

AMERICAN ASSOCIATION OF NEUROLOGICAL SURGEONS BULLETIN

The Socioeconomic and Professional Quarterly for AANS Members Volume 14 No. 4 Winter 2005

TIME TELLS

**Residents Get Less
Operative Experience After
Workweek Restrictions**

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American
Association of
Neurological
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AANS MISSION

The AANS is dedicated to advancing the specialty of neurological surgery in order to provide the highest quality of neurosurgical care to the public.

AANS BULLETIN

The official publication of the American Association of Neurological Surgeons, the *Bulletin* features news about the AANS and the field of neurosurgery, with a special emphasis on socioeconomic topics.

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Articles or article ideas concerning socioeconomic topics related to neurosurgery can be submitted to the *Bulletin*, bulletin@AANS.org. Objective, nonpromotional articles that are in accordance with the writing guidelines, are original, and have not been published previously may be considered for publication.

The AANS reserves the right to edit articles for compliance with publication standards and available space and to publish them in the vehicle it deems most appropriate. Articles accepted for publication become the property of the AANS unless another written arrangement has been agreed upon between the author(s) and the AANS.

PEER-REVIEWED RESEARCH

The *Bulletin* seeks submissions of rigorously researched, hypothesis-driven articles concerning socioeconomic topics related to neurosurgery. Selected articles will be reviewed by the Peer-Review Panel. Submit articles to the *Bulletin*, bulletin@AANS.org.

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Send your comments on articles you've read in these pages or on a topic related to the practice of neurosurgery to bulletin@AANS.org. Correspondence may be published in a future issue edited for length, clarity and style.

Correspondence is assumed to be for publication unless otherwise specified.

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Neurosurgery: The Expedition

Strategic Planning Guides the Way

"I walked down and joined the party at their encampment...much pleased at having arrived at this long-wished-for spot."

Meriwether Lewis thus recorded the arrival of the Corps of Discovery expedition at the junction of the Missouri and Yellowstone rivers in what today is Montana thinking his company was closing in on its goal of finding a water route to the Pacific Ocean. Though they would not attain their goal for many months, Lewis' journal entry of April 26, 1805, describes a point at which to reflect on the wonders of the journey so far and prepare for the yet unknown challenges that lay ahead.

As the nation commemorates the bicentennial of Lewis and Clark's influential journey, the AANS prepares for celebration of its 75th anniversary, acknowledging an expedition of a different kind. It seems an appropriate time at which to pause and take stock of what our association has accomplished and what it seeks to accomplish in the future.

Numerous wonders in neurosurgery have come to pass since the association's inception in 1931 as the Harvey Cushing Society in homage to that first "neurosurgeon." The venerable icon himself is explored in a new biography that reveals fresh insights into Cushing's progress in neurological surgery. In many ways, his professional journey is early neurosurgery's own.

Initially the association's primary goal was to serve as an infrastructure for meetings that involved "investigation and advancement in the fields of neurosurgery, with the fundamental needs of establishing methods of early diagnosis and postoperative treatment, directed toward the protection of the patients, and a decrease in

mortality," according to Temple Fay, a AANS founder.

Like the Corps of Discovery members who equipped themselves for an arduous journey and expected the unknown and unforeseen—wooly mammoths and pure salt mountains were considered among the possibilities—the AANS founders prepared themselves for an expedition into the estab-

Fremont P. Wirth, MD, is the 2005–2006 AANS president. He is in private practice at the Neurological Institute of Savannah in Georgia.



lishment and development of a new and demanding surgical specialty. Though surely they could not have anticipated the astonishing technological advances available to us today—functional magnetic resonance imaging, artificial lumbar discs, robotic surgery—the mission they articulated pointed the organization in the right direction.

Revitalized Mission, Focused but Flexible Goals

Over the years the AANS has formalized and expanded upon its founders' ideas. The current mission and vision statement is accessible at www.aans.org/about, and we anticipate release of a revitalized mission and vision statement during the 75th anniversary year. However, that the founders' concerns remain at the core of the AANS today is apparent in the association's annual meetings, as the 2006 AANS Annual Meeting will exemplify.

In April, the AANS will convene in San Francisco to present its 74th annual neurosurgical event under the direction of James T. Rutka, MD, annual meeting chair, and Mitchel S. Berger, MD, scientific program chair. A total of 646 abstracts have been selected for presentation at the meeting. Over the years the meeting has grown to encompass plenary and scientific sessions, AANS/CNS subspecialty section sessions, breakfast sessions and special lectures. Hands-on practical clinics hearken to the AANS founders' concern for improved patient outcomes through refinement of surgical technique, and enjoyable social activities continue to foster a collegial spirit.

While the meeting itself will focus on scientific advances that promote quality patient care and safety, its theme, Challenges of Neurosurgery: Expanding Resources for a Growing Population, was chosen to ensure that the meeting also incorporates valuable information regarding the impact of current societal influences on the practice of neurosurgery. I selected this theme because issues underlying workforce and other concerns that are significantly challenging our profession now and in the next 10 years must be uncovered and addressed today.

To that end, the AANS Task Force on Neurosurgical Care and Physician Workforce Issues met for the first time in November. I asked several neurosurgeons, chosen for their seniority and representation of various practice situations across the nation, to join me in this endeavor: Paul J. Camarata, Mark H. Camel, Martin B. Camins, Stewart B. Dunsker, Robert Grubb, Hal L. Hankinson, Julian T. Hoff, David L. Kelly Jr., Lawrence H. Pitts, Donald O. Quest, Robert A. Ratcheson, Jon H. Robertson, Richard A. Roski, Alex B. Valadka, and Martin H. Weiss.

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After reviewing available information, the task force identified distribution of neurosurgical services and organization of neurosurgical care as areas in need of further inquiry. Therefore, the AANS is conducting an online workforce survey in early 2006; if you are contacted, I encourage you to help us in this important effort. The task force plans to report on its findings in April.

Another group, the AANS Physician Extenders Task Force, spearheaded a survey conducted last fall to discover how neurosurgeons are using or would like to use nurse practitioners and physician assistants in their practices and to discern how they are, and should be, trained. Charles Hodge, MD, led the effort, the results of which are featured in this *Bulletin* issue.

Workforce was one of three issues identified in my fall column as top AANS concerns; the other two topics, medical liability reform and physician reimbursement, surely are among the forces that are stressing the neurosurgical workforce. All three areas remain top priorities, and they will be addressed in detail in future issues of the *Bulletin* as well as at the annual meeting.

Progress According to Plan

Provisioned with a clear mission, today's AANS leadership employs a detailed document, the AANS Strategic Plan, which maps the way to ensuring that our profession maintains excellence in providing our patients with high quality neurosurgical care while simultaneously addressing professional issues such as workforce. The strategic planning process was formalized in 2003 by A. John Popp, MD, leading the Long Range Planning Committee. Since then the successive plans have articulated goals aligned with the AANS mission, with specific tasks then assigned to specific committees and tied to the budget.

For example, in the tradition of professional education at the core of the AANS mission, a plan goal of developing member services and benefits specified a task that called for the AANS to reassess

benefits for young neurosurgeons—our profession's future workforce. Today residents in North America not only attend the annual meeting at no cost to them, they also receive free AANS membership and the AANS Journal of Neurosurgery. Another task called for the AANS to establish a central repository for continuing medical education and maintenance of certification. The AANS has since worked closely with the American Board of Neurological Surgery to meet this goal and others in advance of the board's MOC program launch in January, and today CME credits for MOC are tracked at www.MyAANS.org. ABNS directors discuss MOC implementation in this issue of the *Bulletin*.

Challenges...need not deter us in pursuing what we know to be a worthwhile, stimulating profession that provides essential services to our patients.

The plan also called for the development of member services and benefits via a biennial member needs assessment that would "assure that members' feedback is continually factored into leadership decision-making." AANS leadership, including all the committee volunteers who make this organization work, can attest to the value of this data in tailoring an association that works for you.

The updated AANS Strategic Plan, currently in development by AANS President-Elect Don Quest and the Long Range Planning Committee, will address financial, organizational, customer service and advocacy areas of the association. The new plan will be detailed in an upcoming issue of the *Bulletin*.

By providing a consistent yet flexible base, the AANS Strategic Plan is an essen-

tial element for meeting the needs of our members and our profession today and anticipating the needs of our successors another 75 years hence. It also serves to remind us that challenges such as workforce, medical liability reform and physician reimbursement—as I write this, we may or may not have staved off the 4.4 percent reduction in Medicare physician reimbursement scheduled to take place in January—need not deter us in pursuing what we know to be a worthwhile, stimulating profession that provides essential services to our patients.

Taking stock of the AANS' first 75 years inspires great confidence that the organization, volunteer leaders and members are equipped with the tools, sense of purpose and fortitude to meet the challenges yet to be imagined and faced. I believe that our planning will prove to be as prudent, responsible and visionary as that of our forebears.

With appreciation for the journey we have taken together and in anticipation of what is to come, I thank you for your involvement in the AANS and invite your future participation in our organization.

April 26, 2006, exactly 201 years after Lewis paused to reflect on his journey at the confluence of two great rivers, coincidentally will mark the conclusion of my sojourn as AANS president. The entire AANS leadership team and I are working to launch the 75th anniversary year memorably at the 2006 Annual Meeting. I hope you will join me in San Francisco April 22–27 not only for superlative science and celebration, but also in feeling much pleased at having arrived at a long-wished-for spot. ■

Related Articles

- 2005 AANS Physician Extender Survey results reported, page 26
- ABNS directors discuss Maintenance of Certification program launch, page 46
- New Cushing biography reviewed in Bookshelf, page 41

NEWSLINE

News Members Trends Legislation

FROM THE HILL

HHS Opens IT Office

Notice of the establishment of the Office of Health Information Technology, a new branch of the U.S. Department of Health and Human Services, was officially given in the Federal Register on Dec. 27. The office's administrator sits on the Health Resources and Services Administration's Health Care Quality Council. Creation of the new office is the latest evidence of the Bush administration's strong support for nationwide adoption of health information technology, an integral component of so-called pay-for-performance programs.

Frequent updates to legislative news are available in the Legislative Activities area of www.AANS.org.

- **Don't Claim Unpaid Services for Indigents as Charitable Deductions** As a new year begins, taxes are on the minds of many. The AANS Board of Directors recently asked AANS legal counsel for an opinion on whether doctors can claim a charitable deduction for the value of uncompensated services performed for Medicaid patients or otherwise indigent individuals. "The answer is no, primarily because Congress specifically excluded individuals from the list of charitable organizations set forth in the Internal Revenue Code," said Russell M. Pelton, JD. "To receive a charitable deduction for services provided to individuals would require an amendment to the Internal Revenue Code by Congress, an event that is unlikely to occur in the foreseeable future." The two main reasons why the value of services performed for Medicaid patients are not deductible are that Medicaid patients do not constitute a charitable organization within the meaning of section 170(c) of the tax code and that deductions are not allowed for the performance of services on behalf of a charitable organization. According to Pelton, a substantial number of court decisions hold that services do not constitute property for charitable deduction purposes. The full text of the opinion, "Charitable Deduction Issues," is available at www.AANS.org.
- **CMS Pledges Rapid Implementation of New Reimbursement Rates** Although Congress adjourned in December without finalizing budget legislation that would have prevented a 4.4 percent cut to physician reimbursement from taking effect Jan. 1, the Centers for Medicare and Medicaid Services advised Congress of its readiness to quickly implement the legislation once it is passed. In a letter to Rep. Bill Thomas, Herb Kuhn, director of the Center for Medicare Management, said the CMS would instruct Medicare contractors to begin paying claims at the revised update of 0.0 percent within two business days of the legislation's passage. Contractors also would be instructed to automatically reprocess claims received between Jan. 1 and passage of legislation, relieving physicians of the resubmission process. The reprocessed claims would be paid in a lump sum to providers by July 1. The CMS also plans to offer physicians a second enrollment period of 45 days following enactment of the budget legislation. Complete text of the letter is available at www.aans.org/ltr_to_leadership01_06.pdf.
- **AANS/CNS Prevent a 3 Percent Reimbursement Cut, Proclaim Victory for Neurosurgeons** On Nov. 2 the Centers for Medicare and Medicaid Services announced that it would withdraw its proposal of last August to change the practice expense calculation under the Medicare fee schedule, thus preventing a nearly 3 percent cut in neurosurgeons' Medicare reimbursement. The AANS and CNS, along with numerous other specialty societies, had objected to the proposed changes. The CMS also adopted two additional policy changes that will result in increased Medicare reimbursement for neurosurgeons. First, the agency made minor modifications to its formula for calculating malpractice expenses. Second, the CMS is applying a multiple procedure payment reduction for diagnostic imaging (similar to the multiple surgery payment reduction policy). Together, these changes result in a modest 0.5 percent increase in reimbursement for neurosurgeons. Regulation CMS-1502-FC can be found at www.cms.gov.
- **Medical Liability Reform Initiative Progresses** In November Doctors for Medical Liability Reform released a new animated e-mail message calling for reform. The e-mail message from A. John Popp, MD, president of the AANS/CNS advocacy organization Neurosurgeons to Preserve Health Care Access, encourages recipients to extend the medical liability reform message by forwarding the e-mail to as many people as possible. The e-mail initiative is one facet of the nationwide grassroots education and advocacy campaign, Protect Patients Now. More information about the DMLR campaign is available at www.protectpatientsnow.org. A listing of donors in 2005 to the NPHCA, an organization that funds the DMLR Protect Patients Now campaign, is available in this issue's Washington Update, page 42.

NEWSLINE

News Members Trends Legislation

NEURO NEWS

.MD DOMAIN

OFFICIALLY LAUNCHES

A domain unique to members of the medical community, .md, officially launched in December. The .md domain differs from .com and .net domains in that it is dedicated to physicians, healthcare providers and medical organizations, allowing them to be located quickly by patients using the Internet. Additional information is available at www.maxmd.md.

- **FDA Approves Device to Treat Lumbar Spinal Stenosis** In November the U.S. Food and Drug Administration announced approval of a new titanium implant designed to limit extension of the spine in the area affected by lumbar spinal stenosis, which may relieve the painful symptoms if the disorder. The X-stop Interspinous Process Decompression System, invented by James Zucherman, MD, fits between the spinous processes. "By wedging those bones apart, the tube is indirectly opened up," explained Dr. Zucherman in an Associated Press story. "The bones don't collapse on the nerves like they did before [and] the patient doesn't have to bend over to protect the nerves." The X-stop is indicated for treatment of patients age 50 or older who have been diagnosed with lumbar spinal stenosis, suffer from pain or cramping in the legs, and have undergone a regimen of at least six months of nonoperative treatment. Additional information is available at www.fda.gov/cdrh/mda/docs/p040001.html.
- **Bone Marrow Stem Cell Approach Tested for Children With TBI** A phase I trial underway in early 2006 is studying the safety and potential of treating children who have sustained traumatic brain injury with stem cells from their own bone marrow. The study at the University of Texas Medical School at Houston and Memorial Hermann Children's Hospital involves extracting mesenchymal and hematopoietic stem cells from the bone marrow of each of 10 patients between the ages of 5 and 14, processing a stem cell preparation and giving it intravenously to the injured child, all within 48 hours of injury. "This would be an absolutely novel treatment, the first ever with potential to repair a traumatically damaged brain," said neurosurgeon James Baumgartner, co-principal investigator on the project.
- **Two Studies Explore Benefits and Risks of Vertebroplasty** In two separate studies published in the American Journal of Neuroradiology, Mayo Clinic researchers report that patients with compression fractures are more functional for up to a year after vertebroplasty, but that the procedure may increase the risk of fracture in adjacent vertebrae. In the November–December issue of AJNR, Trout and colleagues report results of their retrospective review of patients treated with vertebroplasty who had completed the Roland-Morris Disability Questionnaire at baseline and at four points during the year following the procedure. Patients' pain during rest and activity improved an average of seven points one week after treatment and remained improved one year following treatment. In the January issue of AJNR, the researchers found that following vertebroplasty the risk of new fractures in adjacent vertebrae was 4.62 times the risk for nonadjacent vertebrae and that vertebrae adjacent to those treated with vertebroplasty fracture significantly sooner than more distant vertebrae. "This is not definitive evidence, but [it] should be considered when discussing risks with patients before embarking on vertebroplasty," said David Kallmes, MD, senior study investigator.
- **Door Opens for Drugs That Turn Off Stroke-Induced Brain Damage** A new study indicates that the EP1 receptor on the surface of nerve cells is the switch that triggers brain damage caused by lack of oxygen during a stroke or seizure and that ONO-8713 is the compound that can turn the switch off. The study, published in the January issue of Toxicological Sciences, found significant differences among mice whose ventricles were injected with EP1 stimulator ONO-DI-004, EP1 blocker ONO-8713, or the solvent used to carry the drugs. The volume of damage in mice treated first with ONO-8713 was only about 71 percent that of the control group injected with only the solvent. The researchers at Johns Hopkins University also showed that ONO-8713 can exert its influence only by binding to the EP1 receptor and that the stimulation of the EP1 receptors triggers the damage caused when blood flow is restored after a stroke. Researchers concluded that future efforts should focus on development of drugs that block the EP1 receptor.

Send Neuro News briefs to the *Bulletin*, bulletin@AANS.org.

Considering the Evidence

AANS Bulletin Delivers Data

On July 1, 2003, resident work-hour restrictions were imposed by the Accreditation Council for Graduate Medical Education. In this issue of the *Bulletin*, we highlight two studies that examine the effects of the 80-hour work-week on neurosurgical resident education. At the University of Oklahoma, both junior and chief residents were exposed to less volume of surgery following introduction of the restrictions. In the University of Utah study, the number of cases in which the junior residents were involved decreased 45 percent after the implementation of the work hour restrictions.

The reduced work hour rules were imposed without neurosurgical program directors' input, and many do not agree with the changes implemented. Many residents, on the other hand, have welcomed the work hour limitations. What will be the impact of these changes on the practicing neurosurgical graduate? As noted by Martin and Wolfla, while it is apparent that many in our field do not agree with these rules, it is imperative that further study be carried out to ensure that trainees graduating from neurosurgical residency are competent.

Further, while the issue of competency has been a concern for many program directors, no studies to date have objectively assessed the effect of such work restrictions on trainee technical competency. Will this limitation of experience affect competency, or will extra non-work-hour time be compensated by increased reading and hence knowledge of the resident? These questions should be the focus for careful analysis over the next few years. If the residency training will limit technical involvement and competency, then we must consider other alternative means for education, such as surgical simulation training. Alternatively, fellowship training will continue to prop-

agate as a mechanism to develop competency in focused areas of practice.

As many neurosurgeons are contemplating practice restrictions, Richard N.W. Wohns, MD, has compiled a thoughtful analysis of the microeconomics of per-

William T. Couldwell, MD, is editor of the *AANS Bulletin*.



forming cranial surgeries. Individual neurosurgeons will be able to mirror this template analysis and consider the implications of ceasing performance of these procedures in the context of their own particular practice demographics, reimbursement patterns, malpractice premiums,

and on-call responsibilities. These factors impact the profitability of cranial procedures, another of the many factors that must be considered when weighing the decision to restrict one's practice.

Also in this issue is an overview of the Maintenance of Certification program put forth by the American Board of Neurological Surgery for rollout in January 2006. The key elements are published in the MOC handbook and are summarized in this issue of the *Bulletin*. MOC will be a foremost consideration for many neurosurgeons in the coming years. Neurosurgery has been one of the last medical specialties to adopt an MOC initiative, and we thank the ABNS and the many individuals involved with the question-writing committee for their efforts in the development of the MOC program. ■

William T. Couldwell, MD, is professor and Joseph J. Yager Chair of the Department of Neurosurgery at the University of Utah School of Medicine.

AANS Bulletin: A Top Member Benefit and a Leading Predictor of Satisfaction With AANS Membership



The *AANS Bulletin* is the primary source of news that affects the practice of neurosurgery: practice management, legislation, coding and reimbursement, professional development and education, and more. Readers are invited to participate in the *Bulletin*:

Neurosurgical Professionals

- Write a letter to the editor.
- Submit an article or article idea.

- Submit socioeconomic research papers for peer review.
- Provide news briefs to News.org.
- Submit a neurosurgical meeting to the online calendar.

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TIME TELLS

Residents Get Less Operative Experience After Workweek Restrictions

Will the newly minted neurosurgeon you hire be as well-trained as you were? For academicians and private practitioners alike, this is the million-dollar question. When the 80-hour workweek for all medical residents became effective July 1, 2003, the Summer 2003 issue of the *AANS Bulletin* offered an overview of the restrictions that were mandated by the Accreditation Council for Graduate Medical Education and explored their anticipated consequences. An opinion survey by Chang and Bell reported that the majority of respondents, 80 percent of neurosurgical residency program directors and 56 percent of residents, said they expected the restrictions to have a negative impact on neurosurgical training, among other findings. Some articles attempted to foresee the future of neurosurgical education, exploring workweek implementation methodologies and associated

costs, while others reviewed the cost of New York's 405 Regulations, which preceded the ACGME restrictions by a decade, and reported the progress of federal legislation that threatened to supersede the ACGME restrictions.

Now, with more than two years of data available, neurosurgery is beginning to apply evidence-based methodology to determine the actual impact of the restrictions on the medical education of its residents.

Authors of the two peer-reviewed studies in this issue analyzed data at their own neurosurgery training programs to determine the level of compliance with the work hour restrictions as well as the impact of the restrictions on the operative experience of residents. Both studies found compliance with ACGME restrictions. Both also found that the number of operative cases generally and significantly decreased for all residents. Interestingly, the distribution of the

operative cases between junior and chief residents was inverted at the two institutions studied: At the University of Oklahoma, chief residents performed significantly fewer cases compared with data predating July 2003, and junior residents, more cases. At the University of Utah, junior residents performed roughly half the cases they had prior to implementation of the restrictions while chief residents' caseload remained largely unchanged.

Even if the results of these two studies were extrapolated to all of neurosurgical education, would less operative experience necessarily mean that the neo-neurosurgeon you hire won't be as well trained as you were? Common sense may suggest an affirmative response but, as authors suggest in this issue, the answer is far more complex.

To date, little additional data has been published regarding the impact of work hour restrictions on neurosurgical education. One study by Cohen-Gadol and colleagues surveyed neurosurgical program directors and residents in the three months immediately following implementation of the work hour restrictions. They found that 79 percent of the program directors and 61 percent of the residents said the ACGME guidelines have had a negative effect on their training programs, findings similar to those reported by Chang and Bell. The Cohen-Gadol study also reported that 93 percent of all respondents said the work hour restrictions have had a deleterious impact on patient care.

Of course, improving patient care as well as patient and physician safety was the primary aim of the ACGME in instituting the restrictions, and this also is the focus of related nationwide legislation. Whether the ACGME work hour restrictions are robust enough to stave off federal legislation remains to be seen. Federal legislation that restricts resident work hours and increases resident supervision has been introduced every year since 2001, most recently in the 109th Congress as the Patient and Physician Safety and Protection Act of 2005. In March H.R. 1228 was referred to the House Ways and Means Subcommittee on Health, and in June S. 1297 was sent to the Senate Committee on Finance. Text of each bill is available at <http://thomas.loc.gov>.

Data on the cost to neurosurgery programs of implementing the restrictions also is scarce in the published literature. The annual cost of hiring physician extenders to replace residents has been reported in the AANS *Bulletin* to be \$350,000 and \$400,000 at two different training programs. In this issue's

"Restrictions Get Reality Check," the total annual cost of implementing work hour restrictions at one teaching hospital is estimated at nearly \$1 million.

At least one study outside of neurosurgery attempted to analyze cost of the work hour reforms in relation to the benefit of preventing adverse events. In the October 2005 issue of the *Journal of Internal Medicine*, Nuckols and Escarce concluded that a decline in adverse events of 5.1 percent to 8.5 percent would make the reforms cost-neutral to society, but that a much larger drop of 18.5 percent to 30.9 percent would be needed to make them cost-neutral for teaching hospitals.

The impact of the resident work hour restrictions on neurosurgery is one of many areas ripe for further research. Those interested in pursuing such research are encouraged to review the writing guidelines for the AANS *Bulletin*, available at www.aans.org/bulletin. ■

SUMMARY OF ACGME RESTRICTIONS

Complete information is available at www.acgme.org > Resident Duty Hours.

- 80 hours per week, averaged over four weeks, inclusive of all in-house call activities, with up to a 10 percent exception possible.
- One day in seven "off" (one continuous 24-hour period free from all clinical, educational, and administrative activities) averaged over four weeks, inclusive of call.
- 10 hours off between all daily duty periods and after in-house call.
- In-house call every third night, averaged over four weeks.
- 24 consecutive hours on-site, including call, with up to six additional hours for participating in educational activities and maintaining continuity of medical and surgical care.

"Specialty Specific" Language for Neurological Surgery

- Continuous on-site duty, including in-house call, must not exceed 24 consecutive hours. Residents may remain on duty for up to six additional hours to participate in didactic activities, transfer care of patients, conduct outpatient clinics, and maintain continuity of medical and surgical care. This may include resident participation in the first surgical case of the day.
- No new patients may be accepted after 24 hours of continuous duty. A new patient is defined as any patient for whom the neurological surgery service or department has not previously provided care. The resident should evaluate the patient before participating in surgery.

ACGME-Mandated Work Hours: Implementation at the University of Oklahoma

PEER-REVIEWED RESEARCH

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Introduction

Since July 1, 2003, all residents in U.S. training programs have been required to comply with restrictions on work hours mandated by the Accreditation Council for Graduate Medical Education. Residents may work no more than 80 hours per week averaged over a four-week period. In addition, specific restrictions apply to the number of continuous hours that “in-house” and “home call” residents may spend in the hospital. These restrictions were widely debated before their implementation, and the discussion continues today (5,9).

The purpose of this study was to quantify the number of times these limits were exceeded at the University of Oklahoma neurosurgery residency program since the inception of the 80-hour workweek. The study was also designed to characterize the most common reasons and situations for violations of the work hour rules. Additionally, the impact of the new work restrictions on residents’ ability to participate in surgical cases was examined.

Materials and Methods

The University of Oklahoma accepts one resident per year, and the program is seven years in length. The

department has six residents in the second through seventh years of the program. Four residents cover the neurosurgery service, with one on elective and one in the laboratory at any given time. During the study period the department had six attending physicians. The facility, which encompasses a children’s hospital, veterans hospital, adult hospital and a level 1 trauma center, has the capacity of approximately 700 beds. The junior residents take call one night in four; senior residents alternate taking backup call from home one week at a time. The resident workday is 12 hours. Following call, junior residents must leave by 10 a.m., while senior residents function on a flextime system and must subtract the number of extra hours they worked from the following day’s time. In other words, a senior resident who comes in at night and operates for three hours must leave three hours early the next day.

For this study, a retrospective analysis of data taken from the University of Oklahoma resident work hour database was performed. The university’s data system tracks the in-hospital hours of every resident on the campus. Hours are entered daily and averages are calculated every four weeks. When a resident is found to have exceeded 80 hours, the incident is forwarded to the program director and a written explanation must be made for the violation. The data system also tracks residents by their current rotation. Our study used this data to analyze and characterize the incidents in which a violation occurred.

For the second part of the study, departmental records were reviewed to assess the availability of neurosurgical residents to participate in operative cases. The department keeps these records, and their accuracy is checked in weekly meetings with all members of the resident and attending staff and then cross-checked with the online ACGME Resident Case Log System. For the purpose of this study, bedside procedures and stereotactic radiosurgery procedures were excluded. Residents are given credit for being present for part of the case, and in our internal reporting sys-

Abstract

All residents in U.S. training programs are required to comply with work hours mandated by the Accreditation Council for Graduate Medical Education. The purpose of this retrospective study was to quantify the number of times this limit was exceeded since its implementation on July 1, 2003, as well as to gauge the impact of restricted work hours on operative case experience of residents. Data from the University of Oklahoma resident work hour database was analyzed and incidents of violation were characterized. Operative attendance was collected from departmental records. During the study period seven violations were recorded. Further investigation revealed that all supposed violations were attributable to errors in calculation or data entry and were not truly violations of ACGME-mandated rules. Residents were available to assist in more cases the year before the work hour restrictions took effect compared to the first year after they were in place. The differences were evaluated by the chi-square test and found to be significant ($p < 0.0001$). These results suggest that limited duty hours are feasible, albeit with a decrease in operative cases in which residents take part. The impact on patient care, continuity and training experience, however, must be studied further to determine if work hour restrictions are truly in the best interest of trainees and patients.

tem only one resident may be credited for each case. There is no system in place for measuring the number of cases residents had to leave before completion due to work hour restrictions or other commitments.

Results

During the period from July 1, 2003, to June 28, 2004, seven violations were reported by the University of Oklahoma resident duty hour database. In two instances, residents had entered the wrong information. Four instances were termed “frame of reference” violations. Examination revealed that these incidents did not violate ACGME or university rules, but were in fact related to which four-week period (or “frame”) the program chose to recognize. The other violation involved switching from at-home call to in-house call and confusion about the hour calculation in these different situations.

We calculated that junior residents averaged 71.2 hours per week while on the neurosurgery service, 52.1 hours per week during the research year, and 58.2 hours per week while on electives. Senior residents averaged 66.8 hours per week, excluding call taken from home.

From July 2002 through June 2003, 1,601 major operative procedures were performed in the neurosurgery department (Table 1). Residents were unable to assist with 146 of these cases, or 9.1 percent. Each resident performed an average of 242.5 cases. From July 2003 through June 2004, 1,517 major operative procedures were performed in the neurosurgery department. The department performed fewer operations during the second year of the study (2003–2004) in part due to the departure of one attending neurosurgeon near the end of the study period. Residents were unable to be present for 240 cases, or 15.8 percent. Each resident covered an average of 212.8 cases. The difference was evaluated by chi-square test and found to be significant ($p < 0.0001$).

We then analyzed the operative experience of chief residents (Figure 1). During the year before the study, chief residents performed 90.2 percent of all operations at which a resident was present, or 81.9 percent of the caseload of the entire service. In the year after work hour restrictions were implemented, however, the chiefs performed only 81.5 percent of the cases that had a resident present, or 68.6 percent of the service’s overall caseload. This data was evaluated via chi-square testing, and a significant decline was shown in chief resident operative experience for both percent

TABLE 1

Resident Operative Cases Before and After ACGME Resident Work Hour Restrictions

	2002-2003	2003-2004
Total Cases	1,601	1,517
Cases Covered by Residents	1,455	1,277
Cases Not Covered by Residents	146	240
Junior Resident Cases	143	236
Chief Resident Cases	1,312	1,041

of resident-covered cases and percent of all cases they performed ($p < 0.0001$ in both analyses).

Discussion

Resident work hour restrictions have forced training programs to monitor the hours of their trainees. Prior investigations have yielded mixed reviews of the restrictions and their impact on surgical training. Studies have shown that program directors, practicing surgeons and senior residents do not generally believe that training has improved as a result of the limited work hours (4,10,12–14). Evidence suggests that, on the whole, current surgical trainees believe that work hour reductions have improved their quality of life (3). In one study of otolaryngology program directors, 45 percent of respondents felt that the restrictions had resulted in increased faculty workload (8). Still another study showed that signs of “burnout” were unaffected by the decreased work hours (6). Some programs have reported difficulty in maintaining the new work hour limits due to factors such as level 1 trauma status (4) and activities deemed to be “noneducational” (2).

In general, neurosurgery residents and program directors have reported that ACGME guidelines have had a negative impact on training and continuity of care (4). On the other hand, in some studies more residents have reported an improved quality of life without a negative impact on training (7). Two reports that evaluated general surgery programs showed that for their specialty the number of cases performed by chief residents was unaffected by the work hour restrictions (11,1).

Our study is limited in that the data obtained is from only one institution and only covers a two-year period. The aforementioned lack of surveillance of residents who must leave cases early is another

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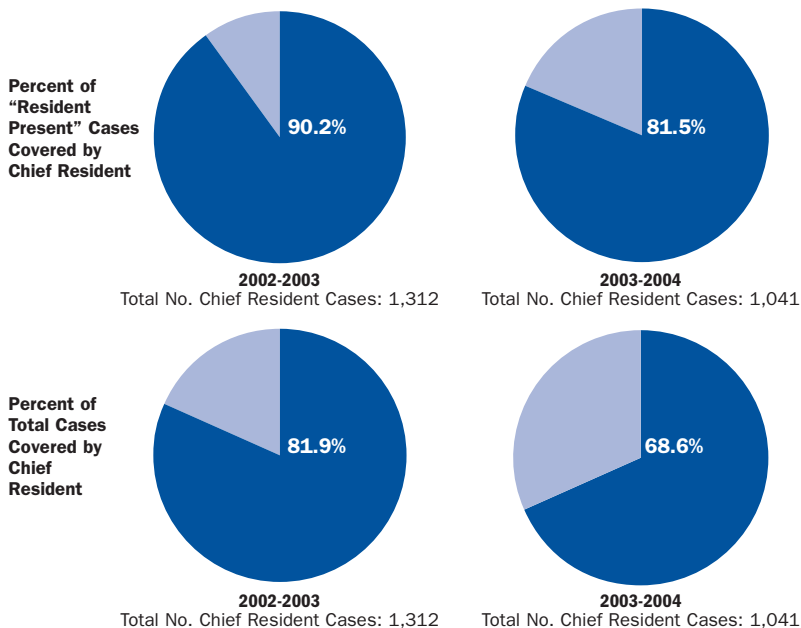
resident duty hours,
neurosurgical residency,
neurosurgical training

Abbreviations:

ACGME, Accreditation
Council for Graduate
Medical Education

FIGURE 1

Chief Resident Operative Cases Before and After ACGME Resident Work Hour Restrictions



Continued from page 15

potential piece of information that would make the data more robust. We also have made no attempt to determine whether the personal preferences of the chief residents for certain cases over others may have falsely elevated or decreased their numbers. Also, although every measure was taken to ensure accurate recording, no guarantee can be made that the systems used for recording data are without flaws.

Conclusions

This study examined the feasibility of working within the ACGME-mandated guidelines and the effect that the presumably reduced time at work had on resident surgical exposure. The results clearly show that even in a one-resident-per-year program covering four hospitals, compliance can be achieved. This compliance, however, was not achieved without significant changes to the resident operative experience. The percentage of cases not covered by residents increased, and further examination revealed that the operative experience of the chief residents dropped significantly. These numbers are conservative estimates. No account can be made for residents who may have had to leave the case before completion or

before the critical portion of the operation was accomplished. At this time the long-term effects of decreased operative exposure are not known.

Clearly more research must be done, especially regarding the impact that the work hour restrictions will have on those currently in neurosurgical training. The restricted hours simply have not been in place long enough for their impact on lengthy training programs such as neurosurgery's to be fully realized. While it is apparent that many in our field do not agree with these rules, it is imperative that further study be carried out to ensure that trainees graduating from neurosurgical residency are equipped to operate in this most challenging specialty. ■

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Work Hour Restrictions: Impact on Neurosurgical Resident Training at the University of Utah

PEER-REVIEWED
RESEARCH

Introduction

In April 2001, the Committee of Interns and Residents, the American Medical Student Association, and Public Citizen sent a petition to the Occupational Safety and Health Administration requesting restrictions on resident work hours for all medical specialties (4,9). As a result, Rep. John Conyers Jr., D-Mich., and Sen. Jon Corzine, D-N.J., introduced the Patient and Physician Safety and Protection Act in the 107th Congress (H.R. 3236 and S. 2614) (5,6). Around the same time, the Accreditation Council for Graduate Medical Education developed its own nationwide guidelines that as of July 1, 2003, restricted resident duty hours to 80 averaged over four weeks.

Arguably, of all surgical residencies, these work hour limitations have hit neurosurgical residencies the hardest. Unlike many other busy medical and surgical residencies, neurosurgical residencies usually have only one, and occasionally two or three, residents per class. The neurosurgical service at a major hospital often has a patient census and operative schedule that is as busy as any surgical service. The impact of the ACGME work hour restrictions on neurosurgical residencies is sure to be significant.

More than two years after the work hour restrictions were mandated, little objective information is available regarding their impact on the surgical experience and education of neurosurgical residents. Many recent reports in the literature that discuss perceived effects of the 80-hour workweek reflect the experience of general surgery. Most of these reports are based on surveys and discuss quality of life, continuity-of-care issues, and whether or not the rules are beneficial to surgical training (1,2,8,9). Cohen-Gadol et al. recently performed a survey of residents and program directors in neurosurgery training programs that evaluated the perceived impact of the ACGME regulations (4), but objective data that assess the effect of these regulations is scarce in the neurosurgical literature.

The University of Utah neurosurgery service has been compliant with the ACGME workweek rules beginning with the 2003–2004 academic year. We reviewed the impact of the work hour restrictions on the surgical experience at the junior and senior neurosurgical resident levels.

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Abstract

Resident work hour restrictions imposed by the Accreditation Council for Graduate Medical Education became effective on July 1, 2003. To evaluate the effect of these regulations on resident operative experience, we reviewed and compared the surgical experience of junior and senior neurosurgical residents four years before and one year after the ACGME restrictions were implemented. Resident work hours since May 2003 and operative caseload during the study period were recorded in commercially available data systems. The mean number of hours worked per week by junior and chief residents decreased from 104 and 110 hours before the ACGME work hour restrictions to 81 and 84 hours afterward, respectively. During the four academic years before the work hour limitations took effect, the mean

number of major cases performed for the chief residents and 849.3 for the junior residents. Following the restrictions, little changed for the chief residents. However, the junior residents averaged only 467 cases, a 45 percent decrease from the previous year studied. The mean number of cases covered by each junior resident per month decreased by 30.5 percent after the work hour restrictions were instituted, and the mean number of cases covered per post-call junior resident in one month declined 47.8 percent, from 23 to 12. At our institution, the ACGME work hour restrictions have resulted in decreased resident work hours for all residents at the expense of the operative experience for junior residents. The operative caseload for chief residents has not been affected.

Key Words:

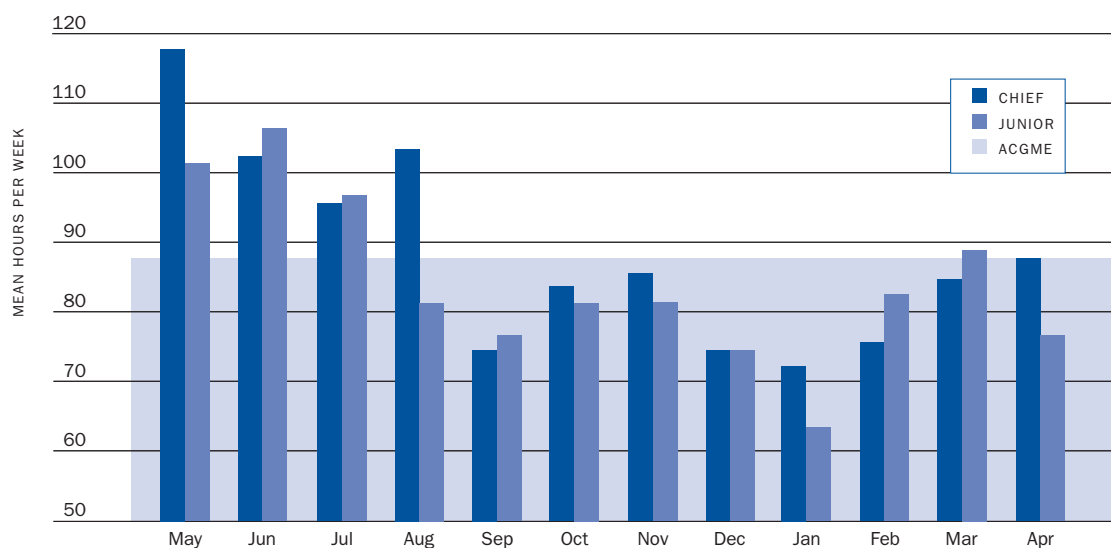
ACGME; resident work hours

Abbreviations:

ACGME, Accreditation Council for Graduate Medical Education

FIGURE 1

Mean No. of Resident Work Hours (May 2003–April 2004)



The work hours of residents were recorded beginning in May 2003. The mean number of resident work hours per week is graphed on a monthly basis for both junior and chief residents over one year. The shaded background represents the maximum

of 88 hours averaged over four weeks that residents can work under the new ACGME guidelines. The 88-hour maximum includes an eight-hour extension that the ACGME granted to the University of Utah neurosurgical residency program.

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Methods

Work Hours

Resident work hours were recorded beginning in May 2003, before implementation of the work hour restrictions. Residents were required to report their work hours weekly using the software TimeClock Plus (Data Management, Inc., San Angelo, Texas).

On July 1, 2003, the ACGME work hour restrictions took effect. Briefly, these rules limit the work-week to 80 hours averaged over a four-week period and place restrictions on the number of hours a resident may work after on-call service. The University of Utah neurosurgery service was granted the optional 10 percent exception, which allowed our residents to work an 88-hour average workweek.

We implemented three changes to the University of Utah neurosurgery service to comply with the new work hour regulations. First, a senior resident was moved from service at the veterans hospital to

the University of Utah Hospital for coverage of junior call responsibilities one day per week and chief call one weekend each month. Second, the residents on the research elective were each required to cover junior call one Friday and one Sunday per month. Third, the intern no longer took call with a junior resident and became available every weekday to help with work on the ward. No physician extenders were hired.

Operative Case Load

For the duration of the reported years (1999–2004), all neurosurgical operative cases at the University of Utah Hospital were recorded in a FileMaker database (FileMaker Inc., Santa Clara, Calif.). The data for each case included the attending physician, assisting residents, date, and description of the case. We reviewed the caseload for chief residents and for junior residents (those in the first or second year of neurosurgery residency) in each academic year

beginning in 1999 and ending in 2004, for a total of five academic years. The number of major operative cases performed by junior and chief residents as first assistant and second assistant was totaled for each academic year. The number of major cases performed by junior residents per month was totaled. Minor procedures, as defined on the ACGME institutional data forms (biopsy, intracranial pressure monitors, halo tongs, and other), and cases done with fellows or residents on research or on neurocritical care rotations were not included. Pediatric cases, placement of lines, and neurosurgical cases managed nonoperatively were not included.

Before the implementation of the work hour restrictions, the post-call day typically was considered protected operating time for the junior residents. However, the new regulations require residents to leave the hospital within six hours of the end of their shift. To assess the impact of the work hour rules on the post-call day's operative experience, we totaled the number of cases in one month (May) that were performed on the post-call days by the junior residents before and after the work rules were instituted. Additionally, to determine differences in operative experience when taking at-home and in-hospital call, the total number of junior resident cases in May at the University of Utah Hospital was compared with similar data at the Primary Children's Medical Center, where the junior resident takes home call and therefore is not required to leave the facility following on-call service.

Results

Work Hours

The mean number of hours junior residents and chief residents worked per week (averaged over four weeks) from May 2003 to April 2004 is summarized in Figure 1. Before July 1, 2003, junior residents averaged 104 hours per week and the chief residents averaged 110 hours per week. With the implementation of changes to conform to the work hour regulations after July 1, 2003, the number of hours worked per week decreased to below 88 hours for both junior residents (80.7 hours) and chief residents (84.2 hours).

Operative Case Load

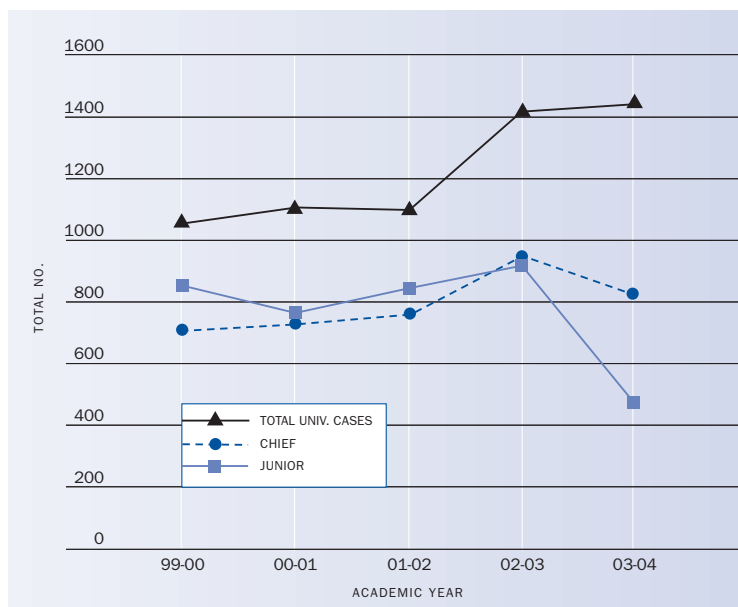
The total number of major operative cases performed at the University Hospital has increased steadily over

the last five years (Figure 2). There was a 26.9 percent increase in cases, from 1,123 during the 1999–2000 academic year to 1,425 during the 2003–2004 academic year. During the four academic years preceding implementation of the work hour limitations, the mean number of major cases performed by the two chief residents was 802.5 per year. The mean number of major cases performed by junior residents during these same four years was 849.3, including 269.5 as the first assistant and 579.8 as the second assistant. For the academic year 2003–2004, after the work hour regulations became effective, the mean number of cases performed by the chief residents was 809, but the mean number of junior resident cases during that same period was 467, including 151 as the first assistant and 316 as the second assistant. This represents a 45 percent decrease in the number of cases performed by junior residents.

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FIGURE 2

Total No. of Major Operative Cases (July 1999–June 2004)

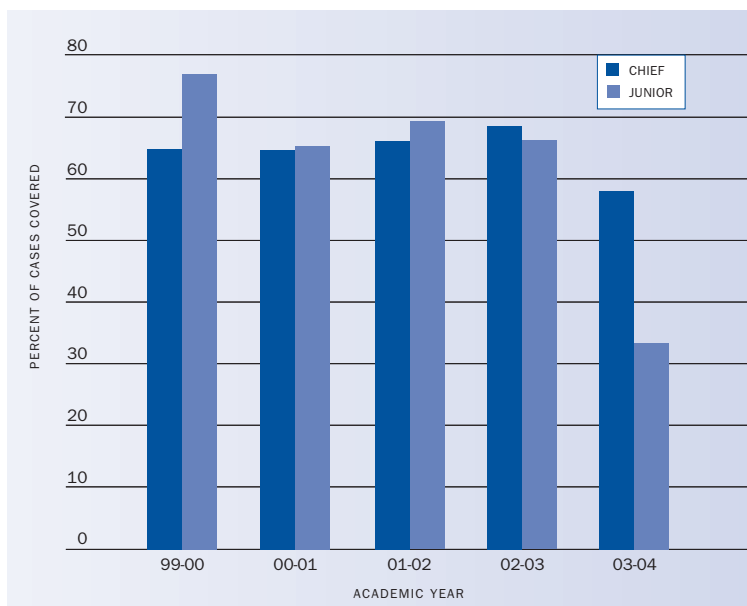


For five consecutive academic years beginning in July 1999, the total number of major neurosurgery cases performed at the University of Utah Hospital is reported along with the number of cases with junior resident and chief resident involvement. ACGME guidelines for resident duty hours took effect at the beginning of the 2003–2004 academic year. Junior resident cases combine both first and second assistant experiences. The sum of junior resident and chief resident cases can be more than the total number of cases for a given year because two residents may be involved with a single case.

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FIGURE 3

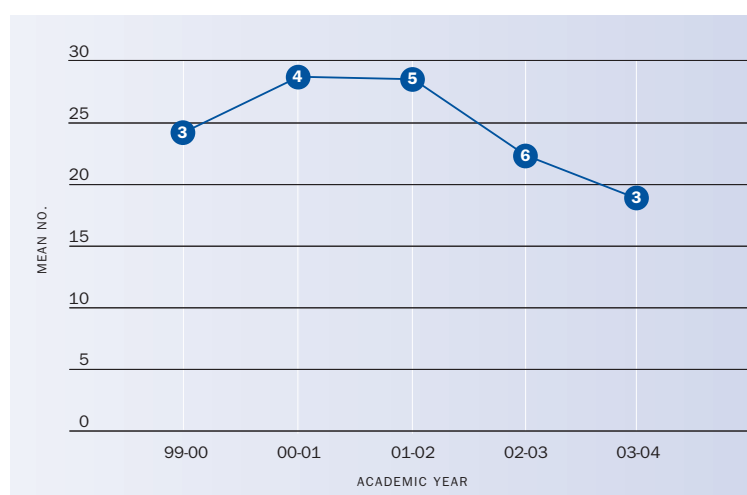
Percentage of Cases Covered by Junior and Chief Residents



The percentage of total neurosurgery cases covered by junior and chief residents was calculated for each academic year to correct for the variable number of total operative cases in each year.

FIGURE 4

Mean No. of Operative Cases for Junior Residents in One Month



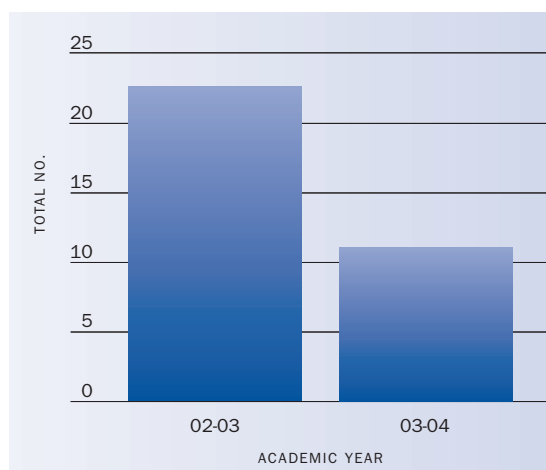
The mean number of operative cases for a single junior resident per month was calculated to correct for the variable number of junior residents each year. For each time point, the number of junior residents that year is indicated. In the 2003–2004 academic year the number of junior residents decreased by 50 percent from the previous year. Therefore, even though there were more total operative cases on the university service per junior resident, the number of cases per month that junior residents operated still declined.

Both the number of operative cases and the number of junior residents varied in each academic year studied. To correct for the variable number of operative cases in each year, the percentage of total neurosurgery cases covered by junior residents and chief residents was calculated for each academic year (Figure 3). There was a 52.5 percent decline in the percentage of total neurosurgery cases at the University of Utah Hospital with junior resident involvement. To correct for the variable number of junior residents each year, the mean number of cases per junior resident per month was calculated (Figure 4). During the 2003–2004 academic year, each junior resident was involved in an average of 18 cases per month, which represents a 30.5 percent decline from the previous four academic years, when each junior resident averaged involvement in 25.9 cases per month.

To evaluate the impact of the work hour restrictions on the post-call operative experience of junior residents, operative data for May 2003 was compared with data for May 2004. The number of cases covered per post-call junior resident declined from 23 before the restrictions to 12 after they were instituted (Figure 5). At University Hospital the total number of cases performed by all post-call junior residents declined from 50 before the restrictions to 25 after the restrictions, compared with a decline from 42 to 36 cases at Primary Children's Medical Center (Figure 6).

Discussion

Several studies have evaluated the attitudes of both resident and attending general surgeons toward the work hour limitation (1,2,8–10). Not surprisingly, the attitudes toward the new rules have been mixed. Many studies have shown that senior residents and faculty view these new rules as having a negative impact on surgical training, whereas junior residents tend to view them favorably. However, these studies do not objectively address the impact that the restricted work hours have on the technical aspects of training a surgeon. The authors of one survey-based study reported that among surgical residents, 44 percent believed that the work hour restrictions would negatively impact the surgical experience (1). This same study showed that the number of cases performed by graduating chief residents actually increased after the work hour restrictions were in place. More recently, Cohen-Gadol et al. reported that the majority of residents (61 percent) and program directors (79 percent) believed that the

FIGURE 5
**No. of Operative Cases Covered per
Post-Call Junior Resident In One Month**


The total number of operative cases performed by post-call junior residents during one month was tallied for the academic years before (2002–2003) and after (2003–2004) the ACGME guidelines became effective. There was a 47.8 percent decline in junior residents' operative experience after implementation of the work hour restrictions.

ACGME guidelines have had a detrimental effect on their training programs (4).

No study to date has examined the impact of the ACGME regulations on the junior resident operative experience. Residents at the junior levels are those who take in-hospital call, work 24-hour shifts, are primarily responsible for patient care, and are the target of the work hour restrictions. These are the residents who likely will lose out on operative experience. Our study shows that, indeed, residents at the junior levels suffer a decrease in operative experience.

Since the implementation of the restrictions on work hours, at our institution the number of cases with junior resident involvement has declined by 45 percent, and the percentage of cases covered by junior residents declined by 52.5 percent. The absolute number of cases performed by junior residents can be influenced by several factors, such as the total number of available operative cases and the number of junior residents. At our institution, the total number of operative cases has increased 26.9 percent in the past five years, suggesting that without the new ACGME regulations, the operative

volume of the junior residents would have increased. We corrected for the varying number of junior residents each year by calculating the mean number of operative cases for a single junior resident per month. In the four years before the ACGME regulations were implemented, each junior resident averaged 25.9 cases per month and the year after, 18 cases per month, a 30.5 percent decline. Therefore, we believe that the decline in the number of cases performed by junior residents in the 2003–2004 academic year most likely is explained by the ACGME work restrictions.

To be compliant, programs have had to make drastic changes in the way their resident staff is used. These changes have included the addition of physician extenders, such as nurse practitioners or physician assistants, as well as drawing residents from the previously protected research rotations into the clinical service (3).

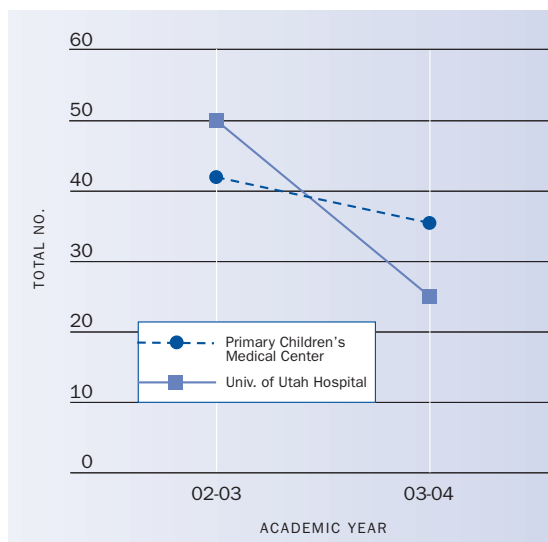
We did not employ physician extenders at our institution during the period of this study. Instead, residents on their research year took additional junior call, and a senior resident from the veterans hospital was added to the University of Utah service. As a result, the added senior resident was able to provide operative coverage that was lost when junior residents began going home following their on-call service. The post-call operative experience that had been significant at our program for junior residents decreased 47.8 percent after we became compliant with the new ACGME guidelines. At Primary Children's Medical Center, where the junior resident takes home call and therefore does not leave the facility after on-call service, total junior resident operative cases for one month only declined 14.3 percent after the new work hour restrictions were implemented compared with a 50 percent decline at the University of Utah Hospital service. Chief residents generally are not affected by the post-call restrictions, and therefore their operative caseload has not diminished.

We considered a number of strategies for improving the operative experience of our junior residents. In one study, 22 percent of resident work hours were unrelated to educational activities (2). We therefore hired a physician assistant to perform noneducational duties, freeing the junior residents for the operating room. Since this change, the monthly operative caseload for the junior residents

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FIGURE 6

Total No. of Operative Cases in One Month for Junior Residents



The total number of operative cases performed by all post-call junior residents during one month at Primary Children's Medical Center was compared with the number at the University of Utah Hospital for the academic years before (2002–2003) and after (2003–2004) the ACGME guidelines became effective.

has increased to 21 per month. Less desirable options, which we have not implemented, include increasing the length of residency, decreasing the research training period, or having chief residents

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cover junior duties and allowing the junior residents to operate on less complicated cases.

Conclusions

The ACGME restrictions on resident work hours represent a paradigm shift in the education of surgical residents in the United States. These new restrictions are likely to affect several issues, including patient care, resident training, resident health, and resident quality of life. This study addresses one aspect of resident training: the operative experience. At our institution, we have managed to comply with the 80-hour workweek at the expense of the operative experience of the junior residents. Any analysis of the ACGME work hour restrictions will need to consider the impact of these regulations on several different aspects of resident training, such as number of publications, board scores, and serial faculty evaluations, as well as on patient care. As additional objective data become available for assessing the impact of the ACGME regulations, residency programs will need to be able to develop strategies to optimize the residents' learning experience while maintaining high standards of patient safety. ■

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Restrictions Get Reality Check

Assessing the Past, Present and Future of Resident Work Hour Restrictions

DEBORAH L. BENZIL, MD

Listening to colleagues across the country discuss their perceptions of the post-July 2003 environment, I hear hauntingly familiar refrains, the same ones that echoed throughout New York more than 10 years ago when the state began to enforce its own resident work hour restrictions. Because academicians, including neurosurgeons, learned little from the New York experience, many will be doomed to repeat the failures of others, perhaps at the expense of resident satisfaction, faculty attrition, and sadly, quality of care for our patients.

Perhaps the most common refrain is that the new resident work hour restrictions, which were mandated nationally by the Accreditation Council for Graduate Medical Education, will debase the profession of medicine resulting in a “shift-worker mentality” attended by failure to commit to the best care for our patients. Anecdotes abound of residents leaving in the middle of cardiac arrest codes, showing up late for rounds because they were entitled to their required time off, and similar behaviors. But these remain anecdotes, less valid scientifically than case reports, and the new reality has yet to be assessed.

It is likely that the full impact of the ACGME resident work hour restrictions will not be understood for a generation, when the residents training under this new system gain seniority and assume roles as program directors and chairs of departments. At this time, two years into national implementation of the 80-hour resident workweek, a brief look at the history of this reform and at how the future success or failure of this change will be assessed may be instructive.

Into the Past

Resident work hour restrictions, arguably medical education’s most sweeping reform in this century, evolved following the death of Libby Zion at a New York Hospital in March 1984. A junior resident admitted her with fever, chills and dehydration; by the next morning, she had died. While the exact cause of her death has never been determined, a New York grand jury investigation in 1986 found that the death

was related to 36-hour sleepless resident shifts and inadequate supervision by attending physicians.

Sidney Zion, Libby Zion’s father and also a newspaper columnist and attorney, sued New York Hospital and the physicians for malpractice. More than the malpractice case, he began a crusade against the system, targeting the long resident work hours and poor supervision that he felt had contributed to his daughter’s wrongful death.

The publicity surrounding this case led the New York Health Commissioner in 1987 to form an ad hoc advisory committee chaired by Bertrand Bell, a professor of medicine at Albert Einstein College of Medicine. The committee’s strong recommendation to restrict resident work hours led to New York State health code legislation enacted July 1, 1989, commonly known as the 405 Regulations. Sidney Zion, however, continued to campaign, claiming that many hospitals were wantonly ignoring the code. In 1998, stiff hospital penalties were added. Initial violations could be fined up to \$6,000 per violation with follow-up violations escalating to \$25,000 and then \$50,000.

While New York hospitals were struggling with the 405 Regulations, the push to implement national work hour restrictions began. In 2002 the ACGME announced its intention to impose national duty hour regulations effective July 1, 2003.

A Look at the Present

Assessment of the effect of the 80-hour resident workweek within much of surgery has emphasized the loss of surgical case volume and the dilution of the surgical training experience (3,11,13). The two studies published in this issue of the *AANS Bulletin* demonstrate the reduced number of cases in which

Continued on page 24



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neurosurgical residents are participating following implementation of the work hour restrictions. Unfortunately, little is known about how many procedures a resident must do to achieve competence or to attain the necessary balance of didactics, patient care, and technical training. Clearly individual residents follow very different learning curves. Surgical simulators, which increasingly are being used for both training and assessment of technical skills (6,7,9,15), may at least partially fill the gap in operative experience opened by the restrictions and also provide additional exposure to particular techniques. Some have even suggested applying the model of flight training to resident education, requiring residents to have simulation experience before they are awarded any patient responsibility (12).

While volume of surgical cases always will be an important factor in technical training, many other factors may also be crucial to achieving technical proficiency. At the same time, fatigue, the technical and supervisory skill of the attending surgeon and the resident's own preparation all may affect the ability to learn surgical technique. Increasing evidence has emerged about the effect of fatigue on medical errors (4,16), resident safety (1), and resident burnout (14). The impact of this research on the public is far greater than the multitude of more descriptive studies on attitudes and perceptions. To date, few studies have even tried to assess the impact of resident work hour restrictions on quality of patient care (2). Several studies have raised the concern of continuity of care but without clear evidence that it has been compromised by the restrictions (10,17). Just one study has addressed the issue of patient satisfaction and physician fatigue, finding that rested residents received consistently higher ratings from patients (8).

Attention also has been given to resident attitudes and the increasing time and responsibility on attending physicians (5,14,20). At least one study failed to document increased faculty hours (19). Most studies of resident attitudes and perceptions are most notable for the differences expressed by senior and junior residents, with junior residents generally more likely to view the 80-hour workweek positively (10,17,18). This may be a reflection of the longer hours junior residents typically work or of a wider acceptance of the new paradigm of training permeating medical schools. This dichotomy of attitudes supports the idea

that assessing the full impact of these changes may take many years, perhaps a "training generation."

A Note on Cost

To date, little public consideration has been given to the cost of this mandate. When penalties were instituted for violation of New York's 405 Regulations, the state provided significant funding to hospitals to balance the new costs. Unfortunately, over time these added monies were withdrawn, though the higher costs remain in place and new funding was not appropriated with the institution of the national ACGME regulations.

At my own institution, three full-time nurse practitioners were hired in the neurosurgery department at a cost of \$375,000 per year to cover 120 hours of "lost" resident time, and conference time for neurosurgery residents declined by 25 percent. To compensate for its own loss of 120 hours of resident time, the orthopedics department hired five physician extenders at an annual cost of \$520,000 and recalled two "away" residents to the primary institution. The hospital also hired a compliance officer, initially half time, then full time at a cost of \$80,000 per year, as well as ancillary staff at an estimated cost of \$250,000 per year. These hospital-wide costs were shared by the neurosurgery and orthopedics departments, bringing the annual cost of the work hour restrictions for just two surgical specialties at one hospital to nearly \$1 million.

Implementation of the work hour restrictions also has coincided with that of several other unfunded mandates: maintenance of certification, ACGME Core Competency Assessments, and the Health Insurance Portability and Accountability Act—all hitting at a time when most medical institutions have little operating surplus. While few in organized medicine argue with the concepts of maintaining patient confidentiality, error reduction, provision of quality care, and developing sound resident education and evaluation, the accompanying cost makes embracing these programs more difficult. At least some of the funding for these mandates has negatively impacted physician salaries. How this will impact retention and recruitment of faculty into academic programs remains to be seen.

The Prospective Reality

In the future, will expectation of a more reasonable

workweek make entering medical school more appealing to a wider range of applicants? Will traditionally time-demanding subspecialties like neurosurgery become more appealing by leveling the time component of the playing field? Medical students entering new residencies in 2006 will have started medical school knowing of the 80-hour restriction. Soon after, we can more fully understand how the new landscape will be shaped.

It has always been surprising to me that once neurosurgeons leave residency, they have the magical ability not only to forget the physical and mental stress of those years but to look back on them as the best years of their lives! Many who then enter academic medicine find it difficult to fathom another sys-

tem that could successfully train competent neurosurgeons. However, rather than resisting the restrictions that already are in place, perhaps neurosurgery would be better served by participating in a concerted effort to assess the success or failure of this major paradigm shift on the quality of resident education and patient care. By understanding the critical factors that contribute to successful resident education and technical training, including work schedules, we will meet the goals of medical education. ■

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Avinash Mohan, MD, a resident at New York Medical College, contributed to this article.

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The PE Potential

New AANS Study Shows Snapshot of Physician Extenders in Neurosurgical Practices

KATHLEEN T. CRAIG

Neurosurgeons recently have expressed great concern over workforce issues. While the need for neurosurgical care has increased, the supply of neurosurgeons to deliver that care has remained the same or declined, particularly in areas of the country outside urban centers and in states experiencing a medical liability crisis.

"The growth of America's population and the increasing longevity of its citizens are being met with a decreasing number of neurosurgeons to provide care for them," said AANS President Fremont P. Wirth, MD. "Recently, there has been significant discussion regarding the use of physician extenders in neurosurgery, and how they could be used to alleviate the current strain."

Physician extenders, a collective term for nurse practitioners and physician assistants, also have become increasingly important to training programs in order to help compensate for lost resident time related to work hour restrictions. Similarly, physician extenders appear to be playing an increasingly important role in the practice of neurosurgery by helping to facilitate the efficient use of neurosurgeons' time.

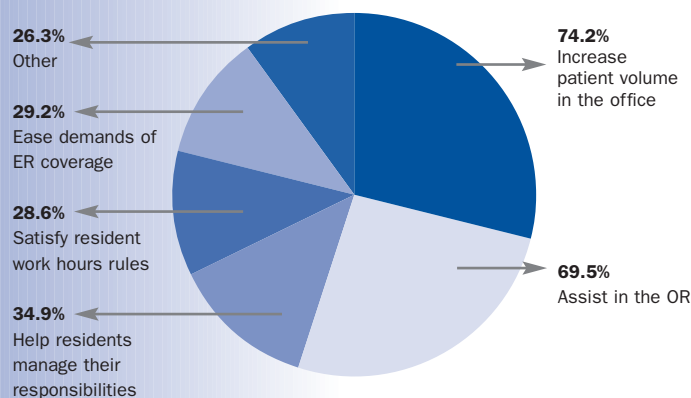
In fall 2005 the AANS surveyed members in the Active and Active Provisional categories, specifically addressing:

- how members use or would like to use, physician extenders in their practices;
- which neurosurgical procedures physician extenders should be trained to perform;
- how physician extenders currently are trained in neurosurgical procedures and how members would like them to be trained in the future; and
- which educational resources the AANS currently offers that might meet physician extender needs, and what should be developed in the future.

Charles J. Hodge Jr., MD, the AANS vice president during fiscal 2005 and the head of the Physician Extenders Task Force, led the survey project, which ultimately was administered by a contracted research firm. The online survey garnered 524 responses and a robust sample size of 380 or more for most questions. Therefore, researchers are 95 percent confident that results presented in the survey report have accuracy of plus-or-minus 5 percent or better, which essentially means that if the survey was implemented one hundred times, the results would be the same 95 times.

The survey results are being used by the AANS Long Range

WHY EMPLOY PHYSICIAN EXTENDERS?



In the 2005 AANS Physician Extender Survey, respondents who currently employ physician extenders were asked how they are using PEs, and those not currently employing PEs were asked how their practices would like to use them. Because respondents could check any option that applied, results do not sum to 100 percent.

Planning Committee and the AANS Physician Extenders Task Force in their planning. The first of the resulting initiatives will be launched during the 2006 AANS Annual Meeting in San Francisco.

Respondent Profile

About half of the respondents were from private practices. Another 28 percent were full-time academicians. Forty percent of respondents indicated that their practice settings were small (two-to-five neurosurgeons), and 24 percent selected medium (six-to-20 neurosurgeons and neurosurgical groups). These figures are consistent with the AANS Member Needs survey taken in 2004, and demonstrate a representative sample of membership.

Use of Physician Extenders

Seventy-four percent of respondents indicated that they employ physician extenders. Of these, just over half have been using physician extenders for more than five years. Another 40 percent have been using them for two-to-five years. When physicians in university settings were asked with whom extenders primarily work, 76 percent responded "attending," and 18 percent, "residents."

The AANS also asked members if they felt their practices were

in need of physician extenders (regardless of whether they currently employ them). A slight majority of respondents, 53 percent, said that their practices are in need of physician extender assistance compared with 47 percent who did not.

Survey respondents who currently employ physician extenders were asked how they are using PEs, and those not currently employing PEs were asked how their practices would like to use them. Respondents could check any option that applied (multiple options).

Most respondents identified “hospital based patient evaluation and management” (74 percent) and “office patient evaluation and management” (73 percent) as among the duties for physician extenders. The selection “phone call returns/administrative duties (letters of appeals)” generated 70 percent of responses, and 64 percent selected “first assist in the operating room.” When asked specifically about which invasive procedures they would like physician extenders to perform, top choices were suturing (58 percent) and lumbar punctures (36 percent).

The pie chart on page 26 illustrates reasons for employing physician extenders. As shown, most respondents selected to “increase patient volume in the office” (74 percent) and to “assist in the operating room” (70 percent).

Long range plans under consideration include developing a physician extender curriculum for competency in neurosurgery, developing advanced curriculum for continued education, and investigating Web-based modules for a formal training program.

Neurosurgical Training for Physician Extenders

The majority of respondents, 81 percent, indicated that “on the job training” best describes the method of physician extenders’ neurosurgical training. Sixteen percent reported that extenders were trained in a formal training program. Only 2 percent indicated they were trained in the military. The majority of respondents (60 percent) also indicated that their physician extenders received training at a university hospital.

When asked how long the neurosurgical training period was, the majority of respondents, 57 percent, indicated that their physician extenders received training for six months or less and 21 percent indicated one year.

More than 77 percent of respondents reported that the establishment of formal training programs for physician extenders in neurosurgery would be useful. When asked how long this training period should be to gain competence in the tasks that neurosurgeons expect a physician extender to accomplish, over half, 52 percent, selected six months of neurosurgical training. Thirty-seven percent selected one year. The participants were equally divided on who should be paying for the training: 40 percent said the physician extender, and 40 percent said the future or current employer. About 57 percent indicated that they expect the physician extender to receive a salary while attending an extended training program in neurosurgery.

Working With the AANS

When asked: “which of the following AANS offerings would best help meet the educational needs of physician extenders,” 62 percent selected “AANS annual meeting practical clinics or breakfast seminars.” Fifty-three percent of respondents selected “AANS instructional DVDs, publications or online offerings,” and 36 percent selected the “AANS Master Series courses taught in educational/research facilities offering lab work using cadaver material.” (Multiple selections were allowed.)

“Survey participants also identified many topics and types of educational experiences they would like extenders to receive from the AANS,” said Dr. Hodge. “Leadership reviewed a summary of write-in recommendations.”

Moving Forward

With survey results in hand as well as input from the task force, the Long Range Planning Committee began to address the issue of using of physician extenders as one of many solutions to workforce shortages.

“Initially, training courses for physician extenders will be offered during the 2006 AANS Annual Meeting in San Francisco,” said Dr. Hodge. “Short-range plans focus on identifying funding for additional physician extender neurosurgical training and expanding AANS offerings for physician extenders. Long range plans under consideration include developing a physician extender curriculum for competency in neurosurgery, developing advanced curriculum for continued education, and investigating Web-based modules for a formal training program.”

Addressing workforce issues has been a priority for Dr. Wirth during his presidential year.

“It is clear that there is tremendous potential for physician extenders to help alleviate neurosurgical workforce shortages,” said Dr. Wirth. “We are considering all the recommendations of the task force and are working closely with nurse practitioner and physician assistant organizations to investigate which avenues will result in optimal benefit to our patients.” ■

Kathleen T. Craig is AANS director of marketing.

Error Results in Doctor's Paradigm Shift

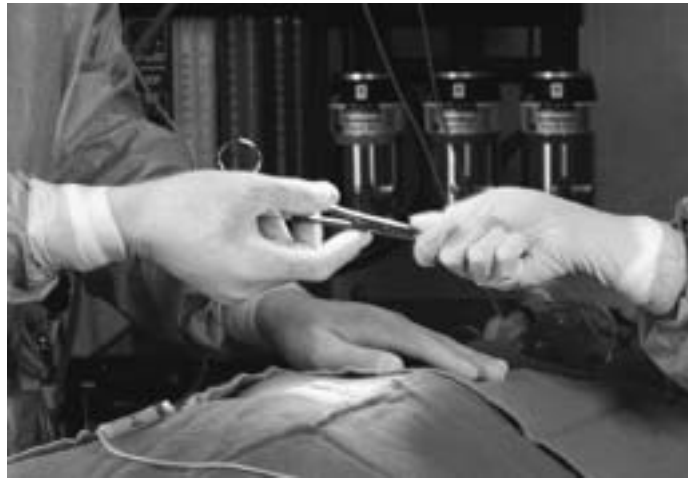
Protocols, Team Approach and Site Marking Increase Patient Safety

As a board-certified neurosurgeon in practice for nearly 30 years, I have served as chair of the neurosurgery section at a major medical center and as vice chair of the entire surgery department for a number of years. As vice chair of the surgery department, I was also chair of the department's Quality Assurance Committee, and I additionally served as a sitting member of that committee for eight years.

During my tenure in these positions, I was faced with several instances of medical errors involving colleagues, including wrong-site surgery. I listened to surgeons describe how their errors occurred and always found myself very unsympathetic. I could not imagine how conscientious surgeons could make such errors and could not, in my wildest dreams, imagine it happening to me. I am one of those compulsive surgeons who checks, double-checks, and even sometimes triple-checks things during surgery to the extent that my partner and operating room staff often tease me about being so obsessive-compulsive.

Then it happened to me. I learned that we all make mistakes. It is easy. We are human. In fact, when I was forced to review the literature to produce a lecture on this topic, I discovered that the numbers of medical errors and wrong-site surgeries and the injuries they cause are unbelievable.

I became a convert, and in 2003 I was one of the surgeons and other health professionals and organizations standing with the Joint Commission on Accreditation of Healthcare Organizations strongly advocating and promoting the Universal Protocol for Preventing Wrong Site, Wrong Procedure, Wrong Person Surgery. The following account describes how I came to be there and what I learned along the way.



Anatomy of a Medical Mistake

In December 2000, a former partner of mine referred his best friend to me for treatment of an L3–4 disc herniation. The patient, an internist, was well known to me. Examination revealed a mild right foot-drop. A magnetic resonance image demonstrated a moderately large, very central herniated nucleus pulposus at L3–4, plus a very small extruded fragment on the right. The patient was scheduled for surgery a few days later, on a Monday.

The weekend before the surgery was particularly memorable for me, with several exciting events transpiring. When I came to the OR, I enjoyed telling everyone the weekend's exciting details during the case. In addition, to accommodate the patient, I had elected to perform the surgery in the hospital where he practices, an excellent institution where I rarely perform elective surgery, although I do assist my colleagues in covering this facility. At my usual hospital, the rooms are rectangular and the operating table is always set up parallel to the long axis of the room in a grid-like fashion, whereas in this hospital, the operating table is frequently on a diagonal.

My usual routine is to scrub my hands, enter the room, check the X-rays and magnetic resonance images, then go to the side of the patient on which I intend to operate and finish prepping the skin with the antiseptic. At this hospital, the doctors are not permitted to prep the skin, so I had to enter, mark the site

and help drape from the most accessible side of the patient. Aside from having a minimal acquaintance with the anesthesiologist, I knew no one else in the room, and as the case proceeded, I realized they also were inexperienced regarding my particular techniques.

I started the case standing on the patient's *left* side because, as I entered the room with the table somewhat askew, I stood there to help drape. I took an X-ray to confirm my level, L3–4, as I exposed the lamina. I then proceeded with the laminotomy. I was easily able to identify a large central disc herniation, but no free fragment. A second X-ray was taken to confirm the level, and then I extended the small laminotomy cranially and caudally looking for the free fragment. A third X-ray confirmed that I was at the L3–4 level as intended. Eventually I incised into the large herniated disc and performed a discectomy. The small extruded fragment was not located, but I had long since learned that sometimes findings are not exactly as expected. I did detect and remove a large herniation, decompressing the thecal sac and nerve roots.

Exiting the OR, I discussed the case with my former partner, the referring physician, including my concern regarding not finding the extruded fragment. When dictating the operative report, as soon as I stated the preoperative diagnosis of “large central disc herniation with small *right* extruded fragment,” I realized that I had been on the patient’s left side. When I explained my concerns to the OR technicians, they reassured me that I must have been in the correct place because I had uncovered and removed a large disc herniation and had checked and rechecked the X-rays. I debated the pros and cons of returning to surgery, with the thought that the significant decompression and excision of the large central disc probably would accomplish the desired goal of alleviating his radiculopathy. However, compelled by my conscience to return to the OR, eventually I convinced everyone that we needed to return to explore the patient’s right side. I discussed the situation with the patient’s wife as well as with the awakening patient himself; this was incredibly uncomfortable.

Back in the OR, I explored the right side at L3–4 through the same incision and located and removed the extruded fragment. My former partner called me a few hours later to advise me that the patient’s foot-drop had already significantly improved and he was doing great. The next morning the patient had no residual foot-drop, was comfortable, and was discharged. Two weeks after the operation he covered call for his colleagues during the holidays and was playing tennis within a few months. He greeted me as a friend whenever I saw him in the hospital, but I always felt too embarrassed to talk with him, other than simply to say hello.

Despite those facts, the patient did file a malpractice suit and the case was referred to the state board of medicine, as is appropriate for such cases. Those issues were a concern, but my greatest concern was simply the fact that I could make such a mistake. I was devastated. I started searching for answers to how this mistake could hap-

pen *and* how similar incidents can be prevented from ever occurring. Literature reviews revealed that many other instances of surgical errors have the same or very similar factors contributing to the errors. In almost all cases, there is a “systems breakdown” in which everyone participating in the case holds some responsibility.

Several factors contributed to my error. First, the case was not performed at my usual hospital. Second, the room setup was unfamiliar to me. Third, the OR staff was unfamiliar to me. Fourth, I was not able to prep the skin myself, which disrupted my usual routine. Fifth, I was distracted by the exciting events of the preceding weekend. Lastly, I knew something was wrong and felt I was in the wrong place but could not recognize that I had exposed the unintended side—what I call “oblivious to the obvious.” Later, recognizing these factors made me even more distressed at how easily such errors happen, and searching the literature and recognizing the frequency of these errors was an absolute eye-opener. Despite the fact that my patient made a rapid and excellent recovery, I still have nightmares about this case.

Toward a New Ideology and Culture

I decided that we must develop a new ideology and culture to recognize how such errors occur and to prevent them from happening again. This was further reinforced by listening, in horror, to some of the disastrous cases of wrong-site and even wrong-patient surgery presented at the board of medicine meeting I attended.

My recommendations, as presented at two national JCAHO conferences, are the following:

- 1.** We must do a better job of communicating between members of the OR team, and should involve the patients.
- 2.** The surgeon is no longer autonomous.
- 3.** We must emphasize teamwork and “systems” to succeed safely.
- 4.** There must be protocols and checklists.

5. The surgeon must participate in development of new ideas to promote teamwork and safety.

6. The OR staff is there to protect the patient.

7. Our culture must change, and the goal and expectation must be perfection.

The protocols and checklists should include:

- 1.** Cases stating site and side should be posted in the OR and listed on the OR schedule.
- 2.** Consent forms should identify site and side specifics.
- 3.** The surgeon should visit the patient immediately before the surgery to reconfirm site and side and note it in the chart.
- 4.** When possible, the surgeon should mark the site and side (in the surgical field).
- 5.** OR staff should reconfirm the intended procedure and site and side immediately before surgery.
- 6.** Appropriate studies—X-rays, scans and data—must be available in the OR, plus confirmed by the OR staff to represent the appropriate patient.

Everyone in the OR is a part of a team. The individual team members are important, responsible parties who must communicate and interrelate in the OR in the interest of the patient. This *must* be a “systems approach.” We must focus on quality and accountability. Safety represents quality, and freedom from errors equates with good results.

Humans are fallible, but mistakes are preventable. We must devote more time and resources to developing teams of varying expertise within the operating room environment to work together toward the common goal of error-free surgery. Surgical errors are devastating for the surgeon just as they are for the patient and must be prevented. ■

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When Neurosurgeons Drop

What Role Might Microeconomics Play in Their Decision?

RICHARD N.W. WOHNS, MD, MBA

Although neurosurgeons are popularly known as “brain” surgeons, anecdotal evidence and some studies suggest that at least a small number of neurosurgeons are relinquishing cranial surgery privileges. A result of taking such action is that the neurosurgeon involved no longer can cover emergency call. While cranial surgery and emergency call long have been accepted tenets of the neurosurgical profession, relinquishing cranial surgery privileges is commonly thought to limit liability and help control rising medical liability insurance costs, as well as ease the surgeon’s demanding schedule.

However, the underlying reason why a neurosurgeon might relinquish cranial surgery privileges may be because the microeconomics of neurosurgical practice has changed. Diminished reimbursement, particularly in the face of escalating overhead affected by high medical liability insurance premiums, means that cranial procedures now may consume more practice dollars than they generate. To illuminate the issues underlying the contentious topic of dropping cranial surgery privileges, a business perspective and analysis can be applied.

Devaluation and Decline of Neurosurgical Reimbursement

Reimbursement for neurosurgical procedures has experienced an overall decline in recent years. After reimbursement values reached their maximum in 1997, cranial surgery values fell about 25 percent and spinal surgery values, about 30 percent. The reimbursement reductions primarily were due to Medicare’s transition to the resource-based relative value scale between 1999 and 2002.

Since 1992, reimbursement for spinal procedures fell more than for cranial procedures in most cases. An example of the reimbursement decline for spinal procedures is the 30 percent reduction for code 63047 (lumbar laminectomy) from \$1,408 in 1992 to \$1,010 in 2003. (Code 22612 for posterolateral fusion is an exception. Reimbursement for this code increased from \$1,255 in 1992 to \$1,372 in 2004.) Cranial surgery reimbursement remained unchanged or even increased slightly from 1992 to 2004, but there was a significant reduction in the real dollar value. This is due to lack of any adjustment for inflation, cost of living or practice overhead increase. Several examples of reimbursement for cranial procedures per Current Procedural Terminology Code are: code 61313 (craniotomy for intracranial hemorrhage)—\$1,600 in 1992, and \$1,662 in 2003; code 61312 (craniotomy for subdural hematoma)—\$1,605 in 1992, and \$1,654 in 2004; and code 61512 (craniotomy for meningioma)—\$1,913 in 1992, and \$2,315 in 2003.

The Cost of Lost Opportunity

In addition to the rate of reimbursement, the time and expense involved in performing each surgical procedure must be assessed. The time and expense spent in the total provision of cranial surgery exceeds that spent in spinal surgery. Therefore, when neurosurgeons forego the revenues generated from spinal surgeries to perform cranial surgeries, they are experiencing the phenomenon of “opportunity cost.” This particularly is the experience when emergency cranial surgeries cause cancellation of elective spinal surgeries.

A neurosurgical practice that primarily focuses on spinal surgery not only is efficient, but there also is very little adverse impact on the profitability of a practice that does not include brain surgery and emergency coverage. An analysis of the opportunity cost and microeconomics of neurosurgical practice illustrates the contrast in profitability between cranial and spinal surgery.

Marginal Revenue, Marginal Cost, and Profit Maximization

When businesses have a product with diminishing profitability and other products with greater profitability, the decision often is made to drop the less profitable product. The decision hinges on the marginal revenue of the product, whether the business is running at capacity, and the supply and demand for products. If the business is not running at capacity and the devalued product helps to cover fixed expenses, then good business practice supports continuing with that product line. However, if the business is running at capacity and there is strong demand for the products, then good business practice supports dropping the less profitable product.

As the business increases its level of output, each additional unit adds to the total revenue of the business. The additional revenue attributable to producing one more unit of output is called marginal revenue. As the business increases its level of output, each unit increase in output increases the business’s total cost. The additional cost of producing one more unit of output is called marginal cost. In the special case in which the price of the commodity is given to the business by the market, marginal revenue equals price. For example, if the business produces plywood, and the market price of plywood is \$300 per 1,000 square feet, the marginal revenue from each additional thousand square feet is \$300. The business would increase plywood production—and maximize profit—as long as the marginal cost of each additional thousand square feet is less than \$300. The business would not increase production if cost of each additional thousand square feet is more than \$300 to produce.

The principle of profit maximization is germane to a neurosurgical practice. The reasoning used by businesses that choose

Cranial Surgery Privileges

output to maximize profit, described by Maurice and Thomas in their 1995 book *Managerial Economics*, can be applied to neurosurgical practice thusly: If neurosurgeons consider surgery as their product, the means to maximizing profit is to choose the level of the activity, or surgery, at which the additional revenue just equals the additional cost.

If a neurosurgical practice produces craniotomies and the market price of craniotomies is \$1,500, the marginal revenue from each additional craniotomy is \$1,500. The neurosurgeon would increase craniotomy production as long as the marginal cost of each additional craniotomy is less than \$1,500. The neurosurgeon would not increase production if the cost of each additional craniotomy is more than \$1,500 to produce.

The marginal cost of producing craniotomies has steadily increased due to escalating practice overhead, including the cost of medical liability insurance. The marginal revenue has steadily decreased due to diminishing insurance reimbursements. In addition, there is the previously discussed phenomenon of opportunity cost wherein neurosurgeons forego the revenues generated from additional spinal surgeries by performing craniotomies, particularly in emergency cases.

Purely from an economic perspective, a neurosurgeon would decrease the output of craniotomies when marginal cost is greater than marginal revenue. A neurosurgeon would increase the number of craniotomies when the added revenue from the expansion (marginal revenue) is greater than the added cost of the expansion (marginal cost). In order to maximize profit, the neurosurgeon would choose to produce the level of output for which marginal revenue equals marginal cost.

Neurosurgery, of course, is not solely an economic enterprise. Some services are offered which, while less profitable, are considered part of the full array of neurosurgical services, and these services are subsidized by other more profitable services. However, when margins run thin and subsidies disappear, the less profitable services such as cranial surgery may be dropped.

The Benefit of Economic Insight

The phenomenon of decreasing the output of craniotomies, that is, giving up cranial surgery privileges, may actually be an attempt by neurosurgeons, with or without formal economic analysis, to establish at least a short-term microeconomic competitive equilibrium. Whether this will become a more prevalent long-term strategy for neurosurgeons, for whatever reason, is yet to be determined.

When deciding on the value of neurosurgical services offered, neurosurgeons might heed the wisdom of Jim Collins, author of business books *Built to Last* and *Good to Great*:

Our study clearly shows that a company does not need to be in a great industry to become a great company. Each good-to-great company built a fabulous economic engine, regardless of the industry. They were able to do this because they attained profound insights into their economics.

Neurosurgical practices are, at least in part, economic enterprises, and neurosurgeons undoubtedly can benefit from the insights that economic analysis can yield. ■

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Surgeons Link Ad
PU Fall 2005

Can Contracts Preclude Frivolous Lawsuits?

Precedent Suggests Yes, When Carefully Crafted and Introduced

Frivolous malpractice claims are expensive and time-consuming. What remedies are available to physicians who fall prey to such lawsuits?

One remedy is to file a suit against the plaintiff and his or her attorney using the tort of malicious prosecution. However, a key element for prevailing is proving that the attorney filed the case with malice, which is difficult to do. In addition, courts generally grant plaintiffs and attorneys wide latitude in pursuing claims of malpractice. Hence, malicious prosecution is a remedy rarely used.

Contract law, which is separate from tort law, is another avenue of redress for physicians to investigate. This article will explore the ability of contract law to protect physicians from frivolous lawsuits.

Making Contracts Enforceable

To help explain what should work, it is first useful to describe what will not work. Asking a patient to forego all remedies is not a workable solution. For example, demanding that a patient not sue for any reason will not be enforceable. Public policy dictates that patients must have some remedy for negligence. That remedy is usually through the courts, although arbitration is another viable option. Having a patient sign a blanket release would be considered an “abuse of power,” and courts routinely have dismissed such agreements.

If, however, the demands of a contract are narrower, the contract should withstand challenges to enforceability. The contract defines expectations regarding resolution of concerns, specifically that the physician cannot be sued for a frivolous reason and that should there be a dispute, each side will use experts who follow the code of ethics of the physician’s specialty society.



The following considerations for the patient-physician contract are suggested:

- Be clear on the mutuality of agreement.
- Do not make any attempt to change the physician’s duty to the patient within the agreement.
- Call the patient’s attention to contractual provisions.
- Allow the patient the opportunity to think about the contract and its consequences and to ask questions.
- Do not seek the patient’s agreement when care is needed urgently or emergently. A better approach is to obtain agreement later (for example, in a post-hospitalization office visit) and to make the agreement retroactive—as long as the effective date of the agreement is clearly reflected.
- Do not condition the patient’s treatment on signing the agreement.

Tests of Enforceability Under Case Law

One test determining enforceability is whether the document is a contract of adhesion. An adhesion contract, as defined in *Sanford v. Castleton Health Care Center*, is “a standardized contract, which, imposed and drafted by the party of superior bargaining strength, relegates to the subscribing party only the opportunity to adhere to the contract or reject it.” While “adhesion contract” is usually viewed as a pejorative label, one court, in *Ingles v. State Farm Mutual Insurance*, has recognized the basic truth that most contracts fit that description. As the *Ingles* court noted, however, the important task is to distinguish which adhesion contracts are appropriate and therefore enforceable, and which are not.

The usual term to describe the unenforceable adhesion contract is “unconscionable.” The court in *Sanford v. Castleton* wrote that “a contract is unconscionable if a great disparity in bargaining power exists between the parties, such that the weaker party is made to sign a contract unwillingly or without being aware of its terms.” The court proceeded to cite the definition of “unconscionable” according to a 1989 Indiana appellate court opinion: “The contract must be such as no sensible man not under delusion, duress, or in distress would make, and such as no honest and fair man would accept.”

Unconscionability is a fact-sensitive, case-by-case issue. As addressed by the court in *Sosa v. Paulos*, there are two aspects to unconscionability: procedural and substantive. The procedural aspect addresses the way the contract is reached. The substantive aspect refers to the actual terms.

Two provisions of agreement that likely would not be considered unconscionable

are first the promise not to bring a frivolous lawsuit and second the mutual promise to use only experts who follow the code of ethics for the physician's specialty society.

The first promise could be "unconscionable" only if the court concludes that it is intended to have a chilling effect on bringing lawsuits, which, the argument would state, is against public policy. Such a promise, however, is nothing more than an obligation already imposed on litigants. People are not supposed to file frivolous lawsuits. This principle is reflected in numerous statutes. For example, an Indiana statute permits the winning party to recover attorney fees if the losing party's lawsuit was frivolous.

The second promise focuses on how evidence may be brought forward. The well-reputed treatise on contract law, Williston on Contracts, Fourth Edition, states: "There is a growing tendency for courts to uphold the right of parties to prescribe certain rules of evidence should a lawsuit arise out of the bargain between them, so long as it does not unduly interfere with the inherent power and right of the court to consider relevant evidence."

As to the option of arbitration, it is well established that patients and physicians can contractually use arbitration. Arbitration asks the plaintiffs to forego their right to trial by judge or jury. Yet imposing reasonable conditions on expert witness behavior is clearly less restrictive than arbitration. Agreements to arbitrate are a far greater intrusion into the traditional judicial system.

Recent cases on arbitration are split among jurisdictions. However, close analysis suggests that the cases in which arbitration was not enforced were so decided because the way the contract was reached was unconscionable, not because arbitration was unconscionable in and of itself. In *Sosa v. Paulos*, an agreement to arbitrate was presented to the patient immediately before knee surgery, after the plaintiff was in his surgical gown, and the agreement was presented for signature without expla-

nation. Neither was there any explanation of the documents at any postoperative visits. The Utah Supreme Court found this agreement unconscionable because of the way the patient was asked to make the agreement. When, however, the troublesome facts reflected in *Sosa v. Paulos* have not been present, agreements to arbitrate have been held to be not unconscionable and, therefore, enforceable.

In the *Buraczynsky v. Eyring* and *Sanford v. Castleton* cases, the courts relied on several factors to find that the contracts were not unconscionable and therefore were enforceable. Those factors included:

- Contractual provisions were not hidden, but highlighted.
- There was opportunity to read the contract unrushed and to ask questions.
- The language was easy to read and understand.
- The language did not change the physician's duty to use reasonable care.
- The contract did not limit liability of the provider to the patient.

Contract Enforceability for Nonsignatory Parties

A contract can mandate that any attorney a patient-plaintiff hires follows the same rules. Further, falling back on the arbitration analogy, there are precedents for holding nonsignatory parties to agreements.

A minor child can be bound by the mother in an agreement to arbitrate made during the prenatal period. The court in *Wilson v. Kaiser Foundation Hospitals* interpreted the arbitration clause to apply to any claim arising from services under the agreement, even though the plaintiff had not been born when the agreement was signed. In *Gross v. Recabaren*, the spouse of a contract signatory filed a lawsuit for loss of consortium because of a physician's negligence. The court found that when a patient contracts to arbitrate claims of negligence, all claims arising from the alleged

malpractice must be arbitrated. Similarly, in *Herbert v. Superior Court*, heirs in a wrongful death action were found to be bound by the decedent's agreement to arbitrate because the contract required claims by the "member's heir or personal representative" to be arbitrated.

A note on retroactive enforcement: Physicians often have long-term relationships with patients. Is it possible to script a new contract to address past actions? The answer is maybe. In California the *Coon v. Nicola* ruling provided precedent for retroactive activation of an arbitration agreement.

What Is "Frivolous"?

The fact remains that what is frivolous to one person might be entirely legitimate to another. How can the definition be tightened to make a contract to avoid pursuing a frivolous case meaningful?

One solution is to focus on frivolous testimony as a determinant of breach. For example, a conclusion by the professional conduct committee of an organization such as the AANS might serve as the basis that the expert testimony was indeed frivolous. Labeling definitions and rules of procedure are often embedded in contracts. Hence, the definition of frivolous or the process for determining if testimony is frivolous could likewise be incorporated into a contract.

In summary, contracts can be used with patients to decrease the likelihood that the physician will be sued for a frivolous reason. There is ample precedent with arbitration contracts to believe that such contracts can be enforced. However, proper attention must be paid to the content and the procedure used for obtaining agreement. Given that tort reform may not be the best tool to deal specifically with frivolous lawsuits, contract law should help to fill the gaps. ■

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Computers in Neurosurgical Education

Online Learning and Performance-Assessment Tools Are Evolving

Throughout a physician's career, computer-assisted learning offers several advantages over traditional educational vehicles. Search and retrieval of information is more rapid and comprehensive. Content is dynamic and can be quickly and easily updated. Digital documents can incorporate multimedia elements. Resource information can be stored more efficiently and economically in digital format. From a cost standpoint, computers require a high initial investment but that expense would ultimately be exceeded by the alternative of accumulating an extensive hardbound library.

Neurosurgery is highly dependent on computer technology. Diagnostic imaging and surgical navigation demand substantial computer facility. Neurosurgeons' familiarity with computers enables the specialty as a whole to take advantage of the numerous opportunities that computers offer for medical education—opportunities that will continue to evolve.

Computers can be used for education in two main ways. The first involves directed learning via computers, whereas the second involves learning through the day-to-day use of computers. As time passes, the latter model will gradually supersede the first, allowing surgeons to take care of patients and simultaneously learn through self-evaluation and competency maintenance.

Under the older model, computers are used to deliver educational content and assess performance. Most of the educational content currently available online follows this paradigm. The most common example of this type of computer-assisted learning is online continuing medical education. A wide variety of CME activities covering the spectrum of clinical topics are now available online. These activities have many advantages for busy clinicians. First and foremost, they can be conducted at the

convenience of the learner. They usually provide immediate feedback and a self-evaluation process, as well as immediate validation of earned credit. Typically, the materials are updated frequently and cost per credit is low.

The self-assessment test for neurological surgery, known as SANS Wired, is a good example of a computer-based tool that provides a mechanism for periodic knowledge assessment and learner-driven study. Each SANS question provides immediate feedback, with a detailed critique and hyperlinks to additional content on the Internet. Users can explore a given topic through the SANS examination using only a Web browser to broaden their reach to study materials. Learning occurs primarily through the process of investigating incorrect responses to practice test questions. The user can study entirely from the SANS Wired system without the need for textbooks. The system tracks the user's progress and also permits the user to interrupt the study process at any time. Yet even though the SANS experience is flexible and "termless," the content is structured and based on defined learning objectives.

The second way that computers can be used for education involves learning through the routine use of computers. By incorporating computers into clinical activity on a day-to-day basis, the learning process becomes perpetual and less well defined. For example, clinical expert systems and clinical decision support systems provide a vast potential for learning in a relatively unstructured fashion. Knowledge acquisition tends to be driven by the interest of the user or the need to solve a particular clinical problem. Under these circumstances, performance evaluation is more difficult because the learning objectives are not defined in advance. Furthermore, since not everyone is studying the

same thing, cohort performance comparison is not possible. As computer-based clinical tools evolve, however, the routine-use realm will offer the most opportunity for expansion of educational activities.

One specific type of learning that is of paramount importance to neurosurgeons, the mastery of technical skills, cannot be easily accomplished using computers. Virtual reality and simulation platforms for surgery are only in their infancy. There are a few simulators for exercises such as ventricular endoscopy and temporal bone drilling, but they are expensive and rudimentary and currently are not in widespread use. Ideally, the sophistication of these platforms will improve so that clinicians can use actual patient data for both surgical rehearsal and training. This would not only promote competency with technical skills but also improve safety for patients in future.

As the capabilities of handheld computers expand and as data transfer improves, too, additional educational applications that work in conjunction with clinical tools will likely emerge. Indeed, young physicians routinely "Google" everything from drug doses to treatment recommendations, often using their cell phones or personal digital assistants.

Computer-assisted learning is clearly an integral part of medical education throughout a physician's clinical career. The body of knowledge has now expanded well beyond the ordinary physician's capacity to carry adequate reference materials physically or to memorize information—and it will only expand more, necessitating further development of everyday opportunities for computer-assisted education. ■

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Evaluating a New Job

Rank Your Priorities and Do Your Homework

After many years of residency, the prospect of getting a job is very exciting. Unfortunately, that excitement can make it difficult to evaluate a potential practice rationally. During residency one learns little about the business side of neurosurgery, and there is no chapter in Greenberg to help you out. Guidance for evaluating job opportunities in both academic and private settings is the subject of this Residents' Forum.

The first step in looking for a job is to determine what is most important to you and your family. The main factors to consider are the practice's location, income potential and financial strength, as well as your interest in a subspecialty and research opportunities. Rank these factors in order of importance, but remember that every job requires some compromise. To decide what is negotiable, you must know your priorities.

Location

Location may be of primary importance, particularly if you have a family. Most hospitals, offices and operating rooms look the same, and you will spend most of your time there. Your family, however, will need to deal with jobs elsewhere as well as with schools, new neighbors and friends, and the like. Talk to people who know the area well, and make sure that you spend at least a few days exploring the area on your own to examine commute times, access to shopping and recreation, and other things that are important to your life outside of work.

Income Potential

Of the 800 neurosurgical job openings each year, approximately 5 percent to 10 percent are academic jobs. Of approximately 150 residents graduating each



year, about 50 go on to fellowships, research or military positions, leaving 100 residents entering the job market. At an 8-1 ratio of jobs to graduates, the odds favor you heavily. Regardless of your academic interests and research prowess, remember that your income will largely be determined by your clinical activity. Additional training such as an endovascular or spine fellowship will allow you to command a premium salary.

Because it is a job-seeker's market, academic practices have increased their starting salaries to be more competitive with private practices. However, this relative equality ends after a few years, as private practitioners become partners in their practices. Compensation of private practitioners is on average 20 percent to 50 percent higher than that of their academic counterparts. So if you are considering joining a private practice, ask about the path toward partner status (for example, time frame and board certification), but

remember, everything is negotiable. Practices with large assets such as office buildings or surgery centers may require a buy-in—but be wary if the assets are not easily valued.

Academic compensation is frequently tied to rank. Be aware that the salary differential between a full professor and a partner in private practice may be less than anticipated, particularly when you factor in benefits such as travel compensation, insurance benefits and malpractice coverage.

Financial Strength

Most academic practices associated with a medical school are either a department, which indicates more financial responsibility and direct reporting to the dean, or a division of general surgery where financial decisions are made in conjunction with the chair of surgery—though financial independence for divisions of neurosurgery is not uncommon. Obviously, a private practice is completely responsible for its finances. In addition to paying salaries, a practice must pay employee benefits, office rental, supplies, resident expenses and professional liability insurance. Any remaining money may be paid as a bonus or used for practice development.

You should meet with the business manager to evaluate the practice's financial condition. Let the manager know in advance what you want to learn, so this person can be prepared with the right information. On the income side, look for the amounts billed and collected, as well as income from alternate sources such as pain clinics, ambulatory surgical centers, office building rents and other sources. On the expense side, look at the "dean's tax," salaries and overhead. Also, ask if bonuses have been based on case numbers or relative value units and whether

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TIMELINE: *Neurosurgery* Through History

When Their Residence Isn't the Hospital What Do You Call Physician Trainees?

MICHAEL SCHULDER, MD

Odd label, “residents,” for medical doctors who are preparing to be fully-trained surgical specialists charged with caring for patients who may be very ill, and who sometimes can do surgical procedures that their presumed teachers and supervisors cannot. The origin of this term sheds light on the long hours that residents have “traditionally” worked such that an 88-hour workweek is viewed as a veritable sinecure.

Through the late 19th century, medical and surgical education followed a haphazard apprenticeship model. No formal education was required. Didactic learning was obtained through courses given by voluntary faculty lecturing in medical schools. Students bought tickets to attend, and when the time was right they attached themselves to a practitioner from whom they learned the art of medicine and/or surgery. When Harvey Cushing entered Harvard Medical School in 1891, he was nearly the only member of his class who had attended college.

At about this time a movement was underway to improve the level of American medical education. William Osler, in particular fervently promoted the importance of formal bedside teaching for medical students and postgraduate trainees. To learn the most pos-

Residents training to be neurosurgeons started out working in essence around the clock for almost no money.

sible (and to do the work of caring for patients, much more of a burden in the developing world of scientific medicine and surgery—and still following an apprentice model), the young doctors

were required to live in the hospital. Hence, they became known as resident physicians.

Residents training to be neurosurgeons started out working in essence around the clock for almost no money. Over time they came to work incredibly hard, by most standards, for a living wage. Now organized neurosurgery has accepted the concept of strictly defined limitations on work hours. Residents still work long and hard but no longer have to fear that a sleepless night will be followed by a day without end. Some people may consider this a needless accommodation. Others might call it progress. ■

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teaching and research have been considered. Is there a business plan for increasing income and decreasing expenses? Does the practice have certified coders? Is it looking at alternative revenue sources? Does it have a plan for expansion? Don't be shy in asking questions—a good practice will have nothing to hide.

Subspecialization

When considering your subspecialty interest, determine what cases you will be expected to do and what you will need to give up. More importantly, make sure the practice's expectations are not at odds with the financial incentives. For example, there will be very little incentive to give up high-billing cases such as those with spinal

instrumentation if the salary and bonus are determined by relative value units. If you are interested in subspecializing, will you be given the opportunity and resources for developing a new practice?

Research

Starting a laboratory requires space, equipment, money, collaborators, a mentor and a lab technician. Meet with the neuroscience chair and other faculty who share your research interests. Determine if resources can be shared and if they are open to collaboration. Ask for a list of faculty members and their research support.

Protected research time, start-up funds and a grace period in which your research will be supported by department funds are critical for the young investigator. Having

an experienced mentor (preferably a neurosurgeon who will understand the unique demands on your time) is a common factor for clinician-investigators who become successful.

The Bottom Line

The most important piece of advice before signing with a new practice is to get the specifics in writing. A key corollary is that everything is negotiable. Be open and polite, but do not be afraid to ask the tough questions. In the end, you will be respected for your acumen and attention to detail. ■

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Surgeon's Error or Jury's Sympathy?

Patient Delays Surgery With Adverse Results

When treating high-risk patients, the uncomfortable reality is that regardless of whether error is involved, juries often are swayed by severe outcomes.

In this case, the defendant neurosurgeon had recommended surgery in June 1994. Despite having received this recommendation, the patient elected to postpone the surgery until after his son's wedding in October. The patient's condition deteriorated rapidly after the wedding and somatosensory evoked potential monitoring performed prior to surgery failed to pick up any signals from his legs.

The defendant neurosurgeon performed anterior cervical discectomy and fusion at C5–6 and C6–7 on the 57-year-old patient in October 1994 to remove two herniated discs and treat spinal stenosis caused by degenerative disc disease. Following surgery, the patient was paralyzed from the chest down. He remained a paraplegic with weakness of his arms and hands until he died from unrelated cancer approximately eight years later.

The patient's estate and his spouse sued the neurosurgeon and the hospital for malpractice. In addition to recovery of medical expenses, the estate sought damages for loss of normal life, pain and suffering and disfigurement. The spouse sought damages for loss of consortium and loss of services.

The patient's expert opined at trial that the postoperative films showed a disc fragment remaining in the spinal canal and pressing on the spinal cord, causing worse compression than the preoperative magnetic resonance images had revealed. The defense countered that the postoperative MR images showed that the spinal canal had been decompressed successfully. The defense further maintained that the patient's spinal cord was so severely compromised

prior to surgery that the cord could not withstand the normal trauma of surgery and the simple act of decompressing the stenotic spinal cord caused a spinal stroke.

The evidence presented at trial demonstrated that in the weeks immediately preceding the surgery, the patient became numb from the waist down and had to use a wheelchair to get around. With regard to the issue of when the surgery took place, the defense introduced the neurosurgeon's notes in the medical record documenting his discussion with the patient concerning the risks associated with delaying surgery.

After deliberating for two days and twice reporting that it was deadlocked, the jury returned a verdict against the defendant neurosurgeon and in favor of the patient's estate and his spouse in the amount of \$2,269,034. The bulk of this sum, 1.5 million, was awarded to the estate and apportioned as \$750,000 for loss of normal life, \$500,000 for pain and suffering, and \$250,000 for disfigurement. The remainder of \$769,034 was awarded to the patient's spouse, with \$517,034 allotted for medical expenses, \$150,000 for loss of consortium and \$102,000 for loss of services. Notably, the defendant hospital had settled out prior to trial for \$400,000.

Outcome's Severity

The fact that the jury twice reported that it was deadlocked is evidence of its struggle to reach a decision on liability. Although the patient's decision to delay his surgery may well have resulted in further compromising his spinal cord, the jury ultimately concluded that this was insufficient to relieve the defendant neurosurgeon of liability.

An argument can be made that the defendant neurosurgeon should have documented more clearly in his notes that he had explained the risks of paralysis as well as the

risk of delaying surgery with the patient. However, it is far from clear that this action would have been outcome determinative.

The result in this case illustrates that the risk of an adverse verdict is sometimes directly related to the severity of the outcome rather than to the actions taken by a surgeon. A 2002 study conducted by Kessler and McClellan underscores this conclusion and demonstrates its frequency. The study revealed that evidence of medical negligence was found in less than 20 percent of cases in which a patient received some form of compensation from a medical provider and further that only one in every 15 patients who were found to have sustained an injury due to medical negligence received any sort of compensation.

This evident lack of relationship between medical liability award and medical negligence compounds the risk of liability for specialists treating high-risk patients. Data maintained by medical liability insurance provider The Doctors Company shows that neurosurgeons frequently sustain claims, averaging a claim every 18 months. Thus, high-risk specialists such as neurosurgeons are sued more often, not because of medical negligence, but because of the risk of the medical condition and the severity of the adverse outcome. ■

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Suggestions? By exploring closed medical liability cases, Risk Management aims to help neurosurgeons identify and avoid areas of legal peril. If you would like to see a particular topic covered, please send your idea to Monica Wehby, MD, Risk Management editor, mcwehby@yahoo.com.

A Match Made in Science

NREF Gives and Receives in Name of Medical Research

It is easy to understand why a relationship works between the Neurosurgery Research and Education Foundation and Kyphon Inc., a medical device company that develops and markets minimally invasive technology designed to restore spinal anatomy. Both organizations are trying to do the same thing: improve patient care and quality of life through research and the development of advanced medical technology.

The AANS founded the NREF, its research division, in 1981 in response to a rapid decline in federal and private funding for medical research. The membership was supportive; however, the annual contributions were not enough to sustain the level of funding necessary to pursue quality research into neurosurgical diseases. Consequently, to enhance the much needed grant support, in the 1990s the NREF began partnering with pharmaceutical and medical device companies such as Kyphon Inc.

Founded in 1994, Kyphon utilizes a proprietary balloon technology to repair spinal fractures with minimally invasive surgery. The company strives to remain true to its core values of loyalty, trust and respect for others, and to operate an organization based on honesty, integrity and commitment.

Since 2003, Kyphon has been one of the many corporations investing in spine research through NREF research fellowships and young clinician investigator awards. Kyphon's annual support of a one- or two-year grant has made a difference in the research careers of three clinician-scientists funded by these grants.

"We are pleased to continue our support of the NREF and its research activities," said Karen Talmadge, PhD, Kyphon's executive vice president and chief science



Pictured at the 2005 AANS Annual Meeting, NREF Chair Martin H. Weiss, MD, at right, presents Kyphon representative Karen Talmadge, PhD, with a token of appreciation for Kyphon's 2004–2005 support of the AANS' neurosurgical research and educational goals. Dr. Talmadge is Kyphon's executive vice president and chief science officer. For more NREF information, visit www.AANS.org/research. For more about Kyphon, visit www.kyphon.com.

officer. "Through our corporate sponsorship, we can support the foundation's activities to realize our common mission of improving patient care and quality of life by advancing worthwhile neurosciences research."

Kyphon Matches Donations 100 Percent

Kyphon recently took its relationship with the NREF to yet another level, issuing a matching grant and a challenge to all AANS members. Kyphon generously agreed to match 100 percent of all donations to the NREF up to \$25,000. Hence the donations made to NREF, either first-

time or renewed gifts, were doubled, thus enabling each contribution to have a greater impact on the overall research grant program.

"We are proud to partner with Kyphon in this way," commented NREF Chair Martin H. Weiss, MD, FACS. "Neurosurgery's growth and expansion is dependent upon both technical evolution and the expansion of our understanding of the disease processes that confront us. Corporations like Kyphon are assisting us with this growth and expansion through their dedicated support of research."

It is a true match made in the name of science and medical research. Kyphon and the NREF are organizations working together toward a common good—making a difference in neurosurgery, one day and one dollar at a time.

Silent Auction Donations Support Research

In addition to corporate support, another avenue of NREF support will be evidenced at the 2006 AANS Annual Meeting April 22–27, when the Young Neurosurgeons Committee hosts the 2006 Annual Silent Auction benefiting the NREF.

The committee, led by Edward Vates, MD, began procuring items for the eighth silent auction immediately following the 2005 event, securing popular items such as vacation packages, electronic gadgets, sports memorabilia and medical books. Also welcomed are monetary donations, which will be used to purchase items in the name of the contributor or contributing company. This year's fundraising goal for the auction is \$30,000.

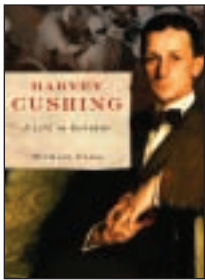
Proceeds from the YNC-sponsored auction assist the NREF in its efforts to fund scientific investigations through research fellowships and young clinician awards.

For more information about the 2006 Annual Silent Auction, to make a donation or to learn more about the NREF grants program, visit www.AANS.org/research. ■

Michele S. Gregory is AANS director of development.

A Tale of Neurosurgery's Founder

A Compelling Cushing Inspired a Specialty



**Harvey Cushing:
A Life in Surgery,**
by Michael Bliss,
2005, Oxford
University Press,
591 pp., \$40
(\$26.40 for AANS
members).

Canadian historian Michael Bliss, MD, author of *William Osler: A Life in Medicine*, has written a new book about neurosurgery's founder, Harvey Cushing. It is a book that everyone should read.

Bliss based this book on a host of Cushing family papers unavailable to earlier biographers. As a result, this is a less constrained and more personal biography. Cushing still comes through as a daring innovator and icon, but he is also revealed as a real person with many foibles.

Born in Cleveland in 1869, Cushing graduated from Yale in 1891 and Harvard Medical School in 1895, staying in Boston for an internship at Massachusetts General Hospital. Then Baltimore beckoned with its new, graciously endowed Johns Hopkins Hospital and Medical School. Halsted, Welch, Kelly and Osler all influenced Cushing, although during his training Cushing had limited contact with Halsted, but it was Osler who quickly became a surrogate father figure for the young surgical pioneer.

A most significant part of Cushing's development then followed in his "Wanderjahr" of 1900–01, when he visited Europe. There, Cushing was shocked by the lack of surgical asepsis, concern for the feelings of the patients and consistency of surgical techniques. He also did the research that led to elucidation of the "Cushing reflex."

The next year, Cushing married Kate Crowell and they moved into the house next to

the Oslers in Baltimore. Cushing was declared the neurosurgical specialist among the Hopkins surgeons. His interest in brain surgery resulted from his ability to successfully treat trigeminal neuralgia by gasserian ganglionectomy. As a result, he began to do brain tumor operations, and in 1902 performed a successful nerve anastomosis.

Before 1900 more than 500 general surgeons in the United States had done operations on the brain. Cushing, however, brought to the then-dismal field a highly developed set of techniques to control bleeding, crucial knowledge of and sensitivity to the problem of intracranial pressure, an awesome dexterity, and an equally

**He was the kind of man
you would work with,
admire and respect, but
not one you would like.**

awesome combination of enthusiasm and determination to succeed.

During the first decade of the 20th century, Cushing established neurosurgery as a specialty. He developed subtemporal decompression as his basic intracranial operation. It was his all-purpose response to any cerebral symptomatology. Halsted is said to have commented during these years that he didn't know whether to refer to "poor Cushing's patients or Cushing's poor patients."

But he also increasingly dedicated himself to the pituitary toward the end of that decade. By 1912 he had data on 48 patients and wrote *The Pituitary Body and Its Disorders*. It was not until many years later that he described the syndrome of hypersecretion due to a basophilic adenoma that came to be known as Cushing's syndrome.

Cushing is not presented in this book as the well-rounded person we would like our resi-

dents to become. He was not a good husband; he was an absentee father, and in the operating room he could be peevish and mean. One Hopkins resident said, "He was the kind of man you would work with, admire and respect, but not one you would like."

World War I, in which Cushing served two tours of duty, definitely took its toll. While in France he probably had the dreadful influenza and then post-flu Guillain-Barre syndrome. This, combined with Berger's disease made worse by his smoking, resulted in significant pain and lower extremity disability. He also learned something from the war, however—how to operate more rapidly. By the time the war ended, he was able to do eight major cases in a day.

I particularly enjoyed the portions of this book that deal with the relationship between Cushing and Osler. The book's most moving scene is the death of Osler's son, Revere, on the operating table in Flanders. William Osler himself died in December 1919, and within a few months his widow asked Cushing to write his biography. Cushing responded by doubling his workload to write more than a million words about his mentor. The final work was edited down to the two-volume *The Life of Sir William Osler*, published in 1925. One year later Cushing was awarded the Pulitzer Prize in biography for this work.

Bliss refers to Cushing as "the Babe Ruth of his game." Interestingly, his subject enjoyed the athletic analogy, too. Cushing wrote to his oldest son, who was struggling with his studies, "Life all round is a kind of sporting event and the best any of us can do is to try continually to improve our game."

Reading this book will help you improve your own game. ■

Gary Vander Ark, MD, is director of the Neurosurgery Residency Program at the University of Colorado. He is the 2001 recipient of the AANS Humanitarian Award.

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Special Thanks to Neurosurgery's Medical Liability Campaign Supporters

This listing of 2005 contributors to Neurosurgeons to Preserve Health Care Access reflects donations at press time. The NPHCA is the AANS/CNS advocacy organization that funds Doctors for Medical Liability Reform, which in October launched a new interactive, nationwide grassroots education and advocacy campaign known as Protect Patients Now (www.protectpatientsnow.org). Additional NPHCA information is located at www.neuros2preservcare.org. Questions or concerns can be directed to Katie Orrico, NPHCA director, at (202) 628-2883.

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MOC Takes Shape

ABNS Begins Maintenance of Certification Rollout in 2006

RALPH G. DACEY JR., MD, M. SEAN GRADY, MD, HUNT BATJER, MD, AND WILLIAM CHANDLER, MD

In 2006 the American Board of Neurological Surgery begins rollout of its Maintenance of Certification, or MOC®, program. The ABNS was founded in 1940 to provide initial certification to practitioners of neurosurgery who meet specific training and practice requirements. In recent years the public, payers, other healthcare organizations and governmental agencies have called for periodic recertification of specialists.

In March 2000 all member boards of the American Board of Medical Specialties, including the ABNS, adopted a commitment to modify their current or planned programs for recertification into programs for MOC. After analyzing the arguments for the establishment of an MOC program, ABNS directors concluded that regulatory bodies will very soon require neurosurgeons to participate in the process. ABNS directors are committed to making available to all diplomates a meaningful and practical MOC program, one that takes into account the concerns of diplomates and meets the standards of the ABNS, as well as those established by the ABMS.

Through its MOC program, the ABNS supports its diplomates' dedication to lifelong learning. The guiding principle in this endeavor is to foster excellence in patient care.

The ABNS MOC program is designed to reflect the realities of today's neurosurgical practice. Emphasis is placed on core neurosurgical knowledge and practice common to all neurosurgeons. The process is designed to permit diplomates to include the areas of their individual expertise when devoting time to continuing medical education activities, selecting a module for the cognitive examination and submitting key cases from their practice.

Diplomates are enrolled in the program upon issuance of time-limited ABNS certificates and submission of a completed MOC application. Time-limited certificates, current for 10 years, were first issued to new ABNS diplomates in 1999. In order to maintain their certification, diplomates certified during or after 1999 must participate in the MOC program. Each individual's progress through the MOC program requirements will be tracked online.

Non-time-limited certificate holders may participate in the program at any time. Current for the life of the individual, non-time-limited certificates were issued to all ABNS diplomates certified before 1999. A non-time-limited, original certificate will not expire regardless of the individual's participation in the MOC program. Individuals in this group, however, are strongly encouraged to participate in the MOC program.

Program Requirements

There are four basic components of all specialty MOC programs: evidence of professional standing; evidence of lifelong learning and self-assessment; evidence of cognitive knowledge; and evidence of performance in practice.

Into this framework, the ABNS MOC program has integrated seven requirements: chief of staff questionnaire; CME hours, both category 1 and category 2; cognitive examination; communication assessment tool (the CAHPS); key case analysis; Self-Assessment in Neurological Surgery Examination (the SANS); and unrestricted license to practice medicine.

The four basic components and the individual ABNS requirements, plus the frequency with which they must be updated, have been integrated as follows.

1. Evidence of Professional Standing

- A.** Full unrestricted license to practice medicine in all jurisdictions in which the diplomate practices will be verified every three years.
- B.** Unencumbered hospital admitting privileges to practice neurosurgery will be verified every three years.
- C.** Questionnaires will be completed by the chief of the medical staff of the diplomate's primary hospital every three years.

2. Evidence of Lifelong Learning and Self-Assessment

A. Lifelong Learning: At least 150 CME hours must be accumulated every three years and must include a minimum of 60 category 1 neurosurgical hours with the remainder in either category 1 or category 2. At least 80 percent of the 150 hours must be specific to neurosurgery. The ABNS reserves the right to establish the activities that qualify for CME categories 1 and 2; a list of accepted activities will be available on the ABNS Web site. Self-assessment exercises and examinations can be used to satisfy portions of the requirement. Accrual of CME hours will be tracked in conjunction with the American Association of Neurological Surgeons, and the information may be verified online.

B. Self-Assessment: The diplomate must participate in a Web-based educational program. For this the ABNS has selected the SANS examination. Its development and administration is done by the Congress of Neurological Surgeons. Participation in the examination will be verified electronically and forwarded to the ABNS data repository every three years.

3. Evidence of Performance in Practice

A. Key Cases: Every three years diplomates must submit the details of 10 consecutive cases of one procedure selected from a list of procedures that cover the subspecialties. If the diplomate practices general neurosurgery or a subspecialty not represented, he or she may send in 10 consecutive cases of the most frequent procedure. Questionnaires must be filled out by the diplomate regarding each reported consecutive case. The list of cases so far consists of the following: (1) Anterior Cervical Discectomy; (2) Chiari Decompression; (3) Clipping of Anterior Circulation Aneurysm; (4) Craniotomy for Cerebral Glioma; (5) Craniotomy for Temporal Lobectomy; (6) Endovascular Embolization of an Anterior Circulation Aneurysm; (7) Lumbar Discectomy; (8) Radiosurgery of a Metastatic Brain Tumor; (9) Release of Tethered Cord; (10) Removal of Intracranial Hematoma; (11) Surgical Treatment of Pituitary Tumor; (12) Surgical Treatment of Trigeminal Neuralgia; (13) Ulnar Nerve Transposition; (14) Non-surgical Treatment of Back Pain. Key case participation will be validated and feedback given to diplomates for analysis.

B. Communication Assessment Tool: Practice assessment of physician-patient communication must be submitted every three years. Patient perception of physician performance in the areas of interpersonal and communication skills will be measured using a survey given to 20 patients who respond via telephone or the Internet. Participation in the communication assessment survey is validated and feedback given to the participant for analysis.

C. Chief of Staff Questionnaire: Every three years a chief of staff questionnaire must be submitted by the diplomate. The questionnaire will allow the ABNS to verify the diplomate's standing at his or her primary hospital and will cover the MOC areas of professionalism, communication skills and participation in systems-based practice.

D. SANS: Content is developed by the SANS CNS editorial board to assess the competencies of interpersonal skills, professionalism, practice-based learning and improvement, and systems-based practice. Items are then refined to meet the standards of the ABNS and the National Board of Medical Examiners for cognitive knowledge examinations.

E. Additional Modules: Other modules, including one on patient safety, will be added as developed. Participation is expected to be every three years.

4. Evidence of Cognitive Knowledge

A cognitive examination must be taken and passed in the eighth, ninth or 10th year of each 10-year MOC cycle. Prior to taking the examination, the applicant must have met these criteria:

■ Active continuous participation in the MOC program (all three-year cycles—i.e., CME hours, key cases, SANS, communications assessment tool, unrestricted license and chief of staff questionnaires) or successful reinstatement in the process if there was a period of non-participation.

■ No fees outstanding to the ABNS.

This secure computer-based examination will be given at regional testing centers. It will consist of 200 questions and will be entirely clinically based. The pass rate is anticipated to be very high. A significant portion of the content of the MOC cognitive examination will be similar in style and content to the material presented in previous SANS examinations. Three different modules will be offered:

(1) *General Examination:* Consists of 200 basic clinical neurosurgery questions.

(2) *Spine Examination:* Consists of 150 of the basic clinical neurosurgery questions, plus 50 complex spine questions.

(3) *Pediatric Examination:* Consists of 150 of the basic clinical neurosurgery questions, plus 50 pediatric questions.

As soon as the results become available, participants will receive their examination score reports and notification of their passage or failure. Participants who do not receive their results within 16 weeks should call the ABNS office and request a report. Examination results will be communicated to the diplomate via a written report mailed to the diplomate's postal address; no results will be communicated via telephone, fax or e-mail.

Most diplomates who participate in the MOC cognitive examination will be successful. Those who do not pass will be encouraged to continue the MOC process and retake it at the earliest possible time, as long as they are within their 10-year cycle. An examination fee must be paid each time the examination is taken. Diplomates may retake the examination as long as they continue to meet the program requirements expected of active participants.

■ *For Time-Limited Certificates:* Diplomates with time-limited certificates are required to pass the MOC cognitive examination. The examination may be taken during the eighth, ninth or 10th year of the MOC process. Individuals who have not passed it by the end of the 10-year period may reinstate their diplomate status only by repeating all the requirements for initial ABNS certification, including passing the primary and oral examinations and thereby earning a new, valid, time-limited certificate. Consequently, diplomates are encouraged to take the MOC examination in the eighth or ninth year of their 10-year cycle so that, in the event they do not pass, they can retake it prior to the expiration of the 10-year period.

■ *For Non-Time-Limited Certificates:* Diplomates with non-time-limited certificates who wish to satisfy the requirements of the MOC process but do not pass the cognitive examination by the end of their 10-year period will not lose their certification; however, they will no longer be considered active in the MOC process unless granted an exemption by the ABNS.

Ralph G. Dacey Jr., MD, M. Sean Grady, MD, Hunt Batjer, MD, and William Chandler, MD, are directors of the American Board of Neurological Surgeons, www.ABNS.org.

NEWS.ORG

AANS/CNS Sections Committees Associations Societies

"Lost" AANS Members

Year Joined,

Last Known Location

Hugh W. Barr, MD
1969, Ontario

Wesley A. Cook Jr., MD
1974, North Carolina

Giuseppe Dalle Ore, MD
1970, Italy

Jeremy W. Denning, MD
2000, Texas

Stefanie Ann DiCea, PA-C
2005, Michigan

Robert A. Evans, MD
1970, California

William S. Fields, MD
1960, Georgia

Adolphe Y. Gerol, MD
1963, Wisconsin

H. Stephen Goldberg, MD
1977, Texas

Daniel Charles Good, MD
1978, Pennsylvania

John Hankinson, MD
1973, England

Thomas J. Holbrook, MD
1950, West Virginia

Henry L. Hood, MD
1961, Pennsylvania

William S. Huestis, MD
1965, Nova Scotia

Kenneth I. Kiluk, MD
1978, North Carolina

Stephen Francis
Korneyey, MD
1958, Hungary

Joyce A. Kunkel, RN,
CNRN
1994, North Carolina

Warren H. Leimbach II, MD
1992, Ohio

Nills G. Lundberg, MD
1969, Sweden

Ignacio A. Magana, MD
1993, Florida

Richard Malmros, MD
1969, Denmark

Help Find "Lost" AANS Members The AANS seeks readers' help in locating the members listed at left. In an effort to locate them, the AANS has contacted their medical schools, residency programs, institutions where they practiced medicine and state neurosurgical societies, and has conducted Web searches. Those with contact or other information that may help to locate an individual are asked to contact AANS Member Services at (888) 566-2267, ext. 538, or kal@aans.org.

AANS Endorses NextGen EMR System AANS members now can receive a discount on NextGen electronic medical record systems, available through a new alliance agreement. EMR systems can help physician practices improve quality, reduce risk, cut costs and increase revenues. NextGen's EMR system is appropriate for any size of medical practice—solo or small practice or large, multiprovider, multilocation group. Providers that want to share and manage clinical and administrative patient information through a comprehensive, single-source application can visit www.nextgen.com or call (215) 657-7010 to learn more. Neurosurgical templates are available. For information on other AANS partner programs, visit the AANS Web site at www.aans.org/membership/mem_services.asp

AANS Achieves ACCME Accreditation Through 2009 Following a routine review of AANS continuing medical education activities, the Accreditation Council for Continuing Medical Education accredited the AANS until the next review in November 2009. The ACCME notified the AANS in November of accreditation, finding compliance in all areas and exemplary compliance in two areas. As an ACCME-accredited provider, the AANS takes full responsibility for its certified activities including planning, implementing and evaluating them. Accreditation by the ACCME allows the AANS to directly sponsor CME programs such as AANS coding courses, practice management courses, clinical courses and oral boards courses. It also allows the AANS to jointly sponsor CME programs with unaccredited providers and to cosponsor CME programs with accredited providers. Additional information on joint sponsorship,

cosponsorship and all AANS CME activities is available at www.AANS.org/education.

ACS/AANS Health Policy Scholarship The 2006 Health Policy Scholarship, offered by the American College of Surgeons and the AANS, supports attendance at the Leadership Program in Health Policy and Management at Brandeis University from May 29 to June 3, 2006. The goal of the leadership program is to provide clinical leaders with the policy and management skills essential for creating innovative and sustainable solutions that improve the quality, cost-effectiveness, and efficiency of healthcare service delivery. The awardee must be between the ages of 30 and 55 and a member of both the ACS and the AANS. The application deadline is Feb. 1. Additional information is available at www.aans.org/ACS_AANS_Scholarship.pdf.

"Contemporary Neurosurgery" Now Counts Toward AANS CME Requirements Each issue of Contemporary Neurosurgery, a biweekly newsletter, has been recognized as a cosponsored activity for which 1.5 category 1 credits are awarded toward the AANS Continuing Education Award in Neurosurgery. A description of the newsletter is available at www.lww.com/product/?0163-2108. Subscribers to Contemporary Neurosurgery may submit CME certificates to the AANS retroactive to January 2005. AANS members are eligible to receive a one-time 10 percent discount on their subscriptions by calling (800) 638-3030 and referencing the AANS promotional code YNLAANS.

AANS Endorses TotalChart Medical Software System TotalChart, a complete and portable electronic chart and medical record, allows access to up-to-date coding information, patient information, schedules and clinical notes. "One of the critical elements to the success of a surgical practice is the efficient management of the coding and billing process," said Ronald Warnick, MD, chair of the AANS Member Development Committee. "TotalChart is one of a new breed of practice solutions that put control of this process in the hands of the surgeon." AANS members receive 10 percent discount of the current list price for the TotalChart software license. Additional information is available at

Remembering Lyal G. Leibrock, MD

JAMES R. BEAN, MD

At the passing of Lyal G. Leibrock, MD, we all lost a dear friend, a wise and humorous companion, and an intrepid and dearly loved fellow-traveler on the highway of neurosurgery.

We will miss him, with his unfeigned modesty, his too little acknowledged distinction, and his understated leadership. He devoted his life to his profession, even to this bitter and untimely end.

He was instrumental in bringing the Council of State Neurosurgical Societies to the position of influence and respectability in neurosurgery that it now enjoys. His guidance and enthusiasm are unmatched and irreplaceable.

He worked until his will no longer trumped his illness, enduring his trial without complaint. This expected news brings unaccustomed sorrow. We see death often, but rarely does it touch our lives so deeply. We mourn his passing.

Dr. Leibrock died Sunday, Nov. 13, of metastatic colon cancer. He is survived by his wife, Judi, children Michele, Elizabeth and Christopher, and a granddaughter, Olivia.

Biography

For 27 years, Lyal G. Leibrock, MD, was an active participant in the Department of Surgery at the University of Nebraska Medical Center, most



recently as professor and department chair. When a neurosurgery training program was approved at UNMC in July 1993, Dr. Leibrock served as its program director.

Dr. Leibrock had an interest in pain, skull base, and spinal surgery. He was a visit-

ing professor at many universities in the United States as well as Shiraz University in Shiraz, Iran, and the China/Japan Friendship Hospital in Beijing, China. He was a fellow of the American College of Surgeons, a member of the Society for Neurological Surgeons as well as the American Association of Neurological Surgeons and the Congress of Neurological Surgeons for which he served on numerous committees, and a founding member of the North American Skull Base Society. He participated in the Council of State Neurosurgical Societies for more than a decade, serving as chair from 1999 to 2001. The CSNS recently honored him with the Distinguished Service Award.

Dr. Leibrock was born in Alma, Kan., Nov. 20, 1940, and raised in California, where he graduated from the University of Southern California School of Medicine. Dr. Leibrock performed a surgical internship at Los Angeles County USC Medical Center from 1969 to 1970. He completed his neurosurgical training at Johns Hopkins Hospital in the summer of 1976 under the direction of A.E. Walker, MD, and Donlin Long, MD, and he then served two years on active duty at the Naval Regional Medical Center, Oakland, Calif. ■

S. Napoleon Martinez, MD
1962, Canada

Luciano M. Modesti, MD
1972, New York

Juan Negrin Jr., MD
1952, New York

Helge Nornes, MD
1976, Norway

Jorge Rene Ordonez, MD
1979, Maryland

Richard G. Perrin, MD
1998, Ontario

Richard Henry Retter, MD
1958, Ohio

Charles W. Rossel, MD
1967, Ohio

William A. Rouady, MD
1978, Virginia

John Albert Savoy, MD
1976, Maine

James F. Sheridan, MD
1973, Ohio

Richard B. Small, MD
1983, California

Donald Leon Stainsby, MD
1960, Washington

Gordon J. Stewler, MD
1957, North Carolina

Fred N. Sugar, MD
1976, Colorado

Jean Talairach, MD
1970, France

John L. K. Tsang, MD
1955, Nevada

Andrew F. Venditti, PA-C
2001, Indiana

Jody M. Wellwood, MSN,
ACNP
2002, Michigan

Walter R. Whitehurst, MD
1967, Florida

Stuart R. Winston, MD
1977, Arizona

Luis Yarzagaray, MD
1975, Columbia

John C. Zahniser, MD
1982, California

David S. Zeale, MD
1955, California

Leonard L. Zinker, MD
1962, Florida

www.aans.org/membership/totalchart.asp and at www.TotalChart.com, (888) 220-1050.

AMA Says P4P Programs Must Be Fair and Ethical At its semiannual policymaking meeting in November, the American Medical Association voted to oppose Medicare pay-for-performance initiatives (such as "value-based purchasing programs") that do not meet the AMA's Principles and Guidelines for Pay-for-Performance. "The AMA today sends a clear message that pay-for-performance must be focused on quality and be patient-centered, fair and ethical," said AMA Trustee John Armstrong, MD. The five AMA principles for fair and ethical pay-for-performance programs are: ensure quality of care; foster the

patient-physician relationship; offer voluntary physician participation; use accurate data and fair reporting; and provide fair and equitable program incentives. Additional information is available at www.ama-assn.org.

2006 NASS Research Grant and Fellowship Applications Due May 5 The North American Spine Society is offering research grants for investigative research on the spine, as well as a clinical traveling fellowship and a research traveling fellowship. The application deadline is May 5. Additional information and an application are available at www.spine.org/Research/ResearchProgram.cfm.

Coding Changes for CPT 2006

Payers May Lag Behind Jan. 1 Implementation

In the past 18 months, several codes have moved through the Current Procedural Terminology process, valuation by the Relative-value Update Committee and publication in the 2006 Medicare fee schedule. These codes include spinal incision and drainage, vertebral augmentation after cavity creation (kyphoplasty) and intracranial stenting. This Coding Corner will examine the new category I codes for 2006 as well as their valuation in relative value units, or RVUs, since Medicare payment is determined by a code's RVUs multiplied by the conversion factor. The deletion of several evaluation and management codes also will be addressed.

The American Academy of Orthopaedic Surgeons requested the development of spinal incision and drainage codes to parallel similar codes that exist for extremity joints. After collaboration with the AANS, CNS and North American Spine Society, a pair of codes was developed to describe posterior incision and drainage of a subfascial infection. Code 22010 (21.69 facility RVUs) reflects posterior drainage of a subfascial cervicothoracic abscess, whereas code 22015 (21.50 facility RVUs) described the same procedure in the lumbosacral region. Neither code should be reported with instrumentation removal (codes 22850 and 22852) or drainage of a complex postoperative wound (code 10180, 4.59 facility RVUs), which was the only code available for this procedure before 2006.

AANS and CNS Call for New Kyphoplasty Codes

The AANS and CNS requested the development of codes to reflect vertebral augmentation after cavity creation and/or fracture reduction (kyphoplasty). Although similar codes for vertebroplasty were developed years earlier, the AANS

and CNS requested a new set of codes to reflect the additional work of balloon kyphoplasty. Code 22523 (16.29 facility RVUs) reflects percutaneous vertebral augmentation, including cavity creation and biopsy, using a mechanical device in the thoracic spine. The code will be used once in an operative session, even if bilateral access is obtained. Additional levels of kyphoplasty performed in either the thoracic or lumbar spine would be coded 22525 (7.47 facility RVUs). If only lumbar vertebrae are treated, then the primary code used would be 22524 (15.61 facility RVUs). Although previously reimbursed at 50 percent more than vertebroplasty by some payers under the unlisted code 22899, the survey process revealed only an incremental difference in physician work when comparing intraoperative work for vertebroplasty and kyphoplasty.

If the surgeon uses image guidance, the supervision and interpretation of the imaging is to be separately reported. The imaging codes for vertebroplasty were revised to include kyphoplasty as well. Code 76012–26 (1.88 facility RVUs) would be used for guidance by fluoroscopy, whereas code 76013–26 (1.93 facility RVU) would be used for computed tomographic guidance. The modifier –26 is appended when the surgeon does not own the equipment, but rather is only providing the professional component of the service. A radiology report must be dictated to reflect the supervision and interpretation of the radiological procedure, but it may be included in the operative note as a separate and distinct paragraph. Alternatively, a completely separate radiology report may be dictated.

A series of five endovascular treatment codes also was developed to reflect recent innovations in intracranial endovascular procedures. Code 61630 describes

intracranial balloon angioplasty, whereas 61635 describes placement of an intracranial stent including balloon angioplasty, if necessary. Both codes include all selective vessel catheterization and diagnostic imaging including supervision and interpretation of the images obtained. For treatment of vasospasm, code 61640 describes balloon dilatation on the initial vessel in vasospasm, whereas 61641 reflects each additional vessel treated in the same vascular family and 61642 each additional vessel in a different vascular family. Likewise, the selective vessel catheterization and diagnostic imaging including supervision and interpretation of the images is included. Unfortunately, the Centers for Medicare and Medicaid Services have identified these as non-covered services and did not publish RVU values.

Redundant E&M Codes Eliminated

In addition, several evaluation and management codes have been eliminated for 2006. Three follow-up inpatient consultation codes (99261–99263) will now be reported as subsequent hospital care (99231–99233). The former codes were felt to be redundant with the subsequent hospital care codes, which will now be used for any subsequent E&M service provided after an inpatient consultation (99251–99255). Similarly, the confirmatory consultation codes (99271–99275) will now be reported as an outpatient consultation (99241–99245). The confirmatory consultation codes were also deemed redundant. If a third-party payer requests the consultation, the –32 mandated services modifier should be appended to the outpatient consultation code.

Note that although the codes become valid on Jan. 1, it can take payers as long as six months to recognize the new changes. ■

Gregory J. Przybylski, MD, is professor and director of neurosurgery at JFK Medical Center in Edison, N.J. He is co-chair of the AANS/CNS Coding and Reimbursement Committee and a member of the CMS Practicing Physicians Advisory Council, and he plans and instructs coding courses for the AANS and the North American Spine Society.

EVENTS

Calendar of Neurosurgical Events

ACI's 7th National Conference on Adding, Updating & Expanding Neuroscience Centers of Excellence

Jan. 26–27, 2006
Phoenix, Ariz.
(312) 780-0700
www.acius.net

Update in EEG, EMG and Clinical Neurophysiology 2006

Jan. 29–Feb. 4, 2006
Scottsdale, Ariz.
(480) 301-4580
www.mayo.edu/cme

Richard Lende Winter Neurosurgery Conference⁺

Feb. 3–8, 2006
Snowbird, Utah
(801) 581-6554
www.lendemeeting.com

Neurology Neurosurgery Interface 2006

Feb. 17–19, 2006
San Juan, Puerto Rico
(215) 898-6400
www.med.upenn.edu/cme

Joint Annual Meeting of the AANS/CNS Cerebrovascular Section and the American Society of Interventional & Therapeutic Neuroradiology⁺

Feb. 17–20, 2006
Orlando, Fla.
(888) 566-2267
www.neurosurgery.org/cv

44th Annual Dr. Kenneth M. Earle Memorial Neuropathology Review Course

Feb. 20–24, 2006
Bethesda, Md.
(202) 782-2637
www.afip.org/Departments/edu/coursehtm/06neuropath.htm

22nd Annual Meeting American Academy of Pain Medicine

Feb. 22–25, 2006
San Diego, Calif.
(847) 375-4731
www.painmed.org/annualmeeting

Carotid Interventional: Interactive Seminar and Live Demonstration⁺

Feb. 27–28, 2006
Buffalo, N.Y.
(716) 887-5200 x2135

Current Topics in Neurosurgery: Meet the Experts

Feb. 27–March 5, 2006
San Juan, Puerto Rico
(732) 235-7430
www.umdj.edu

Southern Neurosurgical Society Annual Meeting⁺

March 2–5, 2006
Southampton, Bermuda
www.southernneurosurgery.org

International Spine & Spinal Injuries Conference

March 3–5, 2006
New Delhi, India
www.scs-isic.com

Interurban Neurosurgical Society Annual Scientific Meeting⁺

March 3, 2006
Chicago, Ill.
(715) 542-3201
mrakow@frontiernet.net

2nd Annual Update Symposium Series on Clinical Neurology and Neurophysiology

March 6–8, 2006
Jerusalem, Israel
www.isas.co.il/neurophysiology2006.com

21st Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves⁺

March 15–18, 2006
Lake Buena Vista, Fla.
www.spinesection.org/MeetingsEd.htm

Carotid Intervention: Interactive Seminar With Live Demonstration Simulation⁺

March 27–28, 2006
Buffalo, N.Y.
(716) 887-5200 x2135

58th Annual Meeting American Academy of Neurology

April 1–8, 2006
San Diego, Calif.
www.aan.com

3rd State of the Art in Chronic Low Back Pain Symposium

April 9–12, 2006
Bodrum, Turkey
www.vitalmedbodrum.com

2006 AANS/CNS Section on Pain Surgery Annual Meeting⁺

April 21, 2006
San Francisco, Calif.
(888) 566-2267
www.neurosurgery.org/pain

2006 AANS Annual Meeting

April 22–27, 2006
San Francisco, Calif.
(888) 566-2267
www.AANS.org

American Society of Neuroradiology 44th Annual Meeting

April 29–May 5, 2006
San Diego, Calif.
(630) 574-0220
www.asnr.org

Carotid Intervention: Interactive Seminar with Live Demonstration and Simulation⁺

May 1–2, 2006
Buffalo, N.Y.
(716) 887-5200 x2135

The Society of Neurological Surgeons Annual Meeting

May 21–23, 2006
Durham, N.C.
www.societyns.org

18th Annual International Bethesda Spine & Peripheral Nerve Workshop

May 31–June 6, 2006
www.bethesdaspine.com

American Society for Stereotactic and Functional Neurosurgery

June 1–4, 2006
Boston, Mass.
www.assfn.org

9th International Conference on Cerebral Vasospasm

June 27–30, 2006
Istanbul, Turkey
www.cerebralvasospasm9.org

Computer Assisted Radiology and Surgery (CARS 2006)

June 28–July 1, 2006
Osaka, Japan
www.cars-int.org

12th Computed Maxillofacial Imaging Congress

June 28–July 1, 2006
Osaka, Japan
www.cars-int.org

⁺ These meetings are jointly sponsored or cosponsored by the American Association of Neurological Surgeons. The frequently updated online meetings calendar and continuing medical education information are available at www.aans.org/education.

AANS Courses

For information or to register call (888) 566-AANS or visit www.aans.org/education.

■ Managing Coding & Reimbursement Challenges in Neurosurgery

* "Coding for Pros" prerequisite: AANS coding course taken within two years.

Jan. 27–28, 2006 Las Vegas, Nev.
Feb. 17–18, 2006* San Antonio, Texas
March 3–4, 2006 .St. Pete Beach/Tampa, Fla.
May 5–6, 2006* Philadelphia, Pa.
Sept. 8–9, 2006 Chicago, Ill.
Nov. 3–4, 2006* Los Angeles, Calif.

■ Neurosurgery Review by Case Management: Oral Board Preparation

May 7–9, 2006 Houston, Texas
Nov. 5–7, 2006 Houston, Texas

■ Current Advances in Spinal Fixation: Advanced Course

Feb. 11–12, 2006 Memphis, Tenn.

■ Minimally Invasive Spinal Techniques

June 10–11, 2006 St. Louis, Mo.

■ Neurosurgical Practice Management: Improving the Financial Health of Your Practice

May 7, 2006 Philadelphia, Pa.
Sept. 10, 2006 Chicago, Ill.



American
Association of
Neurological
Surgeons

A A N S A N S W E R S

THOMAS A. MARSHALL

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AANS Serves Up Success

Table's Already Set for Increased Innovation

The fiscal 2004–2005 year-end report was presented to the AANS Board of Directors at its November 2005 meeting. The report affirmed that for the fourth consecutive year, the AANS enjoyed an extremely favorable cycle of financial stability and growth of services to its members. In fact, this marks the first time in the organization's records that the AANS has enjoyed four consecutive years "in the black" since its founding 75 years ago.

What is evident is that the AANS successfully weathered a series of internal and external upheavals that most organizations rarely must confront separately, let alone simultaneously, in the final years of the 1990s and the initial years of this decade.

In the late 1990s, the budget was losing between \$3 million and \$5 million annually, there was a management revolving door of three AANS executive directors hired successively in 1998, 1999 and 2000, and the Executive Office staff, while somewhat inflated in number, was turning over at a rate of 117 percent in 2000 and 2001.

Though daunting, these management challenges were not the real cause for concern. Far more ominous clouds threatened, not on the horizon, but directly overhead.

The AANS had become dangerously reliant on only two very undependable sources of income for its operations: the annual meeting and membership dues. Not only could earthquake, terrorist attack, or, as we just saw in New Orleans, devastating flood wipe out the former, the AANS was not even systematically and consistently collecting the latter. The only thing that was consistent about the dues was that they were raised every year as a budgetary matter of course to reflect a cost-of-living increase. (Dues have not been raised in the last four consecutive successful fiscal years).

Given what the organization faced at the time, how the AANS has reached the levels of stability and service that you enjoy today as a member is worth truly understanding.

While it is true that dramatic restructuring, downsizing and spending cuts at the front end



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paved the road to recovery, those key decisions are already enjoying too much of the focus and credit. Critical as those strategies were, they were only the "table setting" for the success that followed.

The reasons behind today's success can be attributed to far more than the belt-tightening tactics of five years ago. Crucial to this success is that simultaneously the AANS augmented a thoughtfully chosen menu of new, and at least for the AANS, unproven revenue streams: the expansion of educational programming; the development of products and services based upon accurate assessment of what you, the member, told us you wanted; the revision of organizational policies covering dues, investment revenue, and a cash reserve; and the measured outreach to a variety of allied publics who had an interest in the health of neurosurgery and its most diversified membership association.

Five years' worth of AANS leadership and staff can take pride in the success of those basic strategies. But it was always the AANS members who were the intended ultimate beneficiaries of those early decisions.

At a time when most organizations would seek shelter to ride out the fiscal, structural and philosophical storm, the decisions to propel the AANS into a proactive production mode were critical to providing better and expanded services to AANS members. This proactive mode is the core of AANS' strategic planning for the latter half of this decade and well beyond. The new and improved AANS is an organization ready to move forward in the 21st century with innovative programming for its members, and positioned to launch the specialty to new heights. ■