AANS
NEUROSURGEON
WINTER 2007–2008
Information and Analysis for Contemporary Neurosurgical Practice • Volume 16 No. 4

CONFLICT AND OPPORTUNITY: NEUROSURGERY AND INDUSTRY

Take the New
Gray Matters Survey—
Case Presentation
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VOLUME 16, NO. 4 • WINTER 2007–2008

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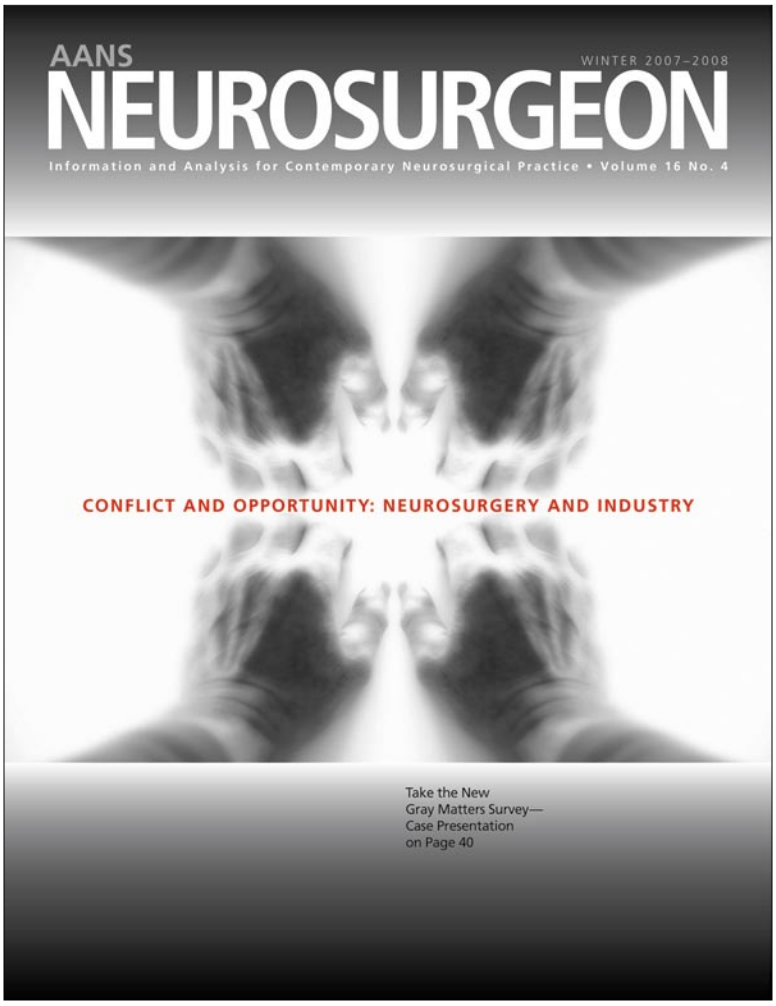

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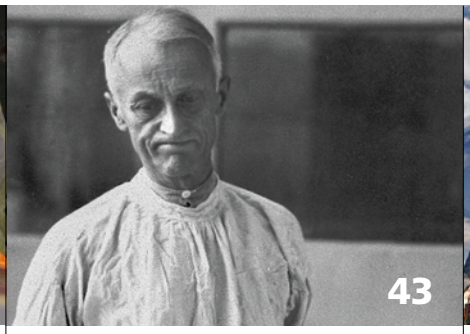

DEPARTMENTS

American Association of Neurological Surgeons

AANS MISSION
The American Association of Neurological Surgeons (AANS) is the organization that speaks for all of neurosurgery. The AANS is dedicated to advancing the specialty of neurological surgery in order to promote the highest quality of patient care.

AANS NEUROSURGEON
The official socioeconomic publication of the AANS, *AANS Neurosurgeon* (formerly *AANS Bulletin*) features information and analysis for contemporary neurosurgical practice.

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Send your comments on articles you've read in these pages or on a topic related to the practice of neurosurgery to aansneurosurgeon@aans.org. Include your full name, city and state, as well as disclosure of any conflicts of interest that might have bearing on the letter's content. Correspondence selected for publication may be edited for length, style and clarity. Authorization to publish the correspondence in *AANS Neurosurgeon* is assumed unless otherwise specified.

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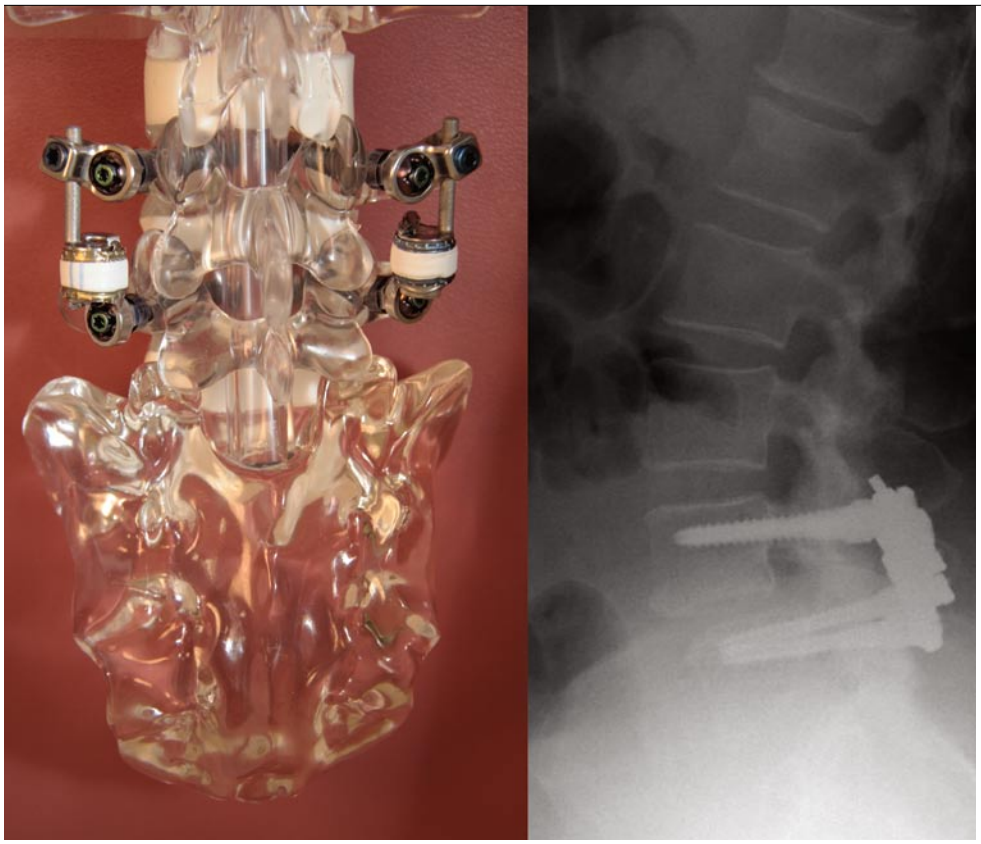

IN THE LOUPE
Dynamic Stabilization: Placement of a pedicle-based motion preservation device, the Stabilimax NZ [Applied Spine Technologies, New Haven, Conn.] (far left), at L4–5 as seen on the postoperative lateral radiograph. The patient is a 63-year-old woman with 20 years of low back pain and recent hip and lower extremity pain. Preoperative imaging revealed a grade I L4-5 spondylolisthes is and lateral recess stenosis refractory to conservative treatment. Surgery consisted of bilateral laminoforaminotomies and placement of the device, the goal of which is to reduce spinal motion to a more normal physiological range. (Contributed by Andrew T. Dailey, MD, Salt Lake CIty, Utah. Dr. Dailey reported no conflicts for disclosure.)

Medicare Options for Physicians

Impact of Medicare, Medicaid and SCHIP Extension Act of 2007

Congress passed legislation in late December 2007 that gave physicians a 0.5 percent payment increase from Jan. 1 through June 30, 2008, temporarily cancelling a 10.1 percent cut that was scheduled to take effect Jan. 1. Congress financed this temporary reimbursement increase in such a way that, in the absence of congressional action, the payment cut in July will be about 10.6 percent. The Congressional Budget Office now estimates that the cut in 2009 will be approximately 5 percent. In light of the passage of the Medicare, Medicaid and SCHIP Extension Act of 2007, the Centers for Medicare and Medicaid Services reopened the Medicare participation decision period for an additional 45 days to Feb. 15, with all participating status changes effective Jan. 1.
The document Medicare Participation Options for Physicians, developed by the AANS and the Congress of Neurological Surgeons outlines the various Medicare participation options available to physicians. www.aans.org/legislative/aans/medical.asp
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▲ **GET IN THE LOUPE.** Compelling digital photos that depict a contemporary event or clinical topic or technique in neurosurgery are sought for In the Loupe. Submit a low resolution image in JPG format to aansneurosurgeon@aans.org with "In the Loupe" in the subject line and a brief description of the photo and its significance in the e-mail message. Submitters must verify copyright ownership of the image and have a 300 DPI resolution image available for publication.

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Medical Liability Rates Improve Nationwide

Medical liability insurance rates are easing nationwide for the second straight year, reported American Medical News. Citing a survey in Medical Liability Monitor, a publication which tracks medical liability rates, it reported that nearly 84 percent of company-reported rates held steady or decreased in 2007. More than half of premiums did not change, nearly one third declined, and increases were slowing, but premiums were still considered high. Further, while the frequency of lawsuit filings decreased, the number of large claims increased as did litigation expenses. www.ama-assn.org/amednews/2007/12/17/prl11217.htm

Most Medical School Chairs Have Industry Ties

A national survey of medical school department chairs revealed that almost two-thirds had some form of personal relationship with industry, including serving as a consultant (27 percent), a member of a scientific advisory board (27 percent), a paid speaker (14 percent), an officer (7 percent), a founder (9 percent), or a member of the board of directors (11 percent). Campbell and colleagues found that two-thirds of departments as administrative units had relationships with industry. Clinical departments were more likely than nonclinical departments to receive research equipment, unrestricted funds, residency or fellowship training support, and continuing medial education support, but nonclinical departments were more likely to receive funding from intellectual property licensing. More than two-thirds of chairs perceived that having a relationship with industry had no effect on their professional activities. JAMA 298(15): 1779–86, 2007

Device Fragments Can Trigger Serious Adverse Events

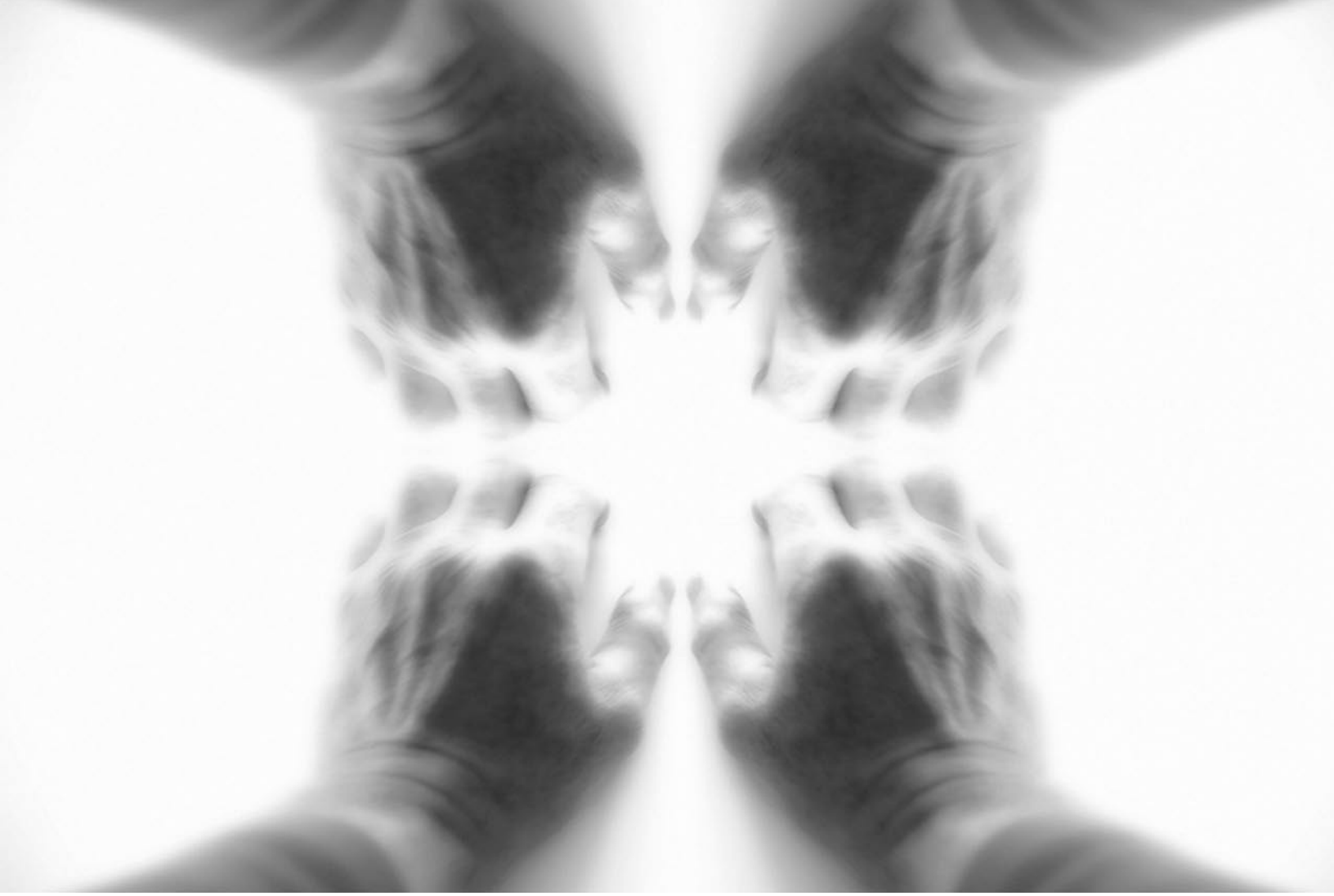
The FDA warned of serious adverse events, nearly 1,000 annually, associated with unretrieved device fragments. The January 2008 notification reported adverse events including local tissue reaction, infection, perforation and obstruction of blood vessels, and death. The FDA cited biocompatibility of the device materials, location of the fragment, potential migration of the fragment, and patient anatomy, among the contributing factors. It further noted that during MRI procedures magnetic fields may cause metallic fragments to migrate and radiofrequency fields may cause them to heat, causing internal tissue damage and/or burns. The FDA cautioned usage of medical devices in accordance with their labeled indications and the manufacturer's instructions for use, particularly during insertion and removal. Recommendations included: inspection of devices prior to use for damage during shipment or storage or any out-of-box defects that might increase the likelihood of fragmentation during a procedure; inspection of devices immediately upon removal from the patient for any signs of breakage or fragmentation; retention of damaged devices to assist with the manufacturer's analysis of the event; and disclosure to and discussion with the patient of the risks and benefits of retrieving or leaving the fragment in the patient. www.fda.gov/cdrh/safety/011508-udf.html

New Web Site Promotes Healthcare as a Marketplace

A Web site launched in January 2008 offers consumers the ability to compare healthcare services like they might shop for cars or travel at sites such as Cars.com and Travelocity.com. Carol.com, named to evoke the persona of a trusted neighbor, compares doctors, prices, location, credentials and availability. For example, a search on the keyword "brain" presents listings that include "care packages" for brain CT, brain MRI, and brain cancer evaluation. Results for a search on "spine" include similar diagnostic tests as well as packages that address types of pain experienced (chronic neck pain with or without arm pain; chronic back pain with or without leg pain). Site users can review the packages as well as providers that are offering the services, book appointments, and share their healthcare experiences in the "community" area of the site. The site currently focuses on Minneapolis and St. Paul, Minn., with plans to expand to other markets in 2008. www.carol.com

FDA Authority Over Medical Devices Expanded

The Food and Drug Administration Amendments Act of 2007, H.R. 3580, passed by Congress in late September 2007, expanded the FDA's role in reviewing, approving and monitoring medical devices. The FDAAA also reauthorized aspects of the Medical Device User Fee and Modernization Act of 2002 through 2012, including the medical device user fee program. In addition, the FDAAA provides several incentives for manufacturers, including those for development of pediatric devices. http://thomas.loc.gov NS



Conflict and Opportunity
Neurosurgery and Industry

BY WILLIAM T. COULDWELL, MD, AND JON H. ROBERTSON, MD

The relationship between neurosurgery and industry is multifaceted. Most aspects of this relationship promote the advancement of a highly technical field such as neurosurgery, helping neurosurgeons bring ever more effective therapies to their patients. However, serious ethical and legal concerns also attend this relationship.

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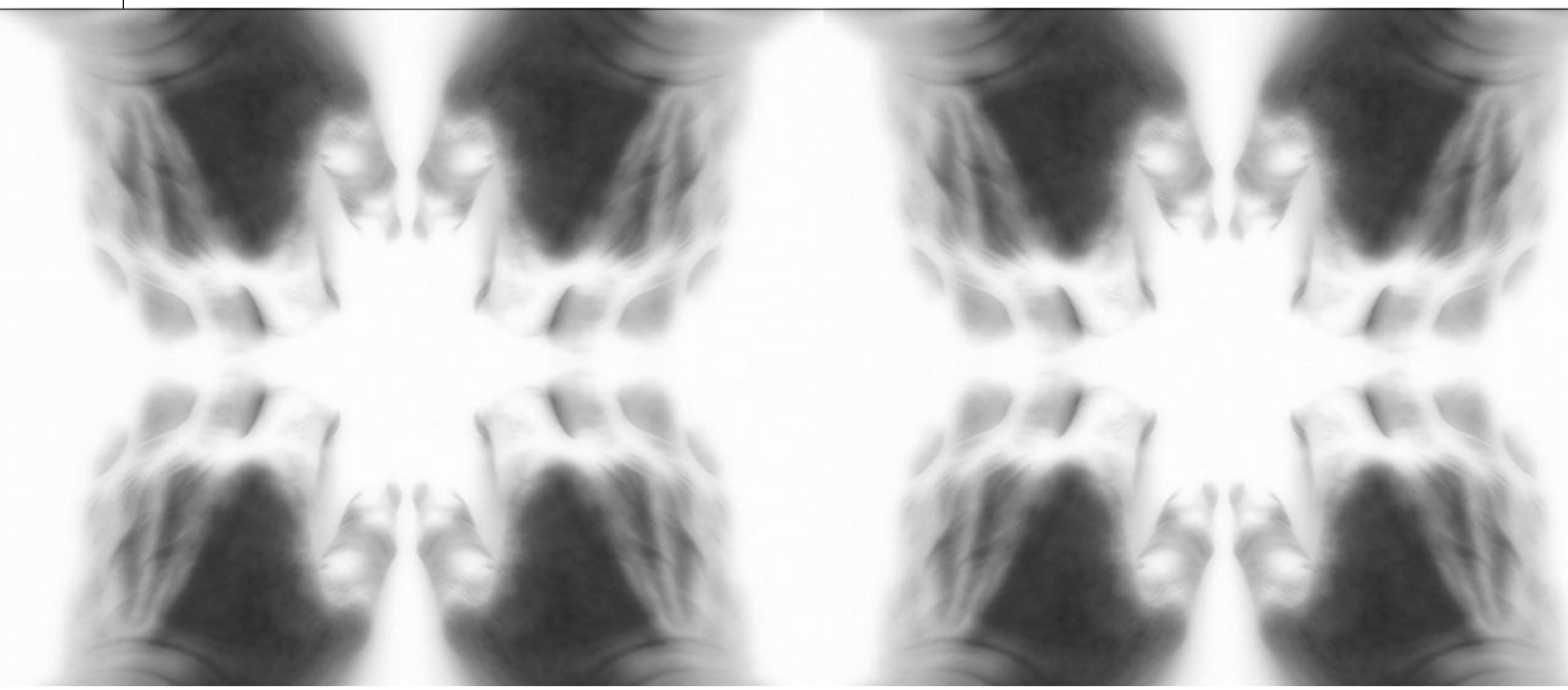

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In recent months the relationship between surgeons and the medical device industry has been much in the news. Since September 2007:

■ The U.S. Department of Justice reached settlements with five medical device makers (Biomet Orthopedics, DePuy Orthopaedics, Smith & Nephew, Stryker Orthopedics, and Zimmer) that subjected the companies to new corporate compliance procedures, federal monitoring, and public disclosure of consulting agreements with physicians, among other things, all following a two-and-a-half year DOJ investigation into violations of the federal antikickback statute.

■ The DOJ subpoenaed two more medical device companies (Exactech and Wright Medical Group), requesting 10 years of records documenting consulting and professional service agreements with surgeons.

■ Legislation was introduced in the U.S. Senate that would require congressional oversight for and public disclosure of consulting agreements between physicians and device companies that are paid with Medicare, Medicaid or SCHIP funds, as well as the cost of implantable medical devices purchased with such funds.

■ Representing the U.S. Senate Finance Committee, ranking member Charles E. Grassley asked Medtronic Sofamor Danek for five years of documents and records and a "response to allegations that Medtronic's practices of providing inordinately high consulting fees, free travel, and other perks distort decision-making among physicians and obscure the best interest of patients."

■ The U.S. Securities and Exchange Commission began looking into whether medical device makers Biomet, Medtronic, Stryker, and Zimmer may have violated the Foreign Corrupt Practices Act, possibly inducing physician consultants outside the United States to use their products.

While these investigations have focused on the orthopedics sector, the relationship between orthopedics and industry is merely a hair's breadth from the relationship between neurosurgery and industry, to which the case of Arkansas neurosurgeon Patrick Chan attests. In January 2008, Dr. Chan pleaded guilty to soliciting and accepting kickbacks for purchasing and using equipment sold by Blackstone Medical, which makes and sells devices used in spinal surgery.

As the federal government, on behalf of the public, delves further into the nature of relationships between physicians and industry, neurosurgery is presented with a prime opportunity to examine its

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AANS Mechanisms for Conflict of Interest Disclosure

Recognizing the need to work with industry in mutually beneficial as well as ethical ways in a variety of activities, the AANS currently requires a number of mechanisms for disclosure of potential conflicts of interest. A summary of main mechanisms of disclosure follows.

As an organization focused on education, the AANS follows all guidelines established by the Accreditation Council for Continuing Medical Education for ACCME-accredited activities. The AANS Updated Standards for Managing Conflicts of Interest in Educational Activities provides an overview of related AANS policy. As the document describes, presenters at AANS educational activities must disclose financial relationships with commercial interests via an online mechanism at password-protected www.MyAANS.org, and they additionally are required to submit an online statement which certifies that presentations will give a balanced view of therapeutic options, among other things.

At the 2008 AANS Annual Meeting, disclosure of conflicts of interest will gain increased visibility with implementation of disclosed information shown on the second slide of every educational presentation. Also at the annual meeting, because the AANS does not endorse individual companies or their products, the AANS neither allows exhibitors access to the press room nor accepts exhibitor material for distribution in the press room.

Exhibitors at AANS meetings are subject to the rules and regulations that are outlined in the exhibitor prospectus and which are part of the exhibitor contract. The purpose of exhibits is to complement the professional meetings and scientific sessions by enabling registrants to examine and evaluate the latest developments in equipment, supplies, and services that are presented for use in the course of neurosurgical practice.

The AANS Guidelines for Corporate Relations offer comprehensive protocols for the interaction between AANS representatives and industry. Exhibiting, advertising, corporate giving, and educational activities are among the areas addressed.

The *AANS Neurosurgeon* and AANS publications in the Journal of Neurosurgery Publishing Group ask authors to disclose conflicts of interest as part of the copyright assignment process. Disclosure information is printed with the published articles.

In addition, to ensure that the decisions and actions of the AANS are not unduly influenced by special interests, volunteer leadership and management staff are subject to the AANS Conflict of Interest Policy. The policy prohibits, among other things, ownership or financial interest in an outside interest that does business with the AANS and requires annual disclosure of possible conflicts of interest.

Exhibits at AANS meetings allow registrants to examine and evaluate the latest technological developments. Exhibitors are subject to rules and regulations outlined in the exhibitor prospectus.

In July 2007, the AANS issued a policy statement on neurosurgeons and industry. The statement affirms the AANS position that the ethical care of patients is the highest priority for neurosurgeons and that the AANS has taken deliberate steps to prevent industry from unethical influence in any AANS activity.

FOR MORE INFORMATION

- AANS Conflict of Interest Policy (governance), www.aans.org/about/membership/Governance_Conflict_of_Interest_Policy.pdf
- AANS Conflict of Interest Agreement for Educational Activities, www.myaans.org/Default.aspx?tabid=142 (login required)
- AANS Guidelines for Corporate Relations, www.aans.org/corporate/guidelines.asp
- AANS Exhibit, Sponsorship and Advertising, www.aans.org/annual/2007/exhibits_info.asp
- *AANS Neurosurgeon* Instructions and Forms, http://mc.manuscriptcentral.com/aansneurosurgeon
- AANS Neurosurgeons and Industry Policy Statement, www.aans.org/library/article.aspx?ArticleId=45795
- AANS Press Room Guidelines, www.neurosurgerytoday.org/media/press.asp
- AANS Updated Standards for Managing Conflicts of Interest in Educational Activities, http://www.aans.org/shared_pdfs/managing_conflict_of_interest.pdf
- Accreditation Council for Continuing Medical Education, www.accme.org
- JNS Publishing Group Instructions and Forms, http://manuscripts.thejns.org/forms.html

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own house and ensure that it not only is in order, but that it stands for the most stringent legal and ethical standards. To support such an examination, this article offers an overview of the DOJ agreements and some of their possible implications for neurosurgeons. In accompanying articles, several individual neurosurgeons offer their perspectives on the neurosurgery-industry relationship, and related legislation and parameters currently established for AANS interaction with industry are summarized.

The DOJ Agreements

The DOJ has been focusing attention on the sales and promotional practices of the orthopedic implant sector. The sales of hip and knee implants have increased markedly in recent years. There have been accusations that the industry is engaged in aggressive sales practices and certain incentive-based arrangements. The prosecution determined that the industry routinely violated the antikickback statute by paying surgeons for using their products, making "consulting agreements" with individual surgeons thinly veiled mechanisms to induce the use of their product.

We should assume that consulting relationships and the amount of money involved will become public knowledge.

The five companies investigated represent 95 percent of all of hip and knee implant sales in the United States. A total of $311 million in fines was levied on four of the companies, but the amount of fines to be paid by each company varied according to its market share rather than individual liability, with a high of $169.5 million assessed from Zimmer. Stryker avoided fines, as it was the first company to voluntarily cooperate with the DOJ investigation; the company signed a nonprosecution agreement and promised to adhere to the same reforms imposed on the four other companies, which signed deferred prosecution agreements. Those four companies also reached accord with the DOJ and the Department of Health and Human Services Office of the Inspector General, entering into civil settlements that include both fines and a five-year Corporate Integrity Agreement, which requires additional reforms and monitoring under OIG supervision.

Federally appointed monitors will review compliance activities with all of the companies, and a needs-assessment will be conducted to determine the reasonable educational expenses for each company as well as the amount of revenue to be spent on new consultants. Of particular note to neurosurgeons is that physicians who have consulting agreements are required to disclose them to their patients.

The DOJ recognized several of the companies for their cooperation and willingness to implement reforms. It also noted that many tenets of the agreements were based on the Zimmer Corporate Compliance Program.

Physician consultants and industry payments to them are clearly listed on each company's Web site. A quick scan of the dollar amounts for 2007 indicates that most surgeons received only nominal amounts; some, however, received several million dollars. A criticism from the orthopedic surgical community has been that all monies transferred have been listed, and not categorized. For example, royalty arrangements (such as for intellectual property) that are entirely appropriate are lumped together with questionable payments.

Soon after the details of the DOJ agreements were released, the American Association of Orthopaedic Surgeons issued the following statement:

> AAOS supports appropriate financial disclosures to patients regarding relationships between orthopaedic surgeons and implant manufacturers … Financial disclosures that display only the name of the physician and an aggregate dollar amount received without any explanation of the nature of the relationship and without educational context may be confusing and misleading to the public and patients. Specifically, AAOS believes that disclosures of implant manufacturer payments to physicians should be divided into separate categories, such as royalty payments, consulting agreements, funding for the conduct of research, funding for the support of medical education, and that these terms should be defined so that patients and the public can understand them. AAOS supports disclosure that is fair and includes a principled education context that is understandable to patients and the public.

The relationships between neurosurgery and industry no longer can be characterized as dichotomous.

The increased scrutiny evidenced by the DOJ investigation and others will quickly transfer from orthopedics to other device manufacturers that interface closely with surgeons from other disciplines. We should assume that neurosurgeon-industry consulting relationships and the amount of money involved will become public knowledge. These relationships can pose multiple conflicts of interest: to the insurance payers, to the federal funders, to the hospital buying the implants, and to the patient receiving them.

Neurosurgery and Industry: Opportunity

While the recent investigations focus on impropriety in physician-industry relationships, there are many positive aspects of these relationships. Neurosurgery's relationships with industry typically fall into one of the following three categories:

Neurosurgical Education Industry support for neurosurgery's educational mission is critical and becoming more so over time. The annual meeting of the AANS is heavily supported by industry, especially by the AANS Pinnacle Partners, which now number 12 companies. The educational quality of the annual meeting is not sustainable without industry support. Further, last year five very successful resident education courses, covering various topics such as spine surgery fundamentals and contemporary endovascular techniques, were initiated. This year at least seven courses are planned, adding to the repertoire and covering clinical topics not fulfilled by all training programs. These resident courses, which have received rave reviews from participants and volunteer faculty alike, are fully funded by industry.

Neurosurgical Research The Neurosurgery Research and Education Foundation, which solicits funding from both neurosurgeons and industry, offers up to 15 major grants annually in support of young investigators in residency or at the junior attending level. In the very competitive NREF grant process, a review board composed of neurosurgeons evaluates applications for funding. Industry sponsors fund or co-fund approximately one-half of the grants. Similar industry support of research is given to the Congress of Neurological Surgeons and to the AANS/CNS sections. Industry also offers major research support of many neurosurgical departments. With the flat budget of the National Institutes of Health and the current extremely competitive nature of NIH funding, industry support likely will comprise an increasing percentage of research budgets in most neurosurgical departments (and medical schools).

Clinical Care Given the technical nature of neurosurgery, much of the research and development of related instruments and implantable devices is driven by industry support. Surgeon consultants and intellectual property arrangements are fundamental in this process. Payments to consultants and royalties on intellectual property are at the center of the recent orthopedics-related controversy. In neurosurgery, areas of intense industry research and development and correspondingly high profit margins, such as found at present in the subspecialties of spinal and endovascular surgery, are particularly vulnerable for exploitation.

Disclosure Is Key

The vast majority of the money received by organized neurosurgery and neurosurgical departments in the form of educational grants and research monies is entirely legitimate, is used for appropriate purposes, and does further neurosurgery's core missions of patient care, education and research.

While the recent investigations may identify questionable relationships between industry and some practitioners, we must keep our perspective and understand that our core educational and research missions are highly dependent on support from industry.

The relationship between neurosurgery and industry no longer can be characterized as dichotomous; rather than black and white, it is a gray area. To navigate this often uncertain landscape effectively, we must thoroughly discuss and define how we can maintain constructive, mutually beneficial relationships with industry that benefit our patients while holding ourselves and our profession to the highest ethical standard.

Disclosure is the necessary key. The surgeon who is receiving compensation from the maker of an

Continues on page 12 ▶

ON THE RECORD

Working With Industry: The Downside

BY DANIEL K. RESNICK, MD

Neurosurgery is a technology-intensive field. New developments happen rapidly and are essential for improvements in patient care. Technological developments do not, however, occur in a vacuum. Bringing new technologies to market requires not only intellectual rigor, but also enormous investment in basic and clinical research, health policy and marketing. As part of this equation, it is absolutely essential that companies enlist actively practicing physicians in order to develop new ideas, test existing ideas, and modify strategies to achieve improved patient outcomes. Participating in this process is difficult, requiring energy and time that could otherwise be devoted to clinical or personal activities. It is generally more convenient to accept the status quo. The energy required to overcome the inertia of the status quo comes from altruism, ambition, and money.

While we all consider ourselves to be altruistic, there are few of us who would tolerate the rigors of residency, the interruptions of our personal lives, the long and late hours, and the hassles of the current medicolegal morass, for free. Sometimes, efforts are made for personal reasons: to gain fame and respect from peers, to achieve academic advancement, or to place a new plaque on the wall. These rewards do not, however, pay the bills. Similarly, there are very few corporations that are willing to invest large sums of stockholder money and spend years in the research and development process for a new device without the potential for significant financial gain. In fact, for a company whose mission is to reward its stockholders, pursuit of such a strategy would be absolutely unethical.

Financial reward is an important driver of technical innovation. This is as true in neurosurgery as it is in personal electronics. If you build a better mousetrap (or pedicle screw or MP3 player), you are rewarded financially. Corporations have figured this out and are aggressive in recruiting physicians to act as innovators, evaluators, and advocates for their devices. While this strategy is fine when the products produced are marketed in a free market in which the consumer determines the relative worth of a product, it is problematic in the medical field. We are not simply shopkeepers who display our wares. Our customers (patients) rely upon us to provide advice and to make purchase decisions for them. We are our patients' advocates and have a moral responsibility to recommend treatment options that make the most sense for them. The problem arises when a physician is also an advocate for a corporation that manufactures a device which may or may not be used for the treatment of a particular disorder. If the physician derives personal benefit from recommending product A versus product B, can the physician truly offer an unbiased recommendation?

I have begun to disclose my consulting arrangement with Medtronic when I offer treatment to a patient with a Medtronic product. I have never had a patient ask me to change my treatment plan based on this disclosure, yet it still is a bit of a hassle. One reason to avoid involvement with industry is simply to avoid yet one more ethical dilemma for the physician who truly may be trying to do the right thing but who works within a system that rewards him or her for doing more surgery, discourages treatment of underinsured patients, and encourages waste. Failure to disclose relationships with industry may also be relevant in a medicolegal system that punishes arbitrarily for perceptions that may have no basis in reality.

The Accreditation Council for Continuing Medical Education has determined that a physician with an industry relationship is by definition conflicted. Therefore, in order for such a physician to participate in an accredited educational event, the physician must disclose his or her relationship(s) with industry. Course directors and program directors have the responsibility to determine whether or not the conflict is substantial enough to disallow participation in the educational program. Therefore, it is possible that participation in ACCME-accredited educational activities may be limited for those who are perceived to be heavily involved in industry. This scenario is probably going to become more commonplace as degrees and definitions of conflict are adjusted in accordance with ACCME regulations and common sense. The physician who earns less than $5,000 per year primarily for teaching a series of "hands-on" courses probably does not have the same conflict as the physician who earns $5 million per year from product royalties.

Probably the most common downside to participation as an investigator or advocate for industry is the potential for loss of academic prestige. Several physician researchers/innovators have been able to maintain academic credibility despite extensive industry involvement. These physicians have contributed directly to the concept and design of innovative technologies and have participated in rigorous clinical trials to validate the relative worth of their innovations. Others have served as ambassadors, bringing established technologies to new markets and evaluating the efficacy of these technologies in new clinical scenarios. These physicians have substantially increased their academic status through their innovation and evaluation of new products.

But more frequently, physicians, particularly young academic physicians, are approached to act as product advocates by companies that have products already in the late stage of development or early stage of marketing. In return for consulting agreements or stock options, these physicians are expected to present at national meetings data derived from trials designed by the industry sponsor. The physician is encouraged to speak with venture capitalists about investing in the parent company and is sent on whirlwind tours with speaking engagements at key hospitals in order to promote the use of the new device. These same physicians tend to get involved with multiple companies, and within a very few years they are thought of more as "spokesmodels" than as academic physicians. It takes many years of thoughtful research to rid oneself of such a reputation.

The worst downside to industry relationships is the potential for real or perceived fraud. I alluded to this earlier when discussing the issue of disclosure to the patient of any financial relationships with instrumentation companies. In addition to disclosing one's industry ties to patients, such relationships must be disclosed to the hospital and/or to the university. If a product line is endorsed by a local surgeon who is paid by the product manufacturer to promote its products, then there is at least the perception of a "kickback."

In summary, physicians and industry must interact in order to develop new technologies that are relevant to patient needs. This interaction must be disclosed in a realistic fashion to any and all stakeholders affected by the relationship (patients, hospitals, students, etc.). In some cases, the degree of the interaction may prohibit participation in certain educational or even clinical activities. Separating clinical decisions from financial decisions is necessary to avoid fraud. Younger physicians are cautioned against endorsing products that they did not substantially help to develop.

The relationship between physicians and industry is changing due to increased complexity of regulations and because of a more saturated market. Physicians must guard their access to patients closely and must act as patient advocates and not as industry "spokesmodels." NS

Daniel K. Resnick, MD, MS, is associate professor and spine surgeon in the Department of Neurological Surgery of the University of Wisconsin-Madison Medical School. Disclosure: The author has a consulting agreement with Medtronic and reports receipt of less than $5,000 for consulting activities in the past year (2007).

"I am an advocate of working with industry [because of] the benefits to patient care. There is concern regarding issues of disclosure; I [share this concern] and have no problems with making any disclosures that are necessary.

VOLKER K.H. SONNTAG, MD, VICE-CHAIR, DEPARTMENT OF NEUROSURGERY, BARROW NEUROLOGICAL INSTITUTE, PHOENIX, ARIZ.

"Going forward, we must continue to partner with industry to support not only clinical trials, but also new product design. However, we as neurosurgeons can't have it both ways, as highly paid consultants as well as investigators participating in the implementation of these industry-funded clinical trials and devices.

MITCHELL S. BERGER, MD, CHAIR, DEPARTMENT OF NEUROSURGERY, UNIVERSITY OF CALIFORNIA, SAN FRANCISCO

"Conflicts of interest could arise in relationships between staff members and any company that is involved with the production, marketing or distribution of supplies, equipment or certain services. This could include, but is not limited to: medical/surgical and pharmaceutical manufacturers, and distributors, implant manufacturers, drug wholesalers and suppliers, group purchasing organizations, insurance companies, pharmacy benefit management companies, and third-party payers.

Faculty and medical staff should evaluate very carefully their own participation in meetings and conferences that are fully or partially sponsored or run by industry because of the high potential for perceived or real conflict of interest. This provision does not apply to meetings of professional societies that may receive partial industry support, meetings governed by ACCME [Accreditation Council for Continuing Medical Education] standards, and the like. They should also be aware of [state requirements] for disclosure.

DAVID ENTWISTLE, CEO, UNIVERSITY OF UTAH HOSPITALS AND CLINICS, SALT LAKE CITY, UTAH

WHAT DO YOU THINK?

Does the relationship between industry and neurosurgery primarily represent an opportunity or a conflict of interest? What is the best way for neurosurgeons to handle their relationships with medical device companies? Share your opinion in a letter to the editor.

Related Legislation: Sunshine and Transparency

Two bills introduced in the U.S. Senate last fall, the Physician Payments Sunshine Act of 2007 and the Transparency in Medical Device Pricing Act of 2007, would amend the Social Security Act to provide the public with specific information related to medical devices. The bills would require manufacturers to supply detailed reports which would become publicly available on Web sites, as well as establish mechanisms of oversight and penalties for noncompliance.

The Physician Payments Sunshine Act of 2007, S. 2029, calls for device, drug or medical supply manufacturers paid under Medicare, Medicaid or SCHIP to provide quarterly electronic reports and annual summaries that detail a device manufacturer's payments or other "transfers of value" to physicians. Reports would include physician names, business addresses, their affiliated facilities, and amounts and descriptions of payments or transfers of value. The Sunshine Act, sponsored by Sen. Charles Grassley, R-Iowa, with five cosponsors, calls for reports to be available to the public on a Web site that is "easily searchable, downloadable, and understandable." The Sunshine Act reports would be quite similar to reports posted beginning last fall on Web sites of five companies that were required to disclose monetary and in-kind payments to consultants following investigation by the Department of Justice into their use of consulting agreements as inducements for physicians to use their devices.

The Sunshine Act defines "payment or other transfer of value" as "transfer of anything of value that exceeds $25, and includes any compensation, gift, honorarium, speaking fee, consulting fee, travel, discount, cash rebate, or services." Included are products or items provided at less than market value, and participation in or materials provided for educational programs or seminars. Excluded are product samples intended for patients or transfer of anything of value to fund clinical trials or to physicians when they are patients and not acting in a professional capacity.

The Transparency in Medical Device Pricing Act of 2007, S. 2221, would require manufacturers of implantable medical devices to issue quarterly reports of their devices by name and category type, the inpatient or outpatient procedure in which they were used, the average and median sales prices of the devices, and other information.

Introduced by Sen. Grassley with cosponsor Arlen Specter, R-Penn., the Transparency Act would require public accessibility of the information "in a matter that is easily searchable, downloadable and understandable" on the Web site of the Centers for Medicare and Medicaid Services. Both bills were referred to the Senate Committee on Finance; further action had not been taken at press time. Complete text and progress of the legislation are available at http://thomas.loc.gov. NS

▶ Continued from page 9

implantable device needs to disclose this information to the patient who is receiving the implant, to the hospital which is buying the implant, and to the partners of the group, whether it is an academic or a private practice.

The AANS is developing guidance for neurosurgeons to assist them in forging ethical and legal relationships with industry. We invite your participation in this important dialogue as we work to ensure compliance with regulations and to develop sustainable, mutually beneficial relationships with industry. NS

William T. Couldwell, MD, PhD, is editor of *AANS Neurosurgeon,* chair of the AANS Development Committee, and Joseph J. Yager chair of the Department of Neurosurgery at the University of Utah School of Medicine, Salt Lake City, Utah. Dr. Couldwell reported that, while he has previously received research support from industry, he has no current industry relationships to disclose. **Jon H. Robertson, MD,** is 2007–2008 president of the AANS, and chair of the Department of Nuerosurgery at the University of Tennessee Health Science Center, Memphis, Tenn. Dr. Robertson reported that he has no industry relationships to disclose.

YOUR OPINION COUNTS

Send your letter to aansneurosurgeon@aans.org. Letters should include the author's full name, city and state, as well as disclosure of any conflicts of interest that might have bearing on the letter's content. Correspondence selected for publication may be edited for length, style and clarity. Authorization to publish the correspondence in *AANS Neurosurgeon* is assumed unless otherwise specified.

FOR MORE INFORMATION

- *AANS Bulletin,* Neurosurgery and Industry: A Delicate Dance (cover section), www.aans.org/bulletin/Issue aspx?IssueId=20294
- AAOS Statement on Partnerships Between Physicians and Implant Manufacturers, www5.aaos.org/industryrelationships/pdfs/PressRelease_nov1.pdf
- AAOS Orthopaedist-Industry Conflicts of Interest, www5.aaos.org/industryrelationships/pdfs/standards.pdf
- Department of Justice Press Release: Five Companies in Hip and Knee Replacement Industry Avoid Prosecution by Agreeing to Compliance Rules and Monitoring, http://newark.fbi.gov/dojpressrel/2007/nk092707.htm
- Letter, Sept. 20, 2007: Charles E. Grassley, ranking member of the U.S. Senate Finance Committee, to Bill Hawkins, president and CEO of Medtronic Inc., http://finance.senate.gov/press/Gpress/2007/prg092607b.pdf
- Zimmer Corporate Compliance Program, www.zimmer.com/z/ctl/op/global/action/1/id/9968/template/CP/navid/9549

LETTERS

EDITOR:

I had the good fortune of reading *AANS Neurosurgeon* prior to a board meeting with the participants in our developing spine center. Two articles in the latest issue [*AANS Neurosurgeon* 16(3), 2007] provided compelling examples of why we need a dramatic change in direction in healthcare.

The first was the article in Frontlines regarding the five medical equipment manufacturers and the terms of their recent deferred prosecution or nonprosecution agreements with the Department of Justice. It should serve as a cautionary tale to any surgeon thinking that there are better ways to make money in medicine than doing surgery.

The second article, your cover story, purported to tell your neurosurgeon readers "What You Need to Know as CEO." Of particular interest to this group of all spine care providers was the section entitled Developing Alternative Revenue Sources. Present at the meeting of providers for our spine center were representatives of the hospital, a radiology practice, an orthopedic group, physical therapy, pain management and physiatry, all potential targets for revenue to assist the neurosurgeon in developing nontraditional revenue streams to "buffer the decline in professional service revenue."

The AANS should be leading the profession out of forest, not deeper into it.

The challenge in spine care is not how to maximize the profits of any one provider at the expense of others. Spine care is currently very fragmented, and raiding others' revenue streams adds to that problem. To bring all providers in a single service line, such as spine care, together, requires the ability to gather around the table and work together to coordinate our efforts. Your model would require that we huddle alone in the corner planning the demise of our perceived competition.

We have had no problem maintaining our revenue by improving efficiency and quality, and in the long run that is a sustainable practice. As we see fewer nonsurgical patients, we need our friends in other areas of spine care to have the necessary resources for providing care, thus allowing us to function efficiently.

Ron Thiessen, RN. Sartel, Minn.

Editor's Note

We appreciate these comments, and welcome the opportunity to address an issue of some importance to AANS Neurosurgeon *and its readers. In* AANS Neurosurgeon, *we seek to explore a wide variety of ideas and viewpoints. Although the AANS publishes* AANS Neurosurgeon, *it does not always share the individual viewpoints that are published within these pages, including those of officers, board members and committee members. Official positions of the AANS are specifically denoted as such. Unless specifically stated otherwise, the opinions expressed and statements made in* AANS Neurosurgeon *are the authors' and do not imply endorsement by the AANS.*

EDITOR:

The article in *AANS Neurosurgeon* on consultant reimbursement is eye-opening, and coverage of this topic should certainly be expanded [AANS Neurosurgeon 16(3):3–4, 2007]. I could not find a list of consultants on the Zimmer or Stryker Web sites, but the DePuy site had plenty enough to go around. Covering some six or seven pages, it lists reimbursement in some cases over $2 million dollars to a single person, and the total (not given) probably well exceeds $10 million! No wonder politicians and public watchdogs have become interested!

Harold Wilkinson, MD, PhD, Boston, Mass.

Editor's Note

At press time for this issue, each company named in the deferred prosecution agreements with the Department of Justice (Biomet, DePuy Orthopaedics, Smith & Nephew and Zimmer) had published a link from its home page to a document listing the company's monetary and in-kind payments to its consultants in 2007. Stryker, which has a nonprosecution agreement with the DOJ, had published on its Orthopaedics page a link to the same type of information.

Like all of medicine, neurosurgery will continue to grapple with the complex issues concerning its relationship with industry, and AANS Neurosurgeon *will continue to explore this matter. The cover story in this issue is a first step, and readers are invited to participate in the discussion by contributing thoughts, concerns, and ideas on this and other matters through letters and articles.*

YOUR LETTERS

- **Letters should be sent to aansneurosurgeon@aans.org and should include the author's full name, city and state, as well as disclosure of any conflicts of interest that might have bearing on the letter's content. Correspondence selected for publication may be edited for length, style and clarity. Authorization to publish the correspondence in *AANS Neurosurgeon* is assumed unless otherwise specified.**

Mick J. Perez-Cruet, MD

Is This the Future?

Minimally Invasive Spine Surgery

With the evolution of modern spine surgery, the use of minimally invasive surgical techniques for the treatment of spinal pathologies has experienced exponential growth. The term minimally invasive spine surgery can be defined as techniques that attempt to limit approach-related morbidity by reducing iatrogenic trauma to normal anatomical structures of the spine. Common to many of these minimally invasive procedures is the use of muscle splitting approaches using a series of muscle dilators and small portals that minimize injury to the muscular, ligamentous and bony structures of the spine (Figure 1).

Minimally invasive procedures now have been successfully applied to the cervical, thoracic, and the lumbar spine. They can be preformed via posterior, anterior and lateral approaches. Preliminary data on reduced postoperative pain, length of hospital stay and recovery time as well as improved patient outcomes have been reported by a number of investigators.

Figure 1

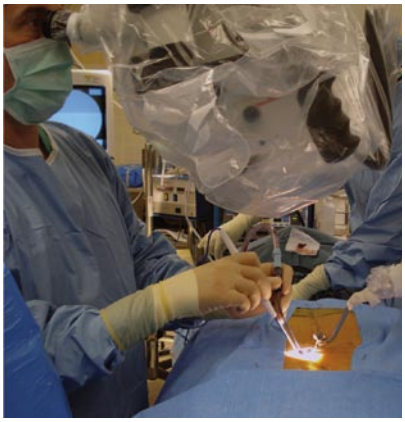

Figure 2

Figure 1. Intraoperative photo showing a tubular retractor placed over a series of muscle dilators to approach the spine.

Figure 2. Intraoperative photo showing the use of a microscope that can enhance visualization while a minimally invasive spine procedure is performed through a tubular retractor.

Some Techniques Come and Go

Within the field of spine surgery, several procedures have been introduced to surgeons with considerable fanfare only to be abandoned after a few years in the clinical arena. This can be due to a number of factors including initial reports of excellent clinical results in multicenter trials where the technique is preformed by "the experts" or "inventors," but the initial hyperbole that accompanies announcement of a new technique or technology is short-lived. With time the technique is either adopted because of its true worth or abandoned because it fails to yield the expected outcomes. Examples of technologies and techniques that spine surgeons have seen come and go include cylindrical cages (the "cage rage"), intradiscal electrothermal therapy, and laser discectomy. Although these technologies are still used, they have not gained the widespread acceptance that was anticipated. On the other hand, techniques and technologies that are successful and used by most spine surgeons include anterior cervical discectomy, fusion and plating, interbody fusion, and pedicle screw fixation. Time is the great equalizer for any new surgical technique and will ultimately determine its value. So how will minimally invasive spine surgery fare?

Despite the rapid growth of minimally invasive spine technologies, universal acceptance and adoption of these techniques by spine surgeons have been slow and intermittent. This is in part because of the initial lag time in receiving related surgical training, the learning curve needed to master these techniques,

and surgeons' general penchant for prudent adoption of new technologies. Microscope visualization can facilitate the learning of some of these techniques (Figure 2). Nevertheless, patients are interested in treatments that reduce postoperative pain and recovery times, and a driving force in the adoption of minimally invasive spine surgery is patient-requested

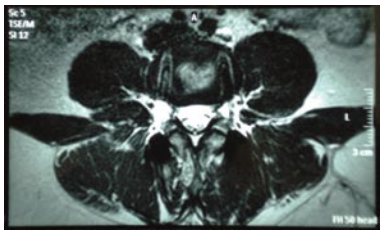

Figure 3. Intraoperative lateral fluoroscopic image showing percutaneous pedicle screw placement over k-wires, thus eliminating the need to expose the bony anatomy of the spine.

Figure 3

Figure 4. Postoperative axial T2-weighted MRI scan after a minimally invasive interbody fusion and percutaneous instrumentation. Note preservation of posterior lumbar musculature with minimal scar formation.

Figure 4

referral to surgeons who can perform these procedures safely and effectively. Other factors that promote the use of minimally invasive spine techniques include increased efficiency of healthcare delivery, industry involvement in development of minimally invasive devices, and the desire of surgeons to remain on the leading edge of treatment options. Examples of minimally invasive spine techniques that have significantly reduced cost of treatment while improving patient outcomes are percutaneous techniques such as vertebroplasty, kyphoplasty [Kyphon, Sunnyvale, Calif.] and more recently, OptiMesh [Spineology Inc., St. Paul, Minn.] reconstruction for treatment of osteoporotic compression fractures.

A review of minimally invasive spine techniques reveals that they can be preformed to address a wide variety of spinal conditions and pathology, thus making these techniques attractive to those surgeons wanting to specialize in this particular area of spine surgery. Though data are preliminary, results are comparable to or better than open techniques. A number of potential benefits that can be seen in minimally invasive compared to open techniques include less scar formation and fewer subsequent reoperations, while maintaining the normal spine architecture.

New Minimally Invasive Techniques

A wide range of minimally invasive technologies that reduce approach-related morbidity has only recently been introduced. The development of percutaneous pedicle screw systems reduces the need to strip the paraspinal musculature off the spine for pedicle screw placement (Figure 3). Instead fluoroscopic or, in some cases, image guidance navigation can direct pedicle screw placement. This technique can significantly affect patient outcomes by preventing many of the problems encountered with open techniques, namely injury to the paraspinal musculature and adjacent facet joints and excessive scar formation (Figure 4). Successful fusion rates can potentially be enhanced since less of the supporting architecture of the spine is disrupted.

However, caution needs to be exercised. Similar to the advent of rigid spinal fixation, there are few class I and class II studies that definitively establish the advantage of minimally invasive procedures over that of open ones. For the moment, the rationale for choosing minimally invasive over open procedures lies in the underlying assumptions and beliefs of the surgeon and patient. For example, when shown the difference between the incisions of an open versus a percutaneous pedicle screw instrumentation operation, many surgeons believe that the benefit of the minimally invasive approach is obvious. For others, this visceral response is not enough to justify the initial learning curve required to adopt minimally invasive techniques. Further, prospective randomized controlled class I studies of minimally invasive procedures will need to be completed to ultimately prove their benefits.

In my experience, minimally invasive techniques are extremely effective in a variety of spine conditions including spondylolisthesis and associated stenosis as well as for surgeries in patients for whom previous open procedures have failed. Time will ultimately determine if minimally invasive techniques are a lasting part of the future of spine surgery. In my opinion they will be. NS

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Disclosure: The author is a consultant for Abbott Spine and Spineology Inc. and has received research support from Abbott Spine.

Effects of Socioeconomic and Geographical Variations on Survival for Gliomas of the Central Nervous System

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The authors reported no conflicts for disclosure.

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Abbreviations:
CNS, central nervous system; CSR, crude survival rate; HR, hazard ratio; ICD-O, International Classification of Diseases for Oncology; MST, median survival time; NHS, National Health Services; SES, socioeconomic status; WHO, World Health Organization

Survival for gliomas of the CNS and particularly cerebral gliomas depends upon tumor characteristics and patient age (22–24). Even though diagnoses and management have been improved since the introduction of magnetic resonance imaging and adjuvant radiotherapy, comparable improvement in the survival seems to be unsatisfactory (8).

The NHS in the U.K. has set out aims and directives to provide the public with equal opportunities of accessing healthcare facilities. However, because of shortages in staff or equipment, patients from deprived SES or living in certain regions may have longer waiting time before being evaluated by specialists (10, 16), while the others can use private medical insurance or employment-related healthcare schemes to bypass the long waiting list and be treated in private hospitals (25). The effects from the inequity of SES and geographical variations on the survival have been demonstrated in some cancers (1, 7, 9), however very few studies have examined the independent effects of social vulnerability on survival for primary CNS gliomas (24).

This study investigates the effects of SES and geographical variations on survival for primary CNS gliomas at a national population level by using the dataset from the Cancer Registry in the U.K. which has the advantage of high accuracy (93 percent) and case coverage (> 94 percent) (9, 17).

TABLE 1

Distribution of Patients With CNS Gliomas by Geographical Region and Socioeconomic Status

		ADULT BRAIN			PEDIATRIC BRAIN		
REGION	**SES†**	**NO.**	**SES H/L**	**P VALUE***	**NO.**	**SES H/L**	**P VALUE***
Southern England	High	10,367	1.96		848	1.69	
	Low	5,297			502		
Midlands	High	2,352	0.88	< 0.001	277	0.83	< 0.001
	Low	2,675			333		
Northern England and Wales	High	4,396	0.81		413	0.72	
	Low	5,403			575		
Total		**30,490**			**2,948**		

*Chi-square test for each tumor population. Abbreviations: SES, socioeconomic status; H/L, high/low; CNS, central nervous system
†SES high and low represent data ranked into upper 50 percent (high) and lower 50 percent (low) using the Carstairs index.

Materials and Methods

Data

Anonymous data from the Cancer Registry, Office for National Statistics, London, U.K. (6), were used and therefore approval from the Ethics Committee was not required. Sources for the cancer registration included inpatient medical records, reports from pathology laboratory, and records of outpatient or other associated departments (radiotherapy, cytology, and general practitioners). In order to solely investigate the effects of SES and geographical variation on survival for primary CNS gliomas, tumors of metastasis, unknown origin, non-glioma, unspecified behavior, death on certificates only, or those with missing data on SES were excluded. The ICD-O was recategorized according to the WHO classification as astrocytoma, oligodendroglioma, oligoastrocytoma, ependymoma, and neuroembryonal tumors. The WHO grade was assigned to each ICD-O code (14).

Continues ▶

ABSTRACT

In order to compare effects of socioeconomic status, SES, and geographical variations on survival for patients with gliomas, data of 30,490 adults and 2,948 children with brain gliomas, and 336 adults and 63 children with primary spinal gliomas from the Cancer Registry in England and Wales were analyzed. The SES was categorized as higher (top 50 percent) and lower (bottom 50 percent) levels. The nine geographical regions were recategorized as Southern England, Midlands, and Northern England and Wales. One-, five- and 10-year rates for median survival time, MST, and crude survival rate, CSR, with respect to age, sex, morphology, World Health Organizaiton grade, periods of diagnosis, SES, and geographical regions were compared using the Kaplan-Meier method. Cox regressions were used for estimating the hazard ration, HR, to death from each variable.

Results showed that in adults with brain gliomas, those from higher SES had lower risk of death (HR 0.94, $p < 0.001$), while those living outside Southern England had higher mortality (HR 1.08 to 1.10, $p < 0.001$). In children with brain gliomas, those residing in Midlands had increased risk of death (HR 1.16, $p = 0.033$), compared to other regions. However, effects from the SES on children were not significant. In patients with spinal gliomas (adults and children), the SES and geographical regions had no significant effect on survival.

This study demonstrated that the SES had significant effects on the survival for adult brain gliomas, while the geographical variation influenced the survival for both adults and children with brain gliomas.

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Key Words:
brain tumor, cancer registry, geography, glioma, socioeconomic

ADULT SPINAL			PEDIATRIC SPINAL					
NO.	SES H/L	P VALUE*	NO.	SES H/L	P VALUE*	TOTAL	SES H/L	P VALUE*
57	1.10		9	0.82		11,281	1.92	
52			11			5,862		
58	1.45	0.005	8	1.33	0.78	2,695	0.88	< 0.001
40			6			3,054		
49	0.61		15	1.07		4,873	0.80	
80			14			6,072		
336			**63**			**33,837**		

PEER-REVIEWED RESEARCH

Material deprivation was represented by scores of the Carstairs index derived from the census data in 1991, which included 109,578 census enumeration districts. Four variables (car ownership, household overcrowding, head of household in social class, and male unemployment) were used to calculate percentage values in each census enumeration district (5). The scores were ranked and the higher and the lower 50 percent of Carstairs scores were categorized into the higher and the lower SES, respectively. The nine NHS regions of England and Wales were recategorized as three major geographical regions: Southern England (South West, North Thames, South Thames, and Anglia and Oxford), Midlands (West Midlands, and Trent), and Northern England and Wales (North and Yorkshire, North West, and Wales).

Analysis

Analysis was performed using STATA for Windows (Intercool 8.0, College Station, Texas). Survival time was computed as the number of days between the date of diagnosis and the date of the last follow-up or death and divided by 365.25 to convert to elapsed years. Patients who were either alive or had emigrated 10 years after the diagnosis or on Dec. 31, 1995, were excluded, while the others were followed until the time of their death. Therefore, those who were diagnosed in the early 1970s had been monitored for up to 20 years.

Survival analyses were performed for brain gliomas in adults or children, and primary spinal gliomas in adults or children. Distributions among different variables were compared using a chi-square test. The estimated MST was defined as the point in time when the survival rate was 50 percent. The CSR was estimated by the Kaplan-Meier method, and the significance was determined by the log-rank test and defined as $p < 0.05$. The CSR at one, five, and 10 years was defined as the proportion of subjects surviving from diagnosis until those times, and the rates were compared with respect to SES and geographical regions. Potential confounders, including age, sex, ICD-O morphology, WHO grade, and period of diagnosis, were adjusted.

The Cox proportional hazard regression was used for multivariate logistic modelling. The probability of death for a specific category relative to a reference was presented as HR with 95 percent confidence interval. The likelihood ratio test was used for evaluating improvement in fit in each variable and the potential linear trend in certain categorical variables was tested for departure from a linear trend (one degree of freedom).

Data summary

There were 41,571 adults (≥ 15 years) and 4,485 children (< 15 years) registered with CNS malignancy in the original dataset. After 2,998 patients were excluded because of no data on SES, a total of 30,490 adults and 2,948 children with brain gliomas, and 336 adults and 63 children with primary spinal gliomas were eligible for final analyses. Information available included sex, dates of birth and diagnosis, tumor morphology, calendar period of diagnosis (1971–1975, 1976–1980, 1981–1985, 1986–1990), vital status, region of residence, and Carstairs index. There were more male than female patients (male-to-female ratio 1:4 in adults and 1:2 in children). The most frequent morphology was astrocytoma (88.9 percent brain gliomas, 62.4 percent spinal cord gliomas) and the majority of the brain gliomas were of high grade (WHO grade III or IV, 86.9 percent). Only 7 percent of the primary spinal gliomas were high grade.

In the whole study population, more patients came from higher SES or Southern England, but the distribution of SES among geographical regions varied; ratios of the higher to the lower SES in Southern England, Midlands, and Northern England and Wales were 1.92, 0.88, and 0.80, respectively (chi-square test, $p < 0.001$). The inequality of SES among geographical regions was most pronounced in adult patients with brain gliomas (Table 1).

Continues ▶

TABLE 2

Median Survival Time and Crude Survival Rates for Patients with CNS Gliomas With Respect to SES and Geographic Regions

CNS GLIOMAS	NO. (%)	MST YEARS	CSR 1 YEAR %	CSR 5 YEARS %	CSR 10 YEARS %	P VALUE*
ADULT BRAIN	30,490 (100)	0.42	29.1	12.0	7.6	
SES†						
High	17,115 (56.1)	0.45	30.1	12.4	7.9	< 0.001
Low	13,375 (43.9)	0.39	27.8	11.6	7.4	
Region						
Southern England	15,664 (51.4)	0.44	30.1	12.3	7.9	< 0.001
Midlands	5,027 (16.5)	0.39	29.3	12.4	7.7	
Northern England and Wales	9,799 (32.1)	0.42	27.3	11.4	7.3	
PEDIATRIC BRAIN	2,948 (100)	9.5	72.8	54.4	49.6	
SES						
High	1,538 (52.2)	N/A	74.3	56.2	50.9	0.085
Low	1,410 (47.8)	7.3	71.1	52.4	48.1	
Region						
Southern England	1,350 (45.8)	N/A	73.9	56.0	50.7	0.22
Midlands	610 (20.7)	5.8	70.8	51.5	46.9	
Northern England and Wales	988 (33.5)	8.7	72.4	53.9	49.6	
ADULT SPINAL	336 (100)	8.7	79.2	59.2	48.5	
SES						
High	164 (48.8)	N/A	81.7	62.8	52.1	0.15
Low	172 (51.2)	7.5	76.7	55.8	45.0	
Region						
Southern England	109 (32.4)	6.01	77.1	53.2	41.0	0.20
Midlands	98 (29.2)	N/A	78.6	62.2	53.6	
Northern England and Wales	129 (38.4)	N/A	81.4	62.0	51.3	
PEDIATRIC SPINAL	63 (100)	N/A	77.8	66.7	63.5	
SES						
High	31 (49.2)	N/A	84.4	65.6	59.2	0.65
Low	32 (50.8)	N/A	71.0	67.7	67.7	
Region						
Southern England	20 (31.8)	N/A	70.0	70.0	65.0	0.92
Midlands	14 (22.2)	N/A	85.7	57.1	57.1	
Northern England and Wales	29 (46.0)	N/A	79.3	69.0	65.5	

*The log-rank test for the Kaplan-Meier method. Abbreviations: CNS, central nervous system; CSR, crude survival rate; MST, median survival time; N/A, not available; SES, socioeconomic status.
†SES high and low represent data ranked into upper 50 percent (high) and lower 50 percent (low) using the Carstairs index.

▶ Continued

PEER-REVIEWED RESEARCH

Survival

The MST and CSR for patients with CNS glioma with respect to SES and geographical regions are shown in Table 2. The MST and one-, five-, and 10-year CSR for adult brain gliomas were 0.42 years, 29.1 percent, 12.0 percent, and 7.6 percent, respectively. The MST and one-, five-, and 10-year CSR for children with brain gliomas were 9.5 years, 72.8 percent, 54.4 percent, and 49.6 percent, respectively. The MST and the one-, five-, and 10-year CSR for adult spinal gliomas were 8.7 years, 79.2 percent, 59.2 percent, and 48.5 percent, respectively. The one-, five-, and 10-year CSR for children with spinal gliomas were 77.8 percent, 66.7 percent, and 63.5 percent, respectively, but the

TABLE 3

Relative Hazard Ratio of Death for Patients With Brain Gliomas

A. Adults With Brain Gliomas

BRAIN GLIOMAS	HR	95% CI	P VALUE*
SES†			
Low	1		
High	0.93	0.91–0.96	< 0.001
Region			
Southern England	1		
Midlands	1.09	1.05–1.12	< 0.001
Northern England and Wales	1.10	1.07–1.13	< 0.001
Morphology			
Ependymoma	1		
Neuroembryonal tumor	1.30	1.03–1.64	0.027
Oligoastrocytoma	1.56	1.24–1.97	< 0.001
Oliogodendroglioma	1.26	1.06–1.50	0.009
Astrocytoma	1.93	1.62–2.31	< 0.001
Grade			
WHO grade I	1		
Per grade	1.21	1.17–1.26	< 0.001
Age			
15 years	1		
Per year	1.04	1.04–1.05	< 0.001
Sex			
Male	1		
Female	0.95	0.92–0.97	< 0.001
Period of diagnosis			
1971–75	1		
Per 5 years	0.91	0.90–0.92	< 0.001

B. Children With Brain Gliomas

BRAIN GLIOMAS	HR	95% CI	P VALUE*
SES†			
Low	1		
High	0.95	0.85–1.05	0.30
Region			
Southern England	1		
Midlands	1.17	1.02–1.33	0.027
Northern England and Wales	1.09	0.97–1.23	0.15
Morphology			
Ependymoma	1		
Neuroembryonal tumor	0.50	0.38–0.67	< 0.001
Oligoastrocytoma	0.26	0.06–1.07	0.062
Oliogodendroglioma	0.61	0.41–0.91	0.016
Astrocytoma	0.37	0.28–0.48	< 0.001
Grade			
WHO grade I	1		
Per grade	1.41	1.26–1.56	< 0.001
Age			
1 year	1		
Per year	0.97	0.96–0.99	< 0.001
Sex			
Male	1		
Female	0.92	0.83–1.02	0.13
Period of diagnosis			
1971–75	1		
Per 5 years	0.91	0.86–0.95	< 0.001

*The log-rank test for the Kaplan-Meier method. Abbreviations: CI, confidence interval; HR, hazard ratio; SES, socioeconomic status.
†SES high and low represent data ranked into upper 50 percent (high) and lower 50 percent (low) using the Carstairs index.

MST was too lengthy to be available.

In adults with brain gliomas, those from higher SES or Southern England achieved longer survival than the others (log-rank test $p < 0.001$). In children with brain gliomas, those from higher SES seemed to fare better than those from lower SES (log-rank test $p = 0.085$), but no difference in CSR was seen among various geographical regions (log-rank test $p = 0.22$). In patients with primary spinal gliomas (adults and children), no significant difference in survival was seen between the two SES or among geographical regions.

The Cox regression showed that in adults with brain gliomas, those from the higher SES had reduced risk of deaths (HR 0.93, $p < 0.001$), while the others residing in regions outside Southern England had increased mortality (HR 1.09 to 1.10, $p < 0.001$) (Table 3A). In children with brain gliomas, those living in Midlands had higher risk of deaths (HR 1.17, $p = 0.027$), compared with the others (Table 3B), but no significant effects from the SES were seen. In patients with spinal gliomas (adults and children), no significant effects on the survival were seen with respect to either SES or geographical regions (Table 4).

Discussion

Results of this study confirmed that the SES had significant effects on the survival for brain gliomas in adults, while the geographical regions influenced the survival for brain gliomas both in adults and children. No similar effects were seen in patients with spinal gliomas, probably because there were far fewer patients, or it may be related to the indolent nature of the spinal gliomas themselves (12, 18). The difference in survival curves among this study population may be partially attributed to the biological characteristics in both the tumor and the host (2).

Although the distribution of SES and geographical variations was similar in patients with brain gliomas, material deprivation obviously only affected the adults. This finding may be associated with the standardized treatment of, or more clinical trials for children, who are most frequently referred to certain specialized centers, irrespective of their family backgrounds (13, 20). Thus, in children, access to the NHS has been found to be equal across all SES levels (19).

For adults with brain gliomas, treatment protocols generally vary among centers. Furthermore, previous studies have suggested that patients from the more deprived SES are less likely to receive continuity of care because of their underlying social or economic problems (21). Even after being referred to the specialist they may be required to wait longer for diagnostic imaging because of severe shortages in staffing and infrastructure in certain regions (10), or because their residence is distant from secondary or tertiary referral centers, making arrangements for accessing these services more difficult (11, 15). Moreover, it has been found that these patients use the emergency department as their medical access more frequently than others (21). In contrast, patients from higher SES are more likely to use private medical insurance or employment-related health schemes to bypass NHS waiting lists or to be treated earlier in private hospitals (10, 16). The difference in waiting time may have caused "lead-time bias," as patients with social disadvantages more frequently have advanced disease at diagnosis and subsequent shorter survival time (16). The significant effect of geography on survival for children with brain gliomas may be associated with similar shortages in staffing and infrastructures in certain regions as mentioned above.

For primary spinal gliomas, patients could be migrating among different geographical regions and neighborhoods because of their lengthy and subtle symptoms. The small number of patients in each region also may have made the effects of SES or geography difficult to demonstrate.

Although the 2,998 patients with missing data on SES only comprised 8.9 percent of the study population, the exclusion of them from analyses may have slightly underestimated the effect of SES as they were most likely to come from materially

Continues ▶

PEER-REVIEWED RESEARCH

TABLE 4

Relative Hazard Ratio of Death for Risk Factors in Patients With Spinal Gliomas

A. Adults With Spinal Gliomas

SPINAL GLIOMAS	HR	95% CI	P VALUE*
SES†			
Low	1.0		
High	0.99	0.73–1.33	0.95
Region			
Southern England	1		
Midlands	0.98	0.66–1.47	0.94
Northern England and Wales	0.89	0.61–1.29	0.53
Morphology			
Ependymoma	1		
Neuroembryonal tumor	10.09	3.64–27.95	< 0.001
Oligoastrocytoma	N/A		
Oliogodendroglioma	2.93	0.89–9.70	0.078
Astrocytoma	3.61	2.40–5.43	< 0.001
Grade			
WHO grade I	1		
Per grade	1.05	0.93–1.18	0.45
Age			
15 years	1.0		
Per year	1.03	1.02–1.04	< 0.001
Sex			
Male	1		
Female	1.30	0.95–1.77	0.097
Period of diagnosis			
1971–75	1.0		
Per 5 years	0.95	0.81–1.10	0.48

B. Children With Spinal Gliomas

SPINAL GLIOMAS	HR	95% CI	P VALUE*
SES†			
Low	1.0		
High	1.58	0.70–3.58	0.27
Region			
Southern England	1		
Midlands	0.36	0.10–1.26	0.11
Northern England and Wales	0.63	0.26–1.50	0.30
Morphology			
Ependymoma	1		
Neuroembryonal tumor	42.58	4.16–435.34	0.002
Oligoastrocytoma	9.49	0.76–118.71	0.081
Oliogodendroglioma	N/A		
Astrocytoma	2.46	0.89–6.81	0.083
Grade			
WHO grade I	1.0		
Per grade	0.90	0.61–1.32	0.58
Age			
1 year	1.0		
Per year	0.96	0.88–1.05	0.40
Sex			
Male	1.0		
Female	0.64	0.31–1.33	0.24
Period of diagnosis			
1971–75	1.0		
Per 5 years	1.26	0.90–1.77	0.17

*The log-rank test for the Kaplan-Meier method. Abbreviations: CI, confidence interval; HR, hazard ratio; N/A: not available; SES, socioeconomic status.
†SES high and low represent data ranked into upper 50 percent (high) and lower 50 percent (low) using the Carstairs index.

▶ Continued

PEER-REVIEWED RESEARCH

deprived neighborhoods (6). Furthermore, the geographical region where the diagnosis was made may not be necessarily the same place where the treatment was given, an important factor known to influence the outcome. Therefore, the effect of geographical region associated with the local health services also may have been underestimated.

The recent reports upon the financial management of NHS showed a deficit of 512 million pounds ($1,002,727,300) (3). The severe deficits have motivated the NHS executives to try to adopt several procedures for counterbalancing (4), including job cuts by modernization of

the medical career for junior doctors, ward closure, stopping pay raises for the general practitioners, and delaying elective operations (BBC News June 7, 2006, and March 1 and 17, 2007). Therefore, we may expect that the differences in survival for patients with CNS gliomas among SES levels and geographical regions may become even more exaggerated in the future.

Conclusion

This study demonstrated that SES had significant effects on the survival for adult brain gliomas, while the geographical variation influenced the survival for both adults and children with brain gliomas. Effects of SES and geographical variations may be even more pronounced in the cohort to be studied in the future. NS

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Gregory J. Przybylski, MD

Minimize Denials for Improper Coding

Coding Changes for 2008

With the arrival of a new year, it is time to introduce the new Current Procedural Terminology codes for 2008 along with the revisions to current CPT codes and coding rules. Although only one major group of codes was developed that applies to neurosurgery, there have been several important revisions to current codes and coding rules that are more likely to impact a neurosurgeon's practice.

The major new code set for neurosurgery in 2008 was developed for an uncommon spinal deformity procedure that was not adequately described with prior CPT codes. In patients with loss of lumbar lordosis, such as with flat-back syndrome, one method for restoring lordosis involves a wedge resection of a vertebra to create an acute lordotic angle at one segmental level. Applying this technique at additional levels allows for further correction of flat-back syndrome. Previously, CPT only described posterior osteotomies that involved the posterior column, including the lamina and facets, with codes 22210–22216. Following a similar pattern, a series of codes was developed for a three-column posterior subtraction osteotomy. A three-column PSO in the thoracic spine is described by base code 22206, with work relative value units of 37. The procedure requires bony removal of portions of the anterior column (anterior portion of the vertebral body), the middle column (posterior portion of the vertebral body), and the pedicles and other elements (facets and lamina) of the posterior column.

Performing the three-column PSO procedure in the lumbar spine is described by code 22207 (36.5 work RVU). If an additional segment is treated with a three-column PSO, the additional level code 22208 (9.66 work RVU) should be used.

When performing the three-column PSO procedure in both the thoracic and lumbar spinal regions in the same operative session, only one primary procedure code should be chosen. For example, in the case of a T12 and L2 PSO, one would code 22206 and 22208 to describe the thoracic and lumbar levels, respectively. The thoracic level is chosen as the primary stand-alone code because it is valued slightly higher to account for the increased risk of performing the procedure around the spinal cord. These codes do not include additional work that may include arthrodesis, decompressions at other spinal levels, instrumentation, or bone graft harvest.

A significant change occurred in the usage of a commonly used code in cranial and spinal surgery. Placement of cranial tongs or stereotactic frame is described with code 20660. The CPT descriptor includes the parenthetical "separate procedure" to alert the surgeon that this procedure is often bundled into other procedures. For example, stereotactic cranial procedures like a brain biopsy with computed tomography guidance, code 61751, include placement of the cranial frame. Prior to 2008, this code was included in the modifier –51 exempt appendix. Consequently, when performing this procedure with other procedures that it was not bundled with, the multiple procedure rule did not apply to 20660, resulting in 100 percent payment of the fee schedule. The CPT editorial panel reviewed all of the codes in the –51 modifier exempt list to determine whether the appropriate criteria were met for continued inclusion. The editorial panel concluded that 20660 did not meet the criteria for continued inclusion as a "–51 modifier exempt code" for several reasons.

Because there is a fundamental payment change in the code, the procedure for placement of cranial tongs or stereotactic frame was resurveyed to determine the proportion of work performed before and after this procedure. Whereas the former work value of 20660 in 2007 was 2.51 work RVU, the newly valued 20660 in 2008, now subject to the –51 modifier, is 4.0 work RVU. When performed as a stand-alone procedure, for example when stabilizing a cervical injury without reduction, payment will be significantly higher than it was previously; however, when performed with another procedure payment will be slightly less than it was previously because of the reduction in payment for multiple procedures.

Lastly, another change in CPT rules occurred with spinal instrumentation, codes 22840–22851, which

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INSIDE Neurosurgeon

News of Neurosurgical Organizations

Inside Neurosurgeon focuses on the news and views of the AANS and other neurosurgical organizations. A sampling of this section's contents is listed at left. *AANS Neurosurgeon* invites submissions of news briefs and bylined articles (please include author's full name and brief biographical information) to aansneurosurgeon@aans.org.

About the Photo: The *Fundamentals in Spinal Surgery for Residents* course is one of several new courses for residents produced by the AANS and sponsored by industry. See related story on page 32.

AANS President's Perspective

Focus on Learning

Jon H. Robertson, MD

In just a few short weeks, I hope to see you in Chicago for what I believe to be the premier event in neurosurgical education, the AANS Annual Meeting. Whether you will be attending for the 50 or so continuing medical education credits available, to learn first-hand what's new in neurosurgery, to see old friends and network with new ones, or because you already love the dynamic and cosmopolitan yet friendly city that is Chicago, I can assure you that this 2008 meeting will be one event well worth your while.

Tim Mapstone and the Annual Meeting Committee have devised an enlightening, thought-provoking and entertaining meeting, the theme of which is Focus on Learning. The meeting will open with a reception at Navy Pier, which offers a spectacular view of downtown Chicago as it stretches along Lake Michigan. The scientific program, planned by Sander Connolly and the Scientific Program Committee, will feature the latest in technological innovations and scientific advances in all areas of neurosurgery.

I would be remiss if I failed to note that this meeting is made possible not only through the thoughtful planning and diligent work of many of our colleagues in neurosurgery as well as AANS staff, but also with the support of industry. As recent newspaper headlines and the cover story of this issue remind us, the relationship between neurosurgery and industry is something to be recognized and scrutinized, appreciated and viewed with healthy skepticism.

As a member of the AANS Board of Directors since 1999 as well as a recent chair of the AANS Development Committee, I have been actively involved in developing partnerships with industry as well as wrestling with the complicated questions related to this involvement. I can assure you that industry involvement in AANS activities occurs with continuing oversight, evaluation and reevaluation by neurosurgeons who are concerned that the integrity of our professional association is upheld.

The leadership consensus in recent years has been that AANS partnerships with industry are appropriate as long as the AANS establishes clear guidelines for them and ensures that they are scrupulously followed. A summary of current guidance for AANS-industry relationships appears in the cover section.

It is important to note that, as in neurosurgery, a strategy or therapy that works today may be antiquated tomorrow. New circumstances and ideas certainly will lead to evolution of the guidelines that are now in place. AANS leadership will remain ever vigilant in its relationship with industry as well as responsive to the needs and ideas of AANS members and the neurosurgical community and the expectations of the public with respect to that relationship. Most of all, as neurosurgeons we will be ever mindful of our ethical responsibilities to our patients.

With clear guidance in place for both neurosurgery and industry, the AANS can ensure that its focus remains on learning. NS

Jon H. Robertson, MD, is the 2007–2008 president of the AANS and chair of the Department of Neurosurgery at the University of Tennessee Health Science Center, Memphis, Tenn. Dr. Robertson reported no conflicts for disclosure.

AANS ANNUAL MEETING

Special Speakers Reflect Neurosurgery's Global Reach

April 26–May 1, 2008

The 76th AANS Annual Meeting in Chicago April 26–May 1 will feature 41 practical clinics, 77 breakfast seminars, approximately 140 oral paper presentations and 480 poster presentations. Fascinating speakers will set the stage for an outstanding scientific event.

"Cloud Gate," affectionately known as "The Bean," reflects the Chicago skyline from Millennium Park in the Loop.

MICHAEL L.J. APUZZO, MD

Theodore Kurze Lecturer

Wednesday, April 30, Plenary Session III

Michael L.J. Apuzzo, MD, is the Edwin M. Todd/Trent H. Wells Jr. Professor of Neurological Surgery and Radiation Oncology, Biology, and Physics at the University of Southern California Keck School of Medicine. He is director of neurosurgery at the Kenneth Norris Jr. Cancer Hospital and Research Institute. His current scientific interests include cerebral and minimally invasive surgical techniques, radiosurgery, virtual surgery, restorative methods, and nanotechnology.

Dr. Apuzzo has played a central role in the practical introduction and development of microsurgery, endoscopy, imaging directed stereotaxy, radiosurgery, and investigative molecular biology as elements of the neurosurgical armamentarium as well as the concepts of minimal invasion and cellular/molecular neurosurgery. An avid internationalist and educator, he has given over 135 invited professorships nationally and internationally and developed more than 600 scientific publications, including 45 edited volumes dealing with topics of microsurgery, stereotaxy, the future of neurosurgery, cerebral surgery, central nervous system tumors, trauma, epilepsy, and operating room design. Since 1992 he has been editor-in-chief of Neurosurgery, Operative Neurosurgery, and Neurosurgery Online.

He is a graduate of Yale College and Boston University School of Medicine. After general surgery training at McGill's Royal Victoria Hospital, his neurosurgical residency was completed at the Yale School of Medicine, where he served fellowships in neurophysiology and neuropathology. He had special training in nuclear, submarine, and diving medicine at the U.S. Navy Postgraduate School at Groton, Conn., after which he served with distinction in the Polaris Nuclear Submarine Service. He has been actively involved with NASA, The California Institute of Technology, The Jet Propulsion Laboratory, and USC Schools of Engineering and Cinematic Arts.

DOUGLAS BRINKLEY, PHD

Cushing Orator

Monday, April 28, Plenary Session I

Douglas Brinkley, PhD, is director of the Theodore Roosevelt Center for American Civilization and professor of history at Tulane University. He received his bachelor's degree from Ohio State University, followed by his doctorate in U.S. diplomatic history from Georgetown University in 1989. He then spent a year teaching history at the U.S. Naval Academy and Princeton University.

He won the Benjamin Franklin Award for The American Heritage History of the United States (1998) and the Theodore and Franklin Roosevelt Naval History Prize for Driven Patriot (1993). He was awarded the Business Week Book of the Year Award for Wheels for the World and was also named 2004 Humanist of the Year by the Louisiana Endow-

ment for the Humanities.

Dr. Brinkley is a contributing editor for Vanity Fair, Los Angeles Times Book Review and American Heritage, and a frequent contributor to the New York Times, The New Yorker, and The Atlantic Monthly.

ERIC C. HOLLAND, MD, PHD

Ronald L. Bittner Lecturer

Monday, April 28, Scientific Session I

Eric C. Holland, MD, PhD, is director of the Brain Tumor Center at Memorial Sloan-Kettering Cancer Center and a professor at Cornell University with joint appointments in the Departments of Neurology, Surgery (Neurosurgery), and Cancer Biology & Genetics.

Dr. Holland received his PhD in biochemistry and molecular biology from the University of Chicago in 1985 and his medical degree from Stanford University in 1990. He completed his internship in general surgery in 1991 and his residency in neurosurgery in 1995, both at the University of California, Los Angeles.

He has authored 80 peer-reviewed articles, written 11 book chapters, and edited Mouse Models of Human Cancer, published in 2004. He has presented at nearly 100 conferences worldwide and nearly 70 institutional seminars/visiting professorships.

In addition to the AANS, Dr. Holland is a member of several professional organizations, including the Society for Neuro-Oncology, American Association for Cancer Research, and the Congress of Neurological Surgeons. He has been honored with numerous awards, including the Farber Award, Seroussi Award, Bressler Scholars Award, American Brain Tumor Association Research Award, Peter A. Steck Memorial Award, Searle Scholars Award, and the Howard Hughes Medical Institute Post Doctoral Fellowship.

RODOLFO LLINAS, MD, PHD

Van Wagenen Lecturer

Wednesday, April 30, Plenary Session III

Rodolfo R. Llinas, MD, PhD, is the Thomas and Suzanne Murphy Professor of Neuroscience at New York University School of Medicine, where he has been chair of the Department of Physiology and Neuroscience since 1976. In 1959 he received his medical degree from Universidad Javeriana, Bogota, Colombia, followed by his doctoral degree in neurophysiology from Australian National University, Canberra, in 1965. His work encompasses many aspects of neuroscience, from the study of depolarization release coupling in the squid giant synapse to voltage-dependent calcium channels from cerebellar neurons. His current research focuses on dysfunctions of the thalamus, an area of the brain known to play a key role in various neurological and psychiatric disorders such as Parkinson's disease, depression, and obsessive-compulsive disorder. An internationally known leader in the field of brain research, Dr. Llinas has contributed to more than 400 publications and has been awarded seven honorary degrees. He is the recipient of numerous honors, including the UNESCO Albert Einstein Gold Medal Award in Science, Catedra Santiago Grisolia Prize in Neuroscience (Spain), and the Koetser Foundation Award for Brain Research (Switzerland). He is a member of many professional organizations, including the National Academy of Sciences, the American Academy of Arts and Sciences, the American Philosophical Society, and the French National Academy of Sciences.

A. John Popp, MD

Richard C. Schneider Lecturer

Monday, April 28, Plenary Session I

A. John Popp, MD, is professor and Henry and Sally Schaffer Chair of Surgery, co-director of the Neurosciences Institute and head of the Division of Neurosurgery at Albany Medical Center in Albany, N.Y.

He completed his undergraduate work at the University of Rochester and received his medical degree from Albany Medical College. He completed his internship at The Queen's Hospital in Honolulu, Hawaii, and his surgical residency at Albany Medical Center Hospital. In 1969, he was commissioned captain in the U.S. Air Force and served as surgeon at the Tachikawa Air Force Hospital in Japan until 1971. Following his military service, Dr. Popp returned to Albany Medical Center Hospital to undertake his neurosurgical residency training.

An active member of the AANS since 1980, he served as president (2003–2004), vice president (1999–2000) *AANS Bulletin* editor (1998–2003), chair of the AANS/CNS Washington Committee and AANS director-at-large (1995–1998). In addition to his involvement with the AANS, Dr. Popp served as president of the New York State Neurosurgical Society; delegate to the Council of State Neurosurgical Societies (1993–1996); president of the Hudson/Mohawk Clinical Neurosciences Society (1992–present); treasurer of The Society of Neurological Surgeons; and director of the American Board of Neurological

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- 2008 AANS Annual Meeting
- Dates: April 26–May 1
- Location: McCormick Place, Chicago, Ill.
- Advance registration and housing deadline: March 24
- Web site: www.aans.org/annual/2008

▶ Continued

Surgery. An active clinician, he has authored numerous books and articles for scientific journals on such topics as head injuries, stroke and brain tumors.

MARCUS E. RAICHLE, MD

Hunt-Wilson Lecturer, Plenary Session I

Monday, April 28

Marcus E. Raichle, MD, is professor of radiology, neurology, neurobiology, biomedical engineering and psychology at Washington University in St. Louis School of Medicine. He is also co-director of the Division of Radiological Sciences, Mallinckrodt Institute of Radiology, and he is affiliated with Barnes-Jewish Hospital of St. Louis and St. Louis Children's Hospital. His current research focuses on the intrinsic functional activity of the brain as distinct from evoked responses related to behavioral events.

Dr. Raichle received his medical degree from the University of Washington School of Medicine, Seattle, in 1964. He did his internship and residency in general medicine at Baltimore City Hospitals, followed by a fellowship at Johns Hopkins University, Department of Medicine. He practiced neurology at New York Hospital, Cornell University Medical College from 1966 to 1969. A major in the United States Air Force from 1969 to 1971, Dr. Raichle served as neurologist and flight surgeon at the USAF School of Aerospace Medicine, Brooks AFB in San Antonio, Texas.

A prolific author, Dr. Raichle has published nearly 200 peer-reviewed articles and close to 150 books, book chapters, reviews and commentaries. He has served on the editorial boards of numerous publications.

LEE WOODRUFF

Rhoton Family Lecturer

Wednesday, April 30, Plenary Session III

As co-author of the bestselling book In an Instant, Lee Woodruff garnered critical acclaim for the compelling and humorous chronicle of her family's journey to recovery following the roadside bomb injury to her husband, Bob Woodruff, in Iraq. Appearing together on national television and radio since the February 2007 publication of their book, the couple has helped put a face on the serious issue of traumatic brain injury among Iraq war veterans and the millions of Americans who live with this often invisible, life-changing affliction.

They founded the Bob Woodruff Family Fund for Traumatic Brain Injury to help wounded service men and women and their families receive the long-term care that they need to successfully reintegrate into their communities.

Woodruff is a freelance writer as well as a contributing editor for the television newsmagazine Good Morning America, and she is currently working on a second book. She ran her own public relations and marketing consulting business for 16 years. Before that she was senior vice president of public relations firm Porter Novelli and spent a year in Beijing, China, working for communications company Hill & Knowlton. NS

CSNS REPORT

Medico-Legal Committee

One of Many That Represent Neurosurgery's Grass Roots

Ann R. Stroink, MD

For more than 30 years, state and regional neurosurgical organizations have been meeting regularly to address socioeconomic issues that affect the practice and delivery of neurosurgical care to patients. These conclaves organized and developed into the present day organization known as the Council of State Neurological Surgeons.

The CSNS consists of elected members, each representing a constituency of 50 neurosurgeons. This full representation of "grass-roots neurosurgery" creates a strong voice that influences policies and decision-making with regard to socioeconomic issues. The CSNS is further enriched by delegates to this organization who are assigned by the parent organizations, namely the AANS and the Congress of Neurological Surgeons. Young physicians also play a significant role, as residents are regularly elected to membership.

The CSNS meets twice a year for two days, just prior to the AANS and CNS annual meetings. It is during this time that the standing committees (Communication & Education, Medical Practices, Medico-Legal, Neurotrauma, Reimbursement, Workforce, and Young Physicians) and the ad-hoc committees (Website, Fellowship, Mentoring Program, Editorial/Publication, Leadership Development, and Membership Expansion) meet regularly for reviewing resolutions that can and will affect socioeconomic issues. The committees work on projects that will further identify, enlighten and persuade neurosurgeons to remain ever vigilant about the socioeconomic forces that remain pervasive in their everyday practices. It is the responsibility of the members of CSNS to decide on which committee they shall serve. Selection of committee assignments can be based on the needs of the constituents or the organization that each member represents.

Dr. Alan Scarrow heads the Medico-Legal Committee of the CSNS. He is considered a good choice as a leader for this committee because, besides practicing neurosurgery as a full-time profession, he also holds a law degree. The Medico-Legal Committee has traditionally been a very active committee that deals with the most controversial medical and legal issues facing neurosurgeons. Several members of this committee, drawing on their own experiences, have recently written articles addressing the legal issues faced by neurosurgeons who are owners of ancillary services such as physical therapy units, surgery centers and imaging facilities. These articles were published in the Summer 2007 issue of the *AANS Bulletin*. Furthermore, this committee is a valuable resource for continuing medical education, generating a large body of self-assessment non-clinical competency questions that focus on medical and legal issues and government oversight and regulations for SANS (Self Assessment in Neurological Surgery) and MOC (Maintenance of Certification).

Mick Perez-Cruet, MD, chair of the CSNS Editorial/Publication Committee, recently interviewed Dr. Scarrow regarding his work with the Medico-Legal Committee. The interview, available at www.csnsonline.org, outlines in detail how a member of the AANS can become an active member of the committee and contribute to neurosurgeons' understanding of how law and regulations impact the everyday practice of neurosurgery.

For further information on how the Medico-Legal Committee functions and to view past and future projects of the committee, please go to the CSNS Web site. NS

Ann R. Stroink, MD, is a member of the Editorial/Publication Committee of the CSNS, www.csnsonline.org. The author reported no conflicts for disclosure.

YOUNG NEUROSURGEONS COMMITTEE

2008 Public Service Citation

Nomination Deadline: March 31

The Young Neurosurgeons Committee is accepting nominations for the 2008 Public Service Citation until March 31. The citation recognizes and honors the extraordinary efforts of a young neurosurgeon who, outside the traditional art and science of neurosurgery, has served the public in an exemplary fashion. The citation is presented annually to an individual who is actively engaged in neurosurgery training or practice. The nominee must be within seven years of neurosurgery training.

Details are available at www.aans.org/young_neurosurgeons/pdfs/psc_guidelines.pdf, or from Chris Ann Philips at cap@aans.org. NS

AANS Resident Education

Residents Get Free Courses Through AANS-Corporate Partnership

Michele S. Gregory and Joni L. Shulman

The 2007 calendar year was an extremely productive and rewarding year for the AANS in terms of residency education. The last in a series of five resident courses produced by the AANS, thanks in part to collaboration by organized neurosurgery and its corporate partners, was completed in October 2007.

The five courses included:

1. **Pediatric Neurosurgery Review,** February 2007, Rick Boop, MD, director (course supporters: Medtronic Neurologic Technologies, Medtronic Navigation and Medtronic Neurosurgical)

2. **Endovascular Techniques,** April 2007, Robert Rosenwasser, MD, director (course supporters: Cordis Neurovascular, Micrus Endovascular Corporation, EV3, Boston Scientific Neurovascular)

3. **Minimally Invasive Spinal Techniques,** August 2007, Kevin Foley, MD, and Charlie Branch, MD, co-directors (course supporters: Medtronic Spinal and Biologics, Anspach, Carl Zeiss Meditec, and Medtronic Neurologic Technologies)

4. **Socio-Economic Review,** October 2007, Rick Boop, MD, and Gary Bloomgarden, MD, co-directors (course supporter: Medtronic)

5. **Fundamentals in Spinal Surgery,** October 2007, Regis Haid, MD, and Chris Shaffrey, MD, co-directors (course supporters: DePuy Spine, Globus Medical, Medtronic and Synthes Spine)

This AANS resident education initiative began in 2006 with the vision and efforts of Jon H. Robertson, MD, the 2007–2008 AANS president. Dr. Robertson saw the tremendous benefit of providing advanced neurosurgical training to residents in areas of education that were not currently available within the residency program. He also saw how the role of corporate funding, through the AANS Pinnacle Partners program, could greatly augment this effort by making these courses available at no cost to the participating residents.

"These fabulous courses have been very well received by the residents," said William T. Couldwell, MD, chair of the AANS Development Committee. "The courses offered a terrific opportunity for residents to interact in a casual educational atmosphere with premiere leaders in the field, and the enthusiasm following the most recent course was palpable."

Fundamentals Training Gets High Marks

The most recent course was *Fundamentals in Spinal Surgery.* Held Oct. 18–21, 2007, the course brought 32 residents from throughout the United States and Canada to the Medical Education and Research Institute in Memphis, Tenn. As for all of these resident courses, the residents in attendance were nominated by their program directors and

The new course *Fundamentals in Spinal Surgery for Residents,* directed by Regis Haid, MD, and Chris Shaffrey, MD, was offered in October 2007 at no cost to residents through the support of DePuy Spine, Globus Medical, Medtronic and Synthes Spine.

then selected by the course directors based upon their program year and geographic distribution. The *Fundamentals* course featured a comprehensive series of didactic lectures and hands-on instruction with internationally recognized faculty illustrating the state-of-the-art management of cervical, thoracic and lumbar disorders.

"The [*Fundamentals in Spinal Surgery*] course was brilliant, the most high-yield two days of my training thus far," said Koji Ebersole, MD, a fifth-year resident at the University of Medicine and Dentistry of New Jersey. "I can't believe this was the first year—everything ran so smoothly!"

Globus Medical was one of four corporate partners supporting this exciting educational opportunity for upper-level neurosurgical residents. "The AANS *Fundamentals in Spinal Surgery for Residents* course provided a number of fantastic didactic forums and working labs along with a world class faculty that truly enjoys communicating and teaching the residents," said Gregory Rhinehart, Great Lakes Area director for Globus Medical. "It was a very well-organized and valuable program for residents serious about spine."

The other corporate supporters included DePuy Spine, a Johnson & Johnson company, Medtronic, and Synthes Spine.

New 2008 Courses Offer Residents Training in Spinal Deformity and Peripheral Nerves

The AANS is planning to offer seven resident courses in 2008. The same five courses held in 2007 will be repeated, and two new courses will be added:

- **Spinal Deformity,** March 2008, Robert Heary, MD, director (corporate supporter: DePuy Spine)
- **Peripheral Nerves,** Fall 2008, Allan Freidman, MD, director (corporate supporters: TBD)

Residents interested in participating in these courses should discuss their interest with their program directors. The AANS call for resident nominations for these courses usually reaches the program directors two months prior to each course.

These educational offerings are beneficial for everyone involved, including the residents, faculty, and corporate partners, but ultimately it is the patients who will likely benefit the most in the future. NS

Michele S. Gregory is AANS development director and **Joni L. Shulman** is AANS associate executive director, education and meetings.
The authors reported no conflicts for disclosure.

First Joint Surgical Advocacy Conference

March 9–11, 2008 in Washington, D.C.

A new three-day advocacy event on March 9–11, 2008, in Washington, D.C., is designed to encourage neurosurgeons to personally bring to Congress their concerns regarding Medicare reimbursement cuts, problems with the emergency medical system, and the need to change the medical liability system. The first annual Joint Surgical Advocacy Conference is sponsored by the AANS, the Congress of Neurological Surgeons, the American College of Surgeons and other surgical societies. Details are available from the AANS/CNS Washington office, (202) 628-2072. Events, scheduled at the Renaissance Mayflower Hotel, include:

- **Sunday, March 9:** AANS/CNS Leibrock Leadership Development Conference Legislative and Political Briefing for Neurosurgeons; Opening Reception
- **Monday, March 10:** Congressional Speakers; Capitol Hill Reception
- **Tuesday, March 11:** Capitol Hill Meetings With Senators and Representatives NS

ADVANCING NEURORESEARCH

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July 1–Dec. 31, 2007

The Executive Council of the Neurosurgery Research and Education Foundation of the AANS gratefully acknowledges the individuals, groups, corporations and members of the general public who generously supported the NREF from July 1, 2007 through Dec. 31, 2007. We recognize and appreciate the support offered by these contributors. They continue to recognize the need for and have an understanding of the important role their support has; without it, critical funding for some of the specialty's brightest scientists and their promising neurosurgical investigations would not be available. These studies have set a high standard in the neuroscientific community, serving as key indicators of our ability to enhance science, medicine and technology, while also improving patient care and saving lives.The investment these NREF supporters made in the future of neurosurgery will achieve positive rewards—new advances in the areas of brain tumors, stroke, cerebrovascular disease, epilepsy, and disorders of the spine. Ultimately, we hope the outcomes of NREF-funded research projects will translate into medical breakthroughs and longer life. Those supporting the NREF during the first half of fiscal 2008 include:

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GOVERNANCE

Four AANS Members Expelled for Loss of ABNS Certification

At the AANS Board of Directors meeting on Oct. 26, 2007, the board received and approved the recommendation of the Professional Conduct Committee that four AANS members be expelled due to loss of certification by the ABNS. Those expelled from AANS membership are Maged Lofty Abu-Assal, MD, Howard Lee Finney, MD, Karl A. Jacob, MD, and Guy Owens, MD. AANS membership requirements are described in the association bylaws, www.aans.org/about/membership/aans_bylaws072707.pdf.

The board also approved the committee's recommendation that four cases in which charges of unprofessional conduct had been made be dismissed without sanction. NS

Van Wagenen Fellowship

Samuel H. Cheshier, MD, Awardee

Samuel H. Cheshier, MD, of Stanford University has been awarded the 2008 William P. Van Wagenen Fellowship. He will travel to Sweden to study with Prof. Anders Bjorklund at Lund University beginning July 1. Dr. Cheshier will continue his research in neural stem cells and will study Wnt proteins as tools to manipulate and engineer neural stem cells as therapeutics for Parkinson's disease.

The fellowship is offered annually to support post-residency study in a foreign country for a period of 12 months. The stipend is $60,000 with an additional $6,000 available for family travel expenses and $5,000 for insurance. Research support of $15,000 is available to the laboratory sponsoring the Van Wagenen Fellow. Information is available at www.aans.org/research/fellowship/aans.asp. NS

IN MEMORIAM

W. Kemp Clark, MD

W. Kemp Clark, the 1981–1982 AANS president, died Nov. 29. His special interests in neurosurgery involved aneurysm surgery and the treatment of the malignant glioma.

He served as the 1983–1984 president of the Society of Neurological Surgeons and as SNS secretary from 1979 to 1982. He was president of the World Federation of Neurological Surgeons for four years, and in 1989 he presided over the WFNS conference in New Dehli, India.

In 1956 he was appointed the chair in neurological surgery at Southwestern Medical School. In 1990, he became Professor Emeritus, University of Texas Southwestern Medical Center at Dallas. Honors include the Distinguished Alumni Award from the Neurological Institute of New York and the Ashwell Smith Distinguished Alumnus Award from the University of Texas Medical Branch Galveston.

As the director of the neurological surgery service at Parkland Memorial Hospital in Dallas, Dr. Kemp pronounced the death of President John F. Kennedy on Nov. 22, 1963. Dr. Kemp's admission note in the case, excerpted from the Warren Commission report, accompanies this article.

He was born Sept. 2, 1925, in Dallas, Texas, the son of Florine Kemp and James Clark. He was trained at the Neurological Institute of New York in neurological surgery, at Indiana University in general surgery, and he graduated from the Medical Branch of the University of Texas at Galveston.

Dr. Kemp's admission note in the John F. Kennedy case, excerpted as published in the Warren Commission report.

Parkland Memorial Hospital Admission Note
John F. Kennedy
Date and Hour: 22 Nov 1963 1220 to 1300 hrs

Called by EOR [emergency operating room] while standing in (illegible) laboratory at SWMS. Told that the president had been shot. I arrived at the EOR at 1220–1225.The president was bleeding profusely from the back of the head. There was a large (3 x 3 cm) amount of cerebral tissue present on the cart. There was a smaller amount of cerebellar tissue present also.

A tracheostomy was being performed by Drs. Perry, Baxter and McClelland. Exam of the president showed that an endotracheal tube was in place and respiratory assistance was being given by Dr[s]. Akins and Jenkins. The pupils were dilated, fixed to light and his eyes were deviated outward and the right one downward as well.

The trach was completed and I adjusted the endotracheal tube a little bit. Blood was present in the oral pharynx. Suction was used to remove this. Levine catheter was passed into the stomach at this time.

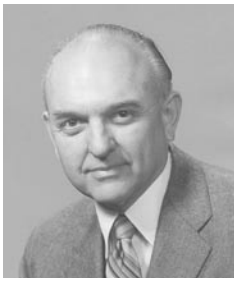
He was (illegible) that I (illegible) no carotid pulse. I immediately began closed chest massage. A pulse was obtained at the carotid and femoral pulse levels.

Dr. Perry then took over the cardiac massage so I could evaluate the head wound. There was a large wound beginning in the right occiput extending into the parietal region. Much of the skull appeared gone at brief examination. The previously described lacerated brain was present.

By this time an EKG was hooked up. There was no electrical activity of the heart and no respiratory effort—he was pronounced dead at 1300 hrs by me.

W. Kemp Clark
22 Nov 1963, 1615 hrs

Henry D. Garretson, MD



Henry D. Garretson, MD, the 1987–1988 AANS president, and his wife, Marianna Garretson, died in an airplane crash on Dec. 8. Dr. Garretson was flying a single-propeller Cessna when it went down in a wooded area of Bardstown, Ky.

Dr. Garretson's interests in neurosurgery included cerebral circulation and intracranial vascular lesions, cell kinetics of glioblastoma multiform, intracranial pressure physiology, cerebral arteriovenous malformations and "alert" anesthesia for cranial surgery.

In addition to serving as president of the AANS, he was president of the Society of University Neurosurgeons, the Southern Neurosurgical Society and the American Academy of Neurological Surgery. He served in leadership roles for the Society of Neurological Surgeons and American Board of Neurological Surgery.

Dr. Garretson received his medical degree from Harvard University Medical School and his doctoral degree from McGill University. He completed his residency at the Montreal Neurological Institute. He was an assistant professor of neurosurgery at McGill University from 1966 to 1971 when he was named professor and director of the Division of Neurological Surgery at the University of Louisville School of Medicine. He retired in 1997 as chair of the University of Louisville Department of Neurological Surgery, and he became emeritus professor in 1998, the year in which a $3 million chair was endowed in his name.

He was born on June 8, 1929, in Woodbury, N.J., and grew up in Tucson, Ariz., and he was a U.S. Navy flight surgeon from 1955 to 1958. NS

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CALENDAR/COURSES

February

18-19
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Feb. 18–19, 2008, Tel Aviv, Israel
www.neurophysiology-symposium.com

18-19
2008 AANS/CNS Cerebrovascular Section Meeting
Feb. 18–19, 2008, New Orleans, La.
www.neurosurgery.org/cv

20-22
American Heart Association/American Stroke Association International Stroke Conference 2008
Feb. 20–22, 2008, New Orleans, La.
www.strokeconference.org

20-23
Symposium on Anesthesia & Perioperative Medicine
Feb. 20–23, 2008, Phoenix, Ariz.
www.mayo.edu/cme/sct-courses.html

21-24
AO North America Advanced Concepts in the Management of Spinal Disorders
Feb. 21–24, 2008, Sun Valley, Idaho
www.aona.com

23-27
Neurosurgery in the Rockies
Feb. 23–27, 2008, Beaver Creek, Colo.
www.uchsc.edu/cme

24-28
The Winter Clinics for Cranial & Spinal Surgery
Feb. 24–28, 2008, Snowmass Village, Colo.
www.winterclinics.com

March

1-2
4th International Conference & Scientific Seminar
March 1–3, 2008, Dhaka, Bangladesh
nausher_alam@yahoo.com

7
Interurban Neurosurgical Society
March 7, 2008, Chicago, Ill.
(715) 542-3201

13-15
34th Annual Barrow Symposium
March 13–15, 2008, Phoenix, Ariz.
thebarrow.org/education/continuing_education

April

12-19
American Academy of Neurology 60th Annual Meeting
April 12–19, 2008, Chicago, Ill.
www.aan.com/go/am

26-May 1
76th AANS Annual Meeting
April 26–May 1, 2008, Chicago, Ill.
www.aans.org/annual/2008

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EOE

Patrick W. McCormick, MD

Asymptomatic Severe Cervical Spinal Cord Compression

Toward Consensus: Case Presentation

The following case presentation is intended to assess current practice habits for common neurosurgical challenges when class I evidence is not available.

Surgical Decision-Making for a Patient With Asymptomatic Severe Cervical Spinal Cord Compression

The patient is a 60-year-old vigorous male who enjoys cycling and inline skating. He injured his shoulder in a fall, and an MRI of the shoulder demonstrated an incidental finding of cervical stenosis. The radiology report suggested a dedicated cervical MRI, which showed significant cord compression with an anteroposterior deformity and T2 signal change. Neurosurgical consultation was requested for evaluation and clearance for general anesthesia for a rotator cuff repair.

The medical history is unremarkable: no medications, no prior illness, no prior surgeries.

The patient's history is negative for any symptom of subtle myelopathy including no decreased dexterity or sensory change of the hands, no change in axial balance, no deterioration in bladder control, no gait abnormality or difficulty with running. The cervical spine is pain-free. Neurological examination is unremarkable except for limitation of the right shoulder joint and associated segmental strength evaluation.

The MRI (Figure 1) demonstrates severe segmental cord compression with deformity of the spinal cord and increased intraspinal T2 signal.

Figure 1. The MRI demonstrates severe segmental cord compression with deformity of the spinal cord and increased intraspinal T2 signal.

QUESTION: Please indicate how you would proceed for this patient by answering the five multiple choice survey questions at www.aasnneurosurgeon.org (select the Gray Matters Survey link in the tool bar and take the survey, Asymptomatic Severe Cervical Spinal Cord Compression); an optional comment field is provided at the survey's end.

Considerations

No class I evidence exists to address the issue of surgical decision-making for a patient with asymptomatic severe cervical spinal cord compression. The prevalence of cervical stenosis in cadavers (anteroposterior view of canal diameter < 12 mm) is 6.8 percent over age 50 and 9 percent over age 70 (5). The prevalence of incidental cervical stenosis in patients undergoing MRI of the larynx is 16 percent under age 64 and 26 percent over age 64 (7). Seven percent of these patients had significant cord compression with flattening in the anteroposterior diameter.

The natural history of untreated cervical stenosis is uncertain. In athletes who participate in contact sports, cord symptoms occur at a low frequency (2, 6). The positive predictive value of a Torg ratio less than 0.8 for developing cervical cord neurapraxia was 0.2 percent (8). In the author's experience central cord syndrome associated with low impact injuries is a familiar reason for emergent consultation particularly for patients over age 60.

Described surgical indications include a transverse spinal cord area of 40 square millimeters or less independent of the presence of clinical symptoms (4). Asymptomatic patients under 65 years of age at risk of quadriplegia with mild trauma may warrant prophylactic decompression (1). The patient's input and his or her full awareness of potential serious complications should guide decision-making (3). NS

Patrick W. McCormick, MD, FACS, MBA, is associate editor of *AANS Neurosurgeon*. He is a partner in Neurosurgical Network Inc., Toledo, Ohio. The author reported no conflicts for disclosure.

Responses: Postoperative Anticoagulation Case

AANS Neurosurgeon 16(3):24, 2007

CASE: Postoperative Anticoagulation for a Patient With Surgically Treated SDH and Intermittent Atrial Fibrillation

QUESTION: When and how should anticoagulation be restarted postoperatively in a patient with a surgically treated subdural hematoma and a symptomatic condition (intermittent atrial fibrillation) requiring this treatment?

The following responses to the Gray Matters postoperative anticoagulation case reveal a range of decision-making factors and courses of action. Readers are invited to review and weigh in on this case by going to www.aansneurosurgeon.org, selecting the Gray Matters Surveys link, then taking the Postoperative Anticoagulation survey.

I like to wait six weeks postoperatively. If the cardiologists are pushing me, I will go to four weeks. If the cardiologists insist on a shorter period, I insist that the cardiologist and I speak to the patient together and explain in detail the risks and benefits of restarting anticoagulation versus waiting longer, and let the patient (or family) decide.

Steven Barrer, MD, Abington, Pa.

Start full dose anticoagulation postoperatively and follow with periodic CT imaging. In my experience, the risk of thromboembolism is much greater than the risk of recurrent bleeding when followed by trained caregivers and CT scans.

Samuel Brendler, MD, Longmeadow, Mass.

I treat each patient differently. In the community where I practice there are many patients on anticoagulants for varying reasons. My partners and I also are the only neurosurgeons at a level 2 trauma center. I look at the underlying reason for anticoagulants. If it is strictly prophylaxis without any embolic or thrombotic events, then I tend to wait about three-to-four weeks. If patient has had history of pulmonary embolism or deep-vein thrombosis, then I will drop down to one week. I will usually tell the patient and/or the family about the risks of anticoagulants to the central nervous system.

John A. Gastaldo, MD, Lancaster, Pa.

If the patient must be on warfarin, I would wait one week before restarting anticoagulant therapy. I would not bolus with heparin on the restart or bridge with Lovenox [enoxaparin]. I would simply have warfarin restarted with the INR [international normalized ratio] goal of 2–2.5 very, very strictly adhered to. Risk of bleed goes way up with INR > 4.0–4.5. Even if the patient is without symptoms, I would get a head CT scan about one-to-two weeks after anticoagulant therapy. If a recurrent bleed is present, I would discontinue anticoagulant therapy for life.

Kamal Kalia, MD, Springfield, Mass.

Unless the use of anticoagulation is established as safe after removal of a subdural hemorrhage, neurosurgeons will not use medications like Coumadin. The downside is that a patient may rebleed into the subdural space, now with an acute subdural hemorrhage that would require a craniotomy with anticipated high morbidity or mortality along with a medical malpractice lawsuit. Unlike the orthopedic procedures, neurosurgeons have to be worried about even a small amount of bleeding in a postoperative site. Thus, we will continue to be against the use of anticoagulation in this setting.

Scott Lederhaus, MD, Pomona, Calif.

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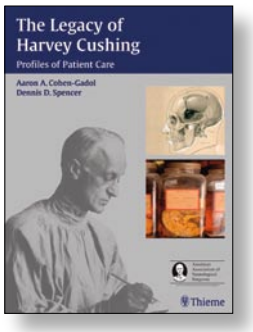
TAKE THE SURVEY

- **Web Address:** www.aansneurosurgeon.org
- **Take the Gray Matters Survey:** Asymptomatic Severe Cervical Spinal Cord Compression
- A synopsis of all responses will be published in the next issue.

Gary VanderArk, MD

Legacy of Harvey Cushing

Rare Photos Reveal Neurosurgery's Infancy, Patients' Humanity



The Legacy of Harvey Cushing: Profiles of Patient Care, Aaron A. Cohen-Gadol, MD, and Dennis D. Spencer, MD, 2007, Thieme, New York, N.Y., and AANS, Rolling Meadows, Ill., 584 pp., $129.95 (AANS members, $117).

This is a great big beautiful book that every neurosurgery resident should be required to read. As Aaron Cohen-Gadol says in the preface:

> This book is a recognition of the Cushing patients for their gift to neurosurgery. The emotional expressions on their faces more than words convey their suffering and senses of uncertainty. In this book, we witness suffering and renew our oath to care for our patients with passion and to honor their trust in our hands.

This is a book of photographs, photographs that have been painstakingly preserved at Yale Medical School, the home of the Cushing's Brain Tumor Registry. These are photographs that allow us to see real patients with very real pathology.

The introduction is Michael Bliss' essay presented to the 2006 Annual Meeting of the Congress of Neurological Surgeons—an essay that reviews Cushing's life and puts things into proper perspective by closing with the quote by Stephen Paget with which Cushing famously concluded his commencement address to young doctors, "Consecratio Medici": "… if a doctor's life may not be a divine vocation, then no life is a vocation, and nothing is divine."

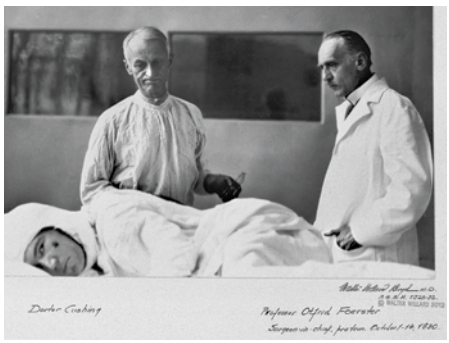
After an explanation and history of the registry, the book is divided into seven divisions or chapters: pituitary tumors and other parasellar lesions (13 cases); gliomas and other malignant tumors (14 cases); meningiomas (13 cases); cerebral aneurysms and arteriovenous malformations (five cases); spinal tumors (10 cases); posterior fossa tumors and other pathologies (20 cases); and special illustrations, additional operative sketches, teaching slides, and operating room photographs. Each division has an introductory text written by experts in each respective subject. As in most multiauthored books, the quality and depth of subject is variable.

The case histories and operative notes are in Cushing's own words and are obviously from an earlier era since their honesty and openness are no longer seen in today's litigious world. Statements of greatest interest have been placed in boldface print by the editors. This makes many memorable words of Cushing impossible to miss. There are, however, many priceless comments which have not been given boldface emphasis.

What an amazing legacy Harvey Cushing gives to us all! He brings to us 2,000 brain tumor patients who all had pre- and postoperative photographs and meticulous medical records created and preserved. As the editors point out, each patient is of historical significance now because our discipline of neurological surgery evolved through his or her care. This book allows us a unique glimpse into a world of a century past. Wilder Penfield was right when he described Cushing as "an artist, a Leonardo da Vinci devoting his talents to surgery."

Read this book. Do not miss the legacy that the father of American neurosurgery has left us. **NS**

Gary VanderArk, MD, is clinical professor of neurosurgery at the University of Colorado Health Sciences Center in Denver. He is the 2001 recipient of the AANS Humanitarian Award. The author reported no conflicts for disclosure.



This photo of Dr. Cushing (left) and Dr. Forster appearing puzzled about the patient's condition is published on page 535 of *The Legacy of Harvey Cushing: Profiles of Patient Care.*

K. Michael Webb, MD

Becoming a Physician-Scientist

To Do the Research, First Get the Grant

Every neurosurgery residency requires at least one and often two years of research. Unfortunately, various factors have made research funding increasingly scarce, particularly for residents. Knowledge of research money sources and the grant writing process can help one be more productive during residency as well as foster a professional career afterward as a true physician-scientist.

Generally, research funding comes from either government or private sources. Sources of federal government funding can be found in the Catalog of Federal Domestic Assistance, an exhaustive source of all federal funding programs, including research grants. Many state governments also offer research funding.

The most familiar source for federal research funding is the National Institutes of Health. NIH grants are known by their series letter and number, and the most common of these grants available during residency are the T, F, and K series grants. Training, or T series, grants are issued to institutions. Although it is unlikely that residents would be able to write T series grants, residents may be able to get funding through a faculty member at their institution if it has received this type of grant. Also available to residents are the Fellowship (F) and Career Development (K) series grants, particularly the K08, K32 and the K99/R00 grants. The K99/R00 grant, or Pathway to Independence Grant, merits particular attention to those desiring a career in academics because it allows one to receive a K series grant before a faculty position has been accepted.

Another source is the Neurosurgery Research and Education Foundation. The NREF offers the Young Clinician Investigator Award, which is only available to junior faculty, and Research Fellowships. The Research Fellowships, available to residents, provide a two-year stipend of $70,000 or a one-year stipend of $40,000 for a specific research project. A complete listing of NREF research funding opportunities can be found on the AANS Web site.

Other funding resources include the Congress of Neurological Surgeons and AANS/CNS sections, which offer similar opportunities for research funding to residents both individually and in conjunction with nonprofit organizations and industry. In addition, GrantsNet, offered by the American Association for the Advancement of Science, is a searchable database of biomedical and science funding opportunities.

Once a funding source has been identified, the next step is to write a grant proposal. Grant applications may vary in form but will almost certainly address research goals, background and significance of the proposed research topic, preliminary studies the investigator has done, research design and methods, and possibly personal background information. Since research funding is limited, reviewers place a great deal of importance on the probability of success of a research project.

There are a number of resources available on the specifics of grant writing, and one should certainly consult them thoroughly while writing a grant. In general, however, reviewers are asking three fundamental questions. First, is this an important topic worth investigating or a new, innovative research technique? Second, does the research design accurately investigate the subject matter? Third, does the investigator have the resources, both personal and institutional, to carry out the proposed project?

The first two criteria are fairly objective, so the key is to be detailed, display a thorough knowledge of the subject, provide a context for this specific project, and up-to-date with references. However, the last criterion can be somewhat political and subjective. Choosing an experienced mentor with the necessary resources and highlighting one's personal experience with research can be essential to success.

In summary, there are many sources for research funding, including governmental, private, and through the neurosurgical organizations. Attention to detail, choosing the proper mentor, and emphasizing in the grant application the probability of success will help maximize success in receiving the grant. NS

K. Michael Webb, MD, is a founding partner with NeuroTexas PLLC, Austin, Texas. Send topic ideas for Residents' Forum to Dr. Webb at aansneurosurgeon@aans.org. The author reported no conflicts for disclosure.

Amy Lynn Sorrel

Attorneys Chastised for Wanton Behavior

Physicians Challenge Lawyers' Meritless Liability Suits—and Win

Physicians say a series of favorable court rulings is turning the tide in their crusade against frivolous medical liability lawsuits. Three Ohio courts in six months sanctioned plaintiff lawyers for pursuing unsupported claims against three doctors. Judges awarded the physicians their legal expenses. In New Orleans, the 5th U.S. Circuit Court of Appeals upheld a similar award to a Mississippi doctor Nov. 13.

The courts chastised the attorneys for wanton behavior including: suing the wrong doctor; refiling a claim against a physician even though the plaintiff's expert withdrew his testimony the first time around; and having no expert testimony against one doctor yet failing to drop the case.

Beyond the money, doctors hope the hard-won victories in cases that often are difficult to prove send a message that deters lawyers from filing baseless claims in the first place.

"We are not trying to prevent legitimate claims. But these are egregious cases where there is absolutely no merit, whether through laziness or negligence or refusal [by trial lawyers] to do due diligence," said Almeta Cooper, Ohio State Medical Association general counsel. The society took on the three Ohio cases through its Frivolous Lawsuit Committee, a program that educates physicians about the practice and helps them defend against it.

Cooper said the rulings "encourage trial judges who see abusive conduct to take action ... and it helps physicians understand the system is not completely stacked against them."

On top of tort reform, proactively challenging meritless cases is another way to reduce the frequency of bad claims and curb rising liability insurance costs, said neurosurgeon Jeffrey Segal, MD, founder and CEO of Medical Justice. The national company sells insurance policies that give doctors legal resources to combat frivolous claims. For example, when a client physician receives notice that a patient is considering filing a lawsuit the doctor believes is frivolous, the company sends a letter to the lawyer that the physician may countersue. As a result, Segal said, only 11 percent of these instances then materialize into a lawsuit.

Plaintiff attorneys are allowed to advocate for patients, Dr. Segal said. But "where physicians go crazy is with frivolous testimony delivered by an expert witness, and the first order of business is to look at the testimony. We try to put the two together and hold the attorney accountable for his expert witness."

Trial lawyers agree that punishment may be justified if an attorney completely eschews his or her responsibilities and maliciously pursues a case. But such conduct is rare, said Jeff Boyd, executive director of the Ohio Association for Justice, the state trial lawyers organization.

"There really is no moral or economic incentive for plaintiff lawyers to file frivolous cases" and take on the often expensive and complicated negligence suits in bad faith, he said.

Penalizing lawyers who have shown no ill will could have a chilling effect on medical liability cases, said Paul Perantinides, a plaintiff attorney in one of the Ohio cases.

"It has a huge impact designed to put the onus on lawyers, so when they look at these cases, instead of asking, am I doing the right thing for the patient, the lawyer is going to say, if I keep [this doctor] in, there's a chance he may come against me."

Perantinides added that plaintiff attorneys must rely on expert testimony when filing their cases and said lawyers should not be held responsible when a claim ends up lacking in merit due to an expert's actions.

Ohio Courts Scrutinize Lawyers' Actions

Two Ohio courts saw differently. Both cases arose before a 2005 law requiring lawyers to attach an expert affidavit with each case filing.

A trial judge on Oct. 18 sanctioned two plaintiff lawyers for frivolous behavior and good-faith

Continues ▶

▶ Continued

violations because they sued bariatric surgeon Mark T. Jaroch, MD, twice without adequate supporting testimony.

The plaintiff's expert in 2002 withdrew his opinion that Dr. Jaroch did something wrong when he operated on a patient who lost portions of fingers after the surgery. Dr. Jaroch denies any wrongdoing. Plaintiff attorneys dropped the case but refiled it in 2003 using the same expert, who again withdrew his criticism.

Dr. Jaroch said his career "came to a standstill" as a result of the case. He had to shut down his practice because his medical liability insurer increased his rates by $100,000.

"The crux of the whole issue is: Is an attorney required to understand the nuances of the case or is he just a maitre d' serving up witnesses?" Dr. Jaroch said. "They should have done their homework."

Matthew Fortado, a lawyer sanctioned in the case, declined comment but said he and the other sanctioned attorney are appealing.

Akron, Ohio, thoracic surgeon Michael A. Oddi, MD, was in Iraq with the Army Reserve in 2004 while fighting a lawsuit filed against him without any expert testimony. Dr. Oddi assisted in a coronary bypass surgery in which the patient died from blood loss. He denies any negligence.

An appeals court on Sept. 26 said the plaintiff's attorney, Perantinides, acted frivolously when he failed to voluntarily dismiss the unfounded claim, forcing Dr. Oddi to incur the legal expenses. But Perantinides said Dr. Oddi's role in the surgery did not come to light until later in the discovery process. Perantinides said he believed he was protecting the patient. He declined to comment on whether he will appeal. Hearings to decide the amounts awarded to Dr. Jaroch and Dr. Oddi are not yet scheduled.

Cleveland orthopedic surgeon Michael A. Banks, MD, won the $4,500 in attorney's fees he spent defending a lawsuit filed against him despite the patient's statement to her counsel that Dr. Banks was not the doctor who mistreated her. The Ohio Supreme Court on Oct. 15 denied plaintiff lawyer John E. Duda's appeal, letting the award stand.

In Mississippi, McComb otolaryngologist Lawrence E. Stewart, MD, will recoup $4,500 in a similar fight. The 5th Circuit sanctioned Charles E. Gibson III and his firm for wrongfully suing Dr. Stewart instead of his deceased father yet refusing to drop the claim even after discovering the mistake. The Mississippi State Medical Association and the American Medical Association/State Medical Societies Litigation Center contributed

Taking Plaintiff Lawyers to Court

Here is a snapshot of recent rulings in cases in which physicians have sued to try to hold lawyers accountable for filing meritless lawsuits.

5th U.S. Circuit Court of Appeals, New Orleans

Case: Sarah N. Ratliff and Charles E. Gibson III, v. Lawrence E. Stewart, MD, elder

Result: In November, the court sanctioned trial lawyers for suing the wrong doctor and then failing to drop the case when court evidence showed the attorneys knew about the mistake. The court awarded the Mississippi doctor $4,500 in legal fees. "It is not even a close question. … [The plaintiff] attorneys had misused the judicial process. … The continued conduct was so outrageous that the court could infer an 'improper purpose' by the attorneys' otherwise inexplicable obstinance."

Ohio Court of Appeals, 9th Judicial District

Case: Gisele Ponder v. Robert W. Kamienski, MD, et al.

Result: In September, the court sanctioned a trial lawyer for not obtaining expert testimony to support a negligence claim against a physician and for failing to dismiss the doctor from the case. "This refusal to act only served to extend the time during which a lawsuit remained pending against [Michael Oddi, MD … and] caused Dr. Oddi to endure the expense."

Court of Common Pleas, Summit County, Ohio

Case: Brenda Callahan v. Akron General Medical Center, Mark T. Jaroch, MD

Result: In October, the court sanctioned two trial lawyers for refiling a second claim against a doctor and failing to promptly dismiss the first one, after the plaintiff's expert withdrew his testimony both times. "What reasonably should have been done … in preparing to file the case(s) … was not done. … At some point in these proceedings plaintiff counsels adopted a 'damn the torpedoes' attitude."

Ohio Court of Appeals, 8th Appellate District

Case: Marie Sigmon v. Southwest General Health Center et al.

Result: In May, the court sanctioned a trial lawyer for wrongly naming a physician in a medical liability case when court evidence showed that the patient told her lawyer it was another doctor who mistreated her. The state Supreme Court in October denied the plaintiff lawyer's appeal, allowing a $4,500 award to stand. "If [the plaintiff lawyer] had dismissed this matter when he realized the case lacked merit, he would have spared the defendants the time and expenses."

financially to Dr. Stewart's defense.

Duda and Gibson did not return calls for comment.

Despite the victories, legal experts warn that frivolity and bad faith are tough to prove, and courts are afraid of shutting out legitimate claims.

Boston plaintiff lawyer Barry D. Lang, MD, said, "Simply because [a doctor] has expert support on his side doesn't mean that [the plaintiff] attorney is doing anything frivolous."

Also, medical liability insurers typically don't cover the cost of fighting frivolous conduct, OSMA's Cooper said, so the society's Frivolous Lawsuit Committee offers doctors legal assistance and monetary help.

Doctors say they are reluctant to drag out an already difficult experience. But they hope these decisions will make the battle a bit easier. NS

Amy Lynn Sorrel is a staff writer for American Medical News. Reprinted, with permission, from American Medical News 50;1–2, 2007.

CODING CLARITY

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also were formerly considered –51 modifier exempt codes. However, these codes almost always are used with another procedure, typically an arthrodesis, and the CPT editorial panel decided to move them to the add-on appendix. Although they will remain exempt from application of the –51 modifier, these codes will follow the rules of add-on codes. As a result, CPT will include a list of primary codes to which the instrumentation codes can be "added on." Although intuitively it would seem that these codes should be added on to arthrodesis codes, there are examples of decompression with interbody placement of polymethylmethacrylate without arthrodesis but with instrumentation. I recommend that your coding staff review the list of primary procedures with which instrumentation codes can be used.

Although only a small set of new codes developed for 2008 applies to neurosurgeons, several significant changes occurred in existing codes that the neurosurgeon should be aware of. Early review of these changes should help minimize denials for improper coding in 2008. NS

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Michael Schulder, MD

E-Books for Your Library?

Books on Paper Are Tactile Treasures

Odds are you have heard of the Kindle, a new electronic book "reader" made and sold by the online retailer Amazon.com. The company's goal (besides making lots of money) is to make the reading of digital books the preferred routine. There have been other such attempts, but these were not accompanied by the revolutionary zeal of the Amazon CEO Jeff Bezos. He intends to be the Gutenberg of 0s and 1s, and the readability of the Kindle—specifically its book-like look—makes one think it just might happen.

At the same time, people around the world are reading less, a sad fact documented most thoroughly in the United States in a variety of surveys over several decades. Fewer books are read, less time is spent reading them, and reading test scores have declined slowly. These changes can be correlated with the increasing penetration of television—not proof of causation but pretty obvious nonetheless. Sociologists speculate that reading may become "an increasingly arcane hobby" of a specific class. Scholastic, publisher of children's books including the Harry Potter juggernaut, recently committed to a new book series that features Internet games and cash prizes. The online move from text to video-based information suggests that salvation for reading will not come from the Internet.

These two trends, the decreasing interest in books on the one hand, and the move away from the printed volume on the other, are enough to make a bookworm stay curled up in a tome. Yet medical book collecting has been a favored hobby of neurosurgeons in the century or so since our specialty was created. Harvey Cushing, of course, was an obsessed bibliophile who left a historical collection of great importance to Yale Medical School. In this he was influenced by his mentor and role model, William Osler, whose collection surpassed even Cushing's and which now resides at McGill University. Geoffrey Jefferson was an admirer of Cushing and Osler, and he took up the hobby as well. In an amusing essay he notes the horror at which a collector reacts when asked if he actually has read any of his books.

Starting and building a book collection is more feasible than you might think. As with other items, the key is to focus on a topic of your interest.

Starting and building a book collection is more feasible than you might think. As with other items the key is to focus on a topic of your interest. Any value you may accumulate over time will result from your passion rather than pure investment-driven purchases. And not everyone can or should seek a Vesalius. As a neurosurgeon you may take particular pleasure in buying a biography of Victor Horsley, Walter Dandy's treatise on third ventricular tumors, or an 18th century work of Percival Pott. Any of these can be obtained for well under $1,000.

Neurosurgeons will continue to read to stay current. Perhaps we will indeed do more of our journal reviews in digital format. Maybe every book ever published will someday be available on a Kindle or its kin. But there is a distinct pleasure in holding old and used medical books and thinking of the bygone practitioners who used them and for whom these works were contemporary. And yes, they sure do look good on the shelf. NS

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