

# C O N T E N T S

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A M E R I C A N A S S O C I A T I O N O F N E U R O L O G I C A L S U R G E O N S

## AANS BULLETIN

The quarterly publication of the American Association of Neurological Surgeons

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Cover Illustration by Bryan Leister

# Shaping the Future

## *Examining the Role of the AANS/CNS Sections.*

Over the past seven months, I have emphasized our Board's efforts to embrace the diverse interests of our membership, and have highlighted the importance of our Research Foundation as we broach the new millennium.

At this point, I wish to address the importance of broadening neurosurgery's representation by focusing on the evolving relationship between the AANS Board and the leadership of the AANS/CNS Sections. This relationship serves as evidence of our organization's commitment to developing the focused interests of our membership.

### **Broader Representation for Subspecialty Sections**

Your Board feels that it is in the best interest of the discipline to engage those groups that have developed representation for the specific foci that constitute the breadth of organized neurosurgery. We realize that focused interests have emerged both within practice groups, as well as residency training programs, and it is important that these focused interests be supported and integrated into the global practice of neurosurgery.

To support these interests, the AANS initially sponsored various subspecialty Sections that have subsequently been embraced by the AANS and CNS leaderships. We also have worked with the American Board of Neurological Surgery (ABNS) and the Residency Review Committee (RRC) for Neurosurgery to ensure that neurosurgical residency, accreditation and certification reflects the developments emphasized by the Sections.

The position of the AANS with respect to these areas of focused interest is parallel to the ABNS, in that we recognize and support the growth of Section interests, but are

opposed to subspecialty certification. We believe that it is important to support the efforts of our Sections and advance their particular areas of interest through a continued investment in research and education. By doing so, all of us, including our patients, will benefit from such efforts.

### **Expanding the Playing Field**

To provide a voice for areas of special interest within the realm of neurosurgery, the

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School of Medicine.*



AANS Board of Directors recently approved a new policy that established ad hoc positions on the Board of Directors for nominated Section leaders. Each ad hoc position, which we anticipate will span three years, allows appointees to participate in the deliberations of the AANS Board in order to enhance communication between the Sec-

tions and the AANS. To date, the deliberations have been enlightening for the Sections and AANS Board alike, and we look forward to the continued interaction during our mid-year meeting in November.

We believe that this two-way information transfer between the AANS Board and the Section leadership will enhance the understanding of both groups and enable the incorporation of multiple principles across the full spectrum of neurosurgery. Therefore, it is imperative that we work together to expand the broad playing field that constitutes neurosurgery.

With this in mind, I encourage each of you to consider participating in the activities of those Sections that impact upon your practices and complement your knowledge base. The AANS offers two mechanisms by which such participation can occur.

- First, the AANS provides an opportunity for our membership to participate in the Section-sponsored Scientific Sessions at the Annual Meeting. These presentations are part of the general registration for the Annual Meeting and cover a full range of topics within a specific area of interest.
- Second, many of the Sections offer interim meetings that provide further opportunities to enhance one's knowledge in particular areas of focus.

Together, these two mechanisms, along with the Board's ongoing support for Section representation, provide us with the tools to face the challenges posed by the evolution of neuroscience and its translation to our future practices. ■

### **GIVE US A CALL—IT'S ON US**

*Need information about new products, upcoming meetings or courses? Want to request your CME transcript, ask a question about your membership or the benefits it brings to your practice and the speciality?*

*The answers are just a phone call away—and it's free. Dial the AANS, toll-free, at (888) 566-AANS.*

# NEWSLINE

NewsMembersTrendsLegislation

## FROM THE HILL

- **“Quality Health Care Coalition Act” Gains Momentum.** HR 1304, the “Quality Health Care Coalition Act,” continues to gain momentum in the House of Representatives. The bill now has over 170 co-sponsors, with a majority of House Judiciary Committee Members co-sponsoring the measure. This bipartisan legislation will allow physicians to jointly negotiate the terms and conditions of their contracts (including fees) with health plans, without violating antitrust laws and without joining a labor union. Currently, insurance companies operate under a special exemption from antitrust laws, putting them in a position to engage in anti-competitive practices that are detrimental to patient care. The AANS and CNS, along with the American Medical Association (AMA) and other specialty societies recently sent Judiciary Committee Chairman, Henry Hyde (R-IL), a letter requesting that he “mark-up” the bill and move it out of committee, and on to the House floor for a vote.
- **House Votes on Managed Care Reform Bill.** On October 7, 1999, the House of Representatives passed a comprehensive managed care reform bill, HR 2723, the “Bipartisan Consensus Managed Care Improvement Act.” After rejecting last minute efforts by the Republican Leadership to pass their weakened version, 68 Republicans crossed party lines to join with the Democrats—the measure passed 275 to 151. The most controversial provisions of the bill will allow patients to sue their HMOs if they have been injured due to delays or denial of medical care. Particularly important to neurosurgery, are the provisions that guarantee patients’ direct access to specialists, choice of physician through a mandatory point-of-service option, and the establishment of the “prudent layperson” definition of an emergency. Finally, the legislation establishes an expedited internal and independent external appeals process for resolving grievances associated with treatment denials. The action now turns to the House/Senate conference, where differences between the Senate (a much more limited bill) and House bills must be reconciled before a compromise measure is presented to the Congress for a final vote. President Clinton has vowed to veto any bill that does not contain adequate patient protections.
- **AANS and CNS Comment on Proposed Changes to Medicare Fee Schedule.** The AANS and CNS recently submitted comments to the Health Care Financing Administration (HCFA), challenging several proposed changes to the Medicare Fee Schedule. In the letter, the AANS and CNS objected to flaws in HCFA’s practice expense payment system, which continues to suffer from significant data and methodological problems. In addition, the AANS and CNS strenuously objected to the newly proposed methodology for calculating the malpractice expense component of the fee schedule, which in our estimation will not adequately cover the costs of a neurosurgeon’s malpractice premium. The AANS and CNS plan to launch a legislative campaign urging Members of Congress to object to HCFA’s malpractice expense methodology which, in 2002, is expected to result in an overall reduction in Medicare income by approximately 10 percent relative to 1998 fees.
- **AANS and CNS File Amicus Brief With Supreme Court Challenging Medicare Act.** The AANS and CNS, along with several other medical organizations including the AMA, have filed an amicus brief before the Supreme Court in the Illinois Council on Long-term Care v. Shalala (ICLTC) case. This case questions when federal courts have jurisdiction to review challenges to Medicare regulations and policies. The Clinton Administration has taken the position that, under current Medicare law such matters are not subject to judicial review. This is an important case for all providers of Medicare services, since without judicial review HCFA’s regulations can only be challenged through the administrative process (which favors the government) or in Congress (which generally does not like getting involved in Medicare payment matters). The outcome of this case could also have a direct bearing on the AANS/CNS practice expense lawsuit, which is still pending before the federal district court in Chicago, Illinois.

# NEWSLINE

NewsMembersTrendsLegislation

## AANS NATIONAL OFFICE IS MOVING

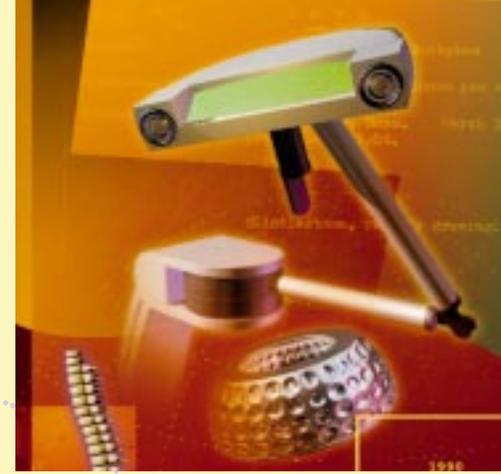
The AANS has purchased a new headquarters building in Rolling Meadows, Illinois. The new facility will be significantly larger than our present building and will better accommodate the growing needs of the AANS professional staff. A tentative move date is scheduled for mid spring of 2000. More information will follow in the next issue of the *Bulletin*.

- **AMA Implements Program to Safeguard Medical Confidentiality on the Web.** The AMA recently announced that it is working with Intel Corporation to deploy a new electronic system that will protect physician and patient confidentiality when they use the Internet to send and receive medical information. Digital credentials (which uniquely identify individuals over the Internet) will be issued to physicians early next year, providing a more reliable authentication technique than passwords for secure Internet transactions. "The potential for the Internet to be used to obtain lab results, send prescriptions to pharmacies and receive patient files makes it vitally important that systems are in place to ensure the patient's privacy and confidentiality are protected," said Richard Corlin, MD, Speaker of the House of Delegates of the AMA, in a statement regarding the program.

## NEURO NEWS

- **HCFA Creates New Medicare Coverage Advisory Committee.** The Health Care Financing Administration (HCFA) has created a new Medicare Coverage Advisory Committee (MCAC). This committee will be responsible for making recommendations to HCFA regarding what services Medicare should cover. The MCAC is subdivided into six review panels: medical/surgical procedures, drugs/biologics, labs, diagnostic imaging, medical devices and durable medical equipment. Kim J. Burchiel, MD, Chair of Neurosurgery at Oregon Health Sciences University, has been appointed to the Medicare Coverage Advisory Committee.
- **AANS and CNS Create New Neurosurgical Device Forum.** In an effort to be more proactive on matters related to the Food and Drug Administration (FDA), the AANS and CNS have established the Neurosurgical Device Forum. This mechanism will bring neurosurgeons and representatives from the FDA, HCFA and National Institutes of Health together to discuss issues related to drugs, devices and other new technologies. Richard G. Fessler, MD, PhD, Professor of Neurosurgery at the University of Florida and Chair of the AANS/CNS Drugs, Devices and Technology Subcommittee of the Committee for the Assessment of Quality, will spearhead this effort. Dr. Fessler also is a member of the FDA's Neurologic Device Panel. Other neurosurgeons serving on the panel include: Alexa Irene Canady, MD, Professor of Neurosurgery at Children's Hospital of Michigan (panel Chair), and Gail L. Rosseau, MD, Director of Cranial Base Surgery at the Chicago Institute of Neurosurgery and Neuroresearch.
- **AMA Establishes New E&M Task Force.** In response to ongoing controversy surrounding the creation of new documentation requirements for evaluation and management (E&M) services, the AMA recently established the Ad Hoc Task Force on Evaluation and Management Documentation System. Troy Tippet, MD, a private practice neurosurgeon in Pensacola, Florida, has been appointed by the AMA Board of Trustees to this new task force. Dr. Tippet is one of 13 task force members, which includes representatives from the following specialties: Internal Medicine (3), Family Practice (4), Pediatrics (1), OB/GYN (1), Psychiatry (1), Orthopedics (1), Cardiology (1), and Neurosurgery (1). HCFA has yet to finalize the new guidelines, which may not be implemented until 2001.
- **LSS Selected as a Research Topic by AHCPR.** The Agency for Health Care Policy and Research (AHCPR) recently selected the AANS/CNS nominated topic "Treatment of Lumbar Spinal Stenosis" for an AHCPR funded Evidence-based Practice Center Topic. The AHCPR, which serves as a science partner with private-sector and other public organizations, works to improve the quality, effectiveness and appropriateness of health care delivery, and to speed the translation of evidence-based research findings into improved health care. Neurosurgeons selected to serve on the technical expert panel are: Paul C. McCormick, MD, Russell L. Travis, MD, AANS Immediate Past President, and Christopher G. Paramore, MD.

**SPECIAL SECTION:**  
The History and Future  
of Neurosurgery



# Evolution of Neurosurgery:

A Century of Advances by Chris Ann Philips

*During the 20th century, neurosurgeons achieved important improvements in technique and diagnosis. What's next?*

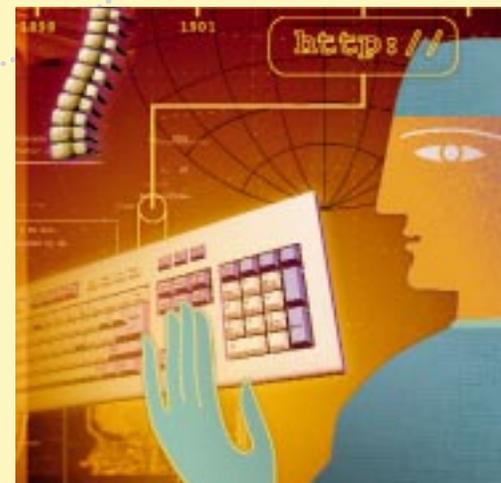
Neurosurgery, in a sense, has been around for centuries. The oldest evidence of purposeful "surgery" on the skull is over 10,000 years old.<sup>1</sup> In fact, we know from the Edwin Smith Papyrus<sup>2</sup> that the Egyptians practiced rather sophisticated neurosurgery 2000 years before the birth of Christ. The 1913 expedition of Dr. Ales Hrdlicka<sup>3</sup> in Peru provided proof of pre-Columbian neurosurgery in the New World. Subsequently, archeologists have found signs of neurosurgery at digs throughout most of the world. Neurosurgery performed during the 19th century was done only as a last resort and most often with disastrous consequences. During the 20th century, however, neurosurgeons have achieved important improvements to both technique and diagnosis.

## Early 20th Century

Most would agree that many of the early advances in neurosurgery during the 20th century can be attributed to Harvey Cushing, MD. After witnessing procedures in Europe, Dr. Cushing developed meticulous techniques based on

Continued on next page

This article provides a brief overview of the history of neurosurgery. For more information on the evolution of neurosurgery or for a listing of neuroscience resources, visit the Cyber Museum of Neurosurgery on NEUROSURGERY://ON-CALL® ([www.neurosurgery.org](http://www.neurosurgery.org)).



Continued from page 5

Halsteadian principles to perform surgery on the brain. Among the many diagnostic and technical advancements made at his hands or provocation, include the development of the anesthesia record; introduction of blood pressure apparatus (Riva-Rocci) in the U.S.; introduction of the pneumatic tourniquet for the control of scalp bleeding during craniotomy; development of vascular clips to control bleeding; and the emergence of electrosurgical techniques (Bovie). Many of the instruments Dr. Cushing invented have changed little over the years, and can still be found bearing his name in various instrumentation catalogues.

**The Influence of Walter Dandy, MD.** Dr. Cushing wasn't the only neurosurgeon making advances in the specialty during the early 1900s. Where his focus was on technique, Walter Dandy's, MD, innovations related to technology.

Dr. Dandy's<sup>4</sup> contributions include the use of myelography, pneumoencephalography and pneumoventriculography, and the wide usage of the radio knife for cautery and surgical dissection. He worked extensively with patients suffering from herniated intervertebral discs, gliomas, Meniere's syndrome, trigeminal neuralgia, pituitary adenomas, meningiomas, and hydrocephalus. His research interests were varied from chordoid plexus to the development of the first protective baseball cap.

What lessons can be drawn from these two medical professionals? They were men living on the cusp of great leaps in technology. More important, they were medically and mechanically astute. When they wanted to perform a maneuver during surgery and did not have an instrument to do it gracefully, they had the ability to design something that would.

When they did not have the diagnostic capability to verify the exact location of a tumor prior to surgery, they worked with inventors who could develop the equipment to insure a more appropriately focused surgical field. Additionally, they lived in a time when innovations were coming about in all areas of medicine and public hygiene that helped increase public awareness.

### Technological Explosion

By mid century, neurosurgery had undergone a metamorphosis and was entering new dimensions. Methods of anesthesia, sterilization, and hemostasis were emerging. The electroencephalogram found acceptance as a localization technique. Nuclear medicine techniques

were identified and advances in this area were made. Stereotactic neurosurgery emerged as a less-invasive surgical procedure. Microsurgery vastly improved patient outcomes, and angiography and other imaging techniques were developed to better assist surgeons.

Clearly, it is difficult to cite all of the advances in neurosurgery in the latter half of this century. However, the following overview provides a glimpse at some of the dramatic advances that have shaped this ever-expanding field.

**Electroencephalography.** Although proof was found in 1875 that electrical current originates from the cerebral cortex<sup>5</sup>, it wasn't until 1935 with the published results of electroencephalography (EEG) research that it came to be accepted as the primary diagnostic tool in certain epileptic disorders and some brain tumors. The emergence of this localization technique enabled neurosurgery to broaden its scope and efficiency, while increasing the safety of many procedures.

It is interesting to note that there were problems with early EEG machines picking up static and background noise (i.e., Wilder Penfield, MD, was able to pick up music on an EEG in 1938<sup>6</sup>). By 1944, it was determined that nearly 60 percent of tumors could be localized correctly using EEG<sup>7</sup>—this has given way to other imaging techniques, but its importance as a diagnostic tool for epilepsy remains.

**Nuclear Studies.** Research at the University of Minnesota in 1947 found that fluorescein will permeate abnormal brain tissue, allowing needle biopsies of suspected tumors to be verified under ultraviolet light. In addition, advances during the 1950s and 1960s utilized many non-harmful types of radioisotopes to identify the type and location of brain tumors.

Detection of the gamma rays emitted by radioisotopes was accomplished by an evolution of scanners, beginning with a Geiger-Müller tube in 1948 and resulting in the rectilinear brain scanner in 1951, scintillation camera in 1958, and the development of the Positron-Emission Transaxial Tomogram (PET) scanner in 1975.

Moreover, the advent of the Computerized Axial Tomography (CAT) scanner in 1970 and Magnetic Resonance Imaging (MRI) in 1981 vastly improved pathology localization techniques.<sup>8</sup>

**Stereotactic Neurosurgery.** Over the past 80 years, stereotactic surgery has progressed from an innovation in the laboratory study of neuroscience, to an ever-increasing part of the practice of neurosurgery. The now burgeoning field of human stereotactic surgery, and

Special thanks to M. Gazi Yasargil, MD; T. Glenn Pait, MD; Igor de Castro, MD; A. John Popp, MD; and Chris Ann Philips for each contributing elements to the timeline.

**1861**  
Broca reports on localization of speech.

**1867**  
Lister introduces surgical antiseptics.

**1870**  
Fritsch and Hitzig introduce cerebral localization by brain stimulation in animals.

**1887**  
Horsley is the first to successfully remove a spinal cord tumor.

**1888**  
Bennett and Abbe develop dorsal rhizotomy for pain.

**1891**  
Horsley describes the surgical treatment for trigeminal neuralgia.

**1892**  
Horsley introduces bone wax.

**1893**  
Macewen describes treatment for cerebral abscess.



Lister



Horsley

its rapid rate of progress, has often been dictated by developments in other clinical and non-clinical fields, such as radiology, neurophysiology, electronics, metallurgy, and more recently, advances in neuropathology, computer science, CAT scanning, and MRI. In the near future, similar advances are expected in neuropharmacology and embryology.<sup>9</sup>

The first procedure on a human using a stereotactic instrument was performed in 1933, and involved thermal coagulation of the human gasserian ganglion to treat trigeminal neuralgia.<sup>10</sup> The first stereotactic instrument routinely used in human neurosurgery was named the stereoencephalotome, and was first described in 1946. In addition to utilizing the stereoencephalotome for the then popular lobotomy, its designers suggested that it should also be considered for the interruption of pain pathways, treatment of movement disorders, and for “withdrawal of fluid from pathological cavities and cystic tumors.” They published their first Stereotactic Atlas in 1952.<sup>11</sup>

During this time, parallel research was taking place in Stockholm and Paris. This research led to the development of four major types of stereotactic frame systems. By 1982, stereotactic surgery was taken to the next level, and the first “frameless stereotactic surgery” utilizing CT scans was proposed. Subsequently, a frame was adapted for MRI imaging in stereotactic neurosurgery in 1985.<sup>12</sup>

**Microneurosurgery.** The first operation on a human using a surgical microscope was performed in 1957 on a 5-year-old girl who had a rare condition of Schwann cell tumor with total facial palsy.<sup>13</sup> The evolution of the surgical microscope was necessary to develop the mobile, counter-balanced surgical microscope in use today. The surgeon requires training in a specially-equipped laboratory and must master indirect eye-hand coordination.<sup>14</sup>

The advent of microsurgery required new studies to reveal previously unreported details of neuroanatomy.<sup>15</sup> In addition, microsurgical techniques necessitated the development of micro-neurosurgical instrumentation. With the instrumentation and mechanics of microneurosurgery developed, the marriage of the surgical microscope and image-guided techniques will surely introduce opportunities in the new millennium.

**Angiography.** In the early 1900s, ligature of the carotid artery in the neck was advocated as a possible successful treatment mode for intracranial aneurysm.<sup>16</sup> During the 1940s, however, experimentation was done by percutaneous carotid angiography (which led to

accidental vertebral angiography), percutaneous deliberate vertebral angiography, and retrograde brachial vertebral angiography.<sup>17</sup> By 1950, cerebral angiography was the accepted diagnostic tool to visualize aneurysms.

During subsequent decades, cerebral angiography and digital subtraction angiography enabled the neurosurgeon to analyze the angiographic details of intracranial aneurysms, including site, size, shape and number of aneurysms, and configuration and condition of the collateral Circle of Willis. Various surgical approaches and a range of aneurysm clips were introduced including several that could be adjusted or removed after initial placement.<sup>18</sup>

Accelerating technical and scientific advances during the latter part of this century gave way to the introduction of diagnostic tools, such as CT, MRI, SPECT, PET, DSA, 3-dimensional CT angiography, and superselective catheterization for cerebral angiography, as well as endovascular occlusion of the aneurysm with balloon or electro-coil techniques and aneurysmal microsurgical illumination.<sup>19</sup>

### Building for the Future

Unquestionably, there was much more to the advancement of neurosurgery during the 20th century than the imaging processes documented. But, without the diagnostic capabilities provided through pre-, intra-, and post-surgical imaging, would the myriad of procedures that we see today have developed? Spinal instrumentation, pain management, angioplasty, trauma management—the improvements in these arenas were a result of new imaging techniques and advances in anesthesia, hemostasis, and pharmaceuticals.

Drs. Dandy and Cushing may have worked at a different level of thought than other surgeons of their time, but their abilities to support interdisciplinary projects under their direction influenced subsequent generations of neurosurgeons to embrace the new modalities developed in collaboration with their non-neurosurgical colleagues. The end result has been the highest level of neurosurgical care ever to exist, and the assurance that the progress will continue in the future. ■

Chris Ann Philips, the AANS Archives Coordinator, is responsible for managing the content of the Cyber Museum of Neurosurgery on NEUROSURGERY://ON-CALL®.

Resources cited in this article appear on page 47.

**1898**  
Sherrington defines mechanisms involved in decerebrate rigidity.

**1898**  
Gigli describes a special saw for craniotomy.

**1901**  
Cushing develops the anesthesia record for intraoperative monitoring of a patient.

**1901**  
Cushing introduces serial measurement of arterial tension using the Riva-Rocci blood pressure apparatus.

**1904**  
Cushing delivers paper on “the special field” of neurological surgery.

**1904**  
Einhorn introduces procaine as the first modern local anesthetic.

**1906**  
Golgi and Ramon y Cajal win the Nobel Prize for their work on identifying the structures of the nervous system.

**1907**  
Paulesco describes a reliable method for experimental hypophysectomy.

**1908**  
Horsley and Clarke design a stereotactic device to study deep-brain structures in animals.

**1909**  
Cushing electrically stimulates the human sensory cortex.



Cushing

# Reflections on Neurosurgery in the 1950s

## An Era of Discovery

EBEN ALEXANDER, JR., MD

Neurosurgery in the U.S. and Canada during the 1950s was an exciting time, marked by dramatic improvements in the diagnosis and treatment of neurosurgical problems, such as brain abscess, tic douloureux, hydrocephalus and more. To fully recognize such advances, one must have a clear understanding of the practice of neurosurgery during that era, as well as an appreciation of the diagnostic tools and treatment alternatives available at the time.

**Tumor Surgery.** Brain tumors were relatively frequent, and required that a neurosurgeon use his knowledge and training to put together a combination of plain skull films—looking for a shift of a pineal gland, intracranial calcification or skull erosion—to aid in the diagnosis of a patient. The ultimate diagnosis was often established by a pneumoencephalogram, or, if the patient had intracranial pressure, a ventriculogram.

It was during the 1950s, that angiography, including the first open carotid angiograms with exposure of the carotid artery and percutaneous angiograms, was introduced. Decadron emerged as a useful glucocorticoid, as did urea. The microscope was rarely used, and acoustic tumors were often removed in their entirety, usually with sacrifice of the facial nerve.

It was also during this time that postoperative radiation (5,000-6,000 rads) was a common treatment for malignant brain tumors and helped prolong the lives of some patients. However, if the patients survived any length of time, most were left with postradiation changes in the brain.

**Neurotrauma and Critical Care.** Head injuries in the 1950s were common, and fell under the domain of the neurosurgeon. Plain skull films were routine in patients with trauma, particularly if the pineal gland was calcified and had shifted.

Most patients with severe head trauma were subject to bilateral burr holes, three on each side, to see if there was a hematoma. Arteriograms were often performed, as were sub-temporal decompressions for patients presenting with a severe head injury and intracranial pressure, without a removable clot.

**Disorders of the Spine and Peripheral Nerves.** Spine fractures and paraplegia were under the domain of the neurosurgeon, as were cervical spine fractures. During this time, Crutchfield tongs and other types of traction apparatus were commonly used, and the use of the Stryker or Foster frame for prevention of decubitus ulcers was common in paraplegic patients.

Ruptured discs, which had been described prior to World War II by Mixter and Barr, also were under the domain of the neurosurgeon. Myelograms with pantopaque were most often performed by the neurosurgeon, and only required the assistance of the radiologist when fluoroscopy was needed (even then, the neurosurgeon was often present).

**Pediatric Neurosurgery.** During the 1950s, myelomeningocele with its accompanying deformities and multiple neurosurgical and orthopedic problems, occupied a great deal of the neurosurgeon's time and effort. Hydrocephalus was common and often associated with myelomeningocele. In addition, various valves, including the Holter and Pudenz valves, were introduced as a useful form of treatment for hydrocephalus patients.

**Chronic Pain and More.** Neurosurgeons during this time saw many patients with chronic back and neck pain, as well as patients with tic douloureux and other manifestations of spontaneous cranial nerve pain. They also cared for patients presenting with various forms of headaches.

It is not surprising that state mental institutions in the 1950s were overcrowded with patients, given that there was no single treatment available for mental disease prior to the introduction of thiorazine. Lobotomies were frequently performed with minimal guidance from the psychiatrists, and malignant hypertension in patients who developed retinal hemorrhages and were going blind, was commonly treated by bilateral thoracolumbar sympathectomy—given high blood pressure medications were not available. Sympathectomies were also a common treatment for peripheral vascular disease, particularly of the legs, and hyperhidrosis of the hands.

Those that were fortunate enough to live and practice during this era were excited by it and, luckily, did not know all of the technological and scientific advancements that would be made in the years ahead. If we had, we might not have enjoyed the work so much.

Eben Alexander, Jr., MD, is Professor Emeritus at Wake Forest University School of Medicine.

**1910**  
Sachs has the first appointment as a neurological surgeon in the U.S. at Washington University.

**1910**  
Publication of *Medical Education in the U.S. and Canada* by Flexner advances academic medicine.

**1910**  
Elsberg introduces the clinical application of insufflation anesthesia.



Sachs

**1911**  
Spiller and Martin introduce cordotomy for relief of pain.

**1911**  
Cushing introduces the use of a clip for clipping aneurysms.

**1913**  
First radiographic air contrast study to identify a post-traumatic pneumocephalus.

**1914**  
Dandy and Blackfan conduct studies on hydrocephalus.



Dandy

**1918**  
Dandy introduces pneumoventriculography, revolutionizing the diagnosis of hydrocephalus.

**1919**  
Weed and McKibben introduce the use of IV hypertonic solutions to decrease brain bulk.

**1919**  
Dandy introduces the use of air contrast radiography to pneumoencephalography.

# Exploring the Practice of Neurosurgery in 2025

## A Time of Revolution

JOEL D. MACDONALD, MD

The changes that will occur in the clinical practice of neurosurgery over the next 25 years will unquestionably be as dramatic in both scope and magnitude as those between the 1950s and today. Following are some of the promising advances I foresee taking place.

**Tumor Surgery.** Over the next 25 years, there will be a quantum change in the way we diagnose and treat neoplasms. Refinements in MRI and optical spectroscopy will enable more accurate preoperative tumor diagnosis. Although it is unlikely that we will be able to accurately label a brain neoplasm by mapping the genome of an individual patient, we may be able to revolutionize technologies that are presently in use for investigational purposes.

For example, in 2025 a tumor biopsy specimen may be used to extract RNA for the purpose of screening against a panel of relevant genes. This will help characterize a tumor in more detail than current classification schemes and, in turn, enable individually tailored treatments with gene therapy. Moreover, the surgeon may be able to apply a customized viral delivery vector to a tumor resection bed to transfect remaining abnormal tumor cells with corrected copies of the affected genes.

**Spine Surgery.** Minimally invasive techniques and biocompatible implant technology will continue to revolutionize the treatment of both degenerative and traumatic disorders of the spine. Compounds such as bone morphogenic proteins mated with biocompatible dissolving polymers may be used in minimally invasive or percutaneous techniques to achieve stabilization or deformity correction. Techniques for protection of the spinal cord from secondary injury after traumatic insult also will evolve. Cerebral spinal fluid treatments following a spinal cord injury will be available and help prevent scarring of the axons of the central nervous system.

**Cerebrovascular Surgery.** Cerebrovascular surgery also will benefit from great technological advantages. Neuroprotective agents will extend the viability of the blood flow deprived brain during temporary circulatory arrest. Angiography will play a larger role in the overall management of cerebral vascular disease. Catheter based technolo-

gies will see an extension of their applications to more pathologic entities; and angioscopy, as well as intraluminal ultrasound, will aid in the diagnosis and management of vascular disease.

Radiosurgery and functional surgery also will benefit greatly from the explosive growth of technology. As the spatial resolution of computer-assisted devices improves, so too will the safety margin and effectiveness of both functional procedures and stereotactic radiation.

**Pediatric Neurosurgery.** Hydrocephalus and congenital birth defects will continue to be a vexing problem for the neurosurgeon. Imaging technology will hopefully enable a more precise technique for the management of intracranial pressure. Refinements in biocompatible materials or perhaps nanotechnology will lead to the creation of a physiologic shunt that matches the moment-to-moment physiologic demands of the hydrocephalic child.

Improved techniques for intrauterine diagnosis of congenital deformities and neural tube defects will enable potential intrauterine treatment. Perhaps a gel of neurotrophic agents will be irrigated onto an open neural tube while still *in utero* to promote a physiologic closure.

**Neurotrauma and Critical Care.** Head trauma will continue to be a paramount public health issue confronting the neurosurgical community. Hopefully, future safety devices for motor vehicles will continue to reduce the severity of vehicular trauma. Perhaps a cocktail of neuroprotective agents will be available for installation at the scene of a severe injury, thereby maximizing effective intervention during the "golden hour."

**Emerging Technologies.** In the next two decades, the growth in computational speed, data storage, and communication will have a profound impact on the practice of neurosurgery. A unified paperless medical record will eliminate reliance on hard copy reports and images. Documentation of surgical procedures may be achieved via a compressed video record, and surgeons may be able to query large neurosurgical data repositories using plain language.

In addition, telemedicine and teleradiology will become commonplace. Handheld communication devices might encompass voice data, video, and Internet capabilities. Federal medical licenses granting neurosurgeons the freedom to practice across state lines via the Internet will be available. Further, systems to obtain instant point-of-service reimbursement and track productivity on a daily basis using the Web will be available as well. ■

Joel D. MacDonald, MD, is Assistant Professor of Neurosurgery at the University of Utah and Editor of NEUROSURGERY://ON-CALL®.

**1920**  
The Society of Neurological Surgeons is founded, the world's first neurosurgical society.

**1924**  
Berger demonstrates the first EEG for use with humans.



Berger

**1926**  
Moniz performs the first successful cerebral angiogram on a living patient.

**1927**  
Cushing introduces electro-surgery (Bovie unit).

**1928**  
Stokey describes cervical spinal stenosis.

**1929**  
Fleming discovers penicillin.

**1931**  
Cushing performs 2000th brain tumor operation.

**1931**  
The Harvey Cushing Society is founded.

**1931**  
Kirschner introduces electro-coagulation of the gasserian ganglion for the treatment of trigeminal neuralgia

**1932**  
Adrian and Sherrington share Nobel Prize for their work on the function of neurons.

# Neurosurgery

## In the New Millennium

Predictions for the Century Ahead by Deia Lofendo

*Question: What does the next 25 years hold in store for neurosurgery? A panel of experts offer predictions and guideposts.*

The evolution of neurosurgery that has taken place over the last 100 years has not only given rise to a thriving specialty, but has grown to include disorders once outside the realm of neurosurgery. From the emergence of cerebral localization theories and antiseptic techniques to the recent explosion of less invasive surgical equipment and techniques (such as microscopes, lasers and focused radiation), the role of the neurosurgeon and the level of care provided has forever been changed.

What the next 25 years will hold in store for the future of the specialty, however, is difficult to predict. Will gene therapy result in a cure for cancer? Will metal plates, cages and screws be replaced by biodegradable hardware? Will bioengineering bring exciting innovations to the operating room? Will telemedicine and teleradiology replace office visits and conventional diagnostic studies? We posed these questions and more to a panel of neurosurgical experts. Here are their predictions as to the role neurosurgery will play in the new millennium.

### Julian T. Hoff, MD, on Neurosurgical Research



**Answer:** Many say that history repeats itself and, assuming they are right, a look back at the past 25 years should be interesting and possibly predictive. Over the past three decades, our specialty has emerged into the microscopic age, made possible by improved diagnostic techniques and technologically-advanced equipment.

For example, computed tomography, magnetic resonance imaging and super-selective cerebral angiography have replaced once popular diagnostic equipment such as myelograms, direct-stick angiograms and pneumoencephalograms. Functional and stereotactic surgery, which had almost disappeared due to the advent of medications, has been reborn since pharmacological intervention proved to be insufficient for many movement disorders. In addition, spinal surgery, which rarely involved fusion except for cervical disc disease, has been revolutionized thanks to state-of-the-art spinal instrumentation.

As a result of these somewhat recent advancements, the practice of neurosurgery will continue to evolve over the next 25 years. We will become increasingly sophisticated in measuring the outcomes of surgery; these outcomes will become necessary for us as clinicians and be required by reimbursement agencies. Gene therapy will take a stronger hold, not only for use in inherited disorders, but also for treating other neurosurgical problems such as neoplasms, stroke and trauma-related injuries. Frameless navigation will assist future surgeons and become commonplace in every neurosurgical practice. Also, percutaneous treatments will replace surgical treatment, especially in the area of cerebrovascular disorders.

The use of spinal instrumentation will continue in the future, but there will be a shift away from metallic devices toward biodegradable hardware. Better diagnostic tools for common neurological disorders will emerge, as will better treatments for recurrent disc disease and pain from non-surgical sites. For hydrocephalus patients, better shunts, or better treatment without shunts, will become available. We may even see the day when we will no longer have to worry about valves, patency of shunts or infection.

Each of these achievements, along with many others, are within the reach of the next generation of clinicians. However, the movement toward scientific advancement requires that we continue to

**1933**  
Foerster defines sensory dermatomes in humans.

**1933**  
Gerard describes the first experimental evoked potentials.



Foerster

**1934**  
Mixer and Barr define disc herniation as a clinical entity.

**1936**  
Dale and Loewie win the Nobel Prize for their research into the chemical transmission of nerve impulses.

**1936**  
Moniz publishes work on the first human frontal lobotomy.

**1937**  
Klüver and Bucy publish work on bilateral temporal lobectomies.

**1937**  
Dandy performs the first selective obliteration of an aneurysm.

**1938**  
The American Academy of Neurological Surgeons is founded.



McKenzie

**1938**  
McKenzie becomes the first neurosurgeon to perform a hemispherectomy.

**1947**  
Spiegel, Wycis, Marks and Lee introduce stereotactic techniques for operating on the human brain.

invest in our own future. By investing in research and development, we will ensure the long-term growth and survival of our discipline, as well as provide our patients with the level of care they deserve.

**Julian T. Hoff, MD**, is Professor and Head of the Department of Neurosurgery at the University of Michigan (Ann Arbor) and Chairman of the Research Foundation of the AANS. He also is a Past President of the AANS.

### Keith L. Black, MD, on Tumor Research and Tumor Surgery



**Answer:** The next 25 years will be a productive time for tumor research and surgery. A large component of the tumor research will focus on malignant brain tumors, with particular emphasis on signal transduction, tumor immunology, gene discovery and gene therapy.

One of the major challenges for gene therapy in tumors will be gene delivery. To impact patient survival, it will be critical for gene delivery vectors to reach all areas of the central nervous system where malignant cells reside and to target 99.9 percent or more of these cells. While not currently available, the technology I foresee being developed to transfect this large number of cells will be a huge scientific breakthrough that will have a major impact on the effective use of gene therapy for cancer.

Within the next three years, we will see all of the 100,000 genes of the human genome sequenced. We also will see gene array techniques—the ability to image genes on small chips or membranes—being used to create precise molecular profiles of tumors. These profiles will be characterized and correlated with outcomes and response to therapy. These molecular profiles will first supplement and eventually replace descriptive tumor histology.

Gene array subtraction techniques will also be used to identify genes uniquely expressed by tumors. The elucidation of the proteins associated with these genes and their function will greatly increase our understanding of tumor biology and lead to many novel treatment strategies for brain tumors, including targets for gene therapy and specific tumor antigens for immune therapy.

I can safely predict that tumor immunology will be an area of increasing activity, and will enhance our understanding of how brain tumors evade immune destruction. Work will greatly extend information on how tumors avoid detection by down regulation of MHC anti-

gens, B7, etc.; release immuno-suppressive cytokines like TGFb; and induce programmed cell death through FAS-ligand. Strategies to circumvent these tumor defenses will be developed and increasingly tested in clinical trials, including tumor vaccines.

Efforts to correct the ability of brain tumors to impair the immune response will also flourish, and begin to answer questions on the impact of improving the immune response against tumors. Strategies using anti-angiogenesis will continue to be of interest and focus on highly vascular tumors, such as hemangioblastomas and refractory meningiomas.

It need not be said that the surgical treatment of brain tumors will look very different in 25 years. Open operations will be less common, replaced by minimally invasive techniques that show improved outcomes and lower cost. Fractionated conformal 3-D radiosurgery will be used more extensively for benign tumors, including acoustic schwannomas, meningiomas, pituitary tumors, as well as skull base and spine tumors. In addition, other energy sources such as focused ultrasound and microwaves delivered through small wave guides will be used to thermally ablate tumors using computer guided imaging.

The need to obtain tissue for diagnosis also will be reduced, as imaging techniques using MRI or optical spectroscopy develop and prove predictive of tumor histology. Ferro-magnetic ligands that cross the blood-brain barrier and bind specifically to tumor cells will be used with MRI and show the true extent of primary tumor infiltration in the CNS.

Moreover, open surgical procedures for tumors will be performed using real-time computer guided imaging. MRI scanners will be incorporated into standard flat surgical beds, so as not to encumber the operative field and provide rapid imaging updates during surgery. Also, the need for frozen section biopsy will be replaced by fiber optic techniques and will instantly provide pathological diagnoses. Fluorescent ligands binding specifically to tumor cells will illuminate malignant cells during surgery and, much to the pleasure of many surgeons, the surgical microscope will be replaced by digital optics worn like eyeglasses.

**Keith L. Black, MD**, is Director of the Maxine Dunitz Neurosurgical Institute at Cedars-Sinai Neurosurgical Institute in Los Angeles, California, Director of the Division of Neurosurgery and Director of the Cedars-Sinai Comprehensive Brain Tumor Program.

*Continued on next page*

**1948**

The Neurosurgical Society of America is founded.

**1949**

Moniz and Hess recognized for their contributions to neurosurgery and physiology.

**1950**

Balance in the Harvey Cushing Society Treasury was \$3,461.62. Income from the *Journal of Neurosurgery* was \$4,281.31.

**1950s**

Holter shunt introduces a reliable valve system for ventriculoperitoneal shunting.

**1951**

Congress of Neurological Surgeons is founded.

**1951**

Leksell constructs a prototype of the Gamma Knife.

**1954**

Charged-particle radiosurgery introduced at the Lawrence Berkeley Laboratory.

**1954**

Ingraham and Matson publish first text devoted to pediatric neurosurgery.

**1955**

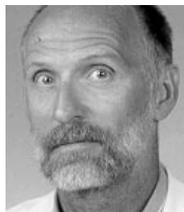
Talairach constructs a stereotactic frame for transnasal procedures.

**1956**

Brownell and Sweet construct the first device for detecting positron-emitting nuclides, the forerunner of the PET scan.

Continued from page 11

### Edward C. Benzel, MD, on Spine Research and Spine Surgery



**Answer:** What has recently transpired in our specialty, and what will continue to transpire well into the next millennium, is the phenomenon of “technology transfer.” This phenomenon, which refers to the transfer of technological developments to clinical use, is key to the future of clinical research and will forever change the way that neurosurgeons practice spine surgery.

Technology transfers in the future may result in: 1) Paradigm shifts in spine stabilization strategies; 2) development of new osteobiologic and ligamentobiologic strategies; 3) refinement of osteointegration and joint motion preservation strategies; 4) emergence of new minimally invasive spine surgery applications; and 5) development and application of robotic, micromachine and steerable and detachable navigation technology for spine surgery.

In the next two years, much will be learned about the application of ceramics and plastics to spine surgery. Osteointegration strategies will be developed and refined; and tissue engineering strategies, including gene therapy and resurfacing strategies will begin to be applied.

For the first time in several decades, the use of metal spine stabilization strategies will diminish and the popularity of dynamic metal fixation strategies will increase, due to their bone healing enhancing capabilities. This shift in the use of spine stabilization devices will continue until osteobiologic strategies become widely utilized, clinically accepted and of documented safety. Interestingly, the common clinical use of osteobiologic strategies will herald the end of the dynamic implant era.

During this timeframe, the use of minimally invasive spine surgery (MISS) strategies will decline due to frustrations related to cost, morbidity and learning curve issues. Similarly, the use of cage technology will decline—particularly threaded interbody fusion cages—as their suboptimal clinical efficacy is exposed and safer and more efficacious strategies emerge.

The next decade will hold even more exciting changes for neurosurgeons practicing spine surgery. MISS technologies will most likely merge with those of robotics, microelectromechanical machines (MEMS) and osteo- and ligamento-biologic technologies. This will provide renewed interest in existing MISS developments, and will open up an avenue through which robotics, MEMS and improved optical (endoscopic) technologies will be applied to the clinical arena.

Ceramic and plastic applications to spine surgery also will flourish during the next decade. Motion restoration and preservation (e.g. artificial disc and tissue engineering) strategies will begin to replace arthrodesis for the management of mechanical back pain. These developments will probably, but not absolutely, be applied via MISS techniques that will have been increasingly utilized and rejuvenated. Unlike today, parallel technological developments, not the marketplace, will drive MISS and related devices.

Toward the end of the next decade, artificial disc technology will be replaced by tissue engineering strategies (e.g., genetically engineered nucleus pulposus). These osteobiologic advances will continue to diminish the impact of the “traditional” stabilization techniques commonly in use today. However, there will always be a need for them to one degree or another, particularly for the grossly unstable spine.

In the next 25 years, robotics, MEMS and steerable and detachable navigation applications to spine surgery will be the rage. The “techno field” will have advanced, and clinically relevant technologies will have been perfected enough to allow these tissue manipulation strategies to be used for neuro-

modulation, programmed decompression and programmed deformity correction purposes. These endeavors will be accomplished via steerable and detachable devices that gain access to previously inaccessible areas or regions where closed intervention clearly demonstrates an advantage over its open counterpart.

Similarly, biological advances will continue to allow for a rapid and precise healing of bone, neural and soft tissue

injuries and defects. Their application, as well, will be facilitated by robots, MEMS and, of course, MISS.

The role of the spine surgeon in the 21st century is sure to be exciting and challenging. Steering and navigation strategies, as well as a multitude of other technologies brought to us by the biological and

**“Technology transfer ... will forever change the way that neurosurgeons practice spine surgery.”**

.....

— EDWARD C. BENZEL, MD

**1956**  
Leksell uses ultrasound to examine the brain.

**1957**  
Penfield and Rasmussen devise motor and sensory homunculus.



Penfield

**1958**  
Cloward describes the anterior approach to the cervical spine.

**1963**  
Huxley, Hogkins and Eccles share the Nobel Prize for their research on nerve and muscle fibers.

**1965**  
Name of Harvey Cushing Society changed to American Association of Neurological Surgeons.

**1966**  
The Canadian Neurosurgical Society is founded.

**1967**  
Hounsfield reconstructed the internal structure of a scanned object using a computer, the forerunner of the CT scan.

**1968**  
Yasargil and Donaghy successfully perform EC-IC bypass in a human.

**1970**  
Axelrod, Katz and Svante von Euler share Nobel Prize for their work on neurotransmitters.

**1970**  
Work started on a CT scanner for humans.

microchip components of the technological revolution, will make new demands on the surgeon, including those related to operative and strategy determination optimization. This will replace, to a significant extent, the traditional surgical paradigm of cutting, remodeling and fixation and make spine surgery an arguably less hands-on endeavor.

To survive and thrive in the next millennium, spine surgeons must be "forward thinking" and prepared to meet the challenges that are sure to change the practice of neurosurgery.

*Edward C. Benzel, MD, is Director of Spinal Disorders at the Cleveland Clinic Foundation and former Chair of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves.*

### Gail L. Rosseau, MD, on the Role of the Female Neurosurgeon



**Answer:** Theodore Roosevelt said, "far and away the best prize that life offers is the chance to work hard at work worth doing." The opportunity to practice neurosurgery may be considered such a prize, particularly from our vantage point of straddling the end of the 20th century and the dawn of a new millennium. One could say that there is no other time in history that better illustrates the axiom that working hard at the practice of neurological surgery is considered "work worth doing."

A meaningful look forward usually includes an enlightened understanding of the past. Over the last century, several leaders have paved the way for women in neurosurgery—from Ruth Kerr Jacoby, MD, the first woman certified by the American Board of Neurological Surgery in 1961, to other female neurosurgical pioneers including Merylee Werthan, MD; Carole Ann Miller, MD; Joan Venes, MD; and Frances K. Conley, MD. Their hard work and determination set a precedent in the medical community and promoted the professional growth and development of many female physicians.

Their example led to an increase in the number of women entering our specialty. The next development was the creation of Women in Neurosurgery (WINS)—a non-profit, incorporated organization started by eight women at a national neurosurgical meeting in 1989. WINS now includes more than 300 female neurosurgeons from five continents. This look back demonstrates that women and men alike increasingly view neurosurgery as an appropriate career

choice for women.

Over the next 25 years, the role of women in neurosurgery is likely to parallel the role of women in other branches of medicine. Since 1989, the number of women physicians has increased by more than 50 percent, now representing 21.3 percent of all physicians. In the same time period, female membership in the American Association of Neurological Surgeons has grown at an even faster rate.

Currently, there are 166 female neurosurgeons who are members of the AANS, representing 3 percent of the total membership. One would expect that the absolute number, as well as the percentage of women in the profession, will continue to grow. With the increasing number of women enrolling in medical schools and the growing number of women entering into practice, the appearance of women in leadership positions within the profession should be expected as well. By 2025, I anticipate that a female neurosurgeon will be at the helm of the American Association of Neurological Surgeons, and female chairs of academic neurosurgery training programs will no longer be "news."

In today's culture, when problems arise, the lack of opportunity usually represents an error of omission, rather than commission. Political issues threaten both the job satisfaction and security of every neurosurgeon. These include the cost of medical malpractice insurance and declining reimbursements, reductions in research funding, and the erosion of public confidence in physicians. Overcoming these obstacles will require the efforts of neurosurgery's best and brightest. The challenge for organized neurosurgery in the new millennium is to create an atmosphere whereby the best neurosurgeons are allowed to excel in our profession, including women and minorities.

choice for women.

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*Gail L. Rosseau, MD, is Director of Cranial Base Surgery at the Chicago Institute of Neurosurgery and Neuroresearch, and Past President of Women in Neurosurgery.*

*Continued on next page*



**"The challenge ... is to create an atmosphere whereby the best neurosurgeons are allowed to excel, including women and minorities."**

— GAIL L. ROSSEAU, MD

**1971**  
Damadian recognizes the diagnostic potential of nuclear MRI.

**1971**  
Section of Pediatric Neurosurgery becomes first separate Section of AANS.

**1972**  
Hounsfield develops x-ray CT.



Hounsfield

**1972**  
First CT scanner was purchased in the U.S. at Massachusetts General Hospital.

**1974**  
Phelps, Hoffman and Ter Pogossian develop first PET scanner.

**1975**  
NINDS is established within the National Institutes of Health.

**1975**  
AANS Section on Functional and Stereotactic Surgery established.

**1976**  
Gajdusek and Blumberg win the Nobel prize for research on causal agents of degenerative neurological disease.

**1976**  
The first MRI scanner was built at Nottingham University in England.

**1976**  
Pilon and Baker report pain relief from intrathecal injection of local anesthetic agents using an implantable pump.

Continued from page 13

**Daniel L. Barrow, MD, on How Young Neurosurgeons Can Prepare Themselves for the New Millennium**



**Answer:** As we approach the new millennium, it is appropriate that we reflect on the extraordinary accomplishments of our relatively young specialty. It also is important that we focus on the remaining and new challenges to be addressed by the young neurosurgeons that will fill our future ranks.

Dramatic advances in science and revolutionary changes in the delivery of health care have created unfamiliar obstacles and exciting opportunities. I believe our future as a specialty depends on our success in attracting the best and brightest students our schools of medicine have to offer, providing comprehensive training in the overall management of neurosurgical disorders, directing individuals into subspecialty areas, and alluring gifted individuals into research careers.

Despite fluctuations in the popularity of medicine as a career choice over the past decade, I remain utterly amazed at the quality of applicants in neurosurgery residency programs over that same period. Many of my colleagues and I personally believe that we are currently attracting the finest, most mature, best prepared and most promising candidates into neurosurgery. Maintaining this trend is the single most important factor influencing our future.

Residency training program directors, academic neurosurgeons and volunteer clinical faculty must periodically recommit themselves to resident education. The augmentation of scope and knowledge within each of the subspecialty areas of our chosen field has made neurosurgical training more complex. Changes in the delivery of healthcare and compliance issues have both complicated the teaching mission further and reduced some of its rewards. The practice of neurosurgery and its associated socioeconomic issues are linked now more than ever. Where discussions of socioeconomic issues were once eschewed in neurosurgery training programs, they are now a necessary component of a complete education.

Within our evolving specialty, it has become increasingly difficult to become and remain an expert in all areas of the field. Despite its controversy as a socioeconomic topic, subspecialization is a reality. Neurosurgery evolved from the field of surgery because it was mandatory for the development of the field, and necessary for optimal patient care. It is the natural process of maturation of any discipline.

Most of the major advances made in our field have been initiated and brought to fruition by individuals that have focused their efforts. Future accomplishments rely on our ability to train young surgeons to make the incremental advances that will, in turn, improve our specialty.

As stated by AANS President, Martin H. Weiss, MD, in the summer *AANS Bulletin*, "Investment in R&D is the only mechanism to assure the long-term growth and survival of a focused discipline." Poised on the threshold of some of the most galvanizing molecular and technological breakthroughs, our future as a specialty requires a commitment to research by select individuals with appropriate training and funding.

Challenges facing the young neurosurgeon in the next millennium are both scientific and socioeconomic. Fertile areas for investigation in the future include spinal biomechanics, molecular biology of brain tumors, bioengineering and vessel wall biology. I believe translational research holds the promise of bringing these exciting innovations from the laboratory to the operating room and bedside.

Potential for growth exists in virtually all areas of neurosurgery. The development of endovascular therapies and neurosurgical involvement in this new field provides novel opportunities in cerebrovascular surgery. Renewed interest in the surgical management of movement disorders has revitalized older procedures such as thalamotomy, pallidotomy, and stereotactic radiosurgery and will continue to give way to new treatment alternatives. An increasing incidence of both metastatic, as well as primary brain tumors has elevated the importance of neuro-oncology as a discipline, and will surely provide exciting and innovative therapeutic options in the future.

Neurosurgeons of the future must recognize the need to be involved in the political process. Medicine is among the most highly regulated occupations in our country. Governmental influence has grown dramatically with no apparent end in sight. Grassroots advocacy is necessary to influence the political process in a direction favorable for neurosurgical practice, patient care, education and research.

Clearly, the young neurosurgeons of today have a bright future filled with opportunities and challenges. To face those challenges and take advantage of those opportunities, our future leaders must obtain comprehensive training, focus their practice and/or research within a specialty area and become involved in the political process that regulates our profession. ■

*Daniel L. Barrow, MD, is MBNA/Bowman Professor and Chairman of the Department of Neurosurgery at Emory University School of Medicine, and President of the Congress of Neurological Surgeons.*

<b>1979</b> AANS/CNS Spine Section established.	<b>1982</b> Magnetic resonance imaging introduced.	<b>1982</b> Gildenberg proposes idea of frameless stereotaxy.	<b>1984</b> AANS/CNS Section on Cerebrovascular Surgery established.	<b>1984</b> AANS/CNS Section on Tumors established.	<b>1985</b> AANS/CNS Section on Trauma and Emergency Medical Services established.	<b>1986</b> Levi-Montalcini and Cohen win the Nobel Prize for discovering factors influencing nerve growth.	<b>1988</b> AANS/CNS Section on Pain established.	<b>1989</b> AANS Section on the History of Neurological Surgery established.	<b>1990</b> U. S. President Bush declares the 1990s the "Decade of the Brain."
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# A Coalition for the Future

## *What is the Role of the AANS in the New Millennium?*

**M**any predict doom and gloom for organized neurosurgery in the 21st century—don't believe it. Although continuing changes in managed care and reimbursement patterns will not abate for awhile, and your practice may have become more difficult to manage, neurosurgery will continue to survive and thrive.

The AANS is one reason for this optimistic outlook. As your professional specialty society, we are hard at work positioning the organization to help you remain successful in the years ahead. How can we accomplish that? By being well organized, having a strong national infrastructure, adopting a mission to do what is best for the patient first, and by developing a cohesive coalition within neurosurgery. With that type of strategic plan, the AANS can indeed influence the future of neurosurgical medicine.

### **Serving our Shareholders**

Health care is big business and is influenced by the need to provide an adequate return on the investment of shareholders. Though the AANS is a not-for-profit organization, it often must learn from our corporate brethren.

First and foremost, the AANS must meet the needs of our members and help their medical practices thrive. Unless we accomplish that one objective, we cannot view ourselves as successful. The difficulty we face is that our mission is ever expanding. We do not have just one product line to support. Rather, we have multiple business units requiring specific professional expertise and management.

Among these business units is communications, which includes working with the media, and distributing publications—

ranging from membership and socioeconomic news to scientific journals. We offer programs to educate the public about safety issues, while at the same time promote the expertise of neurosurgeons and the scope of neurosurgical practice to referring physicians. Other business units create and implement various clinical education and professional development programs, including the Annual Meeting. Another over-

*Dave Fellers,  
CAE, is  
Executive Director  
of the AANS.*



sees publication of text and reference books; and yet another develops products and services that help you better manage the business of your practice.

We also are challenged by the demand for more intervention in public policy activities at all levels of government. Whether it's Medicare reimbursement issues or continuing access to specialty care, the AANS is being asked to fight for the rights of neurosurgeons and their patients. AANS is helping to respond to this challenge through the efforts of the Washington Office.

Our ability to accomplish these business objectives requires a structure that allows leadership to formulate policies and develop a professional staff to implement them. Just as health care has become a big business, medical societies like the AANS have to keep pace with

trends, business planning, technologies and systems that allow them to operate efficiently and effectively.

### **Foresight of Leadership**

Neurosurgery is very fortunate to have an outstanding elected leadership at the helm of AANS. This group had the foresight to retain the American Society of Association Executives late last year to conduct a peer review of the organization. The evaluation brought together the nation's top association executive experts into the organization to scrutinize every aspect of its being—programs, staff structure, policies and leadership involvement.

The process was a lesson in humility. The experts reported on the good, the bad and the ugly, and the evaluation report is now being used as a blueprint to guide the refinement of the AANS.

### **AANS Will Lead the Charge**

The future of neurosurgery will probably be determined by the forces that control the politics and economics of health care. By providing our members and the public with the information and leadership they need, the AANS can make its mark.

We must rethink our strategies for dealing with the health care environment. We have to provide our members with greater assistance in medical information and technology, practice management and reimbursement.

In particular, we will have to listen carefully to young surgeons. Some surveys show that doctors who don't join organized medical societies by the time they're 45 aren't likely to ever join. The AANS is working hard to include young neurosurgeons in leadership positions and to actively seek their input for program development. Also of importance are the needs of our women and minority members.

Our success will depend heavily on unity within the neurosurgical ranks. ■

# Information Is the Key

## *Medical Practice in the Electronic Age.*

Just as the development of the automobile made the horse-drawn carriage a rare sight, personal computers (PCs) will make paper patient charts, referrals, reports, prescriptions, claims, and payments obsolete for medical practices in the electronic age. Once a technological innovation reaches a high enough level of consumer usage, rapid innovations and changes occur in the way products and services are purchased and delivered.

By 2007, experts believe that PCs will be found in more than 90 percent of American homes, with some homes having multiple PCs. Most of these computers will be linked to the Internet and will be routinely used for information, education, communication and trade. As such, the way patients choose and interact with their health care providers will quickly change.

Obviously, everyone will be connected. Your patients will be computer literate, search the Internet for information, and communicate with your practice electronically. Payers also will be connected to you electronically, as will your colleagues and other health care providers.

Recognizing this, your office will need to stay abreast of information system developments and obtain the necessary upgrades and revisions to your information system. Why? Speed, accuracy and cost. Claims processing, billing, collections, contract analysis, benchmark analysis, financial projections, and business communications will all be computerized. In some successful practices, they already are.

Diagnostic systems, medical records, patient protocols and outcome analyses also will be digitally connected. Your referrals will be electronically processed, mediated by "smart systems" and approved or disapproved without human intervention.

### Less Than Obvious Impacts

The idea behind the Internet is to make accessible—to anyone with a PC and a browser—massive amounts of information, at low cost, quickly. Soon, patients will expect your practice to maintain a Web site that is "good enough" for them to bookmark for easy and frequent use.



Patients will routinely search the Internet for qualitative and convenient information about your ability to treat their diseases or conditions. In essence, they will become "experts" in the diagnosis and treatment options available to them. They will make provider decisions based on Internet information. More important, they will expect the point of doctor-patient contact to migrate from the medical practice office to their home PC.

Sounds like futuristic "technojunk?" Consider how consumers now buy software, books, cars, and even homes online. They can read book reviews and passages, learn the cost of a car to the dealer, and scan virtual "homes for sale" catalogs, all while sitting at their home or business computer. Imagine how these people will approach health care services.

Patients will expect your practice Web site to inform and educate them, and provide interactive services, such as online appointment scheduling and questionnaire (i.e., patient history, satisfaction surveys, etc.) completion from their home computers.

They will monitor their health status and view their treatment progress electronically. Often, they will attempt to diagnose themselves and determine which providers to see. They will need you to help them distinguish science from fad. More important, they will need you to guide them as they attempt to triage themselves.

Just as the telephone and television expanded the volume of information and increased the speed at which information is available, the PC and Internet will merge interactivity and telecommunications with remarkable information management capacity. This will result in "virtual" house calls, with the doctor on one end of the computer connection and the patient on the other.

### Planning for the New Millennium

Your medical practice can be one of the ones that benefit from the dawning of the electronic age of health care, if you understand the possibilities before you and the expectations of your patients, and use that understanding to your advantage. What needs to be done?

First, make optimal use of your information systems (IS), which can and should be much more than just a billing system. Successfully computerize functions such as patient scheduling, practice accounting, medical records, and more. Increased speed and accuracy alone will pay for your IS.

Second, with the computer performing more mundane repetitive tasks, you and your staff can focus time and energy on more important and interesting matters, such as patient care, managed care strategies and practice development.

Last, reorganize your personnel and work allocation to take advantage of computerization. You will need fewer people to

accomplish certain tasks, but only by adjusting your organizational structure can you achieve the full benefit of efficiencies your IS is capable of providing. There will be less differentiation between front office and back office duties, which, in turn, will result in quicker response.

Remember that your patients—to some extent now, and to a greater extent in the future—are going to expect you to make optimal use of the technology available. Consider the following applications of computer technology.

#### World Wide Web

The Internet is becoming the primary reference tool for patients to learn about their diseases/conditions, possible treatment methods, and provider options. Your patients are more readily going online and will use their Internet skills to learn about their health.

To provide the most meaningful care to your patients, you must help them separate

philosophy, and learn about which health plans you participate in and which insurance carriers you accept. Send them special alerts via e-mail.

Moreover, use your Web site to direct patients, as needed, to other appropriate providers, particularly according to their health plan policies. Provide information about the help they need (that you do not provide), and where they can get it.

Your patients will expect to be able to access your schedule and request an appointment time, which your staff will either verify or decline. Before the patient visits, your practice also will be able to obtain all necessary preliminary information (i.e., insurance forms, patient records, etc).

Clearly, communicating electronically is convenient for your patients, and is a cost-efficient, broad-reaching vehicle for you too.

#### Practice Management

Get the most from your information system. Use your IS to generate reports and

quickly and cheaply with e-mail. Compared with hard copy messaging, e-mail is quicker and easier, reaches its destination faster, and incurs no postage or service charges.

#### Telemedicine and Virtual House Calls

Telemedicine extends computerization from communication to telemetry. Equipment already exists to obtain a patient's vital signs and other readings at home, using a variety of digital devices. Plug the appropriate monitors into the patient's PC, connect his or her PC with yours, and the data flows into the electronic medical record without staff involvement or expense. Moreover, automatically generated, electronically backed-up files need a fraction of the storage space paper files do.

Virtual house calls, telemedicine and computerized communication will initially benefit some patients with chronic conditions requiring continual monitoring (i.e., diabetes, asthma, and epilepsy). Your practice will be able to monitor these conditions when the patient is at home or even asleep. More important, patients will be able to discuss matters with you electronically.

Most medical practices will re-examine their personnel requirements. Most will need more medical technicians and triage nurses to help people who need information and less "administrative" help. At some point, most physicians will find it difficult to personally manage the practice and will hire practice administrators with business training and experience to assume executive (not just administrative) responsibilities.

Practices will also need information specialists, who combine their technical skills with a strong understanding of practice applications/operations. Some physicians will also earn a second degree, probably in business administration or law. Some will become computer specialists and IS experts. ■

This article was originally published in the spring 1999 issue of the *Forecast Newsletter*, published by the Health Care Group®, a nationwide health care consulting group in Plymouth Meeting, Pennsylvania.

**"Web sites dedicated to health care information represent the fifth largest Web site population on the Internet."**

the useful online information from the misleading, inaccurate and inappropriate. Know what they are "learning" online by reviewing the pertinent Web sites.

Incorporate the Internet into your patient education programs, first by encouraging your patients to visit your Web site. [To learn how to use the Internet to market your practice, see page 27.] Include your universal resource locator (URL) or "Web address" on all your practice literature, brochures and stationery.

Patients visiting your Web site will want to learn about your educational background, procedures you perform, the services you offer, review your practice

expenses, utilization rates, patient demographics, and other indicators of practice business success. You will spend less time trying to get paid, and more time analyzing how your practice is operating. More immediate service and more efficient operations will surely benefit your practice.

Connect your computer with those of other physicians with whom you routinely do business. Use your IS for referrals, consultation reports, treatment plans and similar matters. By making such coordination efforts, your patients' health care will improve.

Explore the use of electronic messaging. You can reach a large audience clearly,

# High Tech, High Costs

## Examining the Increasing Costs of Neurosurgical Care.

BY ROBERT E. HARBAUGH, MD, FACS

Over the past 50 years, we have experienced a steady increase in the technology available to diagnose and treat neurosurgical problems. For most of that time, concerns about the cost of medical care were inconsequential and the need to document the effectiveness of neurosurgical care was minimal. We assumed that we were doing the best for our patients if we employed the newest technology. This is no longer the case. We now live in an era of concern about medical cost containment and the need to document the benefits of our care.

### Technology and Increasing Costs of Neurosurgical Care

Health care spending in the United States has grown at a faster rate than the economy, resulting in an ever-larger share of the gross domestic product being devoted to health care. Various factors have been implicated as causes of increasing health care costs.

Prominent among these are the effects of an aging population, care of terminally ill patients, the impact of medical malpractice, excessive administrative costs and an increasing workforce.

**Aging Population.** According to J.P. Newhouse, health care expenditures on patients over the age of 65 are about three times as high, per person, as they are for younger patients. If the percentage of patients in the population over age 65 is increasing steadily, one would expect the cost of health care to increase as well. This argument is reasonable qualitatively but not quantitatively.

For example, since 1950 the percentage of the U.S. population over age 65 has increased by approximately 0.2 percent per year, while health care costs have shown annual increases of 4 percent. Clearly, all other factors being kept constant, an aging population can account for only a small fraction of increasing health care costs.

**Care of the Terminally Ill.** In a recent article published in *Health Care Finance Review*, it was reported that almost 30 percent of health care dollars, at least for Medicare patients, are spent in the last two years of life. Many argue that this is a waste of health care resources and a cause of steadily increasing medical costs. These are specious arguments. After all, it is not the hopelessly ill who account for the greatest expenditure but those who die unexpectedly.

Moreover, according to an article in the *New England Journal of Medicine*, titled, "Prognosis, Survival and the Expenditure of Hospital Resources for Patients in an Intensive Care Unit," the percentage of health care expenditures in the last two years of life remained relatively constant over a 12-year period. Therefore, this factor cannot account for the rise in health care spending during that time.

**Medical Malpractice.** Neurosurgeons know too well that the threat of medical malpractice may induce some to order diagnostic

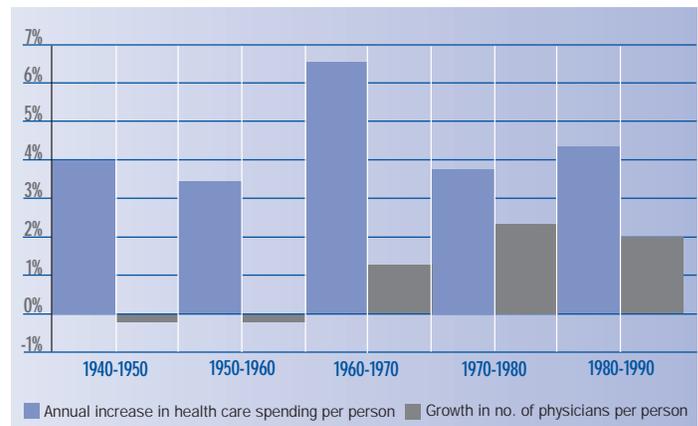


FIGURE 1. Rate of Increase in Per Capita Health Care Spending and Increase in Number of Physicians in the United States by Decade, 1940-1990

procedures of uncertain utility. It is extraordinarily difficult to determine what percentage of health costs can be attributed to defensive medicine.

However, according to an article published in the *Journal of the American Medical Association*, titled, "The Cost of Medical Professional Liability," when estimates have been made, they account for a very small percentage of health care costs. More important, there is no direct correlation between increases in the number of malpractice cases and the steady increases in health care costs since 1940. Therefore, malpractice reform might lower the overall costs of care, but it is unlikely to influence the rate of increase thereafter.

**Administrative Costs.** Much has been made of the administrative inefficiency of numerous competing health care plans in the United States. It has been argued that a single payer system, such as the one in place in Canada, would result in reduced administrative costs and more money being available for health care. This argument seems reasonable but, on closer analysis, administrative inefficiency cannot account for increased spending.

According to several reports published in *Health Care Finance Review*, program administration costs for health insurance grew from 4 percent of total health care spending in 1940 to about 6 percent in 1990, representing a small fraction of the increased health care spending at that time. There is no evidence that the "inefficient" U.S. system has resulted in a greater annual rate of increase than the single payer plan in Canada. In fact, between 1960-1990 the annual, per capita rate of increase in health care spending in Canada averaged 4.7 percent. During the

same time, the annual rate of increase in the United States averaged 4.8 percent.

**Increasing Number of Physicians.** An increasing number of medical specialists, particularly non primary care physicians, is often cited as a significant cause of increasing health care expenditures. This argument is unfounded, given that there is no discernable correlation between the per capita growth rates for the number of physicians and health care expenditures in the United States from 1940-1990 (Figure 1).

### The Effects of New Technology

Several frequently proposed factors cannot be responsible for increasing health care costs. Rather, it is, in my opinion, that increasing medical capability (i.e. new technology) is responsible for the soaring costs of medical care. Some of the factors supporting that argument include:

1. Annual increases in health care costs have remained relatively constant over the last 50 years, while steady advances in health care technology have occurred.
2. The rate of increase in medical care costs has been similar in all developed countries, as has the introduction of new technology.
3. Managed care plans have not been successful in limiting the introduction of new technology. In fact, the rate of increase in spending has been similar for managed care and fee-for-service payment plans.
4. The cost/benefit comparisons we make in most of our economic transactions have not been applied to the purchase and use of new medical technology.

From 1940 to 1990 the annual rate of increase of health care costs in the United States remained relatively constant (Figure 2). Any factor proposed as a major cause of increasing health care costs

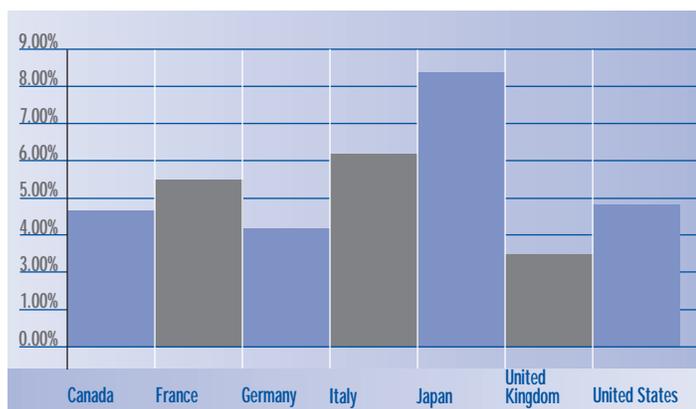


FIGURE 2. Average Annual Rate of Increase in Health Care Spending Per Person, 1960-1990

must have been active throughout this time. It also was during this era that a stream of new health care technology was introduced.

According to G.J. Schieber, "Health care costs have increased steadily over the past 30 years in all developed countries." Whatever is driving the increase in health care spending in the United States is also at work in the United Kingdom, Japan, Italy, Germany, France and Canada. The systems in place for training and reimbursing physicians, adjudicating claims of medical malpractice and financing hospital care are widely divergent among these countries; the introduction of new technology has affected them all.

Managed care plans were supposed to curtail increasing health care costs. This has not been the case. In fact, the rate of cost increases in managed care plans and fee-for-service plans has been remarkably similar. According to reports published in *Health Affairs*, this may be due to the inability of managed care to moderate the use and diffusion of new technology.

In most of our economic transactions, we ask how much benefit we receive for the money we spend. This has not been the case for new medical technology. Here, the test has been whether new technology offers any potential benefit, not whether the benefit is commensurate with increased costs.

Patients demand the latest technology. This demand may be made at the individual level when deciding on which health care plan to enroll in, or at the electorate level in more socialized systems. Because of such demands, suppliers of medical care such as health maintenance organizations, insurance plans, hospitals or elected representatives approve the introduction of new medical technology with limited regard for increased cost.

It has been estimated that this demand for new technology can account for as much as 50 percent of the annual increases in health care spending. In a technology intensive field such as neurosurgery, the effect is likely to be greater than for medical care in general.

### Looking Ahead

Clearly, the introduction of new technology has had a profound effect on increasing costs of neurosurgical care in the past, and will continue in the future. As neurosurgery heads into the new millennium we will have to evaluate how health care financing reforms may impact technological developments and what we can do to assess such technology. More importantly, we must be vigilant to protect the climate of innovation that improves care for neurosurgical patients. ■

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*This is the first in a series of four articles that will highlight how technology is driving the cost of medical practice. Subsequent articles will discuss how health care reform may affect technological development, the role of technology assessment in neurosurgical practice and the need to protect neurosurgical innovation in an era of evidence-based medicine.*

# Financing Healthcare

## *Does the Future Offer An Acceptable Balance Between Costs and Access to Care?*

**B**ruce C. Vladeck, PhD, Professor of Health Policy at Mount Sinai School of Medicine and former Administrator of the Health Care Financing Administration (HCFA), has described the venture of forecasting healthcare costs over an extended period as “an enterprise in comparative fantasy.” The same holds true with relating how healthcare will be financed in the future. Following are some issues that might influence the state of healthcare over the next 10 years, and beyond.

### Projecting Healthcare Costs

There are three basic types of assumptions to keep in mind when projecting healthcare costs: 1) Demographic factors; 2) general economic trends; and 3) medical care cost trends. The latter include, for example, different rates of medical care and general cost inflation, as well as medical activity trends. Most experts believe that technology is the driving force behind the long-term rise of health care spending, and argue that the primary reason for the increase in the health sector's share of the gross domestic product (GDP) over the past 30 years is technological change in medicine.

According to an article published in the January/February issue of *Health Affairs*, the national health expenditure is projected to total \$2.2 trillion in 2008, growing at an average annual rate of 6.5 percent from 1997 levels. Three primary patterns of growth anticipated by the authors include: 1) Rising share of GDP devoted to health care at a rate of increase below that experienced for 1960-1992; 2) cyclical pattern of growth in private spending with accelerating growth for 1998-2001 and decelerating growth for 2002-2008; and 3) diverging pat-

terns of growth in private and public spending for 1998-2002, as the implementation of the Balanced Budget Act (BBA) of 1997 restrains growth in Medicare spending.

The authors also point out that, for the private sector, slower growth reflects an increase in the projected growth in the

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Care Advisory  
Committee.*



uninsured population. The impact of continued innovation in strategies to restrain expansion in managed care costs is expected to reduce growth in health spending for both private- and public-sector payers.

### The Future of Healthcare Spending

Following an unprecedented period of slow growth from 1993-1997, health care spending is expected to demand a rising share of economic resources (GDP) over the next 10 years. As this trend places renewed pressure on private- and public-sector payers, it will drive the search for an acceptable balance between costs and access to care.

The trade-off between rising costs and access to medical services will not be easy to resolve. The increasing difficulty in finding major cost savings that are acceptable to consumers, suggests that further changes in modes of financing and delivery in health care will be incremental, with parallel reductions in health spending growth relative to historical experience.

“Over the long haul,” said Victor Fuchs, a noted economist writing in the January/February 1999 issue of *Health Affairs*, “there is only one reliable way to slow spending growth of Medicare and that is to slow the growth of services to patients. Unfortunately, an increase in the government's share of the bill for Medicare seems unlikely.” Indeed, and as Fuchs relates, even to maintain its current share, the government will have to raise taxes appreciably and make major cuts in other programs. If the growth of services continues at the same rate as in the past, health care for the elderly in 2020 will require 10 percent of GDP.

In the private sector, consumer preference is shifting toward less restrictive models of managed care—a trend expected to continue. However, it is assumed that in the future there will be a slowdown in the diffusion of cost-increasing medical technologies and a shift back to more restrictive forms of managed care.

Moreover, there will be an increasing use of financial incentives to foster more cost conscious behavior in the initial selection of health coverage and the purchase of medical services. It is anticipated that the trend toward declining private coverage will become increasingly pronounced over the next 10 years, causing the growing uninsured population to act as an additional restraint on long-term growth in insurance premium costs and reduce access to care.

A number of health policy analysts have argued that the current dependence of health insurance on employment should be severed or reduced, and the tax code modified accordingly. However, most employees prefer the current employer-based system to the prospect of navigating the free market to purchase health care coverage. This data calls into serious question the proposal that employers provide a defined contribution to health care as seen in Medical Savings Accounts.

Clearly, the future of health care financing is complex. Neurosurgeons must understand the rudiments of the discussion if they're to prosper in the new millennium. ■

# Coding Challenges Ahead

## *Revision to ICD and CPT Coding Systems Underway.*

The current systems of coding diseases and procedures have changed little in the past two decades. The basis for the International Classification of Diseases (ICD) dates back to 1853; however, the current 9th Clinical Modification has been used since 1975. Similarly, Current Procedural Terminology (CPT) was developed in 1966, whereas the current 4th version was published in 1977.

Limitations of these methods have prompted various efforts to modify the systems to reflect the many technological advances that have recently improved medical care. Following is a description of some of the anticipated changes in coding methods that will be introduced over the next few years.

### Changes to Coding Systems

Recently, there have been efforts to improve the specificity of surgical coding to account for the instances in which procedures cannot be adequately summarized by current coding descriptors. A goal of the CPT Editorial Panel is to improve the “granularity” of current, as well as future codes.

More discrete changes in both evaluation and management (E&M) codes (describing office visits, consultations, etc.) and procedural codes are anticipated in the next few years as well. The American Medical Association (AMA) has submitted a modified version of the E&M codes to the Health Care Financing Administration (HCFA) to simplify their application.

In the new version, several categories have been combined to simplify the “grids” in the history and medical decision making components. Documentation requirements may be reduced to improve the flexibility of a system criticized for not

reflecting typical physician practice; and the examination component has been expanded to include additional “single systems” such as the spinal examination. In addition, examination items can be chosen from any system exam in an “a la carte” manner to satisfy examination documentation requirements for the various levels of service provided.

Despite unified efforts to resist a “bulleted” system for documenting physician work by the AMA, AANS, CNS, and other specialty societies, HCFA insisted upon maintaining such a methodology, but offered to work with the AMA in simplifying the method of accounting for the work. The current recommendation of the AMA to HCFA can be examined on the AMA Web site ([www.ama-assn.org](http://www.ama-assn.org)) and may be implemented next year.

### Coding for Neurosurgical Procedures

Additional changes are anticipated in neurosurgical procedure codes during the next two years. A multidisciplinary effort among the AANS, CNS, North American Spine Society, American Academy of Physical Medicine and Rehabilitation, American Academy of Pain Medicine, American Society of Neuroradiology (ASNR), American Society of Anesthesiologists and the American College of Radiology has resulted in a revision of spinal injection codes to simplify their usage. A multidisciplinary work group also has been organized to improve the spine codes when multiple surgeons perform various components of a spinal procedure (e.g., approach, decompression, and arthrodesis).

In addition, a new anterior odontoid screw fixation code has been submitted, along with modification of several existing

spine codes to account for far lateral, endoscopic and laser discectomies. Introductory paragraphs defining terms including “segmental” and “level” have been included to help physicians understand the components included in various spine codes. Many thanks should be shared with Samuel J. Hassenbusch, MD, for coordinating and advancing these significant changes.

Lastly, changes have been made to account for technological advances in the field of deep brain stimulation with the collaborative efforts of the AANS, CNS, ASNR, American Academy of Otolaryngology-Head and Neck Surgery, and the American Academy of Neurology. Modifications of an existing code may allow comprehensive accounting of computerized navigational systems for intracranial, extracranial and spinal procedures.

### HCFA's Plans for a New Coding System

HCFA has concurrently contracted with 3M Corporation to develop a new procedural coding system. Their goal is to develop a highly granular coding system that accounts for more discrete components of procedures currently identified in CPT. There are significant concerns about accurately valuing procedures in this new system. When implemented, physicians, hospitals and payers would incur a substantial cost in changing software to account for any new coding system.

Recognizing this, it is imperative that all physicians maintain correspondence with their CPT representatives to ensure a flexible and evolving system that properly reflects our efforts in providing quality medical care. ■

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# Coding Quandaries

## Understanding the Do's and Don'ts of the -62 Modifier.

**Q.** I performed an anterior lumbar interbody fusion with the assistance of a general surgeon. I had been informed that the AMA considers the approach to the spine bundled into the value of anterior arthrodesis. Since the -62 modifier (co-surgeon) is used to share CPT codes among two surgeons of different specialties, how do the revisions of the -62 modifier in CPT 1999 affect the coding of this procedure?

**A.** You correctly point out that the AMA advises the approach to the spine in both decompression and arthrodesis codes is included in the value of those codes. Consequently, use of "thoracotomy for biopsy" or "exploratory laparotomy" codes to describe the approach are not considered appropriate. The -62 modifier has been used to describe the circumstance in which two surgeons share the use of a single CPT

code. In 1998, there were no CPT restrictions regarding the number of times the -62 modifier could be used in a single operative session. Since the surgeon using a -62 modifier was considered the primary surgeon, he was not allowed to use the -62 modifier on one code and the -80 modifier on others.

However, the spine surgeon could have a second spine surgeon assisting who was permitted to use the -80 modifier, which Medicare reimburses at 16 percent of the fee schedule for the appended code. Although Medicare reimburses a code appended by the -62 modifier at 125 percent of the regular payment, this reimbursement is divided equally between the two surgeons, unless coordinated prior written arrangements are made.

Concerns were raised about the use of the -62 modifier on every code describing an instrumented anterior spinal fusion. For

example, the access surgeon may only be present for the exposure and closure, making it difficult to justify co-surgery for the instrumentation and graft harvest codes.

Also, the spine surgeon loses substantial revenue when all the codes are appended by the -62 modifier. Yet, societies representing access surgeons raised legitimate concerns regarding "stand-by" time, during which the access surgeon must be available to manage a vascular or visceral injury.

Since Medicare rules prohibit surgeons from performing the key portion of two operations simultaneously, the access surgeons feel restricted from performing any billable services while the spine surgeon is performing the instrumented fusion.

Discussions among the specialty societies resulted in a plan to develop separate access codes for spinal surgery. An interim solution was offered to change the use of the -62 modifier so that it could only be applied once in a single operative session. However, the -80 modifier could now be used by the access co-surgeon on remaining codes.

These new coding rules became applicable in 1999, and resulted in a reduction in reimbursement for the access surgeon who used the -62 modifier on all the codes in 1998. The new rule also eliminated the opportunity for an assistant spine surgeon to use the -80 modifier

The chart to the left represents, under 1999 rules, a two-level anterior instrumented lumbar arthrodesis at L4L5 (22558) and L5S1 (22585) performed with iliac autograft (20937) and paired threaded fusion cages at each level (22851 at L4L5 and 22851-59 at L5S1) by a spine surgeon and a general surgeon. ■

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*The coding procedures expressed in this article should not be construed as AANS policy, procedure or standard of care. The AANS disclaims any liability or responsibility for the consequences of any actions taken in reliance on the coding procedures suggested.*

Example 1: Spine Surgeon, Access Surgeon					
SPINE SURGEON		GENERAL SURGEON			
22558-62	13.93 Work RVU	22558-62	13.93 Work RVU		
22585	5.53 Work RVU	22585-80	0.88 Work RVU		
22851	6.71 Work RVU	22851-80	1.07 Work RVU		
22851-59	6.71 Work RVU	22851-59,80	1.07 Work RVU		
20937	2.79 Work RVU	20937-80	0.45 Work RVU		
<b>Total</b>	<b>35.67 Work RVU</b>		<b>17.40 Work RVU</b>		
Example 2: Spine Surgeon, Access Surgeon and Assistant Spine Surgeon					
SPINE SURGEON		GENERAL SURGEON		ASST. SPINE SURGEON	
22558-62	13.93 Work RVU	22558-62	13.93 Work RVU	22585-80	0.88 Work RVU
22585	5.53 Work RVU			22851-80	1.07 Work RVU
22851	6.71 Work RVU			22851-59,80	1.07 Work RVU
22851-59	6.71 Work RVU			20937-80	0.45 Work RVU
20937	2.79 Work RVU				
<b>Total</b>	<b>35.67 Work RVU</b>		<b>13.93 Work RVU</b>		<b>3.47 Work RVU</b>
Example 3: Spine Surgeon Alone					
22558	22.28 Work RVU				
22585	5.53 Work RVU				
22851	6.71 Work RVU				
22851-59	6.71 Work RVU				
20937	2.79 Work RVU				
<b>Total</b>	<b>44.02 Work RVU</b>				

San Francisco half page ad

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Rhone Polenc Rover Ad (B&W)

# Building Your Practice

## *Tips for Marketing Your Practice on the Internet.*

Internet competition for current and potential patients is starting to intensify. Many medical professionals are turning to the information superhighway as a means to market themselves and their practices and to provide valuable educational materials to their patients. Following are steps to help you take advantage of this effective mass communications tool.

### **Step One: Collect and Organize Content**

The first step is to collect and organize your content. Your site should contain an overview of your practice and a list of the physicians and nurses you have on staff. Include each physician's name, educational background, special clinical interests, hospital or academic appointments, professional memberships, research activities, and other pertinent information. List your practice's address and contact phone numbers.

Provide directions to your office and links to online maps such as Yahoo! Maps ([www.maps.yahoo.com](http://www.maps.yahoo.com)). For practices in multiple locations, post an "interactive map," which allows users to enlarge selected areas of the map for more detail. Your site should also include information on your finance and billing policies.

Use your Web site to state your philosophies on medical and patient care, as well as customer service. Describe the services that you offer, neurological disorders you treat and the health plans with which you participate. Provide your patients with information on a range of neurological disorders by establishing a link on your site to the Public Pages of N://OC® ([www.neurosurgery.org](http://www.neurosurgery.org)).

### **Step Two: Register the Name of Your Site**

When establishing your Web site, make it easy to find. Select a name and create a Web

address or URL (uniform resource locator) that communicates a message about you and the services you provide. Your practice name or its initials are often best; however, keep in mind that many names have already been taken. To find out if your name is available, visit Register.com™ ([www.register.com](http://www.register.com)), Network Solutions® ([www.networksolutions.com](http://www.networksolutions.com)), or Netscape (<http://register-it.netscape.com>).

If your site will be part of a hospital or a university site, contact your network administrator and they will review URL and hosting options with you.

### **Step Three: Build Your Web Site**

Find a Web design and development company to build your site, or create one yourself. To locate a Web developer, look in your community yellow pages under Internet services or search the Web for potential vendors. Once you find a Web developer, design your site to be user-friendly, interactive and attractive. Organize it so that navigation is easy and make the graphics interesting, but easy to read.

Update your site regularly, and keep in mind that changes can be made at a nominal cost using programs that eliminate the need to learn HTML, such as FrontPage® by Microsoft® and PageMill® by Adobe®.

If time does not permit you to create your own personal Web site, you may wish to take advantage of a special service provided by N://OC®. The service enables you to develop an extensive practice profile that includes such information as your name, your educational background, the location of your practice and more. The profile is linked to the "Find a Neurosurgeon" section of the Public Pages and the one-time set-up fee is only \$500.

### **Step Four: Choose an ISP**

You have several options when choosing an Internet service provider (ISP). Key factors in determining what type of ISP to use include cost, services offered, customer and technical support and quality of access. Web sites such as HostSearch (<http://hostsearch.com>), and FINDaHOST.com (<http://findahost.com>) may be useful in selecting an ISP.

If you have outsourced the creation of your site, your developer may host the site for you. Either way, visit the Web sites of several hosting companies and compare features, set-up costs and monthly fees.

### **Step Five: Announce Your Site**

To improve your visibility on the Web, make sure that you're registered with the major search engines. Also, link your site to all of the medical and health care directories and search engines on the Web. Send electronic press releases to Internet agencies and to local newspapers. Link your site (with permission) with other useful sites such as your local, state and regional medical societies and specialty medical associations. Also, consider providing links on your site to medical libraries, hospitals and neurosurgery-related Web sites, such as Medscape ([www.medscape.com](http://www.medscape.com)), National Institutes of Health ([www.nih.gov](http://www.nih.gov)) and N://OC® ([www.neurosurgery.org](http://www.neurosurgery.org)).

### **Step Six: Update, Update, Update**

Once your site is established, be certain to update it often. Notify visitors of a new physician, seminars and conferences at which you will be presenting, the departure of a retiring physician, the addition of new services or coverage, the opening of a new facility, your participation in a new health plan or the merger with or acquisition of another practice. If your site becomes stale and your news becomes old, repeat visits will decrease. ■

John J. Oro, MD, is Chief of the Division of Neurosurgery at the University of Missouri Hospital and Clinics, former Editor of NEUROSURGERY://ON-CALL®.

# Cushing Orator

*Doris Kearns Goodwin to Serve as 2000 Cushing Orator.*

BY DEIA LOFENDO

**A**claimed historian, Pulitzer Prize winning author and former Harvard professor, Doris Kearns Goodwin, will serve as the Cushing Orator at the 2000 American Association of Neurological Surgeons (AANS) Annual Meeting in San Francisco, California. Her talk, which will take place April 11 from 12:15 - 1 p.m., will focus on "Leadership in the New Millennium."

For more than 30 years, the AANS has sponsored the Annual Cushing Oration, named for Harvey Cushing, MD, universally recognized as the Father of Modern Neurosurgery. Previous Cushing Orators include H. Ross Perot, General Colin Powell, Wernher von Braun, and former President George Bush.

Born in New York, Goodwin earned her bachelor's degree, magna cum laude, from Colby College in 1964. She was awarded a Fulbright Fellowship in 1966, and received her doctorate of philosophy in government from Harvard University in 1968. During graduate school, she was chosen to serve as a White House Fellow and assigned to Labor Secretary Willard Wirtz, under whom she worked on problems related to ghetto unemployment. Subsequently, President Lyndon B. Johnson had her transferred to the White House, where she served as the president's staff assistant until he left office.

From her White House experience came Goodwin's first book, *Lyndon Johnson and the American Dream*. The book, which explores the life of President Johnson both in and out of the White House, topped the *New York Times* best-seller list for several months and



**2000 Cushing Orator on "Leadership in the New Millennium"**

Pulitzer Prize winning author, Doris Kearns Goodwin, will speak on April 11, 2000 from 12:15 - 1 p.m., at the AANS Annual Meeting in San Francisco.

launched her career as a presidential historian. Her second historical book, *The Fitzgeralds and the Kennedys* was published in 1987 after years of research on the private papers of Joe and Rose Kennedy, and was later transformed into a six-hour miniseries on ABC-TV.

It was her frank look at the presidency of Franklin Roosevelt, however, that brought Goodwin the 1995 Pulitzer Prize in History. *No Ordinary Time: Franklin and Eleanor Roosevelt: The Home Front in World War II*, provided a fascinating inside look at the state of the nation and its leaders during a time of world turmoil.

A true Renaissance author, Goodwin doesn't just write about presidential history. She also is an avid baseball fan and has applied her considerable writing skills to the history of America's pastime. She has written numerous articles on baseball for leading national publications and shattered journalistic taboo by becoming the first female reporter ever to enter the Boston Red Sox locker room. She served as a consultant for the PBS television documentary, *The History of Baseball* and recently completed *Wait Till Next Year*, a coming-of-age book that documents her life as a Brooklyn Dodgers fan in the 1950s.

In addition to her literary career, Goodwin also appears as a political analyst on network television. She serves as a regular contributor to "The Newshour With Jim Lehrer" and appears frequently on ABC's "Nightline." TV news anchor Peter Jennings describes her as "the most fascinating interview I've ever done."

The AANS is honored to welcome Doris Kearns Goodwin to this year's Annual Meeting. Her participation will continue the ongoing tradition of excellence advanced by previous AANS Cushing Orators. ■

## AANS 2000 ANNUAL MEETING

### Annual Meeting Fast Facts

Dates:	April 8-13, 2000
Location:	Moscone Convention Center in San Francisco, California
Registration:	Registration materials will be mailed in mid December.
More Details:	Details will be reported in the next issue of the <i>Bulletin</i> and on NEUROSURGERY://ON-CALL® (www.neurosurgery.org).

# Educating Consumers

*AANS Plans Neurosurgical Insert in USA Today.*

BY SUSAN NOWICKI, APR

The AANS has announced plans to publish the first-ever neurosurgical insert in *USA Today*, the national daily newspaper. The planned publication date is April 7, 2000, which is the Friday immediately preceding the AANS Annual Meeting in San Francisco. It is anticipated that five million readers will see the supplement.

The goal of the insert is to educate various target publics about the broad scope of neurosurgery. The eight-page, full-color, tabloid-size piece will address the broad spectrum of neurosurgical practice—in particular, the role of the neurosurgeon and the surgical and non-surgical care he or she provides. The aim is to communicate the leading-edge nature of neurosurgical treatments. The *USA Today* insert will address these concerns:

- The referring physician's desire to refer patients to the appropriate specialist with the goal of providing quality care to patients.
- The managed care decision-maker's concern with cost and cost management, making sure that services are chosen to provide the best outcomes for the dollars spent, and to provide the quality of care necessary to ensure patient satisfaction.
- The public and media's self interest in health—whether it's in cures for an illness, relief from pain, being able to choose the doctor that is in the best position to help them, and having access to specialists without hassles or hindrances.

The insert will cover spine and peripheral nerves, pediatric neurosurgery, pain, cerebrovascular disorders, neurotrauma, tumors, as well as functional and stereotactic practice. It also will address the importance of patient access to specialty care.

Stan Pelofsky, MD, Chairman of the Editorial Board developing content for the supplement said, "This is an exciting opportunity to educate the public, business leaders, and referring physicians about the scope of neurosurgical practice. It will educate lawmakers about neurosurgical issues, alert the media to neurosurgical story ideas, and help draw the public to our Web site. Most important, it allows us to tell our story the way we want it to be heard." Also serving on the Editorial Board are Russell L. Travis, MD, AANS Immediate Past President; Robert E. Harbaugh, MD; Robert F. Heary, MD; Bruce A.

Kaufman, MD; A. John Popp, MD; Roberto C. Heros, MD; Joel D. MacDonald, MD; and Edie E. Zusman, MD.

## Advocacy Versus Advertising: Telling the Neurosurgical Story

"Some may question the idea of a medical society doing a paid advertisement," noted Dr. Travis, who originated the concept for the neurosurgical insert. "However, this very proactive approach to public awareness should be viewed as an advocacy tool rather than advertising. We very much need to pursue an aggressive public awareness campaign for the neurosurgical story. We need to stake out our practice territory with patients, third-party payers, the media, and referring physicians before others do it for us."

Dr. Travis also pointed out that special sections in *USA Today*

have been used to great benefit by other medical specialty societies including the American Academy of Dermatology, which just published the fourth edition of its insert "Skin Savvy—A Guide to Healthy Skin," and the American Association of Hip and Knee Surgeons (AAHKS), which published "A Consumer's Guide to Total Joint Replacement."

## Member Support Sought

The AANS Board of Directors has developed a plan to cover the production and distribution costs of the insert

through a combination of advertising sales, corporate sponsorships, and an assessment of individual members. "This project needs the support of all members in order to succeed," said Dr. Pelofsky. "So, we're counting on you. For a modest investment, just \$100 per member, you can support a high-profile public relations effort. In return you will receive 100 copies of the insert to place in your waiting room for patients or to share with referring physicians in your community."

A few weeks before the supplement appears in *USA Today*, it will be sent to members of Congress with a letter explaining that their constituents will be receiving the insert. After it is published, the insert will be posted on NEUROSURGERY://ON-CALL®. Extra copies will be available for purchase by members as giveaways to patients, insurance companies, and others. Details about the insert and a payment notice will reach members by December. If you have questions about the insert, call Susan Nowicki at (888) 566-AANS. ■



AAHKS' "A Consumer's Guide to Total Joint Replacement" published in *USA Today* in February 1999.

# The Future of Medicare

## Addressing the Problems, Politics and Solutions.

**M**aking Medicare viable over the long term, while meeting the health care needs of an ever-growing aging population, is a daunting concern facing our country. By 2030, more than 20 percent of the total U.S. population is expected to be covered by Medicare, up from 14 percent today. Medicare outlays in 1997 approximated \$200 billion and it is estimated that by the year 2030, program spending will be nearly \$3 trillion! Under current program configurations, there will not be enough revenues to pay for all expenses unless policymakers take action and significantly modernize and restructure the program to ensure its solvency.

While it is impossible to fully capture the complexity of this issue in the space allotted, this article will attempt to highlight a number of complicated issues involved in the Medicare reform debate.

### THE PROBLEMS

**Demographics are a Disaster.** The biggest and most obvious problem with Medicare is the future demographics of the program.

Currently, Medicare beneficiaries comprise one in seven Americans, but this proportion is expected to grow to one in five by 2030, when the number of beneficiaries will exceed 76 million. The elderly population is also healthier and has a longer life expectancy.

The combination of these factors, coupled with a smaller workforce contributing

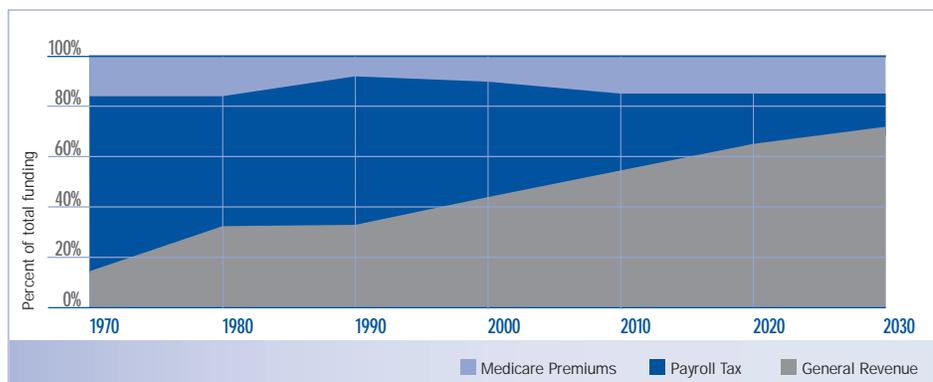
*Katie O. Orrico, JD, is Director of the AANS/CNS Washington Office.*



to the program through payroll taxes, spells doom and it is predicted that the Medicare trust fund will be bankrupt by the year 2015 unless something changes.

Moreover, experts believe that by 2030 approximately 65 percent of Medicare will be funded through general revenue compared to about 37 percent in 1997, putting

Figure 1: Percentages of Total Medicare Funding Over Time



extreme pressure on the remaining elements of the federal budget (See Figure 1).

**Program is a Structural Mess.** Another problem associated with Medicare is that it is a program made up of a hodge-podge of benefits and entitlements, which have been pieced together over the years since President Lyndon B. Johnson signed the Medicare legislation in 1965. Structurally, Medicare is separated into three parts—Parts A, B and C—which in many ways are not financially and administratively integrated. Services covered by Medicare are shown in Figure 2.

In addition, embedded in these payments are a variety of mandatory benefits and social welfare programs. These include financial support of graduate medical education (\$7 billion annually), support for hospitals serving a disproportionate share of low-income patients (\$4 billion annually), the End State Renal Disease Program (\$8 billion annually), and others.

**Rate of Spending Will Rise.** The incentives associated with the combination of traditional Medicare, plus supplementary insurance, have been especially problematic. The current system rewards the most aggressive health care practitioners, penalizes conservatively practicing physicians, provides negligible incentives for the elderly to seek cost-effective physicians or hospitals, and gives incentives to pay for new technologies and procedures irrespective of cost. Add to this the growing elderly population, and Medicare spending, absent budget constraints or reform, will grow more than 7 percent per year (See Figure 3).

### THE POLITICS

The principal obstacle in moving forward continues to be “politics.” Most politicians—republicans and democrats alike—are petrified to disturb a program that is enormously popular with the nation’s 40 million elderly (most of whom vote). One need only recall what happened in 1988 when the Congress passed the Medicare Catastrophic Coverage Act. This

law was a major expansion of the Medicare program that added a new long-term care benefit. Its passage was a direct result of the lobbying efforts of the American Association of Retired Persons (AARP). The program was funded entirely by additional taxes on high-income beneficiaries, however, and many viewed the benefits not to be worth the costs. Irate seniors led to the bill's repeal in 1989.

The AARP is not the only political force serving as an obstruction to meaningful reform. Medicare epitomizes the concept of special-interest politics and every major group with a stake in the Medicare pie has a lobbying force in place to protect their own turf. Medicare is the largest single source of income for the nation's hospitals, physicians, home health agencies, clinical laboratories, durable medical equipment suppliers, to name some. All of these groups work hard to protect and advance their interests through the political process. Bruce C. Vladeck, the former Administrator of the Health Care Financing Administration (HCFA), has referred to this as the "Medicare-Industrial Complex."

Forging a solution to the impending crisis is highly unlikely unless all players involved in the debate can reach a bipartisan consensus. Given that Medicare is a public program, it will never be able to escape the realities of the political process. However, we will likely continue to witness the implementation of short-term stopgap measures focused on provider cuts rather than systemic change, unless our elected officials get the courage to break free of the pressures put on them by the "Medicare-Industrial Complex."

## THE SOLUTIONS

Within the current debate, a number of options exist for reforming the system:

**1) Cut Federal Medicare Spending.** Because Medicare spending already is 12 percent of the federal budget and rising, one reform objective is to curb the program's growth,

while retaining the basic framework of the current program. Options under consideration are as follows:

- **Trim payments to hospitals, doctors, and other health care providers.** Supporters of this approach maintain that it has been an effective way in reducing overall spending in the past and has not had a negative impact on provider participation in Medicare. Opponents argue, however, that further reductions in provider payments may result in physicians refusing to treat Medicare patients, or worse, reducing access to medical technology.

- **Curb fraud and abuse.** Many believe that Medicare's financial problems could be solved, at least in part, by rooting out fraud and inappropriate payments to providers. Unfortunately, it is not that simple. Although a 1997 audit of the program found that Medicare should not have paid claims worth about \$20 billion, not all of these claims were outright fraud. Thus, any savings from such measures would be miniscule in comparison to the amount of money needed to restrain spending growth.

- **Raise the eligibility age for Medicare.** Given the increased life expectancy, many policymakers advocate raising the age of Medicare eligibility from 65 to at least 67. This would limit the number of people covered under the program, thus cutting Medicare spending. Given that some people might find it hard or impossible to work past the age of 65, this could lead to an increased uninsured population for those individuals no longer maintaining employer-sponsored health insurance coverage.

**2) Have Beneficiaries Pay a Greater Share of Program Costs or Raise Revenue From Other Sources.** Coupled with proposals to reduce Medicare spending are several options for generating program revenue.

- **Raise Part B premiums.** Current beneficiary premiums are set to cover approximately 25 percent of Part B costs. The remaining 75 percent is funded by general revenues. Raising the premiums would alter

this ratio, saving the federal treasury additional money. Opponents of this proposal argue that this would put an undue financial burden on poorer beneficiaries.

- **Raise deductibles and co-payments.** Proponents of this proposal argue that imposing higher cost-sharing requirements would discourage beneficiaries from consuming unnecessary medical care. Again, the drawback is that higher cost sharing would be most burdensome for the lowest-income and sickest beneficiaries.

- **Raise premiums for beneficiaries with higher incomes.** An alternative to across-the-board increases in beneficiaries' costs would be to raise premiums only for those who are economically better off, based on a sliding scale. Unfortunately, this proposal is unlikely to result in a significant amount of money for Medicare, since only about 5 percent of Medicare beneficiaries have incomes above \$50,000.

- **Raise payroll taxes.** An increase in the payroll tax would extend the life of the Medicare trust fund. HCFA estimates that

Continued on next page

Figure 2: Medicare Service Percent of Total Spending

### Part A

Hospital In-Patient . . . . .	40 percent
Skilled Nursing Facilities . . . . .	6 percent
Home Health . . . . .	6 percent
Hospice . . . . .	1 percent

### Part B

Physicians . . . . .	15 percent
Hospital Outpatient . . . . .	8 percent
DME, Laboratory, Other . . . . .	6 percent
Home Health . . . . .	1 percent

### Part C

Managed Care . . . . .	17 percent
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raising the rate from the current 1.45 percent to 1.70 percent of wages for both employers and employees would extend the trust fund through 2021. The downside to this is that it places an undue burden on younger workers and may have a significant negative effect on the nation's economy.

- **Raise revenue from other sources.** Other sources of revenue under consideration include, for example, an increase in the tax on cigarettes and other tobacco products.

**3) Improve Benefits.** Many experts argue that a modern Medicare program should address not just future spending, but also the adequacy of Medicare coverage. Additional benefits include prescription drug coverage, stop-loss protection and long-term care. The costs associated with these benefits could be enormous, and unless they are folded into an entirely restructured program, would only add to Medicare's financial instability.

**4) Fundamentally Restructure Medicare.** Many believe that the aforementioned options are temporary solutions, at best, and that the program needs complete restructuring. Several leading proposals that would significantly reform the Medicare program include:

- **Adopt a defined contribution plan to limit federal spending.** Under this approach, Medicare would give beneficiaries a choice of health plans that would offer a basic level

of benefits. Medicare would pay a fixed amount toward the cost of whichever health plan the beneficiary selects. If Medicare payments do not cover the full cost of the premium, then beneficiaries would have to pay the balance themselves.

Supporters like this approach because it would make federal spending on Medicare more predictable. Competition among health plans could improve quality of care and lower costs. Opponents argue, however, that beneficiaries would probably face higher out-of-pocket spending for medical care. Therefore, those with modest incomes or significant health problems could be adversely affected.

- **Replace Medicare with an individual investment-based system of funding retiree health care.** Some policymakers have proposed replacing Medicare, which now provides federally guaranteed benefits with a broad-based system of retiree health savings accounts. In such a system, people would save a percentage of their income during their working years to pay for their own medical expenses upon retirement. Certain tax incentives, similar to Individual Retirement Accounts (IRAs) would be put in place to encourage savings.

Proponents of this approach maintain that this system would help with the demographic imbalance and could introduce greater competition in the health care system—giving individuals greater control over how their health dollars are spent

when they retire. This market-based approach could, in turn, help reduce the growth in health care spending.

The significant disadvantage to this approach is that low-income workers may not save enough money to cover their future health care expenses. Moreover, the amount of money available in the health accounts would be dependent upon how the funds had been invested. The transition from the current financing mechanism to an investment-based system would be difficult, since younger workers might have to contribute to both systems simultaneously.

**What Does the Future Hold in Store?**

Enactment of the Balanced Budget Act of 1997 (BBA 97) produced an estimated \$115 billion of savings over five years from Medicare spending that otherwise would have occurred under then current law. This bill, coupled with a fairly robust economy, has extended the life of the Medicare trust fund from 2008 to approximately 2015.

The BBA 97 also created the National Bipartisan Commission on the Future of Medicare. It was hoped that this 17-member commission made up of individuals appointed by Congress and President Clinton would develop recommendations that would provide Members of Congress political "cover" to vote in favor of the recommendations. Unfortunately, the Commission failed to garner the necessary 11 votes and the preliminary recommendations failed to move forward.

Despite the failure of the Commission, Members of Congress, President Clinton, Medicare stakeholders and other health policy experts continue to debate this critical issue. Over the course of the next year, we can expect to see numerous proposals put on the table for consideration and Medicare reform will likely be a key issue in the 2000 elections. Neurosurgeons should continue to monitor and participate in this debate, as the Medicare program will change and these changes will impact neurosurgeons and the patients they serve. ■

Figure 3: Total Medicare Financing and Spending 1970-2030 in Billions of Dollars

	1970	1980	1990	2000	2010	2020	2030
Medicare Premiums	\$1	\$2	\$8	\$25	\$69	\$171	\$401
Payroll Taxes	5	24	72	130	206	324	497
General Revenue/ Other Funding	1	10	28	92	261	763	2,073
<b>Total Medicare Spending</b>	<b>7</b>	<b>36</b>	<b>108</b>	<b>247</b>	<b>537</b>	<b>1,258</b>	<b>2,972</b>

# Malpractice Insurance Survey

## *Majority of Members Would Participate in AANS-Sponsored Insurance Package.*

**A**ANS members are definitely interested in participating in a medical malpractice insurance program, should such a program be offered," said Dave Fellers, CAE, AANS Executive Director, when commenting on a recent survey distributed to AANS members. The survey, which was included in the summer 1999 issue of the *Bulletin*, queried AANS members on their interest in medical malpractice insurance, and asked if they would be interested in participating in a malpractice insurance program sponsored by the AANS. An overwhelming 56 percent of the survey respondents answered "yes," as compared to only 31 percent who said they were "unsure."

The survey questionnaire asked 10 questions about neurosurgeons' medical malpractice insurance, including the name of their current carrier, their coverage limit, whether they feel their coverage is adequate, how many claims they may have filed over the past 24 months and the type of procedure the claim(s) was related to. The questionnaire also asked if members would be interested in a malpractice insurance program sponsored by the AANS.

The AANS will use the results of the medical malpractice insurance survey to investigate the feasibility of an AANS-sponsored malpractice insurance program and to assist in evaluating potential insurance carriers. The outcome of this study will be reported to the AANS Board of Directors along with a recommendation for action.

### Survey Summary

Of the 4,700 medical malpractice insurance questionnaires distributed, 277 were

returned, constituting a 5.8 percent response rate. Slightly more than 45 percent of the responses came from six states: California (13 percent of responses), Florida (9.7 percent), Texas (7.6 percent), Illinois (5.8 percent), Pennsylvania (4.7 percent), and New York (4.3 percent). The respondents listed more than 45 malpractice insurance carriers with whom they do business. Three companies—SCIPIE, CNA, and St. Paul—were mentioned most frequently.

Coverage limits varied among the respondents—more than 42 percent opt for coverage limited to \$1 million per occurrence and \$3 million annually. Coverage limits reported ranged from a low of zero (two respondents indicated that they currently are not covered by medical malpractice insurance) to a high of unlimited coverage (also reported by two respondents). Coverage limits in the high range were \$1 million-\$10 million, \$2 million-\$6 million, and \$3 million-\$5 million. The low end of the reported range of coverage limits included \$100,000-\$300,000, \$200,000-\$600,000, and \$250,000-\$750,000.

Reported annual medical malpractice insurance premiums ranged as widely as the coverage limits, from a high of \$100,000 to a low of \$7,673.

Not all of the respondents answered the question, "Do you consider your coverage to be adequate?" Of the 256 respondents who did answer this question, nearly 84 percent responded "yes." Forty-two respondents do not consider their coverage adequate, and attributed their coverage shortfall most often to an environment of more lawsuits and unfav-

orable judgments, increasingly high judgments, and the high cost of greater coverage.

One respondent pointed out, "There is the possibility that physicians with more insurance will get sued more because suits are generally aimed at those with deep pockets. Although my limits may not be adequate, it is not clear to me that having more insurance would better protect me."

Only 57 respondents offered feedback on the question, "What additional coverage would you prefer?" Of those who responded that they desired increased coverage limits, the limits mentioned most often were in the \$3 million-\$5 million range. These respondents mentioned tail coverage as a desirable addition; they also prefer an occurrence policy to a claims made policy. Finally, two respondents reported physician assistant coverage as an additional coverage need.

The group responding to the survey tended to have a low number of claims made during the 24 months preceding the survey. Of the 269 members responding to this question, 165, or just more than 60 percent, had zero malpractice claims. Another 91, or about 34 percent, filed one or two claims. Eleven respondents filed three to five claims, and two respondents filed more than five claims.

If a respondent had claims experience, the claim(s) was most often related to spine procedures (average 77.2 percent), followed by intracranial procedures (average 41.59 percent), and all other procedures (average 19.43 percent).

"This survey was the first step in what is intended to be an ongoing effort on the part of the AANS to ask our members what kinds of new products and services they believe have value," said Mr. Fellers. "We will continue to solicit feedback on these types of issues and in other areas on a regular basis so that we keep pace with our members' needs." ■

# Fraud & Abuse Defense Fund

## *New AANS Member Insurance Program Offers Fraud and Abuse Protection.*

In today's environment of complex federal, state and third-party payer rules, potential fraud and abuse sanctions are a stark reality for practicing neurosurgeons. Recognizing this, the American Association of Neurological Surgeons (AANS) is offering a new insurance program that will provide coverage of legal defense costs related to Medicare or Medicaid fraud and abuse proceedings. The insurance carrier, OMIC (Ophthalmic Mutual Insurance Company), originally developed the insurance product for ophthalmologists, and recently made the coverage available to other medical specialists.

### **Fraud and Abuse: A Growing Concern**

According to the United States General Accounting Office, the federal government is increasingly cracking down on Medicare and Medicaid fraud, estimated at between 3 to 10 percent of the nation's \$1 trillion in annual healthcare costs. In fact, in May of this year, a national health care fraud and abuse data bank began collecting information on final adverse actions against health care providers, suppliers and practitioners. Reportable actions include health care-related criminal convictions and civil judgments, exclusion from federal or state health care programs, licensing and certification actions, and other adjudicated actions established by regulation.

Certainly, fraudulent reimbursement claims are primary targets of the government's stepped-up fraud and abuse enforcement efforts; however, inadvertent billing errors also are being discovered and punished—putting even the most conscientious and compliant physicians at risk.

Investigations typically begin when a third-party payer detects an anomaly in

billing patterns, or when a competitor, patient, or employee lodges a complaint. Some investigations are the result of random samplings. Both criminal and civil investigations may ensue, involving on-site visits, employee interviews, documentation reviews, and accounting audits.

### **Put the Policy to Work for You**

The new AANS Medicare/Medicaid Fraud & Abuse Legal Expense Reimbursement Insurance coverage pays legal defense costs in the event that a physician, or his or her practice, becomes the target of a government fraud and abuse proceeding. The policy provides full prior-acts coverage for proceedings or investigations relating to billing records dated prior to the coverage effective date.

The policy has a limit for individuals of \$25,000, which covers the attorney's fees and associated legal expenses and is subject to a \$1,000 deductible. Members of

physician groups have combined aggregate limits based on the size of the group in accordance with an Aggregate Limits Schedule. The annual premium for the coverage is \$375 per physician.

"AANS Medicare/Medicaid Fraud & Abuse Legal Expense Reimbursement Insurance is our most recent addition to an increasingly comprehensive list of benefits available to AANS members," said Dave Fellers, CAE, AANS Executive Director. "We're working hard to develop new benefits—like this insurance program—that add real value to our members' membership investment."

For more information about the new AANS Medicare/Medicaid Fraud & Abuse Legal Expense Reimbursement Insurance, or to request an application, call the AANS Member Services Department at (888) 566-AANS.

### **AANS Wants Your Feedback**

Enclosed in this issue of the *Bulletin* is an AANS member survey on future Professional Development courses. Please complete the survey and fax it to the AANS at (847) 692-6770.

Your feedback is important. ■

### **RESOURCES ON THE WEB**

If you want more information on Medicare/Medicaid fraud and abuse, following is a list of resources available on the Internet.

**Medicare:** [www.medicare.gov/fraudabuse.html](http://www.medicare.gov/fraudabuse.html)

Information on how to report fraud and abuse, tips on preventing fraud and abuse and links to free educational materials.

**Health Care Financing Administration:** [www.hcfa.gov](http://www.hcfa.gov)

Specific Medicare information for researchers, analysts and physicians.

**American Association of Retired Persons:** [www.aarp.org/medfraud](http://www.aarp.org/medfraud)

Information on the "Who Pays? You Pay" campaign, tips on how to avoid becoming an unknowing victim, and a list of practices considered fraudulent and abusive.

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# Spotlight on Researchers

## *The Research Foundation of the AANS Recognizes Five Promising Researchers.*

The Research Foundation of the AANS continues to support the long-term growth and survival of neurosurgery by providing start-up funding for clinical research. Following are five researchers recently selected by the Foundation's Scientific Advisory Committee to receive grants for their work in neuroscience research.

### 1999 Rhone-Poulenc Rorer Research Fellow

Gregory D. Foltz, MD

University of Washington

**Chair:** H. Richard Winn, MD

**Sponsors:** Leroy Hood, MD, and Richard Morrison, MD

**Research Title:** *High Density cDNA Array Analysis of Gene Expression in Astrocytic Tumors.*

**Abstract:** The goal of this research is to characterize gene expression changes associated with malignant transformation in astrocytes. Malignant gliomas are the most common primary tumors in the CNS in adults and, unfortunately, have poor outcome despite aggressive treatment. Mutations and deletions of the p53 gene occur in 30-50 percent of low and high-grade gliomas suggesting its role in astrocytes malignant transformation. Recent advances in molecular biotechnology have produced tools capable of analyzing gene expression changes on a comprehensive scale at distinct time points in a biological process. Applying these tools to neoplastic transformation in astrocytes after the loss of wild-type p53 function will provide insight into the critical determinants of apoptosis and tumor progression in malignant gliomas.

### 1999 Shirley L. Bagan Research Fellow

Babak S. Jahromi, MD

University of Toronto

**Chair:** Charles H. Tator, MD, PhD

**Sponsor:** Bryce K.A. Weir, MD

**Research Title:** *Electrophysiological Properties and Intracellular Ca<sup>2+</sup> Homeostasis in Vasospastic Smooth Muscle.*

**Abstract:** Removal of blood from the subarachnoid space of monkeys within three days of hemorrhage causes vasospasm to resolve four days later. However, if blood is removed after five days from hemorrhage, vasospasm does not resolve within four days. Rather, it persists with the same severity as it does in animals without clot removal. This phase of clot-independent vasospasm is transient because vasospasm eventually resolves 14 days after the hemorrhage. What changes occur in the smooth muscle cells that first prevent, and then allow, relaxation? What is the mechanism of development of those changes? We hypothesize that blood alters smooth muscle cells in cerebral arteries so they remain contracted even in the absence of an ongoing stimulus. They then relax regardless of the presence of spasmogens. We propose to study vasospastic smooth muscle cells using electrophysiological techniques and calcium microfluorimetry to define what these alterations are and to gain insight into the mechanism(s) by which the above-noted features of vasospasm occur.

### 1999 Research Fellow

Sunghoon Lee, MD

Yale University

**Chair:** Dennis D. Spencer, MD

**Sponsor:** Anne Williamson, MD

**Research Title:** *Long-term Modifications in the Human Hippocampus: Implications for Human Memory.*

**Abstract:** Long-term potential (LTP) and long-term depression (LTD) are forms of synaptic plasticity that have been proposed as the cellular foundation for memory and associative learning. Significant energy and resources have been devoted to the investigation of the fundamental mechanisms of LTP and LTD. However, the question still remains unanswered as to whether LTP and LTD have been documented in the human hippocampus. We propose to perform LTP and LTD experiments in the human hippocampus that is resected as part of the surgical therapy for medically intractable epilepsy. We will perform a series of experiments to test the hypothesis that LTP and LTD occur in the human hippocampus and to define their physiological and pharmacological parameters. Lastly, we hope to compare the patient's pre-operative *in vivo* memory function with the degree of synaptic plasticity found *in vitro* following resection.

### 1999 New York City Post-Graduate Neurosurgery Course Young Clinician Investigator

Robert E. Gross, MD

University of Utah

**Chair:** M. Peter Heilbrun, MD

**Sponsor:** Mark Nobel, MD

**Research Title:** *Role of Netrins in the Generation and Regeneration of the Nigrostriatal Pathway.*

**Abstract:** The reconstruction of neural pathways has the potential for restoring neurological function in a variety of neurodegenerative diseases, including Parkinson's Disease. Neural reconstruction has been limited by sparse knowledge of growth-promoting and growth-inhibiting molecules that play a role in normal pathway development. These experiments will examine the role of the netrins, a new family of ligands with growth-promoting and chemotropic activity in the spinal cord and brainstem, in the ontogeny of the nigrostriatal and striatonigral pathways. The

effects of netrins on differentiation and neurite outgrowth of striatal and nigral precursors will be examined, and the expression of netrins and their receptors will be explored. These experiments should provide insights into ways to manipulate netrin signaling for pathway reconstruction in animal models of Parkinson's and Huntington's Disease.

### 1999 Young Clinician Investigator

John H. Sampson, MD

Duke University

**Chair:** Allan H. Friedman, MD

**Sponsor:** Darell Bigner, MD, PhD

**Research Title:** *Determination of the Radio-pharmacokinetics and Dose for Bulk Flow Microinfusion of <sup>131</sup>I-Labeled Antitenascin Monoclonal Antibody.*

**Abstract:** Direct injection of <sup>125</sup>I-labeled anti-tenascin monoclonal antibodies (MAbs) into closed surgically-created brain tumor resection cavities at our institution has produced promising Phase I and Phase II results with significant post-treatment median survival times of >60 weeks in patients with recurrent malignant brain tumors. Still, the majority of patients with malignant brain tumors remain ineligible for such therapy because their tumors are not safely resectable or a closed cavity cannot be created during the resection. Based on preclinical and clinical data from our laboratory and others, we hypothesize that the application of targeted radiotherapy delivered by MAbs that recognize an epitope specific to tumor cells within the intracerebral compartment can be expanded and improved by the use of: 1) Bulk flow microinfusion to optimize penetration into tumor and surrounding brain infiltrated by tumor; 2) "humanized" MAbs to increase biostability and retention time within the tumor; and 3) more potent radioisotopes with higher linear energy transfer (LET), such as At, that have a relative biological effectiveness significantly greater than low LET  $\beta$ -emitters like I to increase tumor cell killing. To test these hypotheses, we seek to define the pharmacokinetics of intratumoral bulk flow microinfusion within the context of Phase I trials of I- and At-labeled anti-tenascin MAbs. ■

# Invest in the Future

## Member Support Sets Tone for 1999 Campaign.

Since its inception in 1983, the Research Foundation of the AANS has proudly funded 56 grants, including this year's Research Fellows and Young Clinicians (see article to left). Recent developments spawned by our past funded research include the outcomes study on cervical spondylotic myelopathy, which will undoubtedly broaden to include future clinical and transitional studies.

Moreover, we are pleased to announce that last year's contributions reached a record \$488,633. Twenty-two companies joined our Corporate Associates Program, and a special gift will establish a new scholarship program in honor of the late William E. Hunt, MD, and Charles B. Wilson, MD.

At present, less than 4 percent of our members actively support the Foundation. In contrast, other associations receive as much as 50 percent support from their membership. We can do better.

Over the next few months, the Executive Council of the Foundation will review the scope of projects we fund, as well as the overall mission of the Foundation. We know we must make the Foundation more relevant to our members, and this will involve expanding our grant applications to include clinical studies. We plan to introduce a broader array of grants, many involving specific sectional-related studies, as well as scholarships and dedicated programs.

### Make Your Contribution Today

Giving to the Foundation is easy. Most give by check, but you can make a pledge and pay via invoiced installments, give by credit card, or add a donation to your dues payment.

Donors will be recognized in the spring

### Corporate Associates Program

The Executive Council of the Research Foundation of the AANS gratefully acknowledges the financial support given by the following companies.

#### Superior Associate

(Gifts of \$75,000 to \$100,000)

Medtronic/Sofamor Danek

Rhone-Poulenc Rorer Pharmaceuticals

#### Supporting Associate

(Gifts of \$25,000 to \$50,000)

Codman/Johnson & Johnson

Professional, Inc.

Elekta

Pharmacia & Upjohn

#### Contributing Associate

(Gifts of \$10,000 to \$25,000)

Depuy Motech

Sulzer Spinetech, Inc.

#### Associates

(Gifts of \$5,000 to \$10,000)

Aesculap

Anspach

Baxter

Bayer Corporation

Brainlab

Carl Zeiss, Inc.

Leica, Inc.

Midas Rex Institute

NMT Neurosciences

OMNA Medical Partners

PMT® Corporation

Radionics

Stryker Spine

Surgical Dynamics

Synthes Spine/Synthes Maxillofacial

issue of the *Bulletin*, on N://OC®, and on the Donor Wall at the 2000 AANS Meeting.

All members should consider joining the Cushing Scholars Circle, with a minimum donation of \$1,000. Gifts of \$1,000 or more will receive an invitation to the Cushing Orator Luncheon. Gifts of less than \$1,000 will also be noted by category.

Gifts in memory of a family member, loved one or colleague, and honorary gifts are encouraged. You may consider a tax deductible gift of securities, such as appreciated stock, naming a gift to the Foundation through your will or estate, or naming the Foundation as a life insurance beneficiary. Invest in the future of neurosurgery and make your contribution today. ■

Julian T. Hoff, MD, Chairman of the Research Foundation of the AANS, and John O'Connell, Director of Development, contributed to this report.

# Membership Still Growing

*Nearly 30 Applicants Approved for AANS Candidate Membership.*

The AANS recently approved the following applicants for Candidate membership.

## Candidate Members

Mathew T. Alexander  
Gordon B. Anderson  
Christopher J. Barry  
Peter G. Brown  
Peng Chen  
Sean D. Christie  
Aaron A. Cohen-Gadol  
Jeffrey E. Florman  
Edward R. Flotte  
Jeffrey S. Henn  
John L. Hudson  
Omar F. Jimenez  
Michael G. Kaplitt  
Richard J. Koesel

Peter J. Lennarson  
Michael A. Leonard  
Sean P. McDonald  
WonHong David Min  
Fardad Mobin  
Graham J. Mouw  
George T. Reiter  
Benjamin J. Remington  
Fernando E. Silva  
Philip V. Theodosopoulos  
Daniel J. Tomes  
Lyndell Wang

## Membership Information

For more information on joining the AANS or for questions on your membership status, contact the Membership Services Department at (888) 566-AANS.

## IN MEMORIAM

### Active

George Ablin, MD  
William R. Bernell, MD  
Randy Florell, MD  
John G. Kennedy, MD  
James R. Mazingo, MD  
Christopher W. Norwood, MD  
Stanley M. Patterson, MD  
Charles P. Shank, MD  
Antone K. Tarazi, MD

### Honorary

Karl A. Bushe, MD

### International Associate

Claude Gros, MD  
Shlomo Pomeranz, MD

### Lifetime

Louis Bakay, MD  
Stanley Batkin, MD  
Joel Brumlik, MD  
Juan Y. Cardenas, MD  
Jack R. Cooper, MD  
John Darroch, MD  
Charles G. Drake, MD  
Gerd Fischer, MD  
J. Cartier Giroux, MD  
Antonio Gonzalez-Revill, MD  
Everett G. Grantham, MD  
James Greenwood, MD  
Wallace B. Hamby, MD  
C. Douglas Hawkes, MD  
William E. Hunt, MD  
Patrick S. Lynch, MD  
Louis O. Manganiello, MD  
William F. Meacham, MD  
Russell Meyers, MD  
Lester A. Mount, MD  
Edwin H. Mulford II, MD  
George N. Pappas, MD  
Bernard B. Perlman, MD  
Bruce L. Ralston, MD  
William D. Robertson, MD  
Henry G. Schwartz, MD  
James R. St. John, MD  
Bernard Bertrum Stone, MD  
Benjamin B. Whitcomb, MD  
David V. Wray, MD

## FOCUS ON CONTINUING MEDICAL EDUCATION

The AANS Coordinating Committee on Continuing Education (CCCE) recently voted to reduce the number of neurosurgical credit hours required for the Continuing Education Award in Neurosurgery. Beginning with the January 1, 1999-December 31, 2001 award cycle, the number of neurosurgical credit hours required within a three-year timeframe will decrease from 90 credit hours to 60 credit hours. AANS Active and Active (Provisional) members are required to receive the Continuing Education Award in Neurosurgery and remain in good standing in the AANS.

To assist you with the documentation of hours, the CCCE will mail personalized CCCE transcripts to all AANS Active and Active (Provisional) members twice a year, in the spring and fall, in an effort to help members monitor their progress and add applicable credits to their CME files.

For more information regarding the Neurosurgery Award program, or to obtain a copy of your CME transcript, visit the CME Section of NEUROSURGERY://ON-CALL® ([www.neurosurgery.org/education/summary.html](http://www.neurosurgery.org/education/summary.html)), or contact the AANS Membership Department at (888) 566-AANS. ■

OMI 4C Ad

# Focus on Socioeconomics

## *PDP Makes a Commitment to Educate AANS Members on Practice Management and Coding Issues.*

Socioeconomic issues affecting the field of neurosurgery, such as coding and reimbursement, E&M guidelines and practice expense issues, are an important concern of the American Association of Neurological Surgeons. The AANS Professional Development Program (PDP) has closely monitored and analyzed these issues and, subsequently stepped forward to meet some of these challenges impacting neurosurgeons today. Key to PDP's response has been the refocus of our coding and reimbursement courses, the development of leading-edge practice management courses and workshops, and the creation of a coding hotline (see page 42).

### Updated Coding, Reimbursement Courses

In response to members' interest in hearing more on CPT and ICD-9 coding, Medicare contracting issues and subspecialty case coding, PDP has redesigned its coding and reimbursement courses to help you and your staff sharpen your coding, reimbursement and financial analysis skills. Descriptions of two new coding and reimbursement courses follow:

- **Mastering Expert Techniques in Neurosurgical Coding**, a beginner level course specifically designed for office staff, practice administrators, and other non-medical staff looking to familiarize themselves with basic neurological anatomy and terminology, as well as billing and coding procedures. The course will begin with an overview of medical terminology and continue with an in-depth explanation of the reimbursement process, including a discussion on commonly misunderstood CPT codes and documentation guidelines for office, clinic and inpatient visits. Participants will have the opportunity to take

part in neurosurgical case discussions and gain a greater understanding of the coding and reimbursement cycle.

- **Managing New Reimbursement Challenges in Neurosurgery** begins with an overview of calculating revenue value

#### UPCOMING PDP SOCIOECONOMIC COURSES

##### Mastering Expert Techniques in Neurosurgical Coding

February 2-3, 2000	Dallas, TX
April 25-26, 2000	Indianapolis, IN
August 9-10, 2000	Cleveland, OH

##### Managing New Reimbursement Challenges in Neurosurgery

February 24-26, 2000	San Antonio, TX
March 3-5, 2000	Oahu, HI
May 11-13, 2000	Chicago, IL
June 1-3, 2000	Washington, DC
July 14-16, 2000	Hyannis Port, MA
September 14-16, 2000	Las Vegas, NV
November 10-12, 2000	Montreal, Canada

##### Designing Better Business Systems

March 4, 2000	Oahu, HI
July 15, 2000	Hyannis Port, MA
November 11, 2000	Montreal, Canada

units and ICD-9 and CPT coding principles, then continues with a discussion on Medicare contracting, subspecialty case coding and E&M coding documentation. Also included will be a discussion on how to code ancillary staff services correctly.

This course is designed for physicians and administrative staff looking to expand their coding expertise. An optional pre-course on anatomy and terminology specifically for office staff is also available.

### New Practice Management Course

Also in an effort to meet members' growing needs, PDP has designed a special practice management course titled, "Designing Better Business Systems." Created specifically for physicians, practice administrators and office staff looking to enhance business systems and improve their overall compliance, this half-day course will run back-to-back with "Managing New Reimbursement Challenges in Neurosurgery," (in selected locations) and review key practice systems and identify points of management distress.

The course will discuss marketing, staff training and development, financial systems and compliance planning. A highly skilled consultant from KarenZupko & Associates will provide participants with the tools to integrate and manage practice systems and increase overall productivity.

### Consultation Corner

To reinforce its commitment to practice management concerns, the Professional Development Program will also sponsor a special consultation booth at this year's AANS Annual Meeting in San Francisco, California. Members can pose questions to highly-qualified practice management consultants on topics ranging from coding and reimbursement to practice mergers and contract negotiations, and from retirement policies to compliance plans and more. In addition, members can arrange, by appointment, a free 30-minute, one-on-one consultation with a representative from Conomikes Associates, Inc.—a renowned practice management consulting firm.

The exhibit booth will be in the Exhibit Hall of Moscone Convention Center. One-on-one consultations will be held adjacent to the Hall. Only 43 appointments will be accepted on a first-come, first-served basis. To schedule an appointment, please visit the onsite Member Services booth beginning Monday, April 10. ■

For more information on upcoming courses, as well as the consultation corner, contact the Professional Development Department at (888) 566-AANS.

## Section News

### Wanted: Neurosurgeons With Coding and Reimbursement Expertise to Join Committee

The AANS Physician Coding Reimbursement Committee is looking for neurosurgeons with knowledge of coding and fee schedules, who are computer literate and willing to take part in three to five meetings per year. If interested in this opportunity, contact Robert Florin, MD, at (562) 693-6935 (rflorin@aol.com) or Richard Roski, MD, at (319) 383-2763 (rroski@neurosurgery.usa.com).

**Section on Cerebrovascular Surgery** The Executive Council of the AANS/CNS Section on Cerebrovascular Surgery is planning a special site for the February 2001 Section Meeting, which will once again be held as a joint meeting with the American Society of Interventional and Therapeutic Neuroradiology (ASITN). The meeting will take place in Hawaii and will be the first joint meeting with the Japanese Society for CV Surgery.

**Section on Disorders of the Spine and Peripheral Nerves** This year's Section Meeting, is slated to take place February 23-26, 2000 in Indian Wells, California. Highlights of the meeting will include special courses on degenerative lumbar instability and peripheral nerve disorders, as well as a special post-meeting resident course titled, "Basic Principles of Spine and Peripheral Nerve Surgery."

**Section on Neurotrauma and Critical Care** The Executive Committee of the AANS/CNS Section on Neurotrauma and Critical Care and Synthes (Spine and Maxillofacial Divisions) are pleased to announce the creation of two new awards, the Synthes Award for Resident Research on Spinal Cord and Spinal Column Injury, and the Synthes Award for Resident Research on Brain and Craniofacial Injury. The first award for Resident Research on Spinal Cord and Spinal Column

Injury was presented to Peter Nguyen, MD, at the CNS Annual Meeting for his presentation "Prolonged Prostaglandin E2 Expression Following Spinal Cord Injury." The Award for Resident Research on Brain and Craniofacial Injury will be presented at the 2000 AANS Annual Meeting in April.

**Section on Pain** The AANS/CNS Section on Pain is pleased to announce the release of a CD-ROM titled, "Interventional Therapies in Neurosurgical Pain Management," that highlights more than 25 presentations delivered at the 1999 AANS Annual Meeting Satellite Symposium on Pain Management. The CD is a user-friendly learning tool that can be purchased through the Pain Section, or ordered online at NEUROSURGERY://ON-CALL®.

**Section on Tumors** The AANS/CNS Section on Tumors, in conjunction with the National Brain Tumor Foundation, is offering a \$15,000 research grant for the best translational research by a practicing neurosurgeon. Interested candidates should send 1) Statement regarding the purpose the proposed research and estimated budget; 2) anticipated start and completion date of the project; and 3) contact information to: Joseph Piepmeyer, MD, Chair, AANS/CNS Section on Tumors, Yale University School of Medicine, Department of Neurosurgery, 333 Cedar St., New Haven, CT 06520-8082. The grant will be presented at the Tumor Section Session at the 2000 AANS Meeting.

### NAMES IN THE NEWS

**Joshua Bederson, MD, and Isabelle Germano, MD,** were the recent focus of an ABC-TV *Nightline* in *Primetime* series called "Brave New World." The segment called, "Hope: A Case Study," examined how a very busy married couple who are both top-flight surgeons try to balance their commitment to their profession with family life. • **Leonard Cerullo, MD,** has been named Professor and Chairman of the Department of

Neurosurgery and Co-Director of the Rush Neuroscience Institute at Rush-Presbyterian-St. Luke's Medical Center. Dr. Cerullo is a 19-year AANS member and the founder, president and medical director of the Chicago Institute of Neurosurgery and Neuroresearch. • **Harold Portnoy, MD,** was recently recognized with Medtronic PS Medical's Robert H. Pudenz Award for Excellence in CSF Physiology. The award is presented annually to a distinguished leader in the area of

hydrocephalus research. An active member of the AANS since 1967, Dr. Portnoy is Clinical Assistant Professor of Neurosurgery at Wayne State University and Clinical Professor of Medical Physics at Oakland University. • **Harold E. Varmus, MD,** has resigned from his position as Director of the National Institutes of Health, a title he has held since 1993, to assume the position of President at Memorial Sloan-Kettering Cancer Center.

Continued on next page

## News From AANS

### AANS on the Move

A lot is happening at the AANS. Some of the activities include:

- Increasing the efficiency of the National Office through closing the print shop, selling the antiquated building and two warehouses in the Chicago area and purchasing a new building;
- Implementing a new toll-free number for members' inquiries and publication orders;
- Restructuring staff and programs to increase response time to members and Sections;
- Developing new programs such as fraud and abuse insurance, malpractice insurance and practice management publications; and
- Converting the association's Wang database to a new ABLAZE database.

Your National Office is undergoing significant changes—all to serve you better!

**Neurosurgery Reaches Out to Family Physicians** In an effort to better inform family physicians about the role of the neurosurgeon, the AANS and CNS co-sponsored a special neurosurgery exhibit at the 1999 Scientific Assembly of the American Academy of Family Physicians, which was held September 16-18 in Orlando, Florida. This project marks the fourth time that organized neurosurgery participated in such an outreach effort to other medical professionals.

The mission of the exhibit was to increase awareness as to the scope of neurosurgical practice with family physicians, who frequently serve as medical care gatekeepers. The objectives were to highlight the neurosurgeon's role in treating stroke and disorders of the cervical spine. Neurosurgeons who volunteered in the booth during the meeting include Paul J. Camarata, MD, and Juan De Dios Lora, MD.

Based on the number of handouts and promotional items distributed, it is estimated that approximately 1,000 family physicians visited the booth during the two days the exhibit hall was open.

**Plans for an AANS Coding Hotline are Underway** Given the complex nature of the current physician reimbursement system and the many coding problems plaguing neurosurgeons today, the AANS Professional Development Program is establishing a consultation service hotline for its members.

The hotline, which will be available starting December 1, will provide AANS members with immediate access to coding specialists who are specifically trained in procedural coding for neuro-

surgery. These specialists have direct access to a database that is organized by procedural code, payer, and state, and that is updated on a regular basis.

Confirmation of AANS membership is required to obtain hotline assistance. Hotline consulting services are measured in Consultation Units (CUs) and are available to AANS members at a discounted price of \$95 for five units. The specific Consultation Unit guidelines are as follows:

- One 10-minute call will constitute one CU.
- Review of one pre-coded operative note will constitute two CUs.
- Coding of one E&M encounter will constitute three CUs.
- Review of a Medicare claim denial, or research on a specific state or national policy rule/regulation will require a minimum of four CUs.

**To contact the hotline, call (800) 972-9298, or fax your coding request to (303) 534-0577.**

**Speaking Up For Neurosurgery** Recently, an article was published in *AM News* titled, "Is There a Dearth of Specialists in the ED?" The article addressed the problems plaguing this country's trauma systems, including the lack of timely emergency medical treatment and the shortage of on-call emergency room specialists. Martin H. Weiss, MD, President of the AANS; H. Hunt Batjer, MD, Immediate Past President of the CNS; and Brian T. Andrews, MD, Chair of the AANS/CNS Section on Neurotrauma and Critical Care, responded to these concerns surrounding emergency medical services by drafting a letter to the editor, which was published in the August 2, 1999 issue of *AM News*. ■

### Cast Your Ballots Now

Each year, every member of the American Medical Association (AMA) who is also a member of a specialty society receives a ballot asking them to designate a specialty society to represent them. To best leverage organized neurosurgery's voice within the AMA House of Delegates, the leadership of the AANS and CNS have agreed that all neurosurgeons who are AMA members should select the American Association of Neurological Surgeons as their spe-

cialty society representative. For every 1,000 votes received, the AANS will be allotted an extra delegate in the AMA House of Delegates.

To register your vote, call (800) 652-0605, fax (847) 517-7229, or e-mail the AMA at [ballot@ama-assn.org](mailto:ballot@ama-assn.org). Your ballot will only be counted if you include your 11-digit AMA membership number and the three-digit code for the AANS (852). To obtain your AMA medical education number, refer to your AMA membership card or call (800) 262-3211. All votes must be received by December 31, 1999.

# Working For You

## *AANS Delegate Mark J. Kubala, MD, Reports on Neurosurgery's Representation in the AMA.*

The American Medical Association's (AMA) House of Delegates has been working hard to achieve a unified voice for organized medicine. Its goal is to provide for the common good of all patients and physicians, promote trust and cooperation among members of the House, advance the image of the medical profession, and increase the overall efficiency of organized medicine for the benefit of its member physicians.

Composed of delegates from state and national medical organizations and appointed representatives from the AMA, the House of Delegates has aggressively advocated the views of organized neurosurgery on a wide range of issues. Following are some initiatives sponsored by the House of Delegates that have impacted neurosurgery.

**Patient Bill of Rights.** The AMA worked closely with the AANS and other organizations to promote passage of the Norwood-Dingell bill (HR 2723), which allows medical decision making to be made by the patient's physician and holds health plans accountable for limitations of care (For more information on the bill, see page 3).

**Practice Expense.** The AMA and Practice Expense Coalition continue to work with the Health Care Financing Administration (HCFA) so Medicare adequately pays for physician practice expenses. The AMA and the Coalition recently convinced Congress to force HCFA to abandon the implementation of a flawed payment scheme that would have reduced neurosurgeons' income by 35 percent. This action prevented a loss of more than \$100 million to neurosurgeons in 1998 alone. The AMA was instrumental in drafting and lobbying

for the legislative language that led HCFA to adopt this top down methodology.

**Campbell Bill.** To promote the passage of federal legislation that will permit physicians to jointly negotiate with health insurance companies without being subject to antitrust liability, the AMA has established an "Antitrust Workgroup." The group is a Washington-based lobbying coalition comprised of specialty societies that help push for anti-trust relief for physicians. The AMA has appointed Katie O. Orrico, JD, Director of the AANS/CNS Washington Office, as Co-Chair of the Workgroup, and has developed joint talking points and a sign-on letter for all specialties.

**Sustainable Growth Rates.** The AMA is actively lobbying for corrections to the Medicare Sustainable Growth Rate (SGR) calculation, which impacts the Medicare conversion factor. The AANS is very supportive of this effort which will help ensure the conversion factor does not decline due to peculiarities in the current formula.

**Scope of Practice Issues.** Supporting the AANS, the AMA recently signed-on to the AANS/CNS coalition letter opposing HR 1046, the "Chiropractic Patients' Freedom of Choice Act." Introduced in March by Representative Wes Watkins (R-OK), this bill would inappropriately expand the scope of diagnostic and therapeutic services chiropractors can perform under Medicare.

**E&M Documentation Guidelines.** The AMA CPT Editorial Panel has worked closely with the AANS and CNS to refine the Evaluation and Management Guidelines established by HCFA. In fact, the AMA CPT Editorial Panel adopted every AANS and CNS recommendation for neurological and musculoskeletal exami-

nations. The recommendations for these exams were the product of a consensus process that included numerous medical specialties.

**Surgical Specialty Representation.** There has been a significant increase in surgical specialty representation in the AMA Board of Trustees. Members include Susan Adelman, MD (pediatric surgeon); Bill Plested, MD (thoracic surgeon); John Nelson, MD (obstetrician/gynecologist); Donald Palmisano, MD (vascular surgeon); and Ralph Smoak, MD (general surgeon), who was elected President-Elect this past meeting. New to the Board are Duane Cady, MD (general surgeon); and Joseph Riggs, MD (obstetrician/gynecologist). In addition, Bruce Scott, MD (otolaryngologist) serves as the young physician representative.

**AANS Representation in AMA House of Delegates.** Representing organized neurosurgery in the House are myself, George H. Koenig, MD (AANS alternate); Peter W. Carmel, MD (CNS delegate); and Philip W. Tally, MD (CNS alternate). Several neurosurgeons serve in the House from their state societies, including: Constantino Y. Amores, MD; Andrew G. Chenelle, MD; Haroon Choudhri, MD; Tanvir Choudhri, MD; Gary C. Dennis, MD; Calvin C. Kam, MD; Adam I. Lewis, MD; Philipp M. Lippe, MD; Howard A. Richter, MD; Francis X. Rockett, MD; Joseph S. Sadowski, MD; Andrew J.K. Smith, MD; Troy M. Tippet, MD; Gary D. Vander Ark, MD; and Roy W. Vandiver, MD. Your representatives, along with Katie O. Orrico, JD, were influential in getting neurosurgeon Samuel Hassenbusch, MD, appointed to the AMA CPT Editorial Panel. This appointment gives neurosurgery a strong voice on reimbursement issues.

Clearly the AMA is committed to providing a unified voice for organized medicine, and it is to neurosurgery's advantage to have a strong voice in this group. The AMA can help deflect the forces challenging us and our healthcare delivery system. To join the AMA call (800) AMA-3211. ■

NS Recruitment

Prescots Half Page ad  
Carly Clinic 1/4 page ad  
Other 1/4 page ad

# Leading the Way

## Quad City Practice Prepares for Challenges of the 21st Century.

**Name:** Quad City Neurosurgical Associates, P.C.

**Location:** Quad Cities, which includes Davenport and Bettendorf, in eastern Iowa, and Rock Island and Moline, in western Illinois.

**Number of neurosurgeons:** Five

**Total number of employees:** 11

**Number of medical centers served:** Three, with applications submitted for a fourth facility.

**Approximate number of patients cared for per week:** 220

### Practice philosophy

Today, patients are confronted with many new sources of information regarding treatment opportunities. We strive to win each and every patient by exercising two important principles: 1) Provide care to every patient, and 2) meet the expectations of referring physicians by serving their patients well and providing timely, efficient follow up concerning our treatment plan.

### Most innovative back office management solution

We strive to continually implement improvements to back office management strategies. Some of those solutions have had a greater impact on practice operations than others, such as providing educational and training opportunities to our clinical and administrative staff, and reducing account receivable processing time through the use of electronic claims submission and bank lock boxes for payments. In the next fiscal year, we hope to implement a new practice information systems network that will permit greater levels of information sharing.

### Approach to external relationships

We believe that positive relationships with external parties are imperative to our practice's future growth and success. We recently established a somewhat disciplined approach to nurturing and managing those relationships. The process begins with the collection of data regarding referrals, demographic trends and strategic plans. That information is then analyzed and

*Richard A. Roski, MD, FACS, is President of Quad City Neurosurgical Associates, P.C. and a 15-year AANS member.*



developed into our own strategic plan. A key element to the plan is an analysis that identifies our practice's strengths, weaknesses, opportunities and threats. We then set out to establish and further develop relationships with strategic partners. Those relationships bear fruit when both parties clearly understand how they can benefit. This process also helps us clearly identify where we should expend our limited resources to maximize our gain.

### Biggest investment in recent years

Recently, we have added several staff members to our team. We recognized that to better compete in the marketplace, we needed to expand the number of physicians, and hire an experienced executive director. Given our recent growth, concern has been expressed that the cramped office hinders the comfort of our patients and limits our ability to be efficient. To combat

these concerns, we are building a new, more spacious medical facility, with construction slated to finish in January 2000.

As our practice grows in size, scope and geographical reach, our existing management information system needs to expand as well. We have prepared a strategic plan focused on our practice's future technology needs, such as telemedicine, voice recognition, electronic medical records, internal and external communications and data management. The cost to implement this plan is significant, and we are organizing an implementation calendar to help us manage the expenditures involved.

### Advice to young neurosurgeons

Remain professionally agile and willing to accept and modify your thinking and behavior to support the changes taking place in our specialty. Remember you have much to learn, as your education to this point has only taught the science of medicine.

### Future of neurosurgical private practice

Competition for patients will become more intense as the boundaries that separate neurosurgery from other specialties continue to blur. By creating coordinated care management systems, we can provide patients with access to the most efficient and advanced medical care available. Also, promoting our practices to our referral sources and their patients will become more important. These factors, combined with the simple cost of operating a medical practice, will further encourage the evolution of larger neuroscience-oriented practices.

### Closing thoughts

It is important we recognize that while our practices allow us the opportunity to do something that we truly enjoy—namely practice medicine—they must be run as professional businesses if we are to survive and thrive. Through the use of tactics such as strategic planning, financial budgeting and forecasting, and professional business management, we will see our practices continue to grow and prosper. ■

# EVENTS

## Calendar of Neurosurgical Events

### Neurological Society of the Virginias Annual Meeting

January 20-22, 2000  
White Sulphur Springs, West  
Virginia  
(410) 646-0220

### AANS/CNS Section on Cerebrovascular Surgery and American Society of Interventional and Therapeutic Neuroradiology Annual Meeting

February 6-9, 2000  
New Orleans, Louisiana  
(847) 692-9500

### AANS/CNS Section on Disorders of the Spine and Peripheral Nerves Annual Meeting

February 23-26, 2000  
Indian Wells, California  
(847) 692-9500

### 26th Annual Symposium—Recent Advances in Neurosurgery

March 2-4, 2000  
Phoenix, Arizona  
(602) 406-3067

### Skull Base Surgery 2000

March 17-20, 2000  
Scottsdale, Arizona  
(301) 654-6802

### AANS Annual Meeting

April 8-13, 2000  
San Francisco, California  
(847) 692-9500

### 27th Annual Meeting of the International Society for the Study of the Lumbar Spine

April 9-13, 2000  
Adelaide, Australia  
(416) 480-4833

### AANS/CNS Section on Tumors Satellite Symposium

April 13-14, 2000  
San Francisco, California  
(847) 692-9500

### 3rd International Congress on the Cerebral Venous System/ 12th Annual Meeting of Japanese Society for Skull Base Surgery

May 31-June 2, 2000  
Matsumoto, Japan  
81-263-37-2690

### Japan Spine Research Society Annual Meeting

June 8-9, 2000  
Nagoya-City, Japan  
81-562-93-2169

### Latin American Congress of Neurosurgery

June 11-16, 2000  
Ceara, Brazil  
55-85-2485125

### 17th Congress of the European Society for Pediatric Neurosurgery

June 17-21, 2000  
Graz, Austria  
43-316-385-2710

### Cervical Spine Research Society Meeting

June 21-24, 2000  
London, England  
00-44-2078298714

### First Interdisciplinary World Congress on Spinal Surgery

August 27-September 1, 2000  
Berlin, Germany  
49-30-857903-0

### CNS Annual Meeting

September 23-29, 2000  
San Antonio, Texas  
(847) 692-9500

### 28th Annual Meeting of the International Society for Pediatric Neurosurgery

October 2-6, 2000  
Istanbul, Turkey  
90-232-4630591

### 15th International Congress of Head and Neck Radiology

October 18-21, 2000  
Kumamoto, Japan  
81-96-373-5258

### 4th World Stroke Congress

November 25-29, 2000  
Melbourne, Australia  
61-3-9682-0288

### AANS/CNS Section on Pediatric Neurological Surgery Annual Meeting

December 6-9, 2000  
San Diego, California  
(847) 692-9500

## Evolution of Neurosurgery

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3 Tyson, RA, Alcauskas, ESD, Eds: *Catalogue of the Hrdlicka Paleopathological Collection*. San Diego Museum of Man, 1980, 359 pp.

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5 Gobo, DJ: Localization Techniques: Neuroimaging and Electroencephalography in *A History of Neurosurgery*, Samuel H. Greenblatt, Ed. American Association of Neurological Surgeons, Park Ridge, IL, 1997, p. 241.

6 *Leaders In Neuroscience Interview of Herbert Jasper, MD by Andre Olivier, MD*. AANS Archives Committee, published in 1993.

7 Gobo, DJ: Localization Techniques: Neuroimaging and Electroencephalography in *A History of Neurosurgery*, Samuel H. Greenblatt, Ed. American Association of Neurological Surgeons, Park Ridge, IL, 1997, p. 243.

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12 Dagi, TF: History of Stereotactic Surgery in *A History of Neurosurgery*, Samuel H. Greenblatt, Ed. American Association of Neurological Surgeons, Park Ridge, IL, 1997, p. 412.

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14 Yasargil, MG: Personal Involvement and Account of the Developments in the Surgery of Intracranial Aneurysms. Written for the AANS Archives Committee Exhibit, 1995 AANS Annual Meeting.

15 Rhoton, RL: Micro-operative Techniques in Neurosurgery. Written for the AANS Archives Committee Exhibit, 1995 AANS Annual Meeting.

16 Pool, JL: Contributions to the Archives for Intracranial Aneurysm Surgery. Written for the AANS Archives Committee Exhibit, 1995 AANS Annual Meeting.

17 Sugar, O: Personal Early Experiences in Aneurysm Surgery. Written for the AANS Archives Committee Exhibit, 1995 AANS Annual Meeting.

18 Aneurysm and Microneurosurgery: A Collection of Essays. Written for the AANS Archives Committee Exhibit, 1995 AANS Annual Meeting.

19 Yasargil, MG: Personal Involvement and Account of the Developments in the Surgery of Intracranial Aneurysms. Written for the AANS Archives Committee Exhibit, 1995 AANS Annual Meeting.

# Neurosurgery: Past, Present and Future

## *Preparing Ourselves and Our Specialty for the New Millennium.*

In this issue of the *Bulletin*, our featured topic explores the history and future of neurosurgery. While the subject raises many questions, such as how will neurosurgery be practiced in the new millennium, what external influences will impact our practice; and how can we as individuals and a specialty prepare ourselves for the future, it also demonstrates the strides we have made over the past century to enhance our profession.

### A Look Back

For most of this century, technological and scientific advances have driven our specialty's progress. The introduction of the CT scan and the use of the operating microscope are two examples of such advances that radically changed the way we practice neurosurgery.

Moreover, neuroscience research was an important element in residency training and discoveries by neurosurgeons in the laboratory lead to improved patient care. Admittedly there were clues—the growth of governmental insurance programs, the development of managed care and the increase in the number and cost of malpractice cases—that presaged a period of dramatic change in the specialty caused by external forces.

While exciting clinical and research advances have continued during this past decade, most neurosurgeons have become preoccupied with external influences on the practice of our specialty. At present, it often seems that HMOs, reductions in reimbursement, workforce size, and the potential erosion of the specialty market share—particularly in the area of spine surgery—engenders more concern from the neurosurgical community than the

actual practice of neurosurgery. Through these economic developments, we have learned that we can no longer be insular protected by the sanctity of our specialty. Instead, as a small specialty with less than 1 percent of the physician workforce, we must actively and persuasively participate

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in the conclaves where policy influencing neurosurgery is determined.

### Predicting the Future of Neurosurgery

While one may hesitate to predict future trends in medicine, it is safe to augur that a return to simpler times is unlikely to happen. Furthermore, in moments of nostalgia for the “good old days,” the comforting thoughts that emerge from such reflections are illusionary—earlier times were often just as complex, but different because the complexities were different. In fact, to the young practicing neurosurgeons and to those currently training, the present state of our specialty will, too, be remembered as the “good old days.”

From my personal perspective, the best way to prepare for the new millennium is to be an active participant in shaping both our specialty and ourselves. We, as neurosurgeons, must establish personal and professional goals that serve to enhance our knowledge, our clinical and surgical skills,

our ability to analyze outcomes and our participation in the greater neurosurgical community on a local, state and national level. By taking an active role, we will empower ourselves and our organizations in determining the future of neurosurgery.

### AANS Works For You

The AANS is working to help its members maintain control over their profession as we approach the new millennium. For example, the AANS is formulating a strategic plan to position organized neurosurgical to be highly responsive to the environment and to its membership. We are refining strategies to represent neurosurgical interests in issues concerning physician reimbursement, practice expense RVU's, E&M documentation, medicare coverage policy, CPT coding, graduate medical education, biomedical research, collective bargaining, quality assurance, tort reform and fraud and abuse—an imposing list of initiatives that serve as evidence that the AANS is working for organized neurosurgery and for neurosurgeons. To ensure the success of these efforts, the current leadership of the AANS needs more than your tacit support, they need your involvement and energy if we are to be a viable presence in the new millennium. ■

### WE WANT TO HEAR FROM YOU

*The AANS Bulletin welcomes letters from our readers. If you have a comment, question or concern on this issue, send it to A. John Popp, MD, FACS, Editor, 22 South Washington, Park Ridge, Illinois 60068. Fax us at (847) 692-2589 or e-mail us at [info@aans.org](mailto:info@aans.org).*