many with support from international investment funds. Large hospital groups like Fortis hospitals, Apollo hospitals, Narayana hospitals, and a host of small groups are investing in different cities to provide quality health care to various segments of the population.

General Agreement on Trade in Services (GATS) has resulted in initiatives like telemedicine services from Apollo hospitals (worth about $4 billion), medical billing and outsourcing ($20 billion globally), “M” visa and more.

All this has resulted in patients traveling to India in search of better treatment and relatively low-cost but world-class capabilities. For example, spinal fusion procedures cost only $6,000 (Figure 1). These costs are attractive and affordable for medical travellers. The outcomes are comparable to many advanced centers in the US, UK, France, Japan, and Germany.

Patients look for “value for money” when they seek treatment. This includes affordability and cost-effectiveness, high-quality health care, and immediate service. Improved communication and travel services are a necessary part of this attraction. Flexible pricing is key to organize the best possibility of treatment for the patient.

### Cost of Procedure

<table>
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<th>US</th>
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<th>Singapore</th>
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<td>11.27</td>
<td>1.27</td>
<td>1.64</td>
</tr>
<tr>
<td>Bone-marrow transplant</td>
<td>30,000</td>
<td>10.00</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Liver transplant</td>
<td>40,000</td>
<td>7.50</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Neurosurgery</td>
<td>8,000</td>
<td>3.63</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Cosmetic surgery</td>
<td>3,500</td>
<td>10.00</td>
<td>–</td>
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**Figure 1**
is critical for certain economic class of patients. Surgical treatment remains the same but “stay” is considered differently. Some reduction in costs are possible while treating a group of patients. Certain strategies are being adopted to make treatment affordable. Hospitals are becoming solution providers, rather than offering surgery alone. Common procedures that can be done safely at an offsite hospital in the host country are performed by visiting surgeons after a simple or small “upgrade.”

Difficult surgeries are then offered in the Indian hospital, increasing patient confidence in the capability of the hospital systems involved. This expands the reach to different locales in the foreign country and offers treatment that may not be available to them at all.

Similar implants are made available with lesser range, reducing costs substantially. Simple kits with less range, and “loaner” sets are helping make expenses leaner. The complete range is not necessary in common procedures, as it adds to the cost of acquiring, maintenance, sterility, and replacement. Less range means lesser variety of implants and tools to use those implants. Loaner sets for surgery reduce acquisition costs for the health care provider while it offers flexibility for the vendor to support multiple hospitals who cannot invest in such technologies. Equipment vendors are willing to discuss with hospitals to provide and partner in cathlabs and diagnostic centers. This strategy has resulted in less downtime and maintenance costs for the healthcare provider.

Additionally, the 2014 “Make in India” initiative launched by the government has encouraged Indian medical companies to manufacture at home. This has the potential to reduce costs, as local manufacturing has less labour expenses. Affordable health care start-ups are encouraged to experiment with alternatives that can challenge existing technologies. Mobile health care initiatives are expected to cross $600 million in 2017. The recent “Digital India” campaign again launched by the government of India, is certainly going to change the scenario by taking health care technology to the “pocket of the common man.”

At the same time, indigenous Indian industry is expanding and proving itself quite capable of accommodating these changes. (Figure 2)

With increasing costs of importing and an ever-expanding base of patients, it becomes imperative for care givers to innovate in many areas of the business. At an anticipated $500 billion in medical device and diagnostic equipment costs by 2030, Indian health care organizations must develop affordable means of treatment to those in need. Potentially, local manufacturing of devices and diagnostic equipment, which can then be exported to needy countries to offset costs, is going to become an important method.

Ultimately, safe treatment practices at affordable costs is the key to encourage medical tourism. “Value for money” has become the new mantra for Indian healthcare organisations. The increasing volume of medical tourists indicate India is becoming a global health care destination of choice, likely reaching even greater significance in the coming years as global health care costs reach unacceptable levels. Strategies now being utilized by Indian health care organizations may become fine-tuned to fulfill global needs in the future.
The Question: Given that Europe removed open vascular quotas from their neurosurgical training, do you think the US should continue to mandate open vascular cases (current quota is 40 cases) during neurosurgical residency? Should neurovascular training be delegated to fellowship?

The Expert Opinion: Several years ago, organized neurosurgery and thought-leaders had the foresight to embrace endovascular therapies. The growing concern at present is a reduction in “open” neurovascular procedures available to neurosurgery residents. This has been driven by several factors. Endovascular techniques and devices continue to advance treatments in the field at a rapid rate. They’ve replaced open surgical procedures for a number of intracranial and spinal vascular malformations and aneurysms. In addition, the number of neurovascular patients presenting to larger academic centers where neurosurgical residents are trained have been reduced by the growth of the availability of endovascular treatments at smaller nonacademic institutions. Often, the treating physician at the smaller facility may not be a neurosurgeon, but a neurologist or neuroradiologist with endovascular training. This has diluted the quality and quantity of vascular procedures at some major training institutions.

In order to address these issues the Society of Neurological Surgeons instituted the Committee on Advanced Subspecialty Training (CAST). Program requirements and standards for enfolded and post-residency fellowships for open cerebrovascular and endovascular training were established.

However, given the rapid changes in treatment techniques, previous training standards and quotas need to be significantly modified. The previous requirement of 40 open vascular cases has not been met at many institutions. When open surgery is performed, several residents are often involved in the operation in order to enter this into their case logs. Several of the residents have little to do with the actual procedure, and were more often simply observing. At present, the American Board of Neurological Surgery is modifying the standard to include 50 open or endovascular procedures as part of the neurovascular training. This means that if the graduating chief resident did 50 endovascular cases and no open cranial vascular cases, he or she would still graduate and meet the threshold for training.

Of all physicians treating neurovascular disease, neurosurgeons represent the one subspecialty perfectly situated to lead the innovation and ongoing changes in the field. Basic endovascular techniques can easily be incorporated into a residency training program. Neurosurgical trainees often have a rapid learning curve and pick up the technical nuances of endovascular techniques quickly, as evidenced by reduction in radiation times and contrast usage over the first few weeks with diagnostic and interventional work. Patient care skills, which often have to be acquired by trainees in other subspecialties, are already part of the neurosurgery resident’s armamentarium. Required rotations on the endovascular service are being incorporated and required in many training programs.

As neurosurgery becomes more subspecialized, one could easily envision a neurosurgical resident doing a year of enfolded endovascular work as a mid-level resident, combined with senior-level training involving a more focused curriculum on open and endovascular neurovascular procedures such that upon graduation, the resident would be trained to assume a position of a comprehensive neurovascular expert in an academic or private practice setting. However, there is still a need for open vascular cases, and the resident would have to train in a program which has a high-volume open vascular practice. Currently, there are eight such CAST-accredited programs. The resident could train for a year as part of an enfolded fellowship or do it post residency. In changing training requirements, we feel it is a time for organized neurosurgery to lead, not follow.
It’s said that some are born to lead, while circumstances thrust others into leadership. I have had both the pleasure and the displeasure of working with leaders both good and bad. The good ones always made it look so easy. It is clear from various subject matter experts that leaders set the direction, but not necessarily how to get there. Leadership is the where and management is the how. To execute the leader’s vision, the leader must first have the confidence of those they lead. Good leaders empower people to move the leader’s vision forward towards a shared goal. They use phrases starting with “we,” not “I,” and look beyond themselves for the greater good. They don’t explain things to people, they discuss issues and problems with colleagues and co-workers.

Many think that to lead, a person needs title and position. This statement could not be further from the truth. There are leaders at every level of an organization. John Maxwell, a famous author of many books on leadership, clarifies, “Leadership is not about titles, positions, or flow-charts. It is about one life influencing another.” I am sure many of you have had the joy of working with a leader that may not have had a title to go along with their influence. These tend to be the people you gravitate to and hold in high value in the day-to-day execution of your duties.

The good leaders that I have had the privilege to work with have had varying styles, but one trait is the building block for any leader to lead: Trust. Trust is like a savings account. It is built over time, when the leader shows competence with their skills, but most importantly, that they genuinely care for those they lead. People don’t care how much you know, until they know how much you care. The more turbulent the times, or larger the change, the more trust the leader must earn.

In my years working with NERVES and the CNS, I have had the opportunity to know many leaders, both administrators and physicians, and I try to glean wisdom and skills from all that I come in contact. They all have varying styles, be it Dr. Clarence Watridge’s calm, comforting, and unflappable demeanor, to Dr. Alan Scarrow’s wit, vision, and oratory skills, which serve them both well in their varying styles of leadership. I have also had the privilege to work with Mary Cloninger from Carolina Neurosurgery and Spine Associates who is great at seeing opportunity and setting a course to achieving a desired outcome, and Derek Cantrell of Goodman Campbell Brain and Spine, who always thoughtfully analyzes all the angles and issues that surround a decision. Their styles also serve them well in their respective organizations.

By the nature of their training, physicians are looked at as leaders when it comes to patient care and the settings that are involved in it, and for good reason. Some physicians carry this responsibility very well, while others have trouble seeing past themselves or the context of the larger picture. But a funny thing happens to people when you expect great things from them—they will surprise you and perform at levels much greater than you or they thought possible. Even when there are legitimate problems that need to be addressed, true leaders are able to find a constructive way to address them.

As administrators and as physicians, get involved in helping shape health care policy and direction in your practice setting and within in legislature, both locally and nationally, by lobbying for both your profession and your patients. Neurosurgery Executives’ Resource Value & Education Society (NERVES) is an organization comprised of administrators and managers of neurosurgery practices across the United States. They manage all areas of neurosurgery, including hospital-based, private, and academic practices.

One of the many benefits of NERVES membership is access to the online listserv for all members. This listserv is a forum where any administrator or manager can ask questions of the entire membership and receive suggestions from other experienced members. It is a very active community with many daily posts. If your practice’s manager or administrator is not a member of NERVES, we hope you will support or encourage them to join. Membership information can be found on the NERVES website: nervesadmin.com.
As health care adapts to digital technology, the operating rooms of the future demand connected medical devices that seamlessly acquire, share, and provide data to physicians and health care teams when and where they need it.

That means data and medical devices must be interconnected pieces of the same fully digital environment, creating and fueling the decision support systems that health care providers need while improving lives.

Digital data enriches the collaborative power of precision medicine for clinicians across multiple specialties, and our patients. Data should be captured across a patient’s treatment timeline, correlated and properly indexed in a patient-centric informatics platform. Such functionality allows surgeons to work with digitized surgical video and image capture, MRI and CT scans, lab reports or other results to make informed decisions.

For example, at the 2016 CNS Annual Meeting, Synaptive Medical partnered with Henry Ford Health System to create a virtual hospital tumor board called ONConnect. Every brain cancer patient deserves the highest level of care, including opportunities to access the best and most individualized treatment solutions for cancer. The reality is that some patients, especially those in smaller care centers or remote regions, do not currently have access to the latest molecular, genetic, and precision medicine treatment protocols, and some physicians may not be aware of available technological advances or ground-breaking clinical trials.

ONConnect’s data-driven platform will transparently link those patients and referring physicians with personalized resources in the most efficient and organized way possible. Making tumor boards virtual may also allow referring physicians with limited access to disease-specific expertise to participate in the process, creating opportunities for standardization and leveraging efficiencies within the health care system.

Health systems need accessible data and connected medical devices to help them deliver high-quality, cost-effective medicine. Moving into a fully connected digital environment will allow physicians and patients to realize large-scale benefits.
WASHINGTON COMMITTEE REPORT

Special FDA Safety Announcement for Frameless Stereotaxic Navigation Systems

On June 15, 2017, the Food and Drug Administration (FDA) issued a Safety Communication to make health care providers aware of possible navigational accuracy errors that may occur when using frameless stereotaxic navigation systems. The FDA emphasized that the overall benefits of using frameless stereotaxic navigation systems continue to outweigh the risks, and they have not determined that any particular system carries greater risk than others. The notice also contains recommendations for surgeons to consider to help mitigate associated risks to patients, including repeatedly assessing navigational accuracy throughout a procedure when using a frameless surgical navigation system.

Neurosurgeons may report device problems to the FDA through the agency’s MedWatch Safety Information and Adverse Event Reporting Program:
• Complete and submit the report online at www.fda.gov/MedWatch/report; or
• Call 1-800-332-1088 to request a reporting form to complete and return by mail or by facsimile to 1-800-FDA-0178.

HOUSE PASSES COMPREHENSIVE MEDICAL LIABILITY REFORM LEGISLATION

On June 28, by a vote of 218 to 210, the U.S. House of Representatives passed H.R. 1215, the Protecting Access to Care Act, as amended. Organized neurosurgery endorsed the legislation. Additionally, the CNS joined the Alliance of Specialty Medicine and the Health Coalition on Liability and Access (HCLA) in supporting this bill.

Key provisions of the bill include:
• Encouraging speedy resolution of claims. The statute of limitations is three years after the injury or one year after the claimant discovers the injury, whichever occurs first.
• Compensating patient injury. Noneconomic damages are limited to $250,000. Parties are liable for the amount of damages directly proportional to their responsibility.
• Maximizing patient recovery. Courts must supervise the payment of damages and may restrict attorney contingency fees. The bill sets limits—on a sliding scale—on contingency fees.
• Future damages. The bill provides for periodic payment of future damage awards.
• Product liability. A health care provider who prescribes, or dispenses pursuant to a prescription, a medical product approved by the FDA may not be named as a party to a product liability lawsuit or a class action lawsuit regarding the medical product.
• State Flexibility. Protects the rights of states that have already enacted comprehensive medical liability reforms or do so in the future.

Several amendments passed, including one offered by Rep. Richard Hudson (R-N.C.), by a vote of 222 to 197. The Hudson amendment (1) sets forth expert witness criteria; (2) requires an affidavit of merit prior to bringing a lawsuit; (3) allows a physician to apologize to a patient for an unintended outcome without having the apology count against them in the court of law; and (4) requires a 90-day cooling-off period before lawsuits can be filed to facilitate voluntary settlements.

HOUSE PASSES HEALTH REFORM LEGISLATION; SENATE STRUGGLES TO FIND CONSENSUS

On May 4, by a narrow margin of 217 to 213, the U.S. House of Representatives passed H.R. 1628, the American Health Care Act (AHCA). In a letter to House committee leaders, the CNS registered our views on the bill, as well as other topics not addressed by the AHCA. We also shared with Congress the results of a health care reform survey of neurosurgical leaders.

Following passage, the CNS sent a letter to Senate leaders expressing our significant concerns about aspects of the AHCA, as well as our opinion on those provisions with which we agree. As with the letter to committee leaders in the House, we also expressed our views about other health reform issues that need to be adopted as well. Furthermore, on May 23, neurosurgery joined forces with the Alliance of Specialty Medicine to send a letter to Senate lawmakers highlighting several health reform principles that the legislation should incorporate. On June 22, Senate Majority Leader Mitch McConnell (R-Ky.) unveiled Senate leadership’s discussion draft bill, the Better Care Reconciliation Act.

Despite goals to improve coverage, the Congressional Budget Office (CBO) estimates 22 million will lose health insurance coverage under the draft. Finding consensus in the Senate remains elusive, thus stalling forward progress on reform legislation for the moment.

NEUROSURGERY SENDS LETTER SUPPORTING THE CONNECT FOR HEALTH ACT

On June 1, the CNS sent Senate leaders a letter supporting S. 1016, the Creating Opportunities Now for Necessary and Effective Care Technologies (CONNECT) for Health Act. Introduced by Sen. Brian Schatz (D-Hawaii), this bipartisan bill will expand telehealth services in Medicare by removing outdated restrictions and make it easier for patients to connect with their health care providers. Neurosurgery has supported efforts to improve the availability of well-established and expanding service delivery method for Medicare beneficiaries.
Neurosurgery Supports the Affordable Health Insurance for the Middle Class Act
On May 25, the CNS sent a letter endorsing, S. 1307, the Affordable Health Insurance for the Middle Class Act. Introduced by Sen. Dianne Feinstein (D-Calif.), this bill would expand access to affordable health insurance coverage for those Americans in financial need. The bill is consistent with neurosurgery’s policy that the federal government should provide need-based financial assistance to help individuals obtain health insurance under the individual mandate.

CNS Representatives Meet With HHS and CMS Leaders
On June 20, Washington Committee chair, Ann R. Stroink, MD, and Katie O. Orrico, director of the AANS/CNS Washington Office, met with HHS secretary, Tom Price, MD, and CMS administrator, Seema Verma. The meeting was one of three roundtables that Dr. Price convened in connection with his Physician Regulatory Relief project. A wide-range of topics were discussed, including:
- Mandatory appropriate use criteria for advanced diagnostic imaging;
- Delaying the global surgery data collection project;
- Minimizing the reporting burden under Medicare’s Quality Payment Program (QPP);
- Halting mandatory bundled payments;
- Streamlining and reforming prior authorization requirements; and
- Achieving EHR interoperability

The CNS will continue to interface with HHS and CMS on this project, which we hope will lead to positive changes for neurosurgeons and their patients.

New Video Shows Physicians How to Avoid Medicare Payment Penalties
As a reminder to neurosurgeons, the Quality Payment Program (QPP) is the new Medicare physician payment system created by the Medicare Access and CHIP Reauthorization Act (MACRA) and administered by CMS. Because the QPP is new this year, the CNS and our partners at the American Medical Association (AMA) want to make sure neurosurgeons know what they have to do to participate and the QPP’s “pick your pace” options for reporting. This is especially important for those physicians who have not participated in past Medicare reporting programs and may be less knowledgeable about the steps they can take to avoid being penalized under the QPP.

The CNS, AMA, and others in organized medicine stressed to CMS the importance of establishing a transition period to QPP and, as a result, physicians only need to report on at least one quality measure for one patient during 2017 in order to avoid a payment penalty in 2019 under the Merit-based Incentive Payment System (MIPS).

A new short video developed by the AMA, “One patient, one measure, no penalty: How to avoid a Medicare payment penalty with basic reporting,” offers step-by-step instructions on how to report so physicians can avoid a negative 4 percent payment adjustment in 2019. On this website, ama-assn.org/qpp-reporting, there are also links to CMS’ quality measure tools and an example of what a completed 1500 billing form looks like.

CMS Unveils Lookup Tool for Neurosurgeons to Determine Participation in MIPS
In May, the CMS unveiled a new interactive tool on the QPP website (qpp.cms.gov) to determine if neurosurgeons should participate in 2017. To determine your status, enter your national provider identifier (NPI) into the entry field on the tool located on the QPP homepage. You will then receive information on whether or not you should participate in the MIPS this year. To avoid financial penalties and qualify for an opportunity to earn bonus payments in 2019, neurosurgeons should participate in MIPS in 2017 if they:
- Bill Medicare Part B more than $30,000 a year; or
- See more than 100 Medicare patients a year

Neurosurgeons new to Medicare in 2017 do not need to participate in the QPP. CMS also recently sent letters in the mail notifying clinicians of their MIPS participation status. For more information, the QPP Service Center may be reached at 1-866-288-8292, Monday through Friday, from 8:00 am to 8:00 pm EDT, or via email at QPP@cms.hhs.gov.

Neurosurgeon Elected to AMA’s Council on Medical Education
On June 13, CNS alternate delegate to the AMA, Krystal L. Tomei, MD, PhD, was elected to a position on the AMA’s Council on Medical Education (CME). The CME formulates policy on medical education, including graduate medical education financing, medical student debt, and physician workforce. The CMS is also responsible for recommending the appointments of representatives to medical education organizations, accrediting bodies and certification boards, including the Residency Review Committee for Neurological Surgery.

Organized Neurosurgery Issues Position Statements on Telemedicine and Motorcycle Helmet Laws
On May 20, the CNS, AANS/CNS Section on Neurotrauma and Critical Care and the AANS/CNS Joint Cerebrovascular Section issued a position statement on telemedicine. In the statement, the group cited that the timely, effectual, and high-quality delivery of neurosurgical care remains the paramount mission of neurosurgeons and their neuroscience colleagues. Organized neurosurgery endorses the appropriate use of telemedicine and telehealth technologies to maintain high-quality standards of care in neurosurgery, as well as the use of streamlined state medical license processes, development of comprehensive malpractice insurance programs, appropriate reimbursement and other necessary tools that would support the efficient adoption of telemedicine and telehealth technologies in neurosurgery.

Additionally, on May 7, the CNS, AANS/CNS Section, on Neurotrauma and Critical Care, and the ThinkFirst National Injury Prevention Foundation released a position statement on motorcycle helmet laws. In the statement, the group noted their core mission is to prevent and mitigate traumatic brain and spine injury. To this end, organized neurosurgery endorsed universal motorcycle helmet laws for all motorcyclists in all states and pledged to oppose efforts of any state to repeal any universal motorcycle helmet law currently in effect.

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STORZ KARL STORZ ENDOSCOPY

PARADIGM SPINE

LEGALLY MINE
An 11-year-old boy presents with multiple intermittent episodes of right-sided tongue numbness, left hemiparesis, and paresthesias. Workup for vertebral artery dissection was inconclusive; aspirin was initiated for antiplatelet therapy. Patient suffered an additional episode of visual disturbances and extreme lethargy, subsequently returning to baseline. A second formal diagnostic angiogram was completed that included dynamic head turning, revealing complete occlusion of the right vertebral artery with head turning to the left. C1-2 fusion was completed to limit motion and intermittent occlusion. Patient has been asymptomatic postoperatively.

Submitted by:
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Department of Neurosurgery, University of Michigan Health System

**Figure 1:** CT angiogram reconstruction of the right vertebral artery shows normal vasculature without evidence of dissection or stenosis.

**Figure 2:** Time-of-flight MR angiogram demonstrates appropriate flow through right vertebral artery.

**Figure 3:** With head in neutral position, digital subtraction angiogram shows patent right vertebral artery.

**Figure 4:** Head turning to the left causes complete occlusion of the right vertebral artery consistent with Bowhunter’s syndrome.

**Figure 5:** With head returned to neutral position, right vertebral artery recanalizes with good distal flow.
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