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PARTNERING WITH
YOUR HOSPITAL CAN BE
GOOD FOR YOU

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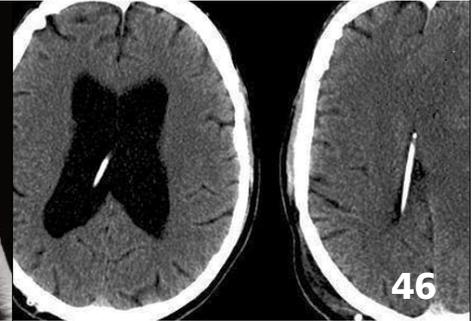
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AANS MISSION

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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AANS Neurosurgeon seeks submissions of rigorously researched, hypothesis-driven articles concerning socioeconomic topics related to neurosurgery. Selected articles are reviewed by peer-review panelists. Papers must comport with the appropriate instructions for authors.

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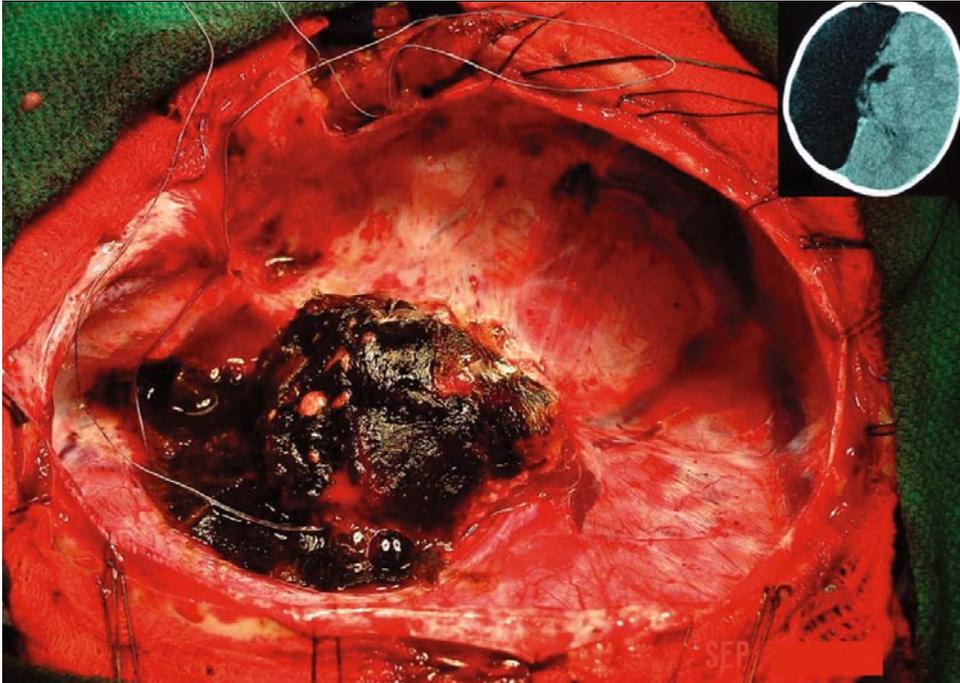
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FRONTLINES

NEWS TRENDS LEGISLATION



IN THE LOUPE

Hemispherectomy for Hemimegalencephaly: Intraoperative photo of the resection cavity and postoperative CT scan (inset) following a right-sided anatomic hemispherectomy for hemimegalencephaly in a three-year-old child. Images are courtesy of William E. Bingaman, MD, Cleveland Clinic, Cleveland, Ohio. No potential conflicts of interest were disclosed.

Sunshine Returns

Senate Considers Sunshine Act of 2009; AdvaMed and NASS Revise Their Policies Governing Industry-Physician Interaction

The Physician Payments Sunshine Act of 2009 introduced in the U.S. Senate in January is a more robust version of the 2008 Sunshine Act. A notable change is the lower threshold for disclosure of industry payments to physicians: Payments of \$100 or more would be posted to a Web site. The bill, S. 301, also is inclusive of all types of compensation: cash, in-kind items or services, stocks, stock options, dividends or other profits, and “any other form of payment or other transfer of value.” It further requires medical companies to disclose the dollar amount of ownership or investment interest held by each physician in their company and imposes penalties up to \$1 million for “knowing failure to report.” Sen. Charles Grassley introduced the bill on Jan. 22, and it was then referred to the Finance Committee, which Sen. Grassley chairs.

<http://thomas.loc.gov>

In related moves, both the North American Spine Society and the Advanced Medical Technology Association recently strengthened their respective policies for physician-industry interaction. The NASS now requires surgeons volunteering in NASS leadership roles, presenting at NASS continuing medical education activities, or publishing in NASS

Continues ►

▲ **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.

► Continued

vehicles to disclose both industry relationships and the estimated dollar amounts of resulting industry payments to them. The estimates to the nearest \$1,000 are converted by NASS to ranges of payment that are published. Sanctions for those failing to disclose include suspension or expulsion from NASS or public letters of censure.

www.spine.org

AdvaMed announced a major update of its Code of Ethics on Interactions with Health Care Professionals in December 2008. AdvaMed said in a press release that the revised code further distinguishes appropriate from inappropriate activity between healthcare professionals and representatives of AdvaMed member companies. For example, the revised code completely prohibits member companies from providing entertainment or recreation to healthcare professionals as well as gifts of any type, including all noneducational branded promotional items, regardless of value, and provides guidelines for companies entering into royalty arrangements with healthcare professionals. It also clarifies ethical behavior regarding consulting agreements, company-conducted training and education, and research and educational grants.

www.advamed.org

Retention Initiatives Keep Physicians in Practice

A recent survey of physician groups found a lower turnover rate among physicians in 2008 than in 2006. For the 2008 Physician Retention Survey, the American Medical Group Association surveyed all of its members in late 2008 and found that family matters and poor cultural fit were the top reasons given by physicians who leave a practice voluntarily. The survey found that retention initiatives such as flexibility through reduced hours, educational loan forgiveness, bonuses, and mentoring new physicians can keep physicians in the practice.

www.amga.org

Sibelius Tapped for HHS Role

Kansas Gov. Kathleen Sibelius is President Obama's nominee for Health and Human Services secretary, an office that oversees the Centers for Medicare and Medicaid Services, the Food and Drug Administration, the Centers for Disease Control and Prevention, and the Agency for Healthcare Research and Quality, among other agencies. In the March 2 announcement, the president noted that "we can't fix the economy without fixing healthcare." He also appointed Nancy-Ann DeParle as the director of the White House Office of Health Reform. Tom Daschle, the president's

original choice for both posts, withdrew his name from consideration on Feb. 4.

IOM Wants More Restrictions on Resident Work Hours

In a report released in December 2008, the Institute of Medicine recommended additional restrictions on the work schedules of residents, including: a limit of 16 hours per shift unless an uninterrupted five-hour break for sleep is provided for shifts that last up to 30 hours; regular days off and variable off-duty periods between shifts to increase opportunities for sleep; and counting both internal and external moonlighting as part of the 80-hour workweek. In a press release, organized neurosurgery detailed several concerns regarding these recommendations, among them the financial impact on training programs, the possible need to lengthen training to adequately train residents, and patient safety. "The IOM committee, in making these recommendations, has failed to adequately consider the key patient safety issues—the considerable risks associated with too many patient handoffs and lack of continuity of care in complex neurosurgical disease or injury cases," remarked AANS President James R. Bean, MD.

www.aans.org, article ID 55353; www.iom.edu

Health 2.0 Popularity Doubles

More people are using the Internet as a health information resource, and more information is becoming available to them on the Web. Over 60 million U.S. adults, more than double the number of the previous year, use "health 2.0," defined as health blogs, online support groups, prescription rating sites, and other health-related social media applications, according to a study by Cybercitizen Health.

www.manhattanresearch.com/newsroom

Biomarker-Based Diagnostic Test for Acute Stroke

A study published in the October issue of *Stroke* found that a biomarker panel may add valuable and time-sensitive diagnostic information in the early evaluation of stroke. Laskowitz and colleagues studied 1,146 patients presenting with neurological symptoms consistent with possible stroke at 17 different sites. Their diagnostic tool detected all stroke 86 percent of the time and hemorrhagic stroke 94 percent of the time. The authors found their approach to be feasible at point-of-care and suggested that together with readily available clinical data it would aid in the early evaluation and management of patients at high risk for cerebral ischemia.

<http://stroke.ahajournals.org> **NS**



PARTNERING WITH YOUR
HOSPITAL CAN BE
GOOD FOR YOU

For some neurosurgeons the suggestion to partner with a hospital is akin to the parental admonition, “eat your peas,” perhaps generating a grimace of distaste underscored by incredulity that such an act actually could be “good for you.”

In fact, in the *AANS Neurosurgeon’s* most recent Random Sample survey (page 16), about half of the neurosurgeons responding felt that hospitals were uninterested in negotiating with them. But a solid majority agreed that a collaborative arrangement or joint venture with a hospital could benefit their practice financially.

As several authors in the following articles point out, the relationship between hospital administrators and neurosurgeons frequently is perceived by each as adversarial. The transition in hospital administration from those with medical training to those with a business background and the resulting divergence of goal prioritization as well as methods for goal achievement may lie at the root of the “us versus them” mentality.

Yet excellent patient care forms the core of success for each party. With that in mind, the following articles encourage taking a fresh look at the practice environment. They suggest that creativity, preparation and persistence are among the tools that can foster a more symbiotic and profitable relationship, a circumstance in which a neurosurgeon-hospital partnership can be more than palatable.

Continues ►

Neurosurgeon-Hospital Partnerships

Strategies for Mutual Success

CLARENCE B. WATRIDGE, MD

Neurosurgeons require hospital resources in order to practice. At the same time, full-service hospitals require neurosurgical services. Yet the relationship between neurosurgeons and hospital administrators perhaps never has been more strained. What is at the root of this difficulty? Money.

Neurosurgeons are experiencing unrelenting downward pressure on reimbursement for their professional services. This occurs at a time when practice costs continue to escalate. Physicians are paid mainly on the basis of a Medicare fee schedule that relies on the flawed sustainable growth rate formula. Most insurance companies in turn have aligned their payment schedules with the Medicare fee schedule. Hospital payment, on the other hand, is based on the Medicare economic index, and hospital payment schedules generally have increased each year while physician payment schedules have declined.

Competing Views and Needs

Neurosurgeons often have the perception that hospitals are making excess amounts of money and are relatively unthreatened by economic problems. For their part, hospital representatives have the same concept of neurosurgeon wealth as the public: They are rich, have big houses, drive nice cars, take luxurious vacations and make more money than they can use. In fact, hospitals and neurosurgeons are experiencing similar economic pressures while insurance companies, the pharmaceutical industry and device manufacturers are performing quite well financially.

Besides money, several misperceptions fuel conflict between hospital administrators and neurosurgeons. Many neurosurgeons erroneously assume that hospitals are fully aware of medical practice issues. While hospital administrators are aware of many such issues, they primarily are occupied with managing hospital issues. They do not have the exposure, experience or need to explore the full extent of neurosurgical practice implications. Many neurosurgeons



further believe it is the hospital's responsibility to ensure neurosurgical practice success. In fact hospital administrators may have a conflict of interest concerning certain issues of specialty care and physician well-being.

So what do hospitals need? The hospital needs a medical staff to provide medical care. Hospitals cannot practice medicine. It still takes a licensed physician to order drugs, admit patients to the hospital, and perform surgeries. Hospitals are unable to generate appropriate program development without physician direction. Physicians provide much of the hospital ancillary staff education. The hospital requires a functional medical staff committee structure for Joint Commission certification, without which the hospital cannot receive payments for services or allow patients to be admitted. Hospitals additionally need to develop a reputation for patient satisfaction in order to attract new patients.

Ripe for Negotiation

To stay in business hospitals also must post a profit, and neurosurgical practices are profitable for hospitals. Some have said that an average neurosurgical practice contributes \$2.1 million to a hospital's margin. Neurosurgeons, too, must be financially successful to continue in practice. Hospitals and neurosurgeons can experience mutual success in numerous ways, several of which are explored in this article.

Emergency Coverage Stipends. All hospitals that have neurosurgical services and an emergency department are federally mandated to provide emergency neurosurgical services. Physicians may negotiate an emergency coverage stipend, or “call pay,” but hospital administrators do not particularly like this arrangement as once they pay neurosurgeons for call, other specialists line up for call reimbursement as well. While emergency coverage stipends are an important source of neurosurgical support, other relationships may be mutually more attractive.

Consultation and Patient Transfer Agreements. Consultation and transfer agreements can be developed by hospitals and neurosurgeons to make neurosurgical services available. Hospitals that provide neurosurgeons who are readily available to answer consultation requests and accept referrals from other facilities can market the service in the community, while hospitals without a full staff of available neurosurgeons lose market share and as a result lose money.

Hospital Employment. Hospital profits from successful neurosurgical practices are significant, and reasonable salaries for hospital-employed neurosurgeons are justifiable. Hospital employment may be a particularly attractive arrangement for early career neurosurgeons or for neurosurgeons in subspecialty areas that are less financially rewarding than others. Pediatric and functional neurosurgery subspecialties are two examples. In addition, hospital-employed neurosurgeons can be included under the corporate liability umbrella, mitigating the high cost of liability insurance. Their productivity can be assessed in several ways: relative value units, patient encounters, and charges are a few. However, neurosurgeons who are hospital employees must realize that their autonomy is limited as they are under the supervision of the administration. In addition, when this model becomes unsatisfactory for the hospital, the neurosurgeon has to find another arrangement.

Fees for Teaching Faculty. Hospitals with teaching missions and neurosurgical residency programs have additional options. Many hospitals with neurosurgical services have residents and graduate medical education dollars available to support the teaching faculty. Hospital reimbursement to teaching faculty is expected because of the time and energy required for provision of these services. Hospitals that pay teaching faculty also have far less exposure to potential legal entanglement than is the case with some other arrangements. In addition, hospitals can market their status as a teaching facil-

ity to patients, attracting those who want to receive leading-edge medical care.

Neurosurgical Service Development. Development of a neuro-service line in a full-service hospital is a labor- and time-intensive endeavor that requires a physician champion. The profits of the hospital will improve with increased efficiency, decreased length of stay, and proper case management. As the full neuro-service line develops, addition of subspecialty programs will add a competitive edge for the hospital.

Hospitals need neurosurgeons for many other activities. Some examples include training and education for the nursing and surgical staff, physician extender training and intensive care unit supervision. Hospitals that develop services that will serve some neurosurgical patients, such as focused beam radiotherapy units, must have neurosurgical input. Medical directorships and programs for patient satisfaction and quality assurance are opportunities for physician services. A limited liability company formed between the hospital and the neurosurgeon to market neurosurgical services to payers is a novel idea. This structure is similar to that of a physician-hospital organization, which is a legal entity formed to negotiate contracts with payers.

Underlying these opportunities are several common goals: achieving mutually agreed-upon targets for patient satisfaction, developing quality measures, complying with tenets of the Surgical Care Improvement Project, reducing morbidity and variance in patient outcomes, realizing cost savings through technology assessment and utilization, and increasing profitability.

Cooperation Cultivates Success

Without surgical practices, hospitals die. Neurosurgical practices and hospitals that find ways to work together for the benefit of the communities they serve will have brighter futures. Developing durable partnerships that will last several years and taking into consideration the financial health of both parties are two keys to the success of these cooperative endeavors.

Given the neurosurgeon’s need for the hospital and the hospital’s need for the neurosurgeon, it behooves each to develop partnerships that not only provide for appropriate patient care but also for economic success. **NS**

Clarence B. Watridge, MD, FACS, is chair of Semmes-Murphey Clinic and associate professor in the Department of Neurosurgery at the University of Tennessee in Memphis. The author reported no conflicts for disclosure.

Neurosurgeon-Hospital Partnerships

Technology Acquisition

L. DADE LUNSFORD, MD

A true partnership between neurosurgeons and hospitals requires that each party shares in revenue, goal development, productivity assessment, cost reduction, and strategic decision-making. For neurosurgeons, active collaboration and partnership with hospital leadership is crucial for continued innovation and optimal patient care in a highly competitive market.

New technology acquisition also is critical for success in the field of neurosurgery. Most neurosurgeons wish to use the latest technologies, such as image guidance, operative microscopes, radiosurgical devices, spinal hardware for a minimally invasive approach, artificial discs, monitoring equipment, and many other examples of technologies that improve neurosurgical outcomes. However, the significant overhead costs associated with the current technology necessary for productivity in the world of neurosurgery frequently is a source of tension between neurosurgical providers and their institutions. Another source of tension is related to the revenue associated with this technology: While professional revenue has declined steadily, technical revenue has remained stable or even increased.

To maintain an optimal neurosurgeon-hospital partnership, balance between technology cost and revenue must be achieved. Moreover, the technology must enhance productivity and patient outcomes.

As a basis for negotiation with one's institution, it is important for neurosurgeons to recognize their value to an institution. A neurosurgical service represents a prime opportunity for a hospital to increase its bottom line exponentially. A hospital's net margin from technical revenue related to neurosurgery is approximately \$600,000 per 100 operative cases. This economic power provides neurosurgeons with a significant degree of leverage in negotiations with hospital administrators.

With this in mind, the following case study demonstrates the prudent acquisition and value of one particular type of technology—the Gamma Knife for

stereotactic radiosurgery—in a single institution over a 22-year period.

Case Study

Over the last 20 years, the Center for Image Guided Neurosurgery at the University of Pittsburgh Medical Center has evaluated the role, use and development of Gamma Knife stereotactic radiosurgery. We persuaded our institution 24 years ago to be the first in the U.S. to install the 201 cobalt-60 source model U Leksell Gamma Knife (Elekta AB), the fifth unit manufactured in the world. This required foresight and fortitude on the part of the physicians as well as the administrators as it represented a significant institutional investment. Over the ensuing 22 years we installed a second unit, which was converted first from model B to model C and then to model 4C, and we recently added the latest generation of the Leksell Gamma Knife, the Perfexion unit.

As a result of these acquisitions and the increasing patient load, our infrastructure increased to a staff of two outpatient coordinators, an inpatient coordinator (who handles an enormous burden relative to insurance issues), four registered nurses and one surgical technician. Four neurosurgical providers are involved in the project in collaboration with three radiation oncologists and two medical physicists. Despite the worldwide increase in the number of Gamma Knife units as well as other competing technologies, we have reached a steady volume of between 650 and 700 Gamma Knife procedures per year.

Capitalization for purchase of the Perfexion unit can be estimated at between \$4 million and \$5 million, room construction of the appropriate radiation vault at approximately \$1 million, and annual operating expenses at \$500,000. The break-even point for installation of a new Gamma Knife, based on the ambulatory technical payment by Medicare in 2008 of approximately \$8,000, is estimated at between 80 and 100 cases per year. Commercial insurance may pay between \$22,000 and \$30,000 per case. In fiscal 2006, technical charges for 618 Gamma Knife proce-

dures totaled approximately \$8 million for inpatients and approximately \$12 million for outpatients, and the estimated margin for these procedures was approximately \$6 million.

In comparison, professional revenue for Gamma Knife radiosurgery is relatively low. In 2008 the single applicable neurosurgical CPT code of 61793 provided total charges of approximately \$8 million and a total payment of about \$2 million on a volume of 1,155 codes submitted (some patients have more than one tumor treated). In addition, professional billing charges for the radiation oncologist using CPT codes 77263 (radiation therapy plan, complex), 77295 (radiation therapy field, 3-D reconstruction), and 77470 (special radiation treatment) generated approximately \$800,000 in professional revenue for 618 patients.

These ballpark figures exemplify the significant margin that exists on the technical side of Gamma Knife radiosurgery compared to the professional side. The coding changes for 2009 appear to further increase this gap.

Collaboration With Industry

Partnership with industry often is critical to the success of technology projects. Various entities recently have developed or strengthened conflict-of-interest guidelines, which has led to a significant chilling

of relationships among physicians, hospitals, and industry. While balance in this area is necessary, this rapid freezing of relationships carries long-term risks to innovation because hospitals do not have the resources or the skill to be able to produce a product. Collaborative relationships must prosper between neurosurgeons (acting as consultants), industry (creating the product), and hospitals, while protecting all intellectual property rights and providing for ethical patient care.

As the relationship between hospital administrators and neurosurgeons evolves, it is important to stress the value of collaboration, discussion, collegiality, vision, guts, risk-taking, and pursuit of innovation in technology as critical elements for the future success of our field. The great Yogi Berra once said that “the future ain’t what it used to be.” The future is somewhat cloudy at the present, but if meaningful partnerships between neurosurgeons and hospital leadership emerge or are strengthened, then neurosurgery in the U.S. can continue to be a potent force for the future. **NS**

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A MODEL FOR NEW TECHNOLOGY USE OR ACQUISITION



Even within a single department, competing agendas can exist regarding which of the latest technology is necessary. Instituting an assessment committee as described in the following model can provide the necessary framework for new technology use or acquisition.

New technology requests as well as innovative practice applications proposed by physicians who wish to use technologies in a novel manner are assessed at the University of Pittsburgh Medical Center by the Technology and Innovative Practice Assessment Committee. This committee of physicians, finance specialists, hospital administrators, nurses, and other decision-makers within the academic medical center reviews new technology requests that are not research and do not require approval by the institutional review board. The committee assesses technology proposals that have an impact of at least

\$50,000 on the institution’s healthcare budget, with the goal of obtaining sufficient data from the champion of the proposal on the merits of the particular new technology.

A merit review is done by physician peers, either by those on the committee or on the basis of an ad hoc request. If a project has been previously approved by regulatory authorities such as the Food and Drug Administration and appears to have scientific or healthcare merit, the finance arm of the committee then reviews the proposal for its downstream financial impact. The committee is designed to be relatively facile in terms of its assessments. All research activities are referred to the institutional review board, although sometimes there is a fine line between “research” and “innovative practice.”

Over the years, the committee has evaluated a variety of new technologies, including the Da Vinci cardiac robot, drug-eluting stents in cardiology, and magnetoencephalography, as well as innovative practice changes such as the timing of various rejection agents in patients undergoing liver or kidney transplantation.

Neurosurgeon-Hospital Partnerships

How Hospitals See Profitability

DEBORAH L. BENZIL, MD

While neurosurgeons recently have experienced declining reimbursements, hospital revenues have been less affected. Neurosurgeons increasingly are turning to alternative revenue sources, often partnering with hospitals. This strategy requires that neurosurgeons negotiate with hospital administrators, ideally proceeding through the three phases of negotiation: prebargaining (information/evaluation, analysis, goal-setting, and planning), bargaining (logistics, offers/counteroffers, tactics) and closure (implementation, documentation). The prebargaining stage is probably the most important: organizing facts, researching history, formulating a clear goal, identifying areas of potential compromise, and defining likely obstacles.

It is essential that the prebargaining stage includes recognizing that a hospital administrator's view of profitability often is different from a neurosurgeon's perspective. Therefore, a neurosurgeon's ability to understand the components of profitability through the eyes of hospital administrators is singularly important to a successful negotiation strategy. When approaching hospital administration, neurosurgeons must use a business model and have a clear understanding of the overall value that each neurosurgeon brings to the table as well as the potential impact of new programs or relationships.

A Profit Primer

Everyone knows what profit is. Profit is what shows up in the bank account after everyone and everything else gets paid. But many fail to recognize that raising revenues without parallel profitability only will increase the workload. In simple terms, profit can be expressed as:

$$\text{REVENUES} - (\text{COST} + \text{TIME})$$

For most neurosurgeons, revenues primarily are reimbursements for procedures, or CPT-based in-

come, while hospitals derive payment on an entirely different scale based on diagnosis-related groups, DRGs. When preparing for negotiation with administrators, it has to be recognized that proposed revenue enhancements may not be parallel. New patient types that may represent high profit to neurosurgeons may represent a financial loss for hospitals or vice versa. Important factors that impact practice revenues include payer mix, elective and emergency patient loads, bundling, timeliness of payment, new and emerging markets, and competition. Many of these same factors impact hospitals, but they are further influenced by inpatient or outpatient status, length of stay, hospital-wide acuity index, hospital capacity and ease of coding.

A prime example of asynchronous reimbursement to neurosurgeons and hospitals for a particular service is that of a patient receiving stereotactic radiosurgery. Regardless of where or how the SRS is delivered, the neurosurgeon's professional fee is dependent only on the insurance carrier's negotiated fee for SRS. Hospitals are paid quite differently if the SRS is done in an inpatient or outpatient setting. Further, if a patient already is admitted for other treatments under certain DRGs, the hospital will be paid nothing extra for delivering SRS. However, some insurance providers will pay the hospital more if the patient is admitted just for SRS than if the procedure is done in an outpatient setting (this is often true for Medicare). Having a clear grasp on how all these factors interact would be necessary when negotiating for a new or expanded SRS program.

Hospitals derive important neurosurgery-related revenues in two additional ways. Neurosurgical patients create a lucrative vortex that includes extensive utilization of radiological and therapy services, often after discharge. This revenue source is easily understood but not often incorporated into a neurosurgeon's perspective on value contributed to a hospital. A not-so-easily comprehended concept is how neurosurgical patients disproportionately affect a hospital's acuity index. The acuity index in turn can significantly increase the payments on all (not

Hospitals derive important neurosurgery-related revenues in two additional ways. Neurosurgical patients create a lucrative vortex that includes extensive utilization of radiological and therapy services, often after discharge. This revenue source is easily understood but not often incorporated into a neurosurgeon's perspective on value contributed to a hospital.

just neurosurgical) patients.

Physicians and hospitals also view costs through different lenses. Administrators divide costs into operational and capital (investments) categories. While neurosurgical patients may represent high reimbursement to the hospital, neurosurgical care

often requires major upfront investments. Many of these costs do not directly result in new income sources. For example, new intensive care unit equipment to monitor brain tissue oxygenation derives no new DRG code. Conflict may arise if neurosurgeons find themselves in the uncomfortable position of advocating for new patient care modalities during a period of hospital financial difficulty. Conversely, a new program in deep brain stimulation may provide more obvious mutual benefit by drawing entirely new patients and cases to a hospital.

Time as an element of profitability also may be seen through different lenses. Certainly, both parties desire efficiency. Long patient turnover time and equipment downtime has a deleterious effect on profit potential for both the neurosurgeon and the hospital. However, routine maintenance and personnel training seen by the hospital as critical for smooth operations may be viewed as disruptive by neurosurgeons. Neurosurgeons, on the other hand, may regard the availability of ample personnel, facilities and services (nurses, operating rooms, etc.) as rudimentary during an emergency, but administrators may view the costs as prohibitive and a threat to hospital financial security.

Continues on page 15 ►

HOW HOSPITAL ACUITY INDEX IMPACTS REVENUE



To understand the impact of the acuity index, a short lesson in hospital payments is required. Since 1983, hospitals have been reimbursed through the Medicare prospective payment system rather than on billed costs. Each facility is assigned a "hospital specific relative weight," HSRW, that is based on a number of

specific financial factors and serves to modify the diagnosis-related group rate that a given insurance company has set. The acuity index of a given hospital will influence the HSRW; the understanding is that it costs more to take care of sicker patients. This payment system applies for most patients. However, patients defined as "outliers" (those requiring more than the usual care) are reimbursed through an entirely different mechanism. While the calculations are too complex to cover in this venue, it is critical to recognize that the hospital

acuity index plays a central role in this portion of hospital reimbursements. Thus, for a patient admitted for chronic obstructive pulmonary disease who remains hospitalized for several weeks, payment will be greatly enhanced in a high-acuity hospital. Increasingly, these outlier payments have become a vital source of hospital revenues.

A Case in Point

Financial information from one 281-bed suburban hospital demonstrates the amazing benefit received from a relatively small increase in neurosurgical cases. This hospital has 10,000 annual discharges and 60,000 annual hospital days. Within one year of recruiting a new neurosurgeon, the case load rose from 15 to 65. The addition of just these 50 cases (mostly spine) also raised the acuity index from 1.1882 all the way to 1.4555, resulting in additional hospital revenues calculated to be \$450,000.

Neurosurgeon-Hospital Partnerships

Joint Ownership of an ASC

E. HUNTER DYER, MD, AND DOMAGOJ CORIC, MD

In the current economic environment, many neurosurgeons are turning to sources of alternative revenue to boost practice profitability. Ownership in an ambulatory surgery center can provide a mechanism for capturing the technical component of medical reimbursement. However, the complexities of developing an ASC require the initial investment of significant time for consideration of all aspects related to such a venture.

State regulation, certificate of need availability, or practice size can make it advantageous or even necessary for a neurosurgical practice to consider partnering with a hospital to develop a jointly owned ASC in its community. Careful planning and preparation, which are fundamental elements of fruitful negotiation, and development of a detailed business plan will increase the likelihood of a successful venture. Most importantly, the strengths that each potential partner brings to the venture and the reasons the combined entity can be mutually beneficial must be identified.

Attributes Potential Partners Bring to the Table

A hospital typically can offer the partnership brand recognition in the local or regional community as well as operating rooms or state facility licenses, and some can offer a wealth of experience with the certificate of need process. Many hospitals additionally can contribute leased land on which the facility can be constructed. They frequently also have significant experience with medical facility construction and can provide contractors and design specialists to expedite the process. With proper planning, it is possible to go from a conceptualized to a completed facility within one year.

The neurosurgical practice should provide the partnership with a local or regional reputation for innovative, progressive care as well as a large patient base. A business plan should include a complete list of potential outpatient cases as well as projected growth related to population increases, and marketing exposure for services such as mini-

mally invasive neurosurgery. The practice's most important contribution is probably related to practice efficiencies that create positive volume trends.

An important caveat to keep in mind during negotiations and ASC development is that a neurosurgical ASC should be run by surgeons. Nobody understands the importance of operating room turnover and surgical quality better than surgeons, and a surgeon-run ASC should remain a primary goal as the center is planned and developed.

When formulating a plan for an ASC partnership, it is vital to consider each of these factors and to complete the strategy development prior to discussion with potential partners. There certainly is an advantage in leverage if several potential partners are available, but even with a single obvious partner it is imperative to prepare a succinct presentation that shows a path to success for both parties and creates some sense of urgency to complete the deal. Although participation in a jointly owned ASC means that a hospital must share facility fees, the many advantages of a well-run, efficient and cost-effective facility can represent great profit opportunity for the hospital partner. True 50-50 partnership can be difficult to achieve, but preparing a detailed plan for joint ownership that highlights the potential for success on both sides can help meet that goal.

Benefits of ASC Joint Venture

The resulting ASC should provide benefit to all affected parties in a variety of ways. The hospital, relieved of these outpatient cases, gains significant OR efficiency and is better able to manage inpatient capacity and throughput. While it is vital to the hospital to offload these outpatient cases, there is significant risk in losing them completely to an outside entity or competitor. The jointly owned ASC resolves this dilemma. For surgeons participating in the ASC there are tremendous improvements in daily efficiency: Several cases can be done in much less time than in a hospital setting, and additional cases can be scheduled on a shorter time horizon. For both the hospital and the surgeons the ASC

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Neurosurgeon-Hospital Partnerships

Building the Business Case

EDIE E. ZUSMAN, MD

Neurosurgeons want the best for their patients: state-of-the-art treatment, great surgical outcomes and the best opportunity for high quality of life. In theory hospitals want that too, but their bottom line is fundamentally different from that of neurosurgeons. They're after high profits and long-term competitiveness in the larger healthcare marketplace. These often divergent goals can turn negotiations between hospital administrators and neurosurgeons into an exercise in futility. When neither speaks the other's language, no one benefits.

With sound negotiating skills, neurosurgeons can get what they want—and what is best for their patients—by learning how to communicate with hospital administrators and their boards of directors. Hospital leaders can support a proposal with enthusiasm if they understand why their investment in it makes sense for their bottom line as well as for their patients and neurosurgeons.

Making the Case

Building the business case for neurosurgery, as for any medical specialty, requires consensus, strategy and strong communication skills.

Neurosurgeons first need to build consensus among stakeholders, who may include other surgeons, neuroradiologists, neurologists, and nursing and ancillary personnel. Stakeholders should reach consensus on mutual goals and be prepared to present those as a majority report.

Data that supports the argument is key to successful negotiation. Discover the amount and specific areas of profit that the hospital is realizing on neurosurgical patients, as well as where hidden costs lie. If hospital officials are reluctant to release this information, use figures provided by colleagues at other institutions as a benchmark or industry standard. Healthcare industry forecasters and policy analysts also are good sources of neurosurgical data.

Before starting a conversation with hospital administrators, neurosurgeons need to remember that their



audience is not fresh out of residency training, that high-tech or complex procedures mean nothing out of the context of their own experience. Rather than discussing an amygdalohippocampotomy with intra-operative electrocorticography, capture their attention by proposing a cutting-edge treatment of epilepsy that has a high-profit diagnosis-related group and generates high-profile community interest, attracting philanthropy and boosting brand recognition.

For a negotiation to be most successful, try to establish a collegial environment up front. It is important to tap into the personal relationships which may already be established among doctors, administrators, their families and friends. Start the conversation by talking about the institution's strengths. Acknowledge their accomplishments and compliment them on the programs they have fostered. Remind them that the pieces are in place for success.

The style of presentation is important, too. Neurosurgeons are used to standing at podiums in dark rooms addressing other doctors seated in rows of chairs. But hospital administrators are more accustomed to having a conversation and may take of-

Continues ►

BUILDING THE BUSINESS CASE

► Continued

fense at the notion of doctors lecturing them. When making a PowerPoint presentation, consider printing copies for each person in attendance to invite interaction and discussion, rather than simply presenting the slide show. Deliver the talk while sitting directly across from the key decision-maker, and keep the lights on.

Knowledge Is Power

Before asking hospital administrators to spend money for new equipment, present a list of their existing technology. Administrators generally are well aware of the capital expenses they already have made and are eager to identify ways to offset this outlay of funds. For example, if they have spent hundreds of thousands of dollars to equip a video-telemetry epilepsy monitoring unit or biplanar angiography suite, they may be seeking ways themselves to grow the epilepsy or cerebrovascular programs.

Investment in new technology for one specialty may eventually attract patients who have other complex medical conditions. These conditions may require other interventions that boost the hospital's profile in the community and generate referrals and profits. For example, having a recognized stroke program may attract patients who also require cardiac stenting. While starting a program from scratch may be daunting, explaining how the hospital is halfway there can make new investment that much easier to contemplate.

It also is important to know which procedures are profitable for the neurosurgical practice and which diagnosis-related groups make money for the hospital. An anterior cervical discectomy and fusion may be very profitable for doctors, but not for hospitals because of the high cost of the surgical hardware. Informed neurosurgeons can negotiate better rates with medical supply companies, increasing hospital profits, which will motivate the hospital to help grow that service line.

Neurosurgeons can play a role in helping hospitals raise—and save—money. For example, while the vast majority of stroke admissions fail to generate profits for the hospital, strokes due to aneurysms, which require endovascular coiling or surgical clipping, can be very profitable. Use best practices methodology to create pathways for the care of the majority of stroke patients, which may mean arranging for nursing home care sooner, using preprinted order sheets, or

staffing a physical therapist on weekends. That alone could increase stroke care profits through lower costs. Hospital efficiencies appeal to third party payers, as well.

Neurosurgeons also can help hospitals understand why investing in talent can help build programs and boost brand recognition even if the up-front costs are high. For example, pediatric neurosurgeons have difficulty covering their salaries in a fee-for-service model. However, their services are essential to support the highly profitable neonatal intensive care unit. With few pediatric neurosurgeons available to fill the many open positions, it makes sense to provide top-dollar salary support for these individuals. Hospital administrators may be willing to make the investment once they understand that the institution can realize millions in downstream profits after establishing these programs. In addition, other specialists will be easier to recruit and pediatric programs started once a pediatric neurosurgery program is in place.

Similarly, certain services are both profitable and attract philanthropic activity, paving the way for program growth. For example, brain tumor care is in a highly reimbursed diagnosis-related group and has a desirable patient demographic. It exploits important technologies such as Gamma Knife and neuronavigation. Additionally, many brain tumor patients will choose to participate in clinical trials and donate brain tumor tissue to basic science research through tissue banking. They and their families are well aware of the need for further research in this area and often step forward to contribute to building construction or program development.

Neurosurgeons can build a better business case and create centers of excellence for care of patients by assembling relevant data and by employing these negotiating tools. Hospital administrators will gladly support a proposed improvement as long as they realize profits and brand recognition as a result. Under this scenario, everyone—especially patients—can have the best outcomes. **NS**

Edie E. Zusman MD, FACS, is director of adult neurosurgery at Sutter Neuroscience Institute, Sacramento, Calif. She is a co-director of Negotiating With Hospitals, a practical clinic on May 3 during the AANS Annual Meeting. The author reported no conflicts for disclosure.

HOW HOSPITALS SEE PROFITABILITY

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One of the time components of profitability is length of stay. A hospital typically receives a set fee for any patient admission, and the longer a patient remains in the hospital, the further that money must stretch. Administrators are acutely aware of even fractional differences in length of stay because they dramatically impact their bottom line. Neurosurgeons who are aware of the impact that length of stay has financially can take it into consideration as one factor in the overall care of a patient.

Creative Negotiation

Armed with a better understanding of the basic business model, negotiations with hospitals can better proceed. Many neurosurgeons are interested primarily in negotiating financial support from hospitals. The most frequent request is salary for on-call coverage. However, a cornerstone of successful negotiation is flexibility. While direct payment may be preferred, alternative revenue-sharing opportunities may be accomplished more easily. For a number of legal reasons, a hospital may prefer to provide salary support for a specific “title” or position rather than for a specific number of on-call days. Reimbursement for teaching is commonplace at academic centers and can be implemented at non-academic institutions as well. Examples of indirect reimbursement include paying for:

- physician extenders, who have the potential to dramatically improve the time element for neurosurgeons and who frequently will enhance patient and family satisfaction, which helps to grow a practice and a hospital’s reputation;
- department administrators or program coordinators who can reduce a neurosurgeon’s time commitment to nonphysician processes; and
- marketing services, which can provide mutual benefit to the hospital and neurosurgeon, always a good “win-win” negotiating strategy.

The ability to articulate the many ways in which neurosurgeons bring value to a hospital and understanding the needs of the other party are fundamental tenets of successful neurosurgeon-hospital negotiation. A comprehensive profitability pitch that stresses the mutual advantage in the proposal at hand has the best opportunity for success. **NS**

Deborah L. Benzil, MD, a member of the AANS Neurosurgeon Editorial Board, is a co-director of Negotiating With Hospitals, a practical clinic on May 3 during the AANS Annual Meeting. She is a neurosurgeon with Westchester Spine and Brain Surgery PLLC, Hartsdale, N.Y. The author reported no conflicts for disclosure.

It is imperative to prepare a succinct presentation that shows a path to success for both parties and creates some sense of urgency to complete the deal. Although participation in a jointly owned ASC means that a hospital must share facility fees, the many advantages of a well-run, efficient and cost-effective facility can represent great profit opportunity for the hospital partner.

JOINT OWNERSHIP OF AN ASC

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represents a new marketing opportunity as a unique facility not otherwise available to patients in the community. Patients much prefer to avoid a large hospital setting with its crowding and perceived complication profile, and their satisfaction with the ASC should be extremely high. Surgical outcomes should be superior, as the procedures are low morbidity and are performed in generally healthy and comparatively young patients.

Development of an ASC can be a successful enterprise for all involved. Start-up costs are not small, but total return on investment can be achieved within 12 to 24 months given appropriate facility management and use. In this unstable reimbursement environment, the addition of some percentage of facility fees can have a very positive effect on practice revenue and an overwhelmingly positive effect on patient care and efficient practice. **NS**

E. Hunter Dyer, MD, is president, and **Domagoj Coric, MD**, serves on the Executive Committee of Carolina Neurosurgery and Spine Associates, Charlotte, N.C. They are members and owners of the Carolina Center for Specialty Surgery.

Can Partnering With Your Hospital Really Be Good for You?

A Look at Current Neurosurgeon-Hospital Financial Partnerships

The *AANS Neurosurgeon* asked currently practicing neurosurgeon members of the AANS about their financial partnerships with hospitals: if they have them, what they are, and how they feel about them.

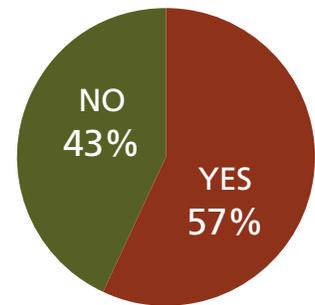
The majority of all respondents, 57 percent, said that they or their practices currently do have some type of financial partnership or joint venture with a hospital. Of this group, 61 percent received a stipend for emergency call coverage. Slightly more than one quarter of respondents received compensation for faculty service, while about one fifth had an agreement to exclusively supply a hospital with some services. About 17 percent received support from hospital-paid physician extenders, department administrators or program coordinators, while slightly fewer, 15 percent, shared profits with a hospital for a joint-venture surgical or neuroscience center. A few, 13 percent, received compensation for supervision of a medical unit, or for training nursing or surgical staff or physician extenders (11 percent). Another 13 percent described some other arrangement with a hospital. Very few said they participated in a limited liability corporation to market neurosurgical services to payers or received compensation for consultation, transfer or ancillary services.

The annual value of these services to respondents personally (rather than to their practices) was concentrated at the upper and lower ends of the ranges provided: Most respondents, 22 percent, received less than \$50,000 annually, while 20 percent received between \$500,000 and \$1 million. Just 2 percent reported receiving more than \$1 million, and for 56 percent the income was fairly evenly distributed among the middle ranges.

Random Sample, a regular feature of the *AANS Neurosurgeon*, engages AANS members to assess their views and practices related to a topic of current interest.

Two questions probed neuro-

DO YOU OR DOES YOUR PRACTICE HAVE SOME TYPE OF FINANCIAL PARTNERSHIP OR JOINT VENTURE WITH A HOSPITAL?



Type of Financial Partnership or Joint Venture With a Hospital	Percentage
Receive a stipend for emergency call coverage	61%
Receive compensation for faculty service	26%
Have an agreement to exclusively supply some services to a hospital	22%
Receive support from hospital-paid physician extenders, department administrators or program coordinators	17%
Share profits from a joint-venture surgical or neuroscience center	15%
Receive compensation for supervision of a medical unit (ICU, focused beam radiotherapy, etc.)	13%
Other	13%
Receive compensation for training and education of nursing staff, surgical staff or physician extenders	11%
Have a limited liability corporation with a hospital to market neurosurgical services to payers	7%
Receive compensation for consultation and/or transfer services	4%
Receive compensation from ancillary services	4%

surgeons' attitudes about financial partnerships with hospitals. When asked if a partnership, collaborative arrangement or joint venture with a hospital could be beneficial to them, 85 percent agreed. When asked about impediments to neurosurgeon-hospital financial collaborations, respondents were evenly split on whether hospital administrators are interested in negotiating. A slight majority, 55 percent, agreed that they are unsure as to how to present the value of their services in terms hospital administrators would appreciate. However, respondents strongly disagreed that they don't have the time for collaboration, that they don't know what to ask for in a negotiation, or that they are concerned about the potential for negative legal consequences associated with neurosurgeon-hospital financial partnerships.

A majority of respondents, 66 percent, felt that it has been difficult to recruit neurosurgeons to their service area.

Your Comments

Survey participants were provided the opportunity to comment on neurosurgeon-hospital partnerships, and one signed response follows:

Neurosurgical alignments with hospitals and communities allow physicians to practice the art and science of neurosurgery. The economic bother of medical business and entrepreneurial misnomers become remote, returning physicians back to the reasons they pursued careers in medicine.

—C.G. Zimmerman, MD, FACS, MBA
Boise, Idaho

The AANS *Neurosurgeon* welcomes comments on this topic. Send correspondence about neurosurgeon-hospital partnerships to aansneurosurgeon@aans.org. Letters that include the author's name, city and state will be considered for publication in an upcoming issue.

Methodology and Demographics

Randomly selected neurosurgeon members with e-mail addresses were asked in January 2009 to participate in this online survey. Residents and fellows were not included in the pool surveyed. Invitations were successfully sent by e-mail to 300 individuals, and 82 neurosurgeons participated in the survey for a response rate of 27 percent.

Most respondents were in private practice

(33 percent) followed by those in full-time academic practice (24 percent), hospital employees (20 percent), and those in private practice with academic affiliation or appointment (16 percent), or other (6 percent). One respondent was a federal employee. Most were between the ages of 46 and 55 (40 percent) and 35 and 45 (39 percent), followed by those between 56 and 65 (20 percent). One respondent was under 35.

All but one of those surveyed practiced in an area where there were at least two hospitals, and for most (27 percent) there were 10 or more hospitals in the area. The majority of respondents said that the largest hospital in their area had 500 beds or more, followed by 300–499 beds (35 percent), 100–299 beds (17 percent), and 50–99 beds (1 percent).

All respondents were from the U.S. and Puerto Rico. There were slightly more respondents from the Northwest (33 percent), while the rest were fairly evenly distributed among the Northeastern, Southeastern and Southwestern regions. **NS**

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Forming Partnerships With Hospitals

Practical Advice

What is a good way to initiate partnerships with hospitals? Which elements contribute to their ultimate success—or failure? The *AANS Neurosurgeon* interviewed two neurosurgeons, one in private and the other in academic practice, to glean practical advice from those who have achieved some success and perhaps occasionally stumbled in their own partnership endeavors with hospitals.

Craig Van Der Veer, MD, Carolina Neurosurgery and Spine Associates. “We’ve had our failures and we’ve been successful at some things,” said Dr. Van Der Veer. “Success means we’ve been pretty lucky.”

While luck may have had an influence, for Carolina Neurosurgery and Spine Associates success was built on a solid business plan. Dr. Van Der Veer explained that the practice first developed a group philosophy and based the business plan on that. Over the course of 15 years the practice has held annual meetings to evaluate and fine tune the plan.

He advised neurosurgeons to be aware of what they are worth financially to the hospital system: A single neurosurgeon at a hospital with no neurosurgeons on staff is worth \$5 million a year to the hospital, and the second neurosurgeon is worth about \$500,000 less, he said.

A key to successful negotiation is knowledge of the other party. To gain this insight he recommended being active at the hospital, particularly getting inside the hospital’s planning mechanism. “I’ve been on the credentialing committee for 15 years and chaired it for several of those,” he said. “It lets you know what’s in the works on the hospital’s side.”

He recommended evaluating the practice’s needs as well as the hospital’s needs for a neurosurgeon. Prioritize the list—emergency coverage, teaching—



based on what you can and want to deliver to the hospital.

A worthwhile exercise involves taking some time to sit back and think about the local geography, he said. “Take a 10,000 foot view, then a 500-foot view” of the practice environment.

“The emergency call issue is low-hanging fruit because it’s high on the hospital’s list of needs, but if you look at your situation more globally, the hospital also may need someone to direct neurotrauma, stroke or complex spine programs, or to develop protocols,” he said. “Even if they need certain services only superficially, they can advertise them.”

For specifics on successful negotiation, Dr. Van Der Veer referred to the book “Getting to Yes” and advised working to keep the relationship balanced between the parties. “Negotiating in good faith depends upon first having a good relationship.”

When encountering conflict, he counseled taking a judicious time-out when warranted. “Say, ‘I need to give this more thought and let’s talk tomorrow.’ You don’t want to pull out a ‘nuclear device’ and threaten to leave,” said Dr. Van Der Veer. “‘I’m leaving’ might hurt the hospital for six months, but it could end up hurting you more.”

His practice is involved with two large hospitals in the center of Charlotte. “We made sure we kept our hand in both hospitals, with each vying for our affection,” he said. “Competition is good business.”

He noted that although one must have things in writing from the hospital, common incentives work even better than a restrictive contract.

A case in point is the neurosciences center developed at one of the hospitals.

“It isn’t a joint venture—we negotiated to provide a director, and the hospital funds and advertises it,” he said. “The center is beneficial for the hospital, and we are the primary neurosurgical providers with access to an increasingly large network of influence: 17 hospitals in 12 counties that feed the hospital.”

However, the practice didn’t neglect the competing hospital. “We told them we’d increase their surgical volume by 100 percent, which we accomplished by designating two people from our group to grow volume there.”

Dr. Van Der Veer maintained that successful neurosurgeon-hospital negotiation is possible even without the presence of interhospital competition. “An absence of competition would have changed our



M. Sean Grady, MD, (left) and Peter Dolhancryk.

perception and plan for how to build a successful practice, but it wouldn't inhibit that, it just would have made the questions and answers different," he said. "You have to refine your list of needs as the situation changes."

The practice also has engaged in some less successful ventures. He termed a venture into oncology services a "distinct disaster" and said another project was killed by an intractable contract.

"Everything isn't going to be successful, but you can't be afraid to try things," he said. "If you have done a business plan and analyzed and done due diligence on a project, you have to trust yourself and try it. If you can develop a hospital sponsor that will share in the project's risk and reward, so much the better."

M. Sean Grady, MD, is the Charles Harrison Frazier Professor of Neurosurgery, chair of the Department of Neurosurgery, and director of the residency program at the University of Pennsylvania. He is a member of the board of directors and the executive committee of the Clinical Practices of the University of Pennsylvania. Peter Dolhancryk is administrator for neurosurgery for the University of Pennsylvania Health System.

In an academic medical center, situational parameters differ from those in private practice, but negotiation strategy is similar and no less important.

"We work under a single taxpayer ID, which gives us flexibility," said Dr. Grady, explaining that as one entity they don't need to worry about gainsharing pitfalls or running afoul of antikickback laws.

He noted that in their region the negotiation with insurance carriers tends to favor hospital reimbursement, so their approach to the hospital is fairly straightforward: How can we help you improve the hospital's bottom line?

They do this by negotiating their services with respect to physician recruitment, support of clinical research programs and improvements in the OR. They also can offer to help to manage costs: For example, reduction in occurrences of deep vein thrombosis, line infections and the like adds up for the hospital. But "never promise what you can't fulfill," cautioned Dr. Grady.

As is true in a private practice's negotiations, it pays to know how profitable neurosurgical cases are to one's hospital. "Profitability varies in different subspecialties," noted Dr. Grady. "For example, costly instrumentation and biologic implants can easily eliminate the margin for complex spine cases."

"At Penn we have a considerable advantage in that the hospital administration is enlightened and shares margin data with the department so that the true value of a program is evident," he continued. "In some areas, such as Gamma Knife radiosurgery, the profit is in the technical component. We don't make money in these areas, but the hospital does."

Because reimbursement based on relative value units is low, compensation can't be made on RVUs alone. "An individual's productivity should be based on both RVUs and hospital margin," said Mr. Dolhancryk.

They present their budget along with salaries. Numbers are benchmarked with information available from groups such as the Medical Group Management Association and the Neurosurgery Executives' Resource Value and Education Society. They also obtain the average margin per admission to the neurosurgery service. "We look at each doctor and add the margin to the professional fees side," said Mr. Dolhancryk. "This number represents the surgeon's value to the health system broadly, enabling us to subsidize important subspecialties that do not generate high RVUs through hospital programmatic support of the department."

When asked how the current economic recession has affected their practice environment, Dr. Grady noted that "the payer mix is changing as people lose their jobs, and the collection rate is slipping." He added that a plan for a replacement hospital, a neuroscience building with 10 operating rooms, has been delayed due to the economy.

"If you lose two neurosurgeons, the hospital suffers significant revenue loss," said Mr. Dolhancryk. "The loss of volume will continue as you recruit and then rebuild the referral patterns."

"Stability in the neurosurgery program over time is priceless, for you and for the hospital," noted Dr. Grady. **NS**

The “Global Experience” analysis of neurosurgeons’ practice environments around the world continues with a look at how neurosurgery is practiced in Israel. For a review of neurosurgery in several other countries, see the *AANS Neurosurgeon* archive (17[3], 2008) at www.aansneurosurgeon.org.

Practicing Neurosurgery in Israel

ZVI RAM, MD

Israeli neurosurgery has experienced many transformations over the last 60 years. While on academic and professional levels it strongly resembles the practice of neurosurgery in the U.S., it is run as part of a socialized healthcare system that regulates cost and surgeon reimbursement. After completing their residency programs in Israel, most of the leading neurosurgeons in the country today received extensive training in various centers of excellence around the world with a strong emphasis on U.S.-based centers.

Currently there are six university-affiliated neurosurgical departments located throughout Israel. Three of the largest centers are in the Tel Aviv area, and the three others are in Jerusalem, Haifa in the north and Beer Sheva in the south. About 45 neurosurgeons are practicing in these centers, which are publicly owned and run.

Approximately 7,000 procedures are performed each year throughout the country, which has a population of approximately 7 million people. Less than 5 percent of neurosurgical procedures are done on a private basis. Patient load and surgical procedures vary significantly among the various centers, and range from 350 cases per year in Beer Sheva to 2,500 in Tel Aviv.

All neurosurgical departments are fully equipped with state-of-the-art imaging facilities, navigation systems, dedicated operating rooms and surgical equipment. Intraoperative MRI is also available in three centers. All aspects of modern neurosurgery are available in most centers. These include all of the neurosurgical subspecialties, including advanced skull base surgery, endoscopic surgery, epilepsy and functional surgery, modern oncological procedures and complex spinal procedures, as well as peripheral nerve surgery, radiosurgery, pediatric neurosurgery and interventional neuroradiology. A strong collaboration between

neurosurgeons and biotechnology and medical device companies in Israel and abroad has contributed to active clinical and basic research activity in this field.

All neurosurgical procedures are based on diagnosis-related groups, and reimbursement is provided by the various sick funds, which are similar to health maintenance organizations. Health insurance is mandatory in Israel, and practically 100 percent of the population is insured. A “base basket” of health-care allows each citizen access to all standard neurosurgical procedures in the public hospitals. Private insurance purchased separately allows a patient to choose his or her surgeon as well as other health-related products. However, such private care can be provided only in private hospitals and is not allowed in the major public centers. There recently has been a heated public debate as well as discussion among government regulators regarding the availability of private medical care in government-owned hospitals, but the current situation is unlikely to change in the near future. About 60 percent of Israeli citizens own a private health insurance policy in addition to the mandatory government insurance, at an annual cost ranging from \$200 to \$4,000 per person, depending on the extent of privileges and the benefits it provides.

A unique consideration for neurosurgical care in Israel relates to the large population of Palestinians outside of Israel who are not Israeli citizens. Specific agreements between the Palestinian Authority and the Ministry of Health, or individual hospitals, have created mechanisms that allow Palestinians access to full medical care, including neurosurgery at centers in Israel. For example, the Tel Aviv Medical Center regularly treats patients from the Gaza Strip for tumors and trauma.

The residency program lasts six years with mandatory written and oral board examinations required for licensing. Four to nine residents are trained in each of the departments. Similar to neurosurgical training programs in the U.S., the limitation on resident work hours (up to 45 hours per week, excluding calls and a mandatory resting period of 24 hours after taking a call) has had a major impact on neurosurgery and has required adjustments by the departments. In addition, the socialized nature of the health system dictates salaries and reimbursement limits that do not allow additional financial compensation for the increased demands of specialties such as neurosurgery. This has resulted in a shift in residency preferences by medical students, who are shying away from careers that are notorious for poor “quality of life,” such as most surgical programs.

Malpractice litigation has become a major concern for those in current medical and neurosurgical practice in Israel. Adopting a defensive medical approach is curbed by issues of cost containment. However, there is a growing emphasis on identifying and preventing medical errors and improving communication skills among staff members as well as between the care provider and the patient and family.

Lastly, the biggest problem facing neurosurgery in Israel is the challenge of maintaining high academic and professional standards in times of growing economic constraints. This challenge is compounded by the difficulty in recruiting capable and enthusiastic residents who are shifting to medical specialties with a better “quality of life” from more demanding options with limited financial compensation. **NS**

Zvi Ram, MD, is chair of the Department of Neurosurgery, Tel Aviv Medical Center, Tel Aviv, Israel. The author reported no conflicts for disclosure.

Practicing Neurosurgery in Israel

GUY ROSENTHAL, MD, AND
FELIX UMANSKY, MD

The Israeli medical system today offers a high standard of medical care with universal health coverage for all residents. Overall, life expectancy is high, 80.3 years, placing Israel 10th of 177 countries for the years 2007–2008. In 2003 the country had 47 general hospitals and approximately 14,350 acute care hospital beds serving a population of just over 7.2 million. The number of hospital beds is low, 1.99 beds per 1,000 people, compared with a U.S. national average of 3.0 beds per 1,000 people. The physician-to-population ratio increased substantially in the 1990s with the large influx of physicians from the former Soviet Union, and it is high (3.7 per 1,000) compared with the U.S. (2.96 per 1,000).

Israel has a per capita gross domestic product of \$26,000 and a Human Development Index of 0.932, placing it 23rd of 177 countries in HDI, according to United Nations statistics. In 2006 Israel spent 7.8 percent of its GDP on healthcare compared with 16 percent spent by the U.S. In absolute terms Israeli annual expenditure per person for healthcare is about one-third of the U.S. expenditure. Most of the popula-

tion is insured through five major health maintenance organizations known as sick funds.

The National Health Insurance law that passed in 1995 ensured universal coverage for all Israelis residing in the country. Even before the law became effective, 96 percent of the population had health insurance coverage. Several factors have contributed to a high level of coverage in the Israeli population. First, membership fees in sick funds are graduated and based on family status. Second, a health insurance bill that passed in 1973 required every employer to finance a portion of employees' health insurance premiums. For an additional fee and in addition to the National Health Insurance, Israelis may choose to obtain supplementary health insurance through their sick funds. Supplementary health insurance pays for prescription drugs not covered by the National Health Insurance and usually allows patients to choose their surgeon in private hospitals should they require an operation. Also, health insurance that may be purchased through private insurance companies provides additional coverage and usually includes operations abroad. Neurosurgery in Israel functions within this context.

Israel has six major academic full-service neurosurgical centers: Three centers are located in the greater Tel Aviv metropolitan area, and the other three are in Jerusalem, Haifa in the north and Beer Sheva in the south. In addition, several smaller private hospitals perform elective neurosurgical procedures, usually for patients with supplementary or private health insurance. The entire resident population is covered for emergent or elective neurosurgical care through the National Health Insurance system. All of the neurosurgical subspecialties, including vascular, endovascular, skull base, neurooncology, spine, functional, pediatric, and trauma, are delivered through the major neurosurgical centers.

Compensation for neurosurgeons in Israel is generally lower than for neurosurgeons in the U.S. This is because the National Health Insurance system places financial constraints on hospitals, which are the primary employers of neurosurgeons. Neurosurgeons can perform procedures at private hospitals or clinics where they can be compensated through the supplementary and private insurers. Even so, the largest volume of cases, the most complicated neurosurgical procedures and all neurosurgical trauma cases are treated at the large academic medical centers.

Although medicine is still considered a very prestigious profession in Israel and admission into one of the country's four medical schools is highly competitive, many talented young people are drawn to the country's burgeoning high-tech industry rather than to medi-

Continues on page 45 ►



Exclusive Investment Opportunity in Device-Distribution LLC

Profit Opportunity or Ethical Pitfall?

This new department will cover challenging ethical issues in the practice of neurosurgery. To encourage neurosurgeons to think critically about the role of medical professional ethics with respect to the relationship between themselves and industry, a short vignette will be presented followed by commentary intended to highlight the key concerns. The vignette is not intended to parallel any real-life scenario but rather to serve as a means for focusing the critical thinking that neurosurgeons must accustom themselves to when evaluating their personal activity in the “medical industrial complex.” The perspectives presented and conclusions reached are intended to stimulate thought and promote conversation about these complex relationships; they are neither intended to be nor do they necessarily represent positions of the AANS.

An issue that recently has received a great deal of attention from the medical profession, related agencies and industry, and the media is that of real and perceived conflicts of interest, particularly the financial relationships between industry and physicians. Probing the following scenario will bring to the forefront the key issues that must be addressed in order to come to a conclusion regarding the appropriateness of neurosurgeon participation.

Vignette

An established spinal implant manufacturer with an established distribution system offers surgeons who are users of the manufacturer’s spinal implant the opportunity to invest in a new device-distribution limited liability company that will have exclusive rights to distribute the manufacturer’s products to hospitals and ambulatory surgical centers in the surgeons’ geographic area. The device manufacturer will form the new LLC and ensure that it has the people and resources to do the work. Only surgeons are being offered the opportunity to invest. The investment is minimal since the distributorship requires very little capital.

Evaluation

Consider taking a moment to formulate a position as to whether this is an appropriate opportunity for a practicing neurosurgeon to enter into. Consider the scenario from the perspective of the manufacturer. Despite the brevity of information presented in the scenario, is it possible to draw a reasonable conclusion as to the intent of the manufacturer (you may assume there is a competitive market for the spinal implant) in offering such a business relationship to a surgeon?

From the point of view of the neurosurgeon receiving such an offer, what are the important considerations based on the ethics of medical professionalism that would influence participation in such an opportunity?

Perhaps most importantly, consider the scenario from the point of view of the patient. Is there anything about this scenario that would place the best interests of the patient in tension with the self-interests of a participating neurosurgeon?

Evaluation of this opportunity is based on the Guidelines on Neurosurgeon-Industry Conflict of Interest, a position statement of the AANS.

Observations 1 and 2

1. To whom should the participating surgeon disclose the LLC relationship (patients, colleagues, institution, others)?
2. Exclusive distribution rights coupled with surgeons who are in a position to create institutional demand for this specific product may result in generating above-market profit for the newly formed LLC.

Evaluation. The position statement notes that a neurosurgeon who has influence in selecting a particular product [such as a spinal implant] or service for an institution should disclose his or her relationship with industry to colleagues, to the institution, and to other affected entities [including patients]. In addition, the position statement advises that “a

neurosurgeon, when reporting on clinical research or experience with a given procedure or device, shall disclose any financial interest in that procedure or device if he or she or any institution with which he or she is connected has received anything of value from its inventor or manufacturer.” This disclosure must include the patient because the risks and benefits of any procedure that the neurosurgeon proposes must be presented within the context of a conflict of interest.

Observation 3

3. The manufacturer already has a distribution network in place. What is the intent of replacing it with an exclusive network? Is it plausible that a financial reward designed to align the interests of the manufacturer and the surgeons who use their product would create a benefit for patient care that is not served by the current distribution network?

Evaluation. The position statement notes that a potential conflict of interest exists whenever professional judgment has a reasonable chance of influence by self-interest of a neurosurgeon. In this vignette a participating surgeon’s self-interest is being served by financial rewards generated by the LLC. The resulting conflict must be resolved in the patient’s best interest.

Observations 4 and 5

4. The manufacturer is forming the LLC and supplying human capital and other resources to ensure that this business model can succeed. If surgeon investors are shielded from the risk of losing invested capital, does this constitute inappropriate financial support from industry?

5. Investment by surgeons is minimal, but it is reasonable to expect that the financial rewards will be attractive. To properly evaluate this opportunity for conflict of interest, should a surgeon ask for additional investment-return information and a prospectus? What role, if any, should the surgeon’s hospital/institution play in such an agreement?

Evaluation. The position statement notes that it is unethical for a neurosurgeon to receive compensation of any kind in exchange for use of a device in clinical practice.

WHAT DO YOU THINK?

Do you have other ideas for appropriate action with regard to this vignette? Let us know in a letter to the editor. If you have a scenario that you would like to see explored in *Ethics in Practice*, please send it to aansneurosurgeon@aans.org; if you would like your contribution to be acknowledged in print, please include your name, city and state.

Conclusions

The process of informed consent deserves special consideration—if the neurosurgeon offering the consent information has a recognized conflict—to ensure that the benefits and risks of the procedure in question are presented to the patient with minimal bias.

Arguably, disclosure is necessary in this case but not sufficient. The existence of a conflict of

interest is actual, not potential. It is morally preferable to resolve such conflicts rather than simply to disclose them.

Further, the neurosurgeon’s investment in the device-distribution LLC would create a reasonable chance of influence by self-interest. Investment in the device-distribution LLC constitutes a form of compensation for use of the device.

Therefore, unless there are facts that address the discrepancies between the above observations and the evaluations in the context of the Guidelines on Neurosurgeon-Industry Conflict of Interest, then under AANS policy it would be unethical for a neurosurgeon to participate in this venture. **NS**

Patrick W. McCormick, MD, FACS, MBA, associate editor of the *AANS Neurosurgeon*, is a member of the AANS Ethics Committee and of the American Medical Association Council on Ethical and Judicial Affairs. He is a partner in Neurosurgical Network Inc., Toledo, Ohio. The author reported no conflicts for disclosure.

ACKNOWLEDGEMENTS

The review of this article by members of the AANS Ethics Committee and the thoughtful comments offered by Paul Ford, PhD, and Christopher Madden, MD, are greatly appreciated. The vignette explored in this article is based on a scenario presented by William Christianson of DePuy Spine and colleagues at the 2007 Symposium on Ethics in Spine Care.

FOR FURTHER INFORMATION

- Guidelines on Neurosurgeon-Industry Conflict of Interest, www.aans.org, article ID 51297
- AANS/CNS Statement on the Guidelines on Neurosurgeon-Industry Conflict of Interest, www.aans.org, article ID 51382

Reader Raises Red Flag RE Statistics

EDITOR:

In their review of neurosurgery in the United States (AANS Neurosurgeon, 17[3]:6–10, 49, 2008), Couldwell and Seaver report that the U.S. healthcare system permits a higher infant mortality rate and a shorter life expectancy than other countries where healthcare spending represents a smaller percentage of gross domestic product. There are several errors in this critique. First, the infant mortality data more likely reflects different methods of counting in different countries. For example, Switzerland does not count the death of very small babies. Certain former Soviet states do not count small premature babies if they die within a week of birth. The U.S. mortality rate for low birth weight babies is actually lower than in other developed countries.

Similarly, the U.S. life expectancy rate is heavily weighed down by the accident/homicide rates as well as factors affected by lifestyle choices, not healthcare. For example, obesity, smoking and unhealthy diets are far more significant factors affecting life expectancy than, say, the prevalence of neurosurgeons. Americans have among the highest rates of obesity in the world, shortening life expectancy and raising the cost of healthcare.

Misleading statistics provide little insight into the problems of the U.S. healthcare system.

—Jeffrey S. Oppenheim, MD, Suffern, N.Y.

The authors respond:

We thank Dr. Oppenheim for his interest and appreciate his comments. Our article was intended to provide an overview of the current practice of neurosurgery in the U.S., and to that end we summarized the healthcare environment in which neurosurgeons work. In our introductory paragraph, we stated that “the high level of healthcare spending [in the U.S.] is not reflected in globally accepted indicators of quality such as comparatively longer life expectancy and lower infant mortality.” “Comparatively” is the operative word: High spending does not necessarily equate to high ranking on health indicators. This simply suggests that factors other than spending alone affect healthcare quality.

We did not discuss life expectancy or infant mortality in detail but will review them now. While individual countries may have differing methodologies for determining each, both life expectancy and infant mortality are widely recognized health indicators.

In a recent report for the National Center for Health Statistics, MacDorman and Mathews assert that infant mortality is an important health indicator because it is associated with “maternal health, quality and access to medical care, socioeconomic conditions, and public health practices.” The report Health

United States, 2007, acknowledges that while “international comparisons of infant mortality can be affected by differences in reporting of fetal and infant deaths ... it appears unlikely that differences in reporting are the primary explanation for the United States’ relatively low international ranking” (the U.S. ranked 29th in the world in 2004). It may be useful to compare the recent performance of the U.S. with its own historical performance on reducing infant mortality. As MacDorman and Mathews note, “the U.S. infant mortality rate generally declined throughout the 20th century ... [but it] did not decline significantly from 2000 to 2005, which has generated concern among researchers and policymakers.”

Our article did not associate the prevalence of neurosurgeons in the U.S. with the life expectancy of the U.S. population. It did state that life expectancy in the U.S. is increasing; but even so, the U.S. ranks 46th on the World Fact Book’s list of countries for which life expectancy information is available. Our article noted that the aging of the U.S. population is a trend that likely will affect neurosurgery with an increase of age-related neurosurgical problems in the patient population. It also identified unhealthy lifestyles, including insufficient exercise and obesity, as a trend in the population that is expected to significantly impact the patient population, and thus neurosurgeons, in the foreseeable future; acknowledging that our country has this problem is the first step toward the development of needed proactive prevention programs.

As our article stated, neurosurgical innovation and patient care are excellent in the U.S. The reference to life expectancy and infant mortality relative to healthcare spending is not misleading in the context of the article, but rather contributes to an overall picture of the current healthcare environment in the U.S.

—William T. Couldwell, MD, PhD, editor, AANS Neurosurgeon

—Manda J. Seaver, staff editor, AANS Neurosurgeon

FOR FURTHER INFORMATION

- Health, United States, 2007, www.cdc.gov/nchs/data/hus/07.pdf
- MacDorman MF, Mathews TJ: Recent Trends in Infant Mortality in the United States. National Center for Health Statistics, 2008, www.cdc.gov/nchs/data/databriefs/db09.htm

YOUR LETTERS

Send your letter to aansneurosurgeon@aans.org. Please include your full name, city and state, as well as disclosure of any conflicts of interest that might have bearing on the content of your letter. Complete submission instructions are available via www.neurosurgon.org.

INSIDE Neurosurgeon

NEWS OF AANS COMMITTEES AANS/CNS SECTIONS ASSOCIATIONS ORGANIZATIONS SOCIETIES

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 content is listed at right. The *AANS Neurosurgeon* invites submissions of news briefs and bylined articles to Inside Neurosurgeon. Instructions for all types of submissions to the *AANS Neurosurgeon* are available at www.aansneurosurgeon.org.

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Fireworks Over San Diego

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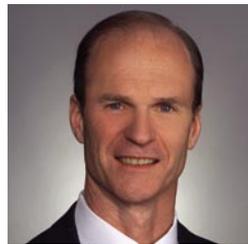
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AANS President's Perspective



Shaping Neurosurgery's Future: A Global Perspective

James R. Bean, MD

Over the course of the 20th century, neurosurgery grew into the highly technical, subspecialized practice that we know today. Driven first by increasing neuroanatomic knowledge and later by key technological innovations such as microsurgery, stereotactic localization, radiosurgery, digital imaging, and endovascular therapeutics, neurosurgery continues to reach ever higher levels of scientific sophistication and therapeutic effectiveness.

Contemporary neurosurgery is a microcosm of surgery in general, of medicine as a whole, and of the modern technological world at large. Discoveries in one medical specialty often and rapidly are applied in others, revolutionizing practice across specialties. For example, laparoscopy and arthroscopy found application in neurosurgery as cranial and spinal endoscopy. Nuclear magnetic resonance spectroscopy, which originated in chemistry and physics, progressed from a laboratory investigative tool to a transformative clinical imaging technique, expanding precision and detail in every anatomic region of the body. Discoveries in metallurgy and pharmaceuticals were utilized in platinum coils, titanium plates, and implantable chemotherapeutic agents used in neurosurgery. Scientific discovery needs only imagination and communication to permeate the broader medical community.

The "broader medical community" today is worldwide. Neurosurgery is a global enterprise, without technological or geographic borders. In this respect, it shares the far-ranging connectivity that drives business, markets, communication networks, scientific innovation, educational dissemination, and international diplomatic policies across the planet. No discovery in the U.S., if useful, long remains within its borders. No technical application in Europe stands isolated from international curiosity and adaptation across the continents. Clinical trials in Asia alter practice in the Americas. Scientific publications are instantly available worldwide via electronic publishing. Medical technology corporations utilize global marketing and distribution networks and profit as much or more from the world market as from the market in the country where the innovation originated. International fellows rapidly disperse scientific and technical ideas as well as practices throughout the global medical community. A scientific idea expressed in Boston inspires invention in Beijing and Bangkok. In every respect, we are connected globally: We cannot be isolated, and we do not act alone.

In recognition of this interconnectivity and with a collegial spirit, in 2009 the AANS will host the XIV World Congress of Neurological Surgery in Boston, a location accessible and attractive to neurosurgeons worldwide. From Aug. 30 to Sept. 4, this quadrennial scientific meeting of the World Federation of Neurosurgical Societies will bring together international experts of the highest caliber in neurosurgical achievement for a concentrated educational and social experience. The AANS is proud to be part of this distinguished and highly respected convocation and to facilitate increased communication, acquaintance, and understanding among neurosurgeons both in the U.S. and from the far reaches of the globe.



This symbol of the 77th AANS Annual Meeting, a globe held in the human hand, represents the incredible power of human action to guide the destiny of the entire planet.

But first, from May 2 to May 6 the AANS will present the 2009 AANS Annual Meeting in San Diego. This premier neurosurgical event will emphasize the global aspect of neurosurgery beginning with its theme, Shaping Neurosurgery's Future: A Global Perspective. The overarching theme is symbolized by a globe formed by points of light that emanate from cities on every continent, illustrating the technical advances that define the contemporary world and interconnect not just neurosurgeons and physicians worldwide, but all the diverse geographic reaches of civilization. The image portrays a unity and interdependency amid the diversity of terrestrial space, culture, language and climate. The globe is held in a human hand, which is in fact a neurosurgeon's hand from "In Their Hands," a book of photographs compiled by California neurosurgeon Javed Siddiqi. The hand symbolizes the ineluctable humanity of the neurosurgeon's craft, despite all technical complexity, and the dependence on the human agent to apply wisdom and compassion for human use and benefit to all scientific discovery and technological application. The symbolic portrayal of the hand is particularly poignant for the surgeon, a word derived from the classical Greek words *cheir* (hand) and *ergein* (work), denoting the artistic skill and master craftsman's precision necessary for neurosurgical success. And finally, the globe held in the human hand represents the incredible power of human action to guide the destiny of the entire planet, for better or for worse.

A symposium featuring notable speakers from around the world will substitute for many of the Saturday practical courses. In this one day, the symposium will concentrate international expertise and experience on topics and techniques that hold interest for all meeting attendees. International attendees will

have the opportunity to hear their colleagues and display their accomplishments before a worldwide audience. North American attendees will have the chance to hear about promising techniques and devices as yet unavailable in the U.S., and to hear firsthand from neurosurgical masters of international reputation and stature.

I personally am looking forward to the 2009 AANS Annual Meeting, which will be a superlative event thanks to many of our colleagues who have taken great pains to plan an event that is of maximum benefit to you. I hope you will join us for what promises to be a scientifically enlightening and thoroughly enjoyable occasion in beautiful San Diego. **NS**

James R. Bean, MD, is the 2008–2009 AANS president. He is president and managing director of Neurosurgical Associates PSC in Lexington, Ky. The author reported no conflicts for disclosure.

FOR FURTHER INFORMATION

- 2009 AANS Annual Meeting, www.aans.org/annual/2009
- XIV World Congress of Neurological Surgery, www.aans.org/wfns2009
- Crowell, R: In their hands. *N Engl J Med* 346:949–951, 2002

AANS GOVERNANCE

Two AANS Members Sanctioned AANS Suspends One, Censures Another

Two AANS members were sanctioned in November for unprofessional conduct related to their testimony as medical expert witnesses. The AANS Board of Directors approved both sanctions on Nov. 22, 2008, based on the Professional Conduct Committee's findings that these members acted unprofessionally.

Thomas J. Mampalam, MD, of Pinole, Calif., received a six-month suspension of his AANS membership for his failure to adequately review and correctly represent radiology reports in his affidavit.

Mark S. Schnitzer, MD, of La Habra, Calif., was censured for testifying without sufficient subject matter knowledge and for failing in his testimony to represent the full range of the standard of neurosurgical care.

The AANS Rules for Neurosurgical Medical/Legal Expert Opinion Services are available at www.aans.org/about/membership/Rulesfor_LegalExpertOpinionServices.pdf. **NS**

AANS ANNUAL MEETING

Shaping Neurosurgery's Future Speakers Shed Light on Neuroscience, Our World

When the world's neurosurgeons convene in San Diego May 2–6 for the 77th AANS Annual Meeting, esteemed individuals representing various paths of knowledge will be on hand to share their experience. In addition to economist and health policy analyst Uwe Reinhardt, PhD, who will deliver the Cushing oration on May 4, Anders Bjorklund, MD, PhD, Pulitzer Prize-winning author Geraldine Brooks, Adm. William J. Fallon, Edward R. Laws, MD, FACS, Robert L. Martuza, MD, FACS, John C. Reed, MD, PhD, and Evan Y. Snyder, MD, PhD, will be among the lecturers whose diverse perspectives will ignite new thought and add luster to an already stellar event.

ANDERS BJORKLUND, MD, PHD

Van Wagenen Lecture, May 5



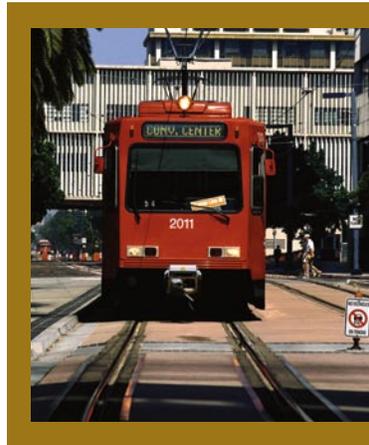
Dr. Bjorklund is professor of histology and section chief at the Wallenberg Neuroscience Center, University of Lund, Sweden, a position he has held since 1983. Dr. Bjorklund is a prolific author, with more than 500 publications in the fields of neuroanatomy, neuronal regeneration, cell transplantation and repair in the central nervous system. He served as president of the European Neuroscience Association from 1996 to 1998. He received his medical degree and doctorate in histology in 1969 and holds several honorary degrees from the University of Turin, the University of Copenhagen and the University of Oxford. He also is the recipient of numerous awards and honors including the Goran Gustafsson Prize and Award from the Swedish Academy of Sciences, the IPSEN Prize in Neuronal Plasticity from the IPSEN Foundation, Paris (with Albert Aguayo and Fred H. Gage); and the Lundbeck Foundation Nordic Award for Outstanding Research, Copenhagen.

GERALDINE BROOKS

Louise Eisenhardt Lecture, May 6



Geraldine Brooks was a correspondent for The Wall Street Journal for 11 years, and her beats included some of the world's most troubled areas, such as Bosnia, Somalia, and the Middle East. Her fiction debut, "Year of Wonders: A Novel of the Plague," was published in 10 countries and



Journey to San Diego for the 77th AANS Annual Meeting May 2–6. Plan to attend International Day, Saturday, May 2, which includes morning practical clinics and an afternoon symposium featuring faculty from across the globe. The International Reception will be held the evening of Monday, May 4. For meeting details, visit www.aans.org.

was named a 2001 Notable Book of the Year by The New York Times, The Washington Post, and The Chicago Tribune. For her second novel, "March," Brooks was awarded the 2006 Pulitzer Prize for Fiction. She is also the author of two acclaimed works of nonfiction, "Nine Parts of Desire: The Hidden World of Islamic Women," and "Foreign Correspondence: A Pen Pal's Journey from Down Under to All Over." Her newest novel, "People of the Book," instantly became a New York Times bestseller. Born and raised in Australia, Brooks lives in Massachusetts. She was a fellow at the Radcliffe Institute for Advanced Studies at Harvard University in fall 2005.

ADM. WILLIAM J. FALLON

Rhoton Family Lecture, May 6



Adm. Fallon is a Robert E. Wilhelm Fellow at the Massachusetts Institute of Technology Center for International Studies. The four-star admiral retired in 2008 after a distinguished 40-year career in military leadership. As head of U.S. Central Command, Adm. Fallon directed all U.S. military operations in the Middle East, Central Asia and Horn of Africa, focusing on combat efforts in Iraq and Afghanistan. His achievements include a resumption of military engagement with China, new outreach to India, a new agreement on a strategic framework with Japan, and humanitarian assistance to the victims of the 2006 Tsunami in S.E. Asia. As vice chief of the Navy, he personally directed the

recovery of the Navy staff in the wake of the Sept. 11 attack on the Pentagon and led in the planning of the retaliatory attacks on Al Qaeda and Taliban forces in Afghanistan. Adm. Fallon is a graduate of Villanova University, the U.S. Naval War College, and the National War College, and he has a master's degree in International Studies from Old Dominion University.

EDWARD R. LAWS, MD, FACS

Richard C. Schneider Lecture, May 4



Dr. Laws is director of the Pituitary Tumor Center at the Brigham and Women's Hospital in Boston, where he is actively involved in surgery and brain tumor and neuroendocrine research. He previously served as surgical director of the Pituitary/

Neuroendocrine Center at Stanford University, and from 1992 to 2007 he held dual positions as professor of neurosurgery and professor of medicine at the University of Virginia, where he established a neuroendocrine center. Dr. Laws is a past president of the AANS and has served in leadership positions for numerous professional medical organizations, including the Congress of Neurological Surgeons, the American College of Surgeons, the World Federation of Neurosurgical Societies, and the Pituitary Society. Dr. Laws has operated on more than 7,500 brain tumors, including 5,000 pituitary lesions, and he has authored more than 500 scientific papers and book chapters. Dr. Laws received his medical degree from Johns Hopkins University School of Medicine in 1963. His surgical internship and neurosurgical residency at Johns Hopkins was under the direction of A. Earl Walker, MD.

ROBERT L. MARTUZA, MD, FACS

Ronald L. Bittner Lecture, May 4



Dr. Martuza is the Higgins Professor of Neurosurgery at Harvard Medical School and chief of the neurosurgery service at the Massachusetts General Hospital, positions he has held since 2000. His clinical interests focus on nervous system tumors

of various types, with a particular interest in acoustic neuromas, meningiomas, and the various forms of the neurofibromatoses. His major research focuses on applications of molecular genetics to neurosurgery. In the 1980s, Dr. Martuza began the first studies of the possibility that viruses could be genetically engineered to selectively replicate within and kill cancer cells while not harming normal tissue. This research subsequently entered clinical trials and has since led to a large and developing field with multiple laboratories worldwide studying oncolytic viruses of various types for cancer

therapy. Dr. Martuza has authored 200 peer-reviewed articles, chapters and reviews. He received his medical degree from Harvard Medical School.

JOHN C. REED, MD, PhD

Theodore Kurze Lecture, May 5



Dr. Reed is president and chief executive officer of Burnham Institute for Medical Research in La Jolla, Calif., where he has worked as a scientist and leader for more than 15 years. Dr. Reed is also professor and Donald Bren Presidential Chair at

Burnham, with adjunct professor appointments at several universities. Dr. Reed has authored more than 700 research publications and over 50 book chapters. He was recognized by the Institute for Scientific Information as the world's most highly cited scientist for his research publications during the decade 1995–2005 in the broad fields of cell biology and general biomedicine. He is the recipient of numerous awards and honors and has been awarded in excess of 70 research grants for his work. He is a named inventor for more than 60 patents, the founder of four biotechnology companies, an advisor to numerous biotechnology and pharmaceutical companies, and serves or has served on the boards of directors of several public and private organizations.

EVAN Y. SNYDER, MD, PhD

Hunt-Wilson Lecture, May 4



Dr. Snyder, a developmental and child neurologist, is professor and director of the Stem Cell and Regeneration Program at Burnham Institute for Medical Research in La Jolla, Calif., and the founder and director of the Southern California Stem

Cell Consortium. He also directs the National Institutes of Health-Sponsored Human Embryonic Stem Cell Research Center. His research interests are in the areas of embryology, molecular and cellular basis of neural development, tissue engineering, gene therapy, and embryonic stem cell biology, and his research is characterized by a multidisciplinary approach to exploring the biology of stem cells and their role throughout life and therapeutic potential. Dr. Snyder serves on local, national, and international scientific committees, on advisory and editorial boards, and as a reviewer for journals and granting agencies. He publishes extensively and holds several patents involving possible therapeutic uses of stem cells. Dr. Snyder received medical and doctorate degrees from the University of Pennsylvania. He is board certified in pediatrics, perinatal-neonatal medicine, and neurology. **NS**

SPECIAL REPORT ON CAST Committee on Accreditation of Subspecialty Training Formation and Present Activities

H. Richard Winn, MD, and David Piepgras, MD

CAST, the Committee on Accreditation of Subspecialty Training, was created in response to the need for a mechanism of oversight for subspecialty education in neurosurgery. This article offers an overview of CAST, including its history, purpose, structure and function.

Accreditation is a process that reviews residency educational *programs*, while certification examines *individuals*. The RRC, authorized by the ACGME, accredits residency educational programs. In contrast, the ABNS, a member of the ABMS, certifies individuals. ACGME-accredited fellowships must fulfill several criteria including duration of at least 12 months and representation of a “new body of knowledge.” Fellows in an ACGME-accredited program are considered students and as such cannot submit a bill for their services.

In 1999, the SNS convened a summit meeting in New Orleans that was attended by representatives from the SNS, RRC, ABNS, AANS and CNS. The following guidelines were developed:

1. Completion of a ACGME-approved residency program is sufficient to allow practice of neurosurgery. Postresidency fellowship is not needed for either competent practice of or reimbursement for delivery of neurosurgical patient care within the definition of neurosurgery promulgated by the ABNS and RRC for neurological surgery.
2. The SNS is responsible for fellowship oversight.
3. The role of the RRC is restricted to evaluation of adverse impact of a fellowship on residency training.
4. There is no subspecialty certification by the ABNS.
5. Certification for supplemental education is by institution or hospital certificate.
6. Flexibility in regard to timing and duration of additional education is maximized. The concept of enrolling subspecialty education into residency electives is preserved.

These guidelines were based also on historical events related to the development of fellowships in neurosurgery. For example, in 1987 the specialties of anesthesia, general surgery, pediatrics, and internal medicine offered “added qualifications in critical care.” The ABNS initially resisted but then approved similar added qualification in 1987. Demand from neurosurgery was limited to one individual, and the ABMS suspended the program in 1994.

In 1990 the ABNS accepted the concept of added qualification in pediatric neurosurgery, but it shortly thereafter rescinded this action. In the interval, the RRC in neurosurgery created guidelines and, at the ACGME level, the “fellowship” designation for pediatric neurosurgery was expanded from one year to two years. This expansion of training duration limited the enthusiasm for ACGME approval, and the ACGME-recognized fellowship in pediatric neurosurgery consequently was suspended in 1997. In 1996 pediatric neurosurgeons formed a separate board, the American Board of Pediatric Neurosurgery, which

was not recognized by the ABNS or the ABMS.

In 1997 a resolution by the Joint Council of State Neurosurgical Societies that reaffirmed opposition to subspecialty certification was accepted by the AANS Board of Directors and the CNS Executive Committee. In 1997 the AANS and CNS appointed a committee headed by Julian T. Hoff, MD, to evaluate and make recommendations on subspecialization and fellowship training. As a result, the summit meet-

ing that led to the creation of CAST was organized and held in New Orleans.

ABBREVIATIONS

- ABMS, American Board of Medical Specialties
- ABNS, American Board of Neurological Surgery
- ACGME, Accreditation Council for Graduate Medical Education
- CNS, Congress of Neurological Surgeons
- FRC, Fellowship Review Committee
- RRC, Residency Review Committee
- SNS, Society of Neurological Surgeons

Administrative Structure

CAST presently consists of five members appointed by the SNS: a chair, a secretary-treasurer, and three additional members. Standing committees are:

- **Committee on Program Requirements.** This committee creates the written fellowship guidelines with significant input from the relevant AANS/CNS sections.
- **Appeals Committee.** This group is composed of the chair of CAST plus two SNS members. It reviews any appeals resulting from the review process.
- **Outcomes Committee.** This committee evaluates training experience of the fellowship and potential impact on residencies.

In addition to these standing committees, ad hoc FRCs review individual fellowship program applica-

tions. FRCs usually consist of one CAST member plus two SNS or AANS/CNS section members with appropriate background for review of the applications.

Past and Current Actions

CAST and the SNS developed these general principles for fellowship requirements:

- “Fellowships” are postgraduate subspecialty educational experiences. Fellowships are usually one year in duration, but in certain instances they may be shorter or longer as determined by the qualifications of the trainee, the body of knowledge, and the skills to be learned.
- “Enfolded subspecialty training” is done during the residency years. This type of training does not constitute a fellowship, but it may in itself be of sufficient depth and breadth to provide a higher level of subspecialty expertise than that achieved during the usual residency training.
- Training requirements for postgraduate fellowships are established by the subspecialty, preferably through its AANS/CNS section. These requirements specify duration and components of training, and requirements for facilities, faculty, affiliated services and minimum case material at the fellowship site. Fellowship requirements must include a curriculum for knowledge and procedural objectives to be attained in the fellowship. Requirements can stipulate minimum case expectations for each fellow.
- CAST accreditation is limited to those fellowships which exist within ACGME-accredited neurosurgery training programs (or the Canadian equivalent) and have current RRC authorization for existence of the specific fellowship.

Fellowships in the following areas currently exist: peripheral nerve, spine, pediatric neurosurgery, cerebrovascular neurosurgery, endovascular neurosurgery, neurosurgical oncology, stereotactic and functional neurosurgery and, most recently approved, advanced training in neurocritical care.

Conflicts, Colleagues and Constituents

From its conception, conflict has been CAST’s constant companion. Individuals and groups, at various times and settings, have been both in favor of and against recognition of fellowship training. On one hand, conflicting aims may exist among the residents, residency program directors, the ABNS and the RRC and, on the other hand, the desires of fellowship directors, the AANS/CNS sections and other subspecialty organizations. For example, fellowship applicants may desire limited duration of extra training, whereas fellowship directors may proscribe a more prolonged

(i.e., 12-month) training period. Residents and fellows can clash daily over their respective patient exposure, OR experience and clinical responsibility.

Because of the paramount importance of residency training, CAST decided that fellowship directors should be appointed by the chair of the neurosurgery department in which the fellowship training occurs. In addition, the RRC in its evaluation of a residency has the responsibility of determining whether the presence of a fellowship at an institution has an adverse impact on residency training there.

On an organizational level, state societies in general could be characterized as being against recognition of fellowship training and the AANS/CNS sections in favor of such recognition; however, individual neurosurgeons in the state societies and in the AANS/CNS sections might share views similar to one another. Similar conflicts often occur between the generalist and the subspecialist in neurosurgery.

The Future

The ABNS has defined the practice of neurosurgery broadly, and the RRC accordingly has created criteria that encompass the breadth of neurosurgery. It is recognized that an individual can be competent in many areas of neurosurgery without fellowship training. Nevertheless, the perceived need for additional subspecialty training is understood and now is organized under CAST. The education of neurosurgeons is not fixed but will continue to evolve in response to advances in clinical and basic sciences. CAST and fellowship training represent a response to the changing nature of medicine in the 21st century, and CAST is a mechanism that provides the flexibility for neurosurgery education to be responsive to these changes as well as to our patients’ needs. Additional details about CAST are available at www.societyns.org/fellowships/index.asp. **NS**

H. Richard Winn, MD, is professor of neurosurgery and neuroscience at Mount Sinai School of Medicine, New York, N.Y. **David G. Piepgras, MD**, is professor of neurosurgery at Mayo Medical School, Rochester, Minn. The authors reported no conflicts for disclosure.

Acknowledgements: The following individuals were “there at the creation” of CAST and are acknowledged for their vision and efforts: John G. Van Gilder, MD, William Shucart, MD, Julian T. Hoff, MD, Howard M. Eisenberg, MD, Martin H. Weiss, MD, Robert A. Ratcheson, MD, David G. Piepgras, MD, and Donald O. Quest, MD. Present members of CAST include Thomas G. Luerssen, MD, David G. Piepgras, MD (secretary-treasurer), Robert H. Rosenwasser, MD, Volker K.H. Sonntag, MD, and H. Richard Winn, MD (chair). Past members of CAST include: Philip R. Weinstein, MD, Charles J. Hodge Jr., MD, Howard M. Eisenberg, MD, and Martin H. Weiss, MD. We thank Martin H. Weiss, MD, Donald O. Quest, MD, Mary Louise Sanderson, Lawrence Sulton, PhD, and M. Sean Grady, MD, for reviewing the manuscript and for their thoughtful revisions.

ADVANCING NEURORESEARCH

AANS Corporate/Leadership Council Convenes Second Summit

Michele S. Gregory

AANS corporate relations efforts continue to reach new heights! Leaders and staff from the AANS met in Chicago in July 2008 with representatives from eight of the AANS' 13 Pinnacle Partners in Neurosurgery participating companies for the second annual AANS Corporate/Leadership Council Meeting.

The AANS CLC consists of members of the AANS Board of Directors, the Development Committee chair, and various other members of the association's volunteer leadership, as well as top leadership from all of the participating companies of the AANS Pinnacle Partners in Neurosurgery corporate giving program. The CLC met in July to further its goal of creating a collaborative environment that responds to the needs of neurosurgeons and the corporate community through discussion of neurosurgical education, research, advocacy and patient care.

The day's agenda addressed topics currently facing neurosurgeons and industry partners alike, including the state of relationships between associations and industry, current developments in medicine and neurosurgery, and future directions for the specialty of neurosurgery related to drugs, devices and education for surgeons. The discussions were lively, drifting toward conflict of interest and ethics, a topic one cannot escape reading about in the New York Times or Wall Street Journal these days.

"It is vital for industry to be able to work with surgeons to continue to innovate in spine, seeking improvement in products to provide care for patients," stated William Christianson, worldwide vice president, Regulatory Affairs and External Relations for DePuy Spine, a Johnson and Johnson company. "Meetings such as the AANS Corporate/Leadership Council allow industry and surgeons to provide their perspectives to each other, and to seek mutually beneficial ways to continue to work together to provide advancements in patient care."

The July meeting generated a number of action items and identified areas of follow-up for all involved. Highlights include the exploration of opportunities to positively promote relationships between corporate partners and the AANS, possibly through public awareness or public service campaigns, third-party management of fellowship funding, and

The mission of the AANS CLC is to provide a forum for discussion and collaboration between the AANS and its corporate partners on issues related to neurosurgical education, research, advocacy and patient care.

creating more opportunities to promote ethical behavior and decision-making. Other ideas included examining the feasibility of developing a panel of experts to review clinical trial methodology, study design and the efficacy of data collected for corporate partners, and exploring the resurgence of corporate-supported continuing medical education courses for board-certified neurosurgeons and neuro-nurses.

The AANS Pinnacle Partners in Neurosurgery program began in 2004 as a way for corporate partners to positively impact the future of neurosurgical research and education, beyond their traditional support of the AANS. In 2006, the AANS' vision of offering resident education courses became a reality, thanks to the investment of Pinnacle Partners in supporting these much needed, highly desired educational offerings for neurosurgeons-in-training. Since 2006, 15 resident education courses have been offered to residents through investments made by Pinnacle Partners.

The mission of the AANS CLC is to provide a forum for discussion and collaboration between the AANS and its corporate partners on issues related to neurosurgical education, research, advocacy and patient care.

"We are proud to say that a number of 2007 CLC meeting action items were accomplished, including the recently adopted Guidelines for Industry-Neurosurgeon Conflicts of Interest," said William T. Couldwell, MD, chair of the AANS Development Committee. "The Corporate/Leadership Council continues to be an important part of the AANS' corporate relations program because it provides a forum for open discussion, and it will play a key role in the future of the AANS' educational and research-related initiatives."

The group plans to meet each summer, in addition to individual corporate visits throughout the year. **NS**

Michele S. Gregory is AANS director of development. The author reported no conflicts for disclosure.

ADVANCING NEURORESEARCH

Cushing Circle of Giving Neurosurgery Research and Education Foundation Initiates New Giving Opportunity

The new NREF Cushing Circle, a cumulative, lifetime and planned-or-deferred giving society of neurosurgeons who support the NREF, will be announced at the 2009 AANS Annual Meeting. The NREF has 11 benefactors who currently qualify for membership in the Cushing Circle and 50 more with at least \$10,000 of historical giving since 1990. All members of the Cushing Circle will be invited to attend the 2009 Cushing Luncheon with Uwe Reinhardt, PhD, immediately following his Cushing oration. AANS President James R. Bean, MD, will officially welcome and thank this inaugural class of Cushing Circle members.

“A giving society such as the Cushing Circle can help build camaraderie among philanthropists who consistently support the NREF,” stated Griffith R. Harsh IV, MD, chair of the NREF Executive Council.

By providing an organizational identity for NREF supporters and enhancing the recognition given to those who have made significant financial commitments to the NREF and neurosurgical research, it is hoped that the Cushing Circle will enable the foundation to attract additional support.

The NREF proposed the Cushing Circle of Donors in 2007, and the AANS Board of Directors approved its establishment in 2008. The criteria for membership include: (a) a historical giving total of at least \$20,000; or (b) a historical giving total of at least \$10,000, with a pledge of at least \$10,000 within the next five years (at a minimum rate of \$2,000 per year); or (c) a historical giving total of at least \$10,000, with a memorandum of understanding for a willed bequest of at least \$50,000.

This plan for an NREF giving society was prompted by the success of the Orthopaedic Research and Education Foundation’s special recognition society for its most generous contributors, the Alfred R. Shands Jr. Circle. Martin H. Weiss, MD, as chair of the NREF in 2006, believed that the establishment of a similar society would greatly benefit the NREF. The Shands Circle, established in 1994, is composed of individuals who have demonstrated substantial commitment to the OREF endowment with a one-time or multiyear contribution of at least \$20,000 or a deferred contribution (for example, trusts, bequests, or insurance policies) of at least \$50,000. To date, the Shands Circle has nearly 500 members and \$59 million in assets.

Many colleges, universities, religious entities, and national organizations have lifetime or cumulative giving societies, among them West Point, the American Cancer Society, and the Make-a-Wish Foundation. The American College of Surgeons’ Fellows Leadership Society serves the same purpose. **NS**

MICHAEL C. PARK, MD

2009 Van Wagenen Fellowship Awardee



Michael C. Park, MD, has been awarded the 2009 William P. Van Wagenen Fellowship. As the 2009 Van Wagenen Fellow, Dr. Park will travel to Marseille, France, to study with Jean Regis, MD, at Assistance Publique L’Hopital d’Adulte de la Timone. Through this fellowship, Dr. Park will continue his research in support

of the further theoretical and clinical investigation, development and clinical analysis and application of the Anatomist/Brain VISA as a part of treatment protocol for intractable epilepsy. Training will commence on July 1, 2009, and will be completed within the 12-month period of the grant.

Awarded annually, the William P. Van Wagenen Fellowship is offered for postresidency study in a foreign country for a period of 12 months. In 2008, the fellowship stipend increased from \$60,000 to \$120,000 in an effort to remain competitive with junior academic positions. Additional funds are available to the fellow should he or she need them, including \$6,000 for family travel expenses and up to \$5,000 for health insurance. Each year, \$15,000 of research support is made available to the university, laboratory or institution sponsoring the Van Wagenen Fellow to help defray research, education and investigation costs.

Additional information about the Van Wagenen Fellowship is available at www.aans.org/research/fellowship/aans.asp. **NS**

AANS IN THE NEWS

Growing Media Presence

PR Primer Reveals What's Behind the Numbers

Betsy van Die

The media increasingly has relied on the AANS for its expertise as the go-to organization for all topics neurosurgical. The AANS' reach as the spokesorganization for neurosurgery has grown exponentially over the last few years. In 2004, media coverage was at just 265 million impressions, while three years later, 2007 coverage topped 2.7 billion impressions. Media coverage in 2008 exceeded 3.9 billion impressions, with nearly 1,500 news articles/broadcasts. Of that total, the 2008 AANS Annual Meeting contributed to a record-breaking 1.96 billion impressions and 489 articles or broadcasts.

The increase in AANS media coverage has been accomplished through a four-prong approach:

1. Promoting AANS as the spokesorganization for neurosurgery with experts available for media interviews
2. More proactive annual media campaigns
3. More frequent public awareness campaigns
4. Building and improving patient outreach Web content and weaving it into public awareness campaigns

What Do Circulation Numbers Mean?

Public relations agencies universally use similar metrics to measure success. The major measurement tools used by nonprofit organizations to analyze public outreach efforts include: media circulation, inquiries received (e-mails and phone calls), Web site hits, and Google page ratings.

Newspapers and magazines provide subscriber figures. Web-based outlets such as Medscape provide the unique number of visitors per month, while radio and television outlets generally do not provide audience figures. The AANS tracks all coverage mentioning the AANS, the *Journal of Neurosurgery*, the NREF, and AANS Web sites through a comprehensive media report, the sum total of which is all of the figures provided by every media outlet in which the AANS garnered coverage.

Public inquiries have increased considerably over the last few years. Recent inquiries have included

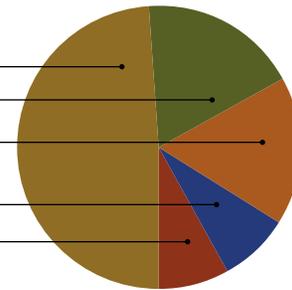
spinal fusion, minimally invasive spine procedures, Chiari malformation, ruptured aneurysms, Tarlov cyst, and deep brain stimulation. The AANS Public Relations Committee utilizes public inquiry trends as criteria for developing new patient outreach Web topics and public awareness campaigns.

There are currently more than 60 in-depth topics posted on www.NeurosurgeryToday.org under the Conditions and Treatments heading. On a recent

Google search, 10 AANS topics came up No. 1 on page one, followed by an additional 25 scoring placement on page one. These ratings have increased because the AANS has made these Web topics an integral part of all public awareness campaigns, which

has led to the media, the public, and AANS members/institutions utilizing them with increasing frequency.

2008 Media Circulation/Coverage	
AANS Annual Meeting	49%
Journal of Neurosurgery	18%
Public Awareness Campaigns	17%
NeurosurgeryToday.org	8%
Spokesperson Placements and Other	8%



Recent Media Coverage and Spokesperson Placements
Publicity efforts related to “The Future of Neurosurgery: A White Paper on the Recruitment and Retention of Women in Neurosurgery,” a paper published in the *Journal of Neurosurgery*, set important precedent for the AANS to publicize *JNS* articles. The July press release generated considerable media interest, with 40 articles, totaling 97.9 million in circulation, appearing in *The Wall Street Journal*, the *Chicago Tribune*, *Crain's Chicago Business*, *Medscape*, *United Press International*, and *Google Health*, among other publications.

A press release was distributed in late November on “Radiolucent Hair Accessories Causing Depressed Skull Fracture Following Blunt Cranial Trauma,” an article in the *JNS: Pediatrics*. This was the first time that the AANS publicized a *JNS* clinical article, and the results were impressive. The publicity efforts generated 115 articles, totaling 310.7 million in circulation, in such publications as *HealthDay*, *MSN*, *Yahoo!News*, *USAToday*, *Health*, *Business Week*, *Forbes*, *U.S. News & World Report*, and the *Atlanta Journal-Constitution*.

An integral part of the AANS media program is having experts at the ready to field media interview requests. When news about Sen. Ted Kennedy's glioma diagnosis broke, the AANS received a flurry of requests necessitating immediate response. Gail Rosseau, MD, was featured in The Washington Times (two articles), The Wall Street Journal, and Wisconsin Public Radio.

Dr. Rosseau also fielded AANS interview requests from the Baltimore Examiner on brain mapping/awake craniotomy, The Desert Sun on minimally invasive brain surgery, and the Chicago Tribune on death from traumatic brain injury in Cook County Jail. Other spokesperson placements included David Jimenez, MD, Fox News San Antonio on Oscar Diaz and the dangers of boxing; Jeffrey Thomas, MD, USA Today and Delaware Online on Joseph Biden and brain aneurysms; James Bean, MD, Physician's Weekly on carpal tunnel, and Medscape on the SPORT study and surgery for herniated disk; and Ghassan Bejjani, MD, CBC Radio One Calgary on Chiari malformation. **NS**

Betsy van Die is AANS director of communications. The author reported no conflicts for disclosure.

AANS MEMBER BENEFIT

Dividend Credit Debuts

AANS members insured by The Doctors Company through the AANS Professional Liability Insurance Program receive a 5 percent dividend credit in addition to the premium discount that AANS members with favorable claims histories receive. Dividend distributions began appearing as credits against current premiums effective with renewals that began on July 1, 2008. The Doctors Company has authorized a total of \$44 million in dividends for its policyholders in the past two years. The AANS has exclusively sponsored The Doctors Company as administrators of its national member program since 2000. The multiyear dividend is in addition to other industry-leading member benefits, including the Tribute Plan, which honors physicians with a significant financial reward for providing outstanding patient care. The AANS Professional Liability Insurance Program also offers members: a 5 percent program discount for AANS members with favorable claims histories; free tail coverage for The Doctors Company's policyholders on full retirement at age 55 or older who have been insured for five years, or who suffer permanent and total disability or die; an additional claims-free credit of up to 17.5 percent per year; patient safety

programs tailored to the needs of AANS members; and claim settlement with the consent of the insured physician as long as the policyholder is an active insured of The Doctors Company. **NS**

AANS POLICY

CME Policy Change

As of Jan. 1, 2009, the AANS began accepting credits from any continuing medical education activity that awards category 1 credit. The AANS no longer requires members to attend specific activities that are directly sponsored, jointly sponsored, or cosponsored by the AANS. In addition, the AANS once again will accept category 1 credit awarded for Grand Rounds. This policy change, which largely represents a return to CME policy before Jan. 1, 2005, is effective for the CME cycle of Jan. 1, 2008, to Dec. 31, 2010. The Maintenance of Certification Committee recommended the change, and the Executive Committee approved it with the following caveat: To maintain membership in the AANS, Active and Active Provisional members are required to document receipt of the Continuing Education Award in Neurosurgery. This award is earned by documenting within each CME cycle at least 60 credits, 40 of which are recommended to be neurosurgical credits. Neurosurgical credit is offered to individuals who have attended a neurosurgery-related meeting, course, or activity that has been granted AMA PRA Category 1 Credit. Detailed information about AANS education policies

AANS/SNS PARTNERSHIP

New Online Courses

The AANS and the Society of Neurological Surgeons have partnered to offer online courses developed principally for residents, but also for physician extenders and others. The courses cover subjects designated as clinical and core competencies by the Accreditation Council for Graduate Medical Education and feature slide presentations synchronized to discussion narrated by neurosurgical experts. The courses are designed to reflect the consensus among program directors about the scope of study that should be encompassed in neurosurgical resident education. As an added benefit, appropriate modules potentially can be used to complete aspects of the American Board of Neurological Surgery's Maintenance of Certification Program. Course topics and faculty have been selected by an online content committee of program directors and ABNS and AANS/SNS leadership. These courses will reside on the AANS Web site for a minimum of three years. The courses are accessible from the AANS education page, www.aans.org/education. **NS**

CALENDAR/COURSES

AANS COURSES

Goodman Oral Board Preparation: Neurosurgery Review by Case Management

May 24–26, 2009, Houston, Texas

Nov. 8–10, 2009, Houston, Texas

Managing Coding and Reimbursement Challenges in Neurosurgery

June 26–27, 2009, Chicago, Ill.

July 17–18, 2009, Washington, D.C.

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

Additional listings are available in the comprehensive and interactive Meetings Calendar at www.aans.org/education/meetings.aspx, where calendar items can be submitted.

March

11–14

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

March 11–14, 2009, Phoenix, Ariz.
www.spinesection.org

25–28

Southern Neurological Society

March 25–28, 2009, Greensboro, Ga.
www.southernneurosurgery.org

April

15–18

9th European Skull Base Society Congress

April 15–18, 2009, Rotterdam, Netherlands
www.esbs2009.eu

17–22

21st Bethesda Annual International Spine Workshop

April 17–22, 2009, Bethesda, Md.
www.bethesdaspine.com

25–
May 2

American Academy of Neurology 2009 Annual Meeting

April 25–May 2, 2009, Seattle, Wash.
www.aan.com

May

2–6

77th AANS Annual Meeting

May 2–6, 2009, San Diego, Calif.
www.aans.org

24–27

15th Quadrennial Meeting of the World Society of Stereotactic and Functional Neurosurgery

May 24–27, 2009, Toronto, Canada
www.wssfn.org

June

23–27

23rd International Congress and Exhibition on Computer Assisted Radiology

June 23–27, 2009, Berlin, Germany
www.cars-int.org

July

8–11

2009 Cerebrovascular Complications

July 8–11, 2009, Teton Village, Wyo.
jan@strategicmedicalseminars.org

August

13–16

2nd Annual American Neurological Association Summer Course for Clinical and Translational Research in the Neurosciences

August 13–16, 2009, Vail, Colo.
www.aneuroa.org

17–23

2nd Annual NINDS/NIH sponsored Clinical Trial Methods Course in Neurology

August 17–23, 2009, Vail, Colo.
www.neurologytrials.org



Increase Positive Awareness and Goodwill

PR for Your Practice

In today's rapidly changing economic climate, few neurosurgeons take the time to consider how their practice is perceived by their patients, referring physicians, the hospital and the community. The goal of public relations is to create positive impressions and goodwill toward your practice, communicate a message, or explain a situation from your point of view.

Central to PR is a consistent message that encapsulates the qualities of your practice that you want to publicize. No matter how established your practice is, it can be beneficial to define or revisit the qualities that separate your practice from the competition. Based on these qualities, your practice can design a cost-effective PR strategy that reaches your patients, referring physicians, hospital administration and the community.

One way to spread this message is through the traditional and relatively expensive media outlets of television, radio, or newspapers. Consider contacting newspaper or magazine advertising offices to publish an informational insert that highlights your practice. You also can purchase time on local television or radio stations to showcase your practice. A less expensive alternative is to create a brochure about your practice that is distributed to referring physicians and patients. A marketing consultant can do this for you.

However, the local medical community might perceive purchased media as distasteful and your targeted audience might view it with skepticism. One way to mitigate this potential negativity is through earned media opportunities. Most newspapers and television stations have health desks, which often are interested in stories such as the first application of a new technology or procedure, interesting or heartwarming patient accounts or the development of new clinical programs. Alternatively, you can offer to comment on current events, such as the recent controversy over cell phones and brain tumors. Within the community, sponsorship of a public radio station or community events can create a "halo effect," whereby the positive feelings evoked by the activities are transferred to your

practice. A stroke risk factor screening at a mall, a better back and neck workshop or mini-medical school at your hospital also can bring good publicity to your practice.

To create and maintain a positive association between referring physicians and your practice, organize a happy hour or other program to thank your referral sources for their support. Being active in your local medical society is another way to increase visibility. Educational events such as con-

PR often is neglected in a practice's overall business strategy, but it shouldn't be.

tinuing medical education lectures or Grand Rounds can create new referral sources or expose existing referral sources to new concepts, such as functional neurosurgery, which may be unfamiliar to many primary care physicians.

In addition to creating positive associations, another goal of PR is to communicate or explain.

Two major issues facing neurosurgical practices are malpractice reform and insurance reimbursement, particularly from Medicare. In addition to the usual news, sports and entertainment magazines in your office waiting room, consider providing articles about the impact of defensive medicine on health-care costs, or about the rising cost of malpractice insurance causing a shortage of physicians, which impacts a patient's access to care. If you recently have stopped accepting a certain insurance plan, or are limiting Medicare or Medicaid patients, a letter to patients and referring physicians explaining your decision can ease some of the negative feelings that are bound to result from your decision.

Lastly, remember that your most frequent opportunity for PR is within your office. Take some time to consider your customer service. Word-of-mouth referrals to friends can generate a significant compo-

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Improving Emergency Neurosurgical Care: Regionalization or Acute Care Surgery?

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The authors reported no conflicts for disclosure.

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Introduction

Over the past few years the idea for a new specialty called acute care surgery, in which acute care surgeons would take care of cases of trauma, acute general surgery, acute orthopedic surgery, and acute neurosurgery, has been developed primarily by those in the trauma surgery community (6–15, 21). The rationale underlying this proposal has been discussed extensively in the literature and can be summarized as a response to two parallel problems. The first relates to workforce, encompassing the shrinking case load of the trauma surgery specialty and the waning interest of residents in pursuing the specialty (7, 11, 18). The second is the generally perceived lack of interest by orthopedic surgeons and neurosurgeons in trauma care participation (7, 9, 11, 22). Proponents of acute care surgery have argued that neurosurgery coverage primarily is lacking in the area of trauma and that the availability of acute care trauma surgeons covering orthopedic and neurosurgical trauma at trauma centers therefore would solve both problems.

Although a recent national survey by the AANS showed that 94 percent of neurosurgeons participate in emergency call, with 79 percent doing so more than once per week, there are more EDs than

neurosurgeons in the United States (16–17, 19). Because of this, and because legal and socioeconomic concerns have led some neurosurgeons to cut back on extensive ED coverage, not all EDs in the United States can be covered by neurosurgeons.

The two most commonly offered solutions to this problem are regionalization of emergency neurosurgical care and the acute care surgery model (1, 3–5, 7, 11–12, 17, 19).

Materials and Methods

Data were collected on emergency neurosurgical transfers to five academic centers in Cook County, Ill., from Cook and 14 adjacent counties in Illinois, Indiana, and Wisconsin (3). In the two-month, prospective evaluation of these transfers to the five academic centers, data were evaluated on 230 patients with 19 different diagnoses transferred from 71 different hospitals. Emergency neurosurgical transfers were identified as the subpopulation of patients transferred from facilities that lacked either neurosurgical coverage or expertise in emergency care in cases such as intracranial hemorrhage.

Results

Trauma or Nontrauma Center Origination Only
3 percent (eight cases) of the 230 patients

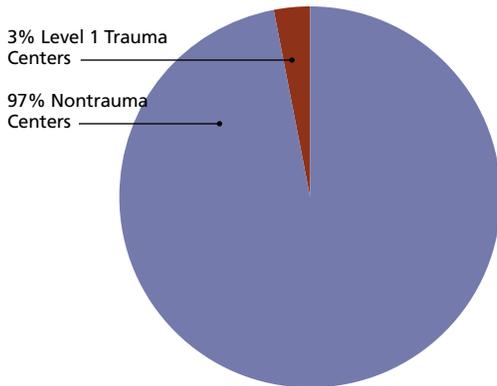
who required emergency transfer due to lack of neurosurgical coverage or lack of expertise were originally seen in level 1 trauma centers (Figure 1). All of these centers had full-time neurosurgical coverage in addition to coverage by trauma surgeons. Of these eight cases,

ABSTRACT

Recent proposals to improve emergency neurosurgical care have focused on two possibilities: regionalization and the acute care surgery model. Arguments for each have been made, but frequently in the absence of robust data support. In an effort to identify the better choice, we analyzed data collected on neurosurgical transfers of patients to five academic medical centers in an urban setting. The data indicate that these patients primarily had complex diagnoses most commonly related to nontraumatic intracranial hemorrhage and that they were transferred from nontrauma centers across a large geographic area. These findings support a model of regionalization as the better option for serving emergency neurosurgical patients.

FIGURE 1

Origination of Emergency Neurosurgical Transfers



there were five aneurysmal SAHs, one ventriculoperitoneal shunt failure, one parenchymal ICH and one blunt head injury. The blunt head injury was addressed at the level 1 trauma center by a neurosurgeon who placed an intracranial pressure monitor prior to transfer.

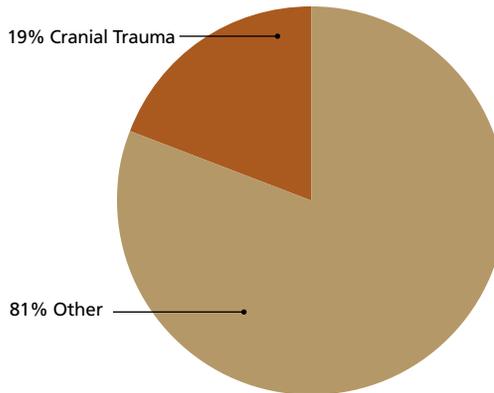
The other 97 percent of patients were transferred from 65 different nontrauma center hospitals in 15 different counties and in three different states. These nontrauma center hospitals transferred 1.6 patients per month on average.

Diagnoses Diagnoses were unrelated to cranial trauma in 81 percent of these emergency neurosurgical transfers cases (Figure 2). The most common reason for transfer was parenchymal ICH (33 percent) followed by SAH (29 percent). Cranial trauma was the primary diagnosis in 19 percent of these transfers, and only one of these cases was transferred from a level 1 trauma center.

Of the 44 cases transferred with the primary diagnosis of trauma, there were 35 subdural or epidural hematomas, four skull fractures, three contusions and two traumatic brain injuries. The cases with the primary diagnosis of head trauma were transferred from 18 different hospitals spanning northeastern Illinois to the Wisconsin and Indiana borders. Each of

FIGURE 2

Diagnosis of Cranial Trauma in Emergency Neurosurgical Transfers



these hospitals on average transferred 1.2 cranial trauma cases per month in the two-month period studied.

Discussion

These data clearly show that the deficit in emergency neurosurgical care is not at trauma centers. Thus, acute care surgeons practicing at trauma centers would have little impact on patient access to emergency neurosurgical care. The deficit in emergency neurosurgical care is primarily in small hospitals where trauma surgeons are not practicing.

Based on the data, an acute care surgeon practicing in a small community hospital on call every fourth night could expect to see four cranial trauma cases per year. On average, two of these cases would be subdural hematomas that possibly would require a craniotomy. This would be an insufficient volume to maintain competency in cranial surgery. If this trauma surgeon were to expand his practice beyond cranial trauma and take all neurosurgical emergencies at the hospital, he would see 1.6 cases per month on average. The most common cases would be aneurysmal SAH and parenchymal ICH. Models of acute care surgery fellowships described in the current literature do not include craniotomy for aneurysm or

Continues ►

Abbreviations:

AANS, American Association of Neurological Surgeons; ED, emergency department; ICH, intracerebral hemorrhage; SAH, subarachnoid hemorrhage

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PEER-REVIEWED RESEARCH

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Some of these data were published in *Neurosurgery* 62(3):709–716, 2008.

► Continued

endovascular coiling (8, 14, 20–21).

The data show a pattern of intermittent tertiary emergency referral of mostly complex cases from small hospitals spread across hundreds of miles. These findings strongly support a model of regionalization. However, efforts at regionalization have been local and slow to materialize thus far. An unpublished survey conducted in 2007 by the authors and Christopher Getch for the Illinois State Neurosurgical Society showed that 76 percent of respondents would support regionalization of emergency neurosurgical care. Formal regionalization of emergency neurosurgical care at the state or national level is being studied and may gain momentum (2–5, 17). In the meantime, ongoing efforts to improve the efficiency of transfers to tertiary centers have resulted in de facto regionalization that nevertheless shows promise for improvement in emergency neurosurgical care.

Conclusions

This collection of data on patients who were transferred to a tertiary care hospital for acute neurosurgical care is useful in evaluating the better model of caring for these patients. Their needs should be of primary concern in any effort to improve emergency neurosurgical care.

While few would argue that the status quo is ideal, proponents for change must show that their proposal would correct the current deficiency. The acute care surgery model would be the better choice if the patients initially came primarily to trauma center emergency departments that had no neurosurgical coverage and the surgical training for addressing their cases were simple to learn in a short period. The regionalization model would work better if complex emergency cases initially presented to nontrauma center hospitals scattered over large distances.

Because the data indicates that the transferred patients primarily have complex diagnoses most commonly related to nontraumatic intracranial hemorrhage and that they are transferred from nontrauma centers across a large geographi-

cal area, they support a model of regionalization as the choice for better serving emergency neurosurgical patients. **NS**

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SPECIAL FEATURE

► Continued from page 21

cine. The high-tech industry in Israel is seen as offering higher financial rewards for success than fields such as medicine. Neurosurgery in Israel faces particular challenges in attracting the most talented medical students because it is such a demanding surgical specialty and cannot offer financial compensation in accordance with the demands of the field. Despite these challenges, Israeli neurosurgical residency programs still are able to attract highly motivated and talented medical graduates for the rigorous neurosurgical training. All six residency programs in Israel are regulated by the Scientific Council of the Israeli Medical Association. In addition to other requirements, residents must pass written and oral board examinations to complete neurosurgical training and receive specialist certification.

Historically, the malpractice environment in Israel has not been as bad as in the U.S. However, there is a trend in Israel toward more medical malpractice litigation, which is affecting neurosurgery. Malpractice insur-

ance rates are still much lower when compared to the U.S. and are usually paid by the hospital that employs the neurosurgeon. **NS**

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FOR FURTHER INFORMATION

- Highlights on Health in Israel 2004, www.euro.who.int/document/e88549.pdf
- Israeli Central Bureau of Statistics, http://www1.cbs.gov.il/reader/cw_usr_view_Folder?ID=141
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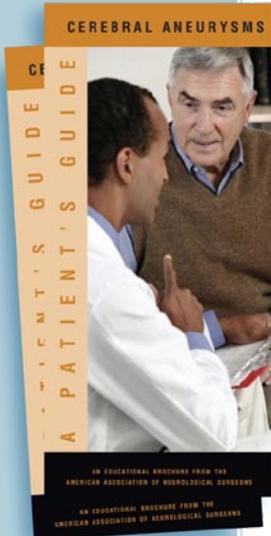
PRACTICE MANAGEMENT

► Continued from page 41

ment of your new patients, and a positive experience also can result in more referrals from primary care physicians. More importantly, a negative experience is much more likely to be communicated to friends and referral sources. According to a recent survey conducted by the Wharton School of Business, only 6 percent of customers who were dissatisfied with service formally complained, while 31 percent told friends or family what had happened and 6 percent told eight or more people about their dissatisfaction. Furthermore, 48 percent of people reported avoiding a store because of someone else's negative experience.

PR often is neglected in a practice's overall business strategy, but it shouldn't be. With minimal effort and expense, a simple, coherent message and basic PR strategies can increase positive awareness and goodwill toward your practice. **NS**

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What's Your Diagnosis, Treatment Plan?

Subdural Hematoma in a Patient With a VP Shunt

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

The Case

A 51-year-old man presented to the emergency department with mild but progressive headache, dysphasia, and right-sided weakness present over a two-week period. He had sustained a minor head injury approximately one month earlier.

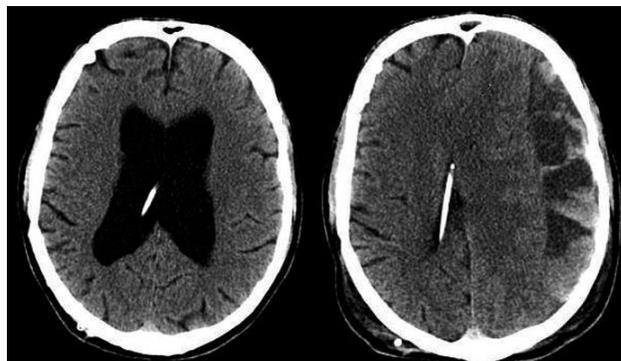
A programmable ventriculoperitoneal shunt (Strata valve, Medtronic Inc.) had been inserted five years prior to this presentation to treat communicating hydrocephalus, which developed after he sustained a severe closed-head injury with a right-sided acute subdural hematoma. He had made a good recovery functionally, with slight residual left-sided weakness. Two months before this presentation in the emergency department, his valve had been adjusted to the lowest performance level of 0.5 (the minimum cerebrospinal fluid pressure required to open the ball and spring valve).

Examination showed an alert male (Glasgow coma scale score of 15) who exhibited some comprehension difficulty and made occasional naming errors. He exhibited a pronator drift of the right outstretched arm and a right Babinski response.

Discussion

A recent population-based study in California reported a complication rate of 27 percent for adults five years after shunt placement (7). Both intracranial and spinal subdural hematomas were recognized complications (3, 4).

Different strategies have been employed to decrease shunt drainage to aid ventricular re-expansion and resolution of the subdural collection, including suture ligation (3) and valve adjustment or replacement (8). A magnetically adjustable valve system has the advantage of achieving this nonsurgically.



Baseline CT before emergency presentation (left) and CT at emergency presentation (right).

Bedside twist drill craniostomy drainage of a chronic subdural hematoma is considered as effective as burr hole drainage with irrigation or craniotomy under general anesthesia (1, 6, 2). Any portion of the collection that appears hyperdense on a CT scan would not be expected to drain well and, if of substantial volume, may require either additional time to liquefy or a more invasive surgical procedure. The use of corticosteroids in the setting of chronic subdural hematoma is controversial but may have benefit, especially for those patients treated nonsurgically (5). In a patient with a ventriculoperitoneal shunt and chronic subdural hematoma, the acceptable management options are greatly increased and likely would vary substantially depending on the specific circumstances and practitioners' preferences.

Take the Gray Matters Survey

Please indicate how you would manage this patient by taking the brief multiple choice survey:

- Web address: www.aansneurosurgeon.org
- Select the Surveys link in the *AANS Neurosurgeon* toolbar.
- Take the survey: Subdural Hematoma in a Patient With a VP Shunt.

Responses: Primary Cerebral Malignancy

This case was published in the *AANS Neurosurgeon* 17(3): 50–51, 2008. Review this case at www.aansneurosurgeon.org.

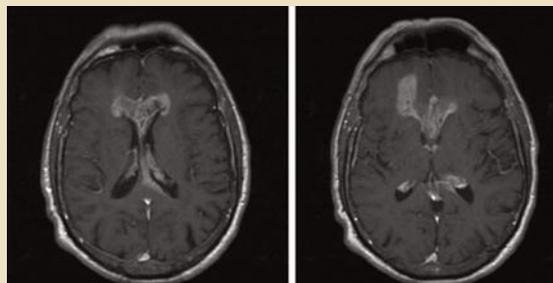
THE CASE

Primary Cerebral Malignancy: Treating Malignant Brain Tumors in the Elderly Population

SURVEY RESULTS SUMMARY

This case generated a lot of controversy, with considerable variation in how respondents would manage this patient. The survey response as well as interesting narrative comments spanned the spectrum from palliative hospice care to relatively aggressive surgical and medical treatment. Overall, two thirds of the respondents did recommend some form of surgical treatment whereas one third recommended only medical treatment without surgery (and presumably not even biopsy-proven diagnosis). For example, in the medical-only treatment group, approximately half of the respondents recommended radiation therapy. Another third recommended chemotherapy. Approximately two thirds would have used dexamethasone and half would have continued renal dialysis.

Based on the survey results, it was unclear whether the respondents recommending medical therapy without surgery would have recommended or would have been obligated to do a biopsy to first prove the diagnosis. At least two of the respondents commented that they would prefer their local oncology and/or radiation oncology teams to provide radiation and/or chemotherapy to such patients without a proven histopathological diagnosis. Of the respondents recommending surgery, the vast majority would have performed a stereotactic biopsy, with the preponderance of this group preferring a frame-based system under local anesthesia rather than a frameless procedure under general anesthesia. One of the respondents actually recommended surgery for attempted gross total resection.



Gadolinium-enhanced T2-weighted axial MRI images demonstrating the butterfly wing enhancement pattern and ependymal spread.

The following comments demonstrate the range of opinions expressed by survey respondents.

–Rajiv Midha, MD, Calgary, Canada

CASE COMMENTARY

I would tailor the treatment to the patient's and family's wishes, trying only to provide as clear a picture as possible on which they could base their decisions. If treatment is desired, then I would recommend a tissue diagnosis and the most appropriate anesthetic for the patient.

–Hunt Bobo, MD, Tupelo, Miss.

The MRI appearance makes primary central nervous system lymphoma very possible. I would treat with Decadron for two weeks; if there is significant reduction in enhancement I would recommend empiric chemotherapy.

–Jeffery Masciopinto, MD, Madison, Wisc.

Because surgical removal probably would not improve quality of life and may worsen it given the anatomy of this tumor, it is best to go with the adjunctive treatments alone that would otherwise be offered with surgery.

–Harry Friedman, MD, Memphis, Tenn.

A synopsis of all results will be published in an upcoming issue. **NS**

Jacob Alant, MD, is a clinical fellow, and **Rajiv Midha, MD**, is professor and deputy head of the Department of Clinical Neurosciences at the University of Calgary in Canada. Dr. Midha is a member of the AANS Neurosurgeon Editorial Board. The authors reported no conflicts for disclosure. Send case presentation ideas for Gray Matters to Dr. Midha at aansneurosurgeon@aans.org.

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Speculating in Alternative History

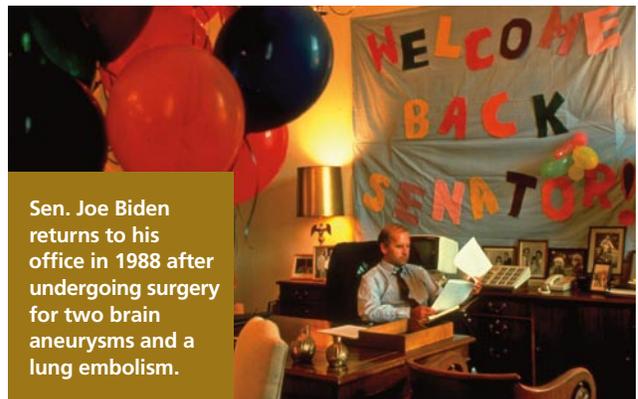
When the Patient Is a Head of State

The recent election yielded a historic milestone in which we can truly take pride. Yes, for the first time, America has a vice president who has had two craniotomies. In 1988 then-Sen. Joseph Biden sustained a subarachnoid hemorrhage and was found to have bilateral posterior communicating artery aneurysms. The right-sided one that bled was clipped first, followed about six weeks later by elective clipping of the contralateral aneurysm. Surgery was done at Walter Reed Army Medical Center in Washington, D.C., under the care of Eugene George, MD.

Did the air hitting his brain contribute to the vice president's famous tendency to verbosity and even disinhibition? There is no reason to think so. Biden displayed this kind of behavior well before his brain surgery. He had been an early candidate for the 1988 Democratic presidential nomination, but dropped out in the fall of 1987 after the media reported that he plagiarized the speeches of other politicians and exaggerated his academic credentials. This was in the wake of plagiarism allegations 20 years earlier, when Biden was in law school.

Historical examples of sovereigns being treated for a neurosurgical problem are rare enough to be the subject of special interest. Perhaps the best-known example is that of King Henry II of France, injured in a joust in 1559. A wooden lance penetrated his right orbit and temple. Surgical consultants included Ambroise Pare and Andreas Vesalius, who performed the autopsy 11 days later. Intracranial infection probably caused the royal death.

No American president has undergone brain surgery while in office. Ronald Reagan had a subdural hematoma drained within a year after leaving the White House (and later succumbed to Alzheimer's disease). Abraham Lincoln and John F. Kennedy suffered nonsurgical and lethal head injuries from their assassins' bullets. Other neurological conditions have taken their toll on the chief executive, however. In August 1919 Woodrow Wilson had a stroke that was kept a secret to all but his innermost circle. He served as president for a full year and a half afterward, despite being completely disabled. Would a healthy



Sen. Joe Biden returns to his office in 1988 after undergoing surgery for two brain aneurysms and a lung embolism.

© Photo by Bill Ballenberg/Time Life Pictures/Getty Images

Wilson (or his putative replacement, Vice President Thomas R. Marshall) have advocated successfully for U.S. support of the League of Nations, preventing the rise of Hitler and later World War II?

Franklin Delano Roosevelt became paraplegic from polio in 1921, a year after an unsuccessful vice-presidential run. Of patrician birth, it is plausible that his disability (hidden from the public by a cooperative press) made him more sympathetic to others dealt a bad hand in life. This may have played a role in his shaping the New Deal. FDR died of an intracerebral hemorrhage several months after beginning his fourth term as president in 1945. Even before the election, his health had been declining because of hypertension and congestive heart failure. With modern treatment, would FDR have lived longer, perhaps leading the United States to victory in Japan without the use of nuclear weapons?

Of course, speculating in alternative history is futile. But elected officials choose a public life. We are entitled to know their medical histories and if their ability to serve is affected by health problems. As neurosurgeons we can proudly point to our vice president as an example of just how well patients can do, even after complicated surgery on their brains. **NS**

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