GET IN LINE WITH ONLINE NEUROSURGICAL TECHNOLOGY

<4> ARE TABLETS ALL GOOD?

<16> MEDICARE AND MEDICAID ELECTRONIC HEALTH RECORD (EHR) INCENTIVE PROGRAM: A NEUROSURGEON’S PERSPECTIVE
EDITOR’S NOTE

In this issue of the CNSQ, we focus on the sudden and profound impact of electronic media on the neurosurgery community. This leads to the important question: Are we becoming overloaded with these devices, contraptions, and media or are these items facilitating improved and better care of our patients? To answer these questions, we have asked numerous experts in the neurosurgical field their opinions.

When mobile or cellular phones came onto the scene there were questions about their safety in the hospital setting. Originally there was a fear of them reprogramming pumps and hospital devices and harming patients. However, over the years, these devices have become accepted and are now an essential component of patient care. Discussing the use of electronic tablets, Drs. Srinivasan, Yates and Papadakos provide an overview in their article, Are Tablets All Good?, while Drs. Matthews and Colen specifically concentrate on Mobile Devices and HIPAA Issues followed by Drs. Kellner, Feldstein and Anderson’s article focusing on the specific uses of tablets by neurosurgeons. In addition, the use of applications in neurosurgery has expanded greatly in the last several years. Drs. Zalatimo and Colen provide their perspective of Neurosurgery’s Top Apps while Drs. Joshua and Rosen discuss Apps for the Neurosurgical Residency Training.

Additionally, this issue provides an article from Drs. Rizk, Ratliff, and Benzil discussing Medicare and Medicaid Electronic Health Record (EHR): A Neurosurgeon’s Perspective. Dr. Rosen, who has been quite involved with the use and standardization of imaging in neurosurgery, has provided an article on PACS in Neurosurgery. Dr. Mazzola and Ms. Dye from the AANS/CNS Washington Office, discuss the importance of Protecting Your Online Identity. Duncan A. MacRae, the managing editor of Neurosurgery, details social media and its impact in the neurosurgical literature in his article Neurosurgery and Social Media, while Drs. Ragel, Asthagiri, Hoh and Ms. Lengerman discuss Social Media and the CNS.

In the Featured Articles Section, we are pleased to have an article by the spine oncology team at Memorial Sloan-Kettering Cancer Center. Drs. Bilsky, Laufer and Yamada discuss Spine Radiosurgery: Fad or Here to Stay? In addition, Dr. Nanda has been very interested in the advancement of international neurosurgical education and as part of this project has formed a foundation in order to maximize the use of neurosurgical instrumentation, which is illustrated in his article The Global Neurosurgical Community: Recycling Medical Equipment. Lastly, in our Inside the CNS section, past Secretary of the CNS, Dr. Nathan Selden provides the 2011-2012 Secretary Report.

As always, we appreciate your support and involvement in clinical neurosurgery. We are more than happy to hear from you in order to improve your magazine at info@1cns.org.
CONTENTS

1 Editor’s Note
   James S. Harrop

2 President’s Message
   Ali R. Rezai

ELECTRONIC MEDIA OVERLOAD

4 Are Tablets All Good?
   Vasisht Srinivasan, G. Edward Vates, Peter J. Papadakos

6 Mobile Devices and HIPAA Issues
   Marlon Stephen Matthews, Chaim B. Colen

8 Use of Tablets by the Neurosurgeon
   Christopher P. Kellner, Neil A. Feldstein, Richard C. E. Anderson

10 Neurosurgery Top Apps
   Omar Zalatimo, Chaim B. Colen

12 Apps for the Neurosurgery Resident in Training
   Darnell T. Josiah, Charles L. Rosen

16 Medicare and Medicaid Electronic Health Record (EHR) Incentive Program: A Neurosurgeon’s Perspective
   Elias Rizk, John Ratliff, Deborah Benzil

18 PACS in Neurosurgery
   Charles L. Rosen

20 Protecting Your Online Identity
   Catherine A. Mazzola, Alison Dye

22 Neurosurgery® and Social Media
   Duncan A. MacRae

24 Social Media and the CNS
   Brian T. Kegel, Brian L. Hoh, Ashok Asthayiri, Michele L. Lengerman

FEATURED ARTICLES

27 The Global Neurosurgical Community: Recycling Medical Equipment
   Anil Nanda

28 Spine Radiosurgery: Fad or Here to Stay?
   Mark H. Bilsky, Ilya Laufer, Josh Yamada

INSIDE THE CNS

30 Secretary’s Report
   Nathan R. Selden

CNSQ BACK PAGE

Images in Neurosurgery
It is my great honor and privilege to serve the Congress of Neurological Surgeons as its 63rd President, and I want to thank each one of you for giving me this opportunity to serve you. The CNS is a strong, dynamic and growing organization with over 8,350 members. I am looking forward to working with our team of dedicated surgeon volunteers and association professionals to take the CNS and our specialty to new heights.

Education has always been and will remain a core mission and focus of the CNS. In this upcoming year, we will further develop and expand our educational activities with improved and innovative offerings encompassing all stages of lifelong learning, throughout training and practice. First, as described in this issue of the Congress Quarterly, the CNS will further integrate educational content across various platforms to provide members with a seamless, user-friendly mechanism for lifelong learning. This effort will include the integration of a rich repository of online educational content from the CNS University and Webinars, from the leading publications Neurosurgery® and Operative Neurosurgery, as well as from the Annual Meeting and other live courses. Another key educational initiative for this year is the CNS Simulation platform, which provides a standardized curriculum and assessment in conjunction with virtual reality, physical models and web based simulator modules for spine, skull base, endovascular, trauma, and functional neurosurgery. The CNS Simulation educational platform will be rolled out and implemented in various national and international educational venues in the next two years.

As part of this expansion of educational offerings, I have specifically placed a high priority on effectively integrating the efforts of our Education and Scientific Program Committees with those of our International Division to expand our international educational offerings, in support of international neurosurgical development. The CNS is an international society and has remained committed to internationalism throughout its history. The CNS has partnered annually with various neurosurgical societies in educational and other capacities around the globe to foster international collaboration for the advancement of our specialty. In 2013, we will reinvigorate this spirit of international collaboration with a strategic plan for international growth that specifically focuses on Europe, Southeast and East Asia, South America and Africa. By developing and
strengthening lifelong partnerships with neurosurgical leaders and societies in these and other regions of the world, the CNS will serve its mission as a global educational leader and will stay abreast of pertinent issues affecting neurosurgeons around the world.

This year, the CNS will also launch the new CNS Foundation to fund the development and execution of educational initiatives central to the practice of neurosurgery. This new foundation will not focus on neurosurgical research, but rather on the strategic priorities of practice guidelines development and international education that are necessary to advance our specialty in the years ahead. The CNS Foundation was incorporated in late 2012, and the recently selected Foundation Board of Directors is now in the process of finalizing the case statement and mission of the Foundation, which we will announce to members in 2013.

Lastly, and very important to the future of the CNS, I am committed to the completion of a new strategic plan, which will be launched at the end of my Presidential term. This new plan will guide the CNS in identifying the most relevant strategic priorities for our members and corporate partners, as well as expanding our product and service offerings to effectively meet your needs now and in the future. As we progress in this strategic planning process, the CNS may from time to time ask for your feedback via short surveys, focus groups or telephone interviews. I encourage you to participate in these efforts so the CNS can continue to deliver the greatest value to you as a member neurosurgeon.

While the CNS is one of the largest Neurosurgical Societies in the world, I am confident that through this process, we will become a stronger, more focused organization, better able than ever before to advance neurosurgery worldwide.

I am looking forward to serving you as the CNS President and to hearing from each of you about how the CNS can better meet your needs in the years ahead. Thank you again for this tremendous opportunity.  

> THE CNS IS A STRONG, DYNAMIC AND GROWING ORGANIZATION WITH OVER 8,350 MEMBERS. I AM LOOKING FORWARD TO WORKING WITH OUR TEAM OF DEDICATED SURGEON VOLUNTEERS AND ASSOCIATION PROFESSIONALS TO TAKE THE CNS AND OUR SPECIALTY TO NEW HEIGHTS. <
> IPADS AND THEIR IMITATORS HAVE CHANGED THE WAY INDUSTRIES HANDLE THEIR WORKFLOWS. MEDICINE, IN PARTICULAR, HAS INCORPORATED MOBILE COMPUTING AND THE JUDICIOUS USE OF TABLETS CAN INCREASE PHYSICIAN PRODUCTIVITY AND ENHANCE PATIENT CARE. <

When the iPad was introduced on April 3rd, 2010, it created a revolution in modern computing. iPads and their imitators have changed the way industries handle their workflows. Medicine, in particular, has incorporated mobile computing and the judicious use of tablets can increase physician productivity and enhance patient care. At the same time, mobile computing, instant messaging, and easy access to social media has created the potential for distractions, and how these two opposing forces ultimately are balanced during the care of patients may be important to the future of neurosurgery.

Tablet and mobile computing, in its infancy, was rudimentary at best, and devices simply replicated the interface and design of desktop and laptop computers, or replaced other real-world devices (e.g. calculators). However, mod-
ern mobile interfaces and technologies provide unique opportunities to access different data channels and points of contact with other providers. Portability aside, a touch-based screen naturally allows for easier, more intuitive interfaces with a shorter learning curve, leading to faster and more wide-spread adoption. Because of this, physicians have taken the initiative to incorporate tablet technology into their practice. Tech blogs were abuzz with stories of individual physicians and hospital systems using iPads to access electronic medical records, view imaging, and update patient charts. However, tablets have the ability to enhance medical care beyond these simple tasks that can be performed with remote desktop applications.

Tablets present relevant data in applications with optimized interfaces, and can increase productivity and allow physicians to interact with their patients in efficient, inexpensive ways. For example, tablets can replace paper in many settings by being used to sign consent forms, as note-taking devices, and display interactive 3D anatomy charts to explain various diseases and procedures to patients and colleagues. Physicians can organize documents, record patient interviews, and search or catalog the medical literature. Many journals offer iPad-specific applications that are superior to their print editions, and can present video and other interactive features embedded within the article that would otherwise require extra effort to obtain.

iPads and tablets are now a common sight in many hospitals, but physicians must use them judiciously and exhibit situational awareness to make sure that tablet use does not interfere with important social aspects of doctor-patient interactions or professionalism. We all think we can multitask effectively, but it is imperative that patient care tasks not be interrupted by e-mail, push notifications, social media alerts and the like. Approximately 19 million push notifications and alerts are sent to Apple devices daily and it is easy to get lost in the daily onslaught of beeps that comes with the current “always-on” world. Mainstream media has recently focused on incidents of medical distractions to highlight the increasing potential for danger of these devices in medical practice. However, it is not the device but the way people use them that may be dangerous, and this is why neurosurgeons need to be aware of these issues.

One solution that has been proposed would be only use dedicated devices in clinical settings that are devoid of social media, music, or personal data. Pilots are given iPads by airlines for use as flight manuals, navigation charts, and storage of relevant documents. Hospitals and practice groups could do the same for their physicians, pre-loading applications and references, similar to the current practice of purchasing desktops.

The constant stream of incoming data allows one to be easily distracted from important tasks and individual physicians must police themselves and show restraint, otherwise we create opportunities for others to impose regulations on the profession. There are also medico-legal implications from connectivity. A physician may not be actively using a social media tool, but the stream of alerts are still sent to the device and logged with a timestamp that may coincide with a specific patient care event, fueling allegations of negligence. It is up to each individual physician to monitor their connectivity, and if needed, silence alerts or power off the devices altogether when not essential to the task at hand.

The panoply of applications available through the iOS Appstore and Google Play does, however, bring to light the federal regulations governing technology. Unfortunately, Title II of the Health Insurance Portability and Accountability Act of 1996 governs and provides fairly stringent, sometimes suffocating restrictions on the use of technology in patient care. While no one will dispute or minimize the importance of maintaining patient privacy, adaptation and development of new technologies has come at a snail’s pace in medicine compared to other industries, and too often, privacy laws are cited as the reason why many ideas or advances never see the light of day. Specifically, several iOS developers with applications that would easily lend themselves to patient care uses have gone on record stating their software is not HIPAA compliant due to the costs of obtaining the certification, and even Apple refuses to definitively comment on the status of its products (e.g. Facetime). However, even a cursory review of these applications’ encryption schemes would suggest they meet all criteria necessary for physician compliance, suggesting a bureaucratic roadblock to adoption. Additionally, the frequent requirement for HIPAA certification in many hospital systems precludes use of otherwise secure products in favor of expensive, unintuitive, custom solutions that are not functionally any different from the open standards they attempt to replace. In aggregate, these custom solutions only add to the massive healthcare spending currently being targeted for reform in the United States. Appropriate modifications to existing laws at a national level are necessary to truly allow modern technologies and the existing, secure infrastructures to be used at a fraction of the cost while maintaining the strict standards for privacy that are currently in place.

Tablet and mobile computing can be a very useful tool to enhance a physician’s practice, increase their productivity, and provide valuable tools to improve patient care. With appropriate usage and relevant applications, iPads can occupy a valuable space in the “toolbox” of medicine.

References

2. Papadakos PJ: Keeping the Patient in Focus in a World of Electro Distraction, in Arab Health Magazine, pp 40-42
The information technology revolution has resulted in an exponential rise in the use of mobile platforms for information exchange across all spheres of life. Medical professionals are particularly impacted, especially given federal pushes for the rapid adoption of electronic health records. As a result, the healthcare sector is rapidly adopting mobile technology, with likely near universal uptake in the future. A recent survey of nearly 3,800 physicians estimated that 83% of physicians owned mobile devices and roughly the same percentage are likely to use a mobile device in a clinical setting. This has significant confidentiality and HIPAA implications relating to the access and exchange of Electronically Protected Health Information (EPHI). The Office of the National Coordinator for Health Information Technology (ONC) defines a mobile device as “a handheld transmitting device with multifunctional capabilities used to store, transmit and receive health information, and has user control over the access to health information.” Mobile devices combine elements of computing, telephone/fax, Internet and networking functions. This generally includes laptop computers, personal digital assistants, smartphones, and tablet computers. The use of USB devices by this definition is less clear.

Mobile devices are particularly vulnerable to theft or loss because of their portability and size. The most common form of information security breach occurs through the theft of a mobile device. Mobile devices are typically small, light and highly tempting to thieves. In less than two years, from September 2009 through May 2011, the Department of Health and Human Services (HHS) Office for Civil Rights (OCR) reported 116 data breaches of 500 records or more from the loss or theft of a mobile device, exposing more than 1.9 million patients’ PHI. Mobile devices store data in two ways: within the computer’s “onboard memory”; or within the “SIM card” or memory chip. Thus, mobile devices used to exchange EPHI retain a record of that data on the device. In addition, not all mobile devices restrict user access to data through the use of encryption software or authentication features. In addition, unlike laptops and PCs, clinicians are far more likely to use their own personal mobile devices, rather than employer-issued devices, to access and exchange EPHI. The use of personal mobile devices to access EPHI raises several risks to health care providers related to authentication, encryption and network connection. Mobile device users are less likely to enter passwords or provide biometric identification to access information stored on a personal mobile device. Data stored on personal mobile devices is usually not encrypted. Mobile devices that use public Wi-Fi or unsecure cel-
ular networks to send and receive information risk exposing EPHI unless connecting through Virtual Private Networking (VPN), which is a cumbersome process.

The HIPAA Security Rule allows healthcare providers to communicate electronically with patients (e.g. email) but the law requires covered entities to apply reasonable safeguards when doing so. The Security Rule requires appropriate “administrative, physical and technical safeguards” to ensure the confidentiality, integrity, and security of EPHI. Administrative safeguards provide management, accountability and structural oversight to ensure proper policies and procedures are in place to protect EPHI. Physical safeguards include physical barriers to the loss of mobile devices containing EPHI. Technical safeguards include automated processes (such as encryption) used to control access to data. Examples are shown in Table 1.

The HIPAA Security and Privacy Rules require all covered entities to protect the EPHI that they use or disclose to business associates, trading partners or other entities. New technologies have significantly simplified the way in which data is transmitted throughout the healthcare industry and created tremendous opportunities for improvements in the healthcare system. However, these technologies have also created complications such as increased risk of loss, unauthorized use, and disclosure of sensitive information. One of the key goals of the Federal Health Information Technology Strategic Plan is to inspire confidence and trust in health IT and electronic health information exchange by protecting the confidentiality, integrity, and availability of health information. ONC’s Office of the Chief Privacy Officer (OCPO), along with the HHS-OCR, recently launched a privacy and security mobile device project. While the ONC and OCPO work to fine-tune regulations for mobile devices, the existing “HHS HIPAA Security Rule – Remote Use Guidance” designed to identify good privacy and security practices for mobile devices, can be used as a general guideline to maintain HIPAA compliance for the use of mobile devices.

References

5. Barrett C. American Bar Association (ABA) Health eSource. October 2011 Volume 8 Number 2.

<table>
<thead>
<tr>
<th>TABLE 1. Examples of Administrative, Physical and Technical Safeguards for EPHI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Administrative Safeguards</strong></td>
</tr>
<tr>
<td>1. Conducting periodic risk assessments of mobile device use,</td>
</tr>
<tr>
<td>including assessments of whether personal mobile devices are</td>
</tr>
<tr>
<td>being used to exchange EPHI and whether proper authentication,</td>
</tr>
<tr>
<td>encryption and physical protections are in place.</td>
</tr>
<tr>
<td>2. Establishing processes and procedures to appropriately</td>
</tr>
<tr>
<td>protect EPHI in a mobile device environment, including</td>
</tr>
<tr>
<td>establishing encryption and security breach protocols for</td>
</tr>
<tr>
<td>mobile device use.</td>
</tr>
<tr>
<td>3. Training clinicians on the processes and procedures to use</td>
</tr>
<tr>
<td>when using mobile devices to access EPHI and educating</td>
</tr>
<tr>
<td>clinicians on the risks of data breaches, HIPAA violations</td>
</tr>
<tr>
<td>and fines.</td>
</tr>
<tr>
<td><strong>B. Physical Safeguards</strong></td>
</tr>
<tr>
<td>1. Storing mobile devices in locked offices or lockers;</td>
</tr>
<tr>
<td>2. Installing radio frequency identification (RFID) tags on</td>
</tr>
<tr>
<td>mobile devices to help locate a lost or stolen mobile device;</td>
</tr>
<tr>
<td>and,</td>
</tr>
<tr>
<td>3. Using remote shutdown tools to prevent data breaches by</td>
</tr>
<tr>
<td>remotely locking mobile devices.</td>
</tr>
<tr>
<td><strong>C. Technical Safeguards</strong></td>
</tr>
<tr>
<td>1. Installing and regularly updating anti-malicious software</td>
</tr>
<tr>
<td>(malware) on mobile devices;</td>
</tr>
<tr>
<td>2. Installing firewalls and encryption where appropriate;</td>
</tr>
<tr>
<td>3. Installing IT backup capabilities to provide redundancy and</td>
</tr>
<tr>
<td>access to electronic health information;</td>
</tr>
<tr>
<td>4. Adopting authentication tools to verify the person using</td>
</tr>
<tr>
<td>the mobile device is authorized to access EPHI.</td>
</tr>
<tr>
<td>5. Ensuring mobile devices use secure, encrypted Hypertext</td>
</tr>
<tr>
<td>Transfer Protocol Secure (“HTTPS”) similar to those used in</td>
</tr>
<tr>
<td>banking and financial transactions to provide encrypted</td>
</tr>
<tr>
<td>communication and secure identification of a network web</td>
</tr>
<tr>
<td>server.</td>
</tr>
</tbody>
</table>
Over the last decade, technological advances in personal, office, and mobile computing have transformed the day-to-day function and efficiency of the neurosurgeon. In an age when residents’ learning opportunities in the hospital are limited by work hour restrictions, mobile computing has created new ways for residents to learn outside of the hospital with increased access to journals, surgical videos, and electronic textbooks. Studies have shown that resident efficiency in the hospital has improved with tablet computing, permitting residents to finish orders and patient care duties faster.1 Some institutions have demonstrated improved neurosurgery resident satisfaction, reading habits, and CNS-SANS examination scores with the introduction of tablets.2 Academic and private neurosurgeons benefit as well, with the ability to evaluate imaging and access patient files from anywhere, allowing more time out of the hospital without compromising safety or resident teaching.

While the mobile revolution was initiated by the smartphone, the tablet computer has quickly assumed the prominent role given its large screen size and greater versatility. Many different tablets are available at varying prices including the Apple iPad ($499-$699, depending on storage), Google’s Nexus 7 ($199-$249), Amazon’s Kindle Fire ($199), and the Microsoft Surface ($499-$699, depending on storage). Analyzing total unit sales, Morgan Stanley Research demonstrates that the tablet has rapidly overtaken the netbook and is rapidly increasing relative to the notebook and desktop (Figure 1).3 The Apple iPad leads this computing shift, holding 67% of the tablet market share in 2011, and maintaining 65% of the market in Q1 of 2012 despite the introduction of new competitors (Figure 2).4 While younger individuals embrace mobile computing more than older surgeons, the tablet has succeeded in incorporating itself into the practice of neurosurgeons of all ages. A recent course held at the 2012 AANS conference in Miami instructed more than forty attendees on how best to incorporate mobile computing - particularly the Apple iPad - into practice. This article will highlight the course’s main points, focusing on the best ways that resident, faculty, and private neurosurgeons can utilize the tablet for increased access to patient information, imaging, productivity, presentation, communication between surgeons, and access to educational material such as academic resources and scholarly journals (Figure 3).

**Accessibility to hospital-based systems**

Many hospital systems have embraced mobile computing and enable applications to allow access to the electronic medical record in order to obtain patient information and view images on the tablet. Most commonly this is done through Citrix or VPN client. Check with your hospital IT department to determine if your hospital supports any of these. Other hospitals, however, have lagged in providing mobile applications. Fortunately, there are several applications that facilitate encrypted access to in-hospital office computers such as Parallels Mobile ($5, $69 for the desktop companion), VMWare View (free, $49 for the desktop companion), GoToMyPC (free, $10 per month for the desktop companion), LogMeIn (free), and Splashtop ($5). Parallels and VMWare fusion have strong mobile applications that permit access to both the Apple and Windows environments on a Macbook or desktop Mac in the office. These programs are particularly important if the hospital-based electronic records or imaging system is windows-based. LogMeIn and Splashtop lack the more advanced features of Parallels and VMWare Fusion but permit no-frills, effective access to the office Mac or PC from the iPhone, iPad, or Mac computer.

**Productivity**

The tablet increases access to cloud-based storage applications and word-processing programs that are most useful for accessibility and collaboration. New applications are continually introduced to this market. At the moment, the most useful are DocumentsToGo ($17), Evernote (free), Sugarsync (5Gb free), Dropbox (2Gb free), and Google Disc (5Gb free). DocumentsToGo, for example, allows users to create, read, and edit Microsoft Word, Excel, or PowerPoint files, as well as read several other types of image files (TIF, JPG, etc.). Sugarsync and Dropbox are ideal for storing similar files to allow remote access and instantaneous syncing. Each of these applications has a strong iPad version. Evernote separates itself from the other programs by providing more of a note-taking interface that is easily edited on the iPad version. Entries are eas-
likely searchable using key words and photos can be easily added. Google Disc is very similar to other storage applications but allows live editing, meaning multiple parties can view an open document and actively edit without creating conflicting copies.

**Presentation**

The best presentation program in the Mac environment is Keynote ($10). The iPad application syncs seamlessly with a Macbook or desktop Mac, streams well, and presentations can be created and edited without difficulty. Keynote even has a remote application ($1.99) that allows users to control the presentation from an iPhone. For computer-to-computer presentations, Keynote projects well through other video-conferencing applications, such as GoToMeeting ($49 per month) or Google Hangout (free). GoToMeeting permits a single paying user to invite up to 25 attendees to a secure online conference. Through this program, it’s possible to share the entire desktop, an application, or a specific document. Google Hangout is accessible through either Gmail, Gchat, or Google Plus and has the enormous advantage of being free, allowing 10 users at once, highlighting the speaker, and permitting the same screen sharing functions found in GoToMeeting.

**Imaging**

Although there are many mediocre options for a PC-based DICOM viewer, there is one exceptional Mac viewer: Osirix. The desktop application is free while the iPhone/iPad versions are each $30. The programmers declare on their website that they will never release a PC-compatible version. The iPad application syncs well with the desktop version. Notable features include the ability to read and upload almost any DICOM CD, 3D rendering, and sharing amongst users. Even without specific imaging applications, many residents and health care personnel in the current era use MMS to send select images or short videos of scans to an attending or other physicians involved in the patient’s care. This provides a rapid and effective method of sharing images from phone to phone or phone to tablet in an emergency.

**Education**

The ability to access neurosurgical information including journal articles, textbooks, and operative videos through the tablet is rapidly expanding. JNS has a strong mobile site accessible on the tablet while Neurosurgery has developed a great, easy-to-use application available in the App Store. Additionally, both the CNS and AANS began developing mobile applications with their 2010 Annual Meetings. The applications have continued to improve, providing valuable and unique functions, including viewing talks and posters, receiving schedule updates, communicating with other attendees among other features. This application has changed the way attendees approach the conference, increasing access to the schedule, scientific abstracts, and permitting improved communication.

The tablet has changed the way we learn, communicate, and treat patients. We excitedly anticipate the inevitable developments in mobile computing that will continue to enhance the practice of neurosurgery. Specific hospital rules regarding access of patient information should be evaluated before utilizing these programs.

**References**

In a recent report by ComScore, by January 2012, there were 101.3 million smartphone subscribers in the US. Put another way, 32.5% of the US population has a smartphone. These mobile devices have given us continuous access to the internet with a computer organizer as powerful as our desktop computers from a few years ago. While smartphones have enabled us to have a virtual office with us at all times, we have yet to define its role in neurosurgical practice. There are an increasing number of neurosurgery apps available, but we don’t have a strong impression of how useful these apps are or under which circumstances they would be most useful.

To investigate this further, a short survey was prepared and distributed to the CSNS Fellow email listserv (2009-2012). The responses received showed that most users had Android and Apple systems with iOS (45.5% each), 9.0% did not have a smartphone, while none had either Blackberry or Windows systems (Figure 1). With regards to the apps available today, there were many that were not used by the respondents, including Aesculap Neuroendoscopy.

The apps evaluated were:
- Calculate by QxMD
- Helsinki Microneurosurgery Book
- iSpine Care
- iSpine Operations
- mLumbar Fusion
- mLumbar Microdiscectomy
- mLumbar Laminectomy
- Neuro Toolkit
- Neuro Board Review
- Neuromind
- Neurosurgery
- NeuroRad Mini
- NeuroRad Review
- Neurosurgery Blog
- Neurosurgery Conditions
- Neurosurgery Conditions and Treatments
- Neurosurgery Survival Guide
- Neurosurgery Whats the data?
- NI GME
- Operative Flash Dictation
- Safe Surgery
- Simpli Glasgow
- SNI Mobile
- 3D Brain

The apps that were most utilized were (in order from most to least) Epocrates, Kindle, Medscape, Neurosurgery Survival Guide, and Web MD. Four of these five apps were used for general patient care reference. Kindle, along with other e-readers can be loaded with any form of literature to be readily available for review. Many residents find this program particularly helpful as they can store many volumes of books on their phone as well as other devices and read about or look up a topic anytime and anywhere. The app Neurosurgery Survival Guide was the top app that was used solely for neurosurgery reference. This app is available for both the iPhone and Android systems and is used as a reference or high-yield guide for neurosurgery.

The other apps that were in use are 3D Brain, Helsinki Microneurosurgery Book, Neuro Board Review, Neuromind, Neurosurgery, Operative Flash Dictation, and SNI Mobile. While some of the respondents did report having these apps, they were not being used frequently. In regards to resident educational apps for the neurosurgery written board examination, our research indicates that the Neuro Board Review® is the only comprehensive high-yield educational app for rapid review currently available.
The findings of this survey were revealing. In compiling the questions for this survey, the goal of our group was to find the apps that were of most use for neurosurgeons. The results provided us with information on the most used apps. We also found that despite there being apps that are found to be useful, these apps are still not being used with great frequency in our community. Only one respondent stated that he/she used an app on a daily basis, while a few respondents stated that they used a few apps on a weekly basis. However, when asked if there was anything else they would like to add at the end of the survey, one respondent stated that he/she had “Never heard of any of these. I have never used a neurosurgery app, and don’t know anyone that has.”

Another finding was the price respondents were willing to pay for an app they did not know: 54.5% stated they would not pay more than $1, 27.3% stated they would pay between $1-$5; while 9.1% stated they would pay more than $5, and an additional 9.1% stated they would pay more than $15 for an app (Figure 2).

While smartphones are ubiquitous and there are a number of neurosurgery apps, the best use of these apps has yet to be realized. One potential use for an app is for patient explanation of disease processes and surgery, however the respondents did not implement these in the clinic setting. This could be due to the high level of existing demonstrative tools in clinic or the awkwardness of using your phone to describe patient disease. Furthermore, even as a reference tool, apps have not been embraced, with even the best apps being mostly used once a month. The reason for this finding may be that with the repetitive nature of our clinical work, references quickly become part of our memory and become less useful as we continue in our practice. For the same reason even apps like Epocrates (a medication reference app) was not heavily used. Finally, e-books are becoming more widely used and this will likely be an area of growth in the future.

* Chaim Colen, MD has disclosed a potential bias in that he is CEO of Colen Publishing
With the increase in the use of smartphones and tablets worldwide, it comes as no surprise that their use has also blossomed among the medical community and not only for checking Facebook or tweeting. There is a growing category of medically related applications that clearly suggest that physicians are interested in using apps to assist in clinical decision making and specialty educational references. A recent survey was conducted by the University of California San Diego examining the use of smartphone apps among residents in ACGME training programs. It revealed a greater than 88% use of smartphones with 68% using their devices for medically related apps.

Here we present apps geared to the Neurosurgery resident in training.

While the Greenberg Handbook of Neurosurgery is a very familiar resource, there is however no smartphone application available at this time. The Neurosurgery Survival Guide (NSG) is an app with iPhone and Android platforms available. It is a quick reference, high-yield guide that encompasses a massive breadth of knowledge and information necessary to care for neurosurgical patients. There are over 100 unique topics covered in this guide. “In the OR” section covers several topics such as getting an OR case started, as well as positioning and pinning. In addition, there are step by step guides for many of the common neurosurgical procedures. The NSG has a built-in background auto-update program that allows newly added content to be downloaded and refreshed each time the app is opened. This app is available for $7.99 on iPhone and Android platforms.
NeuroMind contains neurological and neurosurgical scores, anatomical images and interactive clinical decision support. NeuroMind 2.0 now contains almost 100 scores that are relevant to neurosurgical practice and is one of the highest ranked neurosurgical apps in the world. It is available as a free download for iPhone, iPad and Android.

Nerve Whiz Designed by a neuromuscular neurologist at the University of Michigan, Nerve Whiz is a free application for medical professionals interested in learning the complex anatomy of nerve roots, plexuses, and peripheral nerves. Select which muscles are weak, or point to areas of sensory loss, and the application can provide you with distinguishing features and detailed information, complete with relevant pictures and diagrams. This comprehensive inventory of the most clinically relevant muscles in the upper and lower extremities can be sorted by root, trunk, cord, peripheral nerve, action, or muscle name. It is available as a free download for the iPhone platform.

Helsinki Microneurosurgery Basics and Tricks is a unique book about the Hernesniemi School of Neurosurgery. It is introduced by a foreword of Dr. Robert Spetzler and provides many operative videos and pictures. It is available as a free download for the iPhone and iPad platform.

> THERE IS A GROWING CATEGORY OF MEDICALLY RELATED APPLICATIONS THAT CLEARLY SUGGEST THAT PHYSICIANS ARE INTERESTED IN USING APPS TO ASSIST IN CLINICAL DECISION MAKING AND SPECIALTY EDUCATIONAL REFERENCES. <
Medscape from WebMD. Clinical drug reference applications are the most commonly used apps for all physicians in and out of training programs. Two of the most popular are the Medscape and Epocrates apps. Medscape has a lot more features incorporated than Epocrates. It features medical news and critical alerts available in 34 specialty areas (updated daily), prescribing and safety information for 8,000+ brand & generic drugs, OTC drugs, and herbs & supplements including a drug interaction checker, 4,000+ evidence-based articles authored by leading physician experts (supported with images and videos) and 129 medical formulas, scales, and classifications. It is available for iPhone, Android, Blackberry, iPad and Kindle Fire devices as a free download.

AANS on iTunes U serves as an online repository of multimedia content for the neurosurgical community and general public. Audio and video podcasts focus on topics of interest to neurosurgical practitioners, allied health professionals, and patients who have dealt with surgical treatment for a neurological disorder or condition. AANS on iTunes U features lectures from some of the leading experts in neurosurgery, demonstrations of procedures or surgical techniques, discussions of the latest clinical breakthroughs and media content from their scientific journals. This app is only available for iPhone and iPad platforms.

Antibiotic Advisor provides recommendations for all infectious diseases encountered in medicine. Antibiotic Advisor includes built-in calculators for calculating creatinine clearance and adjusting the dosage of renal excreted antibiotics. Antibiotic Advisor includes recommended antibiotics by organ and disease, antibiotic prescribing guide, dosage calculator, antibiograms for bacteria, fungi, tuberculosis, and mycobacteria. Junior residents may find this or similar infectious disease related apps particularly helpful with managing floor and ICU patients. The app is available for $0.99 on iPhone and iPad platforms.
**GoodReader** is the super-robust highly-rated PDF reader with advanced reading and annotating capabilities. GoodReader has earned its accolades by the way it handles huge PDF files, manuals, large books and magazines. Besides reading, you can also sync your files with remote servers such as Dropbox, SkyDrive or SugarSync. The app is available for iPhone and iPad, both of which are available for $4.99.

*References:*


**Dropbox** is a free service that lets you bring all your documents and files anywhere. This is a powerful application/service for storing your articles, textbooks and presentations with interconnectivity with many other popular apps like GoodReader and Facebook. The free version starts with 2GB of storage space and is available for iPhone, iPad, Android, Blackberry and Kindle Fire.

**Toodledo** is a powerful task and note manager. It will organize your to-do list and notes. Toodledo is flexible enough to work with many different productivity styles. You can keep things simple, or you can add as much complexity as you need. It has interconnectivity with Google Calendar, Microsoft Office, Apple Mac as well as social networking sites. It has the ability to share to-do lists with others and may be a welcomed asset to the busy resident. The app is available for $2.99 for iPhone, iPad, Android and Blackberry platforms.
MEDICARE AND MEDICAID ELECTRONIC HEALTH RECORD (EHR) INCENTIVE PROGRAM: A NEUROSURGEON’S PERSPECTIVE

Health care reform will impact neurosurgeons in a variety of ways. One important goal is to improve efficiency (fiscal savings) and quality of patient care through the use of electronic health records (EHR). A framework of regulations has been developed to apply to all physicians and may present a challenge to many neurosurgeons. This article details the program and its requirements to help neurosurgeons navigate this new practice challenge.

Foundations of the Program
To encourage global implementation, CMS has a program to defray some costs associated with purchase and implementation of EHR. The American Recovery and Reinvestment Act (ARRA, P.L. 111-5) passed in 2009 includes $19 billion in grants and loans for infrastructure and incentive payments under Medicare and Medicaid for physicians who adopt certified Electronic Health Record (EHR) technology. This is divided into $17 billion slated for specific States is posted at http://www.cms.gov/EHRIncentivePrograms/40_MedicaidStatenInfo.asp. The incentives offered by CMS require more than just buying software. Most refer to this as “Meaningful Use” (though less glamorous names have also been applied). As currently configured, the final requirements intended to realize financial gain and improved quality will be released in stages.

In addition to rewards, the program also carries penalties for those who do not implement EHRs during this period. Physicians who do not adopt a certified EHR by 2015 would receive a one percent reduction in Medicare payments; the penalties increase to 3 percent over the next three years. (Table 1)

**How will eligible professionals (EPs) and eligible hospitals apply for incentives?**
Registration for the Medicare EHR Incentive Program began on January 3, 2011 and is available online at https://ehrincentives.cms.gov. Information on when registration will be available for Medicaid EHR Incentive Programs in specific States is posted at http://www.cms.gov/EHRIncentivePrograms/40_MedicaidStatenInfo.asp. The incentives offered by CMS require more than just buying software. Most refer to this as “Meaningful Use” (though less glamorous names have also been applied). As currently configured, the final requirements intended to realize financial gain and improved quality will be released in stages.

**What do Stages 2 and 3 involve?**
The second stage proposal is currently under development and subject to change. Briefly, in the proposal for Stage 2, physicians would be required to meet seventeen core measures plus required reporting on twelve clinical quality measures and an additional three measures of their choice from a menu set of five measures. Nearly all of the Stage 1 core and menu measures would be retained for Stage 2. There are also multiple Stage 1 measures that would be combined under Stage 2, and thresholds would be significantly increased for measures that have been retained from Stage 1 in Stage 2. For example, the Stage 1 Computerized Physician Order Entry (CPOE) measure, which requires use of CPOE for medication orders with a 30 percent threshold, has significantly changed for Stage 2. In Stage 2, CMS proposes that CPOE use would be required for medication, laboratory, and radiology orders, and the threshold would be increased to 60 percent. These measures will be electronically submitted to CMS.

**What does Stage 1 involve?**
To earn the incentives in Stage 1 a physician, hospital or practice needs to use the clinical information in a certified EHR to improve care and outcomes for your patients. In the first stage the basic requirements for Medicare and Medicaid are that you use the capabilities of your certified EHR system to meet 15 core objectives plus an additional 5 objectives you select from a menu. Furthermore, in 2011 and 2012 physicians will have to report on three quality core measures (blood pressure, tobacco use status, and adult weight screening and follow-up) and three other quality measures from a menu of 38 measures provided by CMS.

This means you need to meet a total of 26 requirements, 18 mandatory objectives and measures and another 8 that you select from menus.

To qualify for 2011 incentives, physicians need only to satisfy the above 26 requirements for a period of 90 consecutive days in 2011. Moving forward the physician must show compliance with all the requirements for the whole year.

**What does Stage 1 involve?**
To earn the incentives in Stage 1 a physician, hospital or practice needs to use the clinical information in a certified EHR to improve care and outcomes for your patients. In the first stage the basic requirements for Medicare and Medicaid are that you use the capabilities of your certified EHR system to meet 15 core objectives plus an additional 5 objectives you select from a menu. Furthermore, in 2011 and 2012 physicians will have to report on three quality core measures (blood pressure, tobacco use status, and adult weight screening and follow-up) and three other quality measures from a menu of 38 measures provided by CMS.

This means you need to meet a total of 26 requirements, 18 mandatory objectives and measures and another 8 that you select from menus.

To qualify for 2011 incentives, physicians need only to satisfy the above 26 requirements for a period of 90 consecutive days in 2011. Moving forward the physician must show compliance with all the requirements for the whole year.

**What do Stages 2 and 3 involve?**
The second stage proposal is currently under development and subject to change. Briefly, in the proposal for Stage 2, physicians would be required to meet seventeen core measures plus required reporting on twelve clinical quality measures and an additional three measures of their choice from a menu set of five measures. Nearly all of the Stage 1 core and menu measures would be retained for Stage 2. There are also multiple Stage 1 measures that would be combined under Stage 2, and thresholds would be significantly increased for measures that have been retained from Stage 1 in Stage 2. For example, the Stage 1 Computerized Physician Order Entry (CPOE) measure, which requires use of CPOE for medication orders with a 30 percent threshold, has significantly changed for Stage 2. In Stage 2, CMS proposes that CPOE use would be required for medication, laboratory, and radiology orders, and the threshold would be increased to 60 percent. These measures will be electronically submitted to CMS.
How to avoid the penalties?
The first critical concept each neurosurgeon needs to appreciate is that penalties are not assessed concurrently. For example, you will be exempt from the first year of penalties if you successfully demonstrate meaningful use in 2013. Also, if you demonstrate meaningful use in 2014, you would be able to avoid the penalty in 2015 if you meet the attestation requirement by October 3, 2014. However, it is important to note that physicians eligible for Medicare incentives in 2014 who instead chose to participate in the Medicaid EHR incentive program and who have only adopted, implemented, or upgraded a certified EHR without meeting meaningful use measures would be subject to a Medicare EHR penalty in 2015.

Is there an appeals process?
Yes. Three types of appeals are available:
1. Eligibility appeals
2. Meaningful use appeals (disputes involving thresholds)
3. Incentive payment appeals

There would be two levels in the appeals process: an informal review and a final reconsideration. The administrative review and appeal process would have to be exhausted prior to seeking review in federal court.

What other challenges can transition to an EHR entail?
For neurosurgeons implementation or upgrading of an EHR can provide both rewards and risks. Like any important business investment, the costs must be carefully analyzed. Regardless of the requirements detailed above, there is an inexorable march toward global EHR. Particularly for neurosurgeons embarking on the first EHR, you need to consider all of the following and not assume there is any easy, cheap or “one-size-fits-all” solution:
1. Purchase cost
2. Service fees (licenses, annual support, upgrades)
3. Cost of implementation (especially staff training time, development of tailored products, transition of data)
4. Change in patient flow
5. Coordination with other computer systems (hospital EHR, billing systems, scheduling, messaging)
6. Improved remote access
7. Diminution in disposable costs, archiving and lost data

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CY 2011</td>
<td>$18,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CY 2012</td>
<td>$12,000</td>
<td>$18,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CY 2013</td>
<td>$8,000</td>
<td>$12,000</td>
<td>$15,000</td>
<td></td>
</tr>
<tr>
<td>CY 2014</td>
<td>$4,000</td>
<td>$8,000</td>
<td>$12,000</td>
<td>$12,000</td>
</tr>
<tr>
<td>CY 2015</td>
<td>$2,000</td>
<td>$4,000</td>
<td>$8,000</td>
<td>$8,000</td>
</tr>
<tr>
<td>CY 2016</td>
<td>$0</td>
<td>$2,000</td>
<td>$4,000</td>
<td>$4,000</td>
</tr>
<tr>
<td>CY 2017</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$44,000</td>
<td>$44,000</td>
<td>$39,000</td>
<td>$24,000</td>
</tr>
</tbody>
</table>

Table 1: Medicare Meaningful Use Incentive and Penalty Chart (2011-2017)

<table>
<thead>
<tr>
<th>Stage of Meaningful Use as Proposed under Stage 2 Regulations</th>
</tr>
</thead>
<tbody>
<tr>
<td>-------</td>
</tr>
<tr>
<td>2011</td>
</tr>
<tr>
<td>2012</td>
</tr>
<tr>
<td>2013</td>
</tr>
<tr>
<td>2014</td>
</tr>
<tr>
<td>2015</td>
</tr>
<tr>
<td>2016</td>
</tr>
<tr>
<td>2017</td>
</tr>
</tbody>
</table>

Table 2: Effective Dates for Stage 2 and 3.
Advances in Electronic Medical Imaging (EMI) have made bulky hard copy films largely a thing of the past, but issues of quality and usability of the resulting compact disc (CD) formats, until recently, created new headaches of their own. A confusing array of different formats and quality in CDs left consulting neurosurgeons often frustrated at the lack of compatibility and consistency, as well as vulnerable from a legal standpoint with the caveat “not to be used for diagnosis or treatment” being included on most EMI.

However, organized medicine along with the instrumental support of the CSNS, AANS, and CNS helped change this situation for the better. Working with the AMA and other organizations, a “Safety Statement” regarding image quality of EMI was adopted nationally, as were basic requirements for image viewer functions.

The proposed end result of these efforts is to influence the industry to produce portable media, such as CDs, or web-based interactions, which allow for the export of diagnostic quality images to the physician’s own computer for viewing with the Picture Archiving and Communications Systems (PACS) program of the physician’s choice. Furthermore, all CDs with imaging must include a simplified but powerful viewing program with a standard set of functions that may be universally applied across all specialties (Figure 1).

The progress of the AANS, CNS, and AMA on this issue has been commendable, but more work still remains before standardized imag-

**Table 1: Commercially-Available DICOM Viewers**

<table>
<thead>
<tr>
<th>Program Name</th>
<th>Trial Period</th>
<th>Cleared for Clinical Use by FDA</th>
</tr>
</thead>
<tbody>
<tr>
<td>OxiriXMD</td>
<td>no (non-FDA cleared version is free)</td>
<td>yes</td>
</tr>
<tr>
<td>ClearCanvas PACS Team Edition</td>
<td>varies by vendor</td>
<td>yes</td>
</tr>
<tr>
<td>ClearCanvas WordStation Clinical Edition</td>
<td>varies by vendor</td>
<td>yes</td>
</tr>
</tbody>
</table>

> THE PROGRESS OF THE AANS, CNS, AND AMA HAS BEEN COMMENDABLE, BUT MORE WORK STILL REMAINS BEFORE STANDARDIZED IMAGING BECOMES A REALITY. <
ing becomes a reality. In the meantime, a neurosurgeon who regularly uses EMI on CD may consider a number of options. EMI viewers are available both as free and commercial products for PC and Mac, both readily downloaded from the internet. They can import images from the CD into their own viewing program, thereby lessening the frustration of learning multiple formats and improving the flow of a neurosurgical clinic. Clinic staff may be trained to import these images to the surgeon’s program of choice before the patient is seen.

Importantly, although DICOM viewers were made to review medical imaging, not all DICOM viewers are validated in the United States for clinical purposes. Those which are appropriate for clinical use will state this and are labelled as “FDA cleared” or “FDA validated”. Some examples include OsiriXMD, ClearCanvas PACS Team Edition, and ClearCanvas WorkStation Clinical Edition. Trial periods of commercial programs are common so the practicing neurosurgeon may review and select the one which most fits with his or her practice and preferences (Table 1).

EMI has resulted in unique opportunities and problems for the medical community. A variety of solutions exist for practicing neurosurgeons, with more progress on the way thanks to organized neurosurgery.

**Figure 1:** Image of a simplified but powerful viewing program with a standard set of functions
According to most studies, 80 percent of consumers conduct searches online to find out information about doctors. So here’s my take on why it’s important for physician’s to protect their online reputation.

I finished my Pediatric Neurosurgical Fellowship at Children’s Hospital of Pittsburgh in June 2002. I joined Hackensack University Medical Center Department of Neurological Surgery thereafter, and had been in practice for about a year when I logged on to the Health Grades website. I was looking for the address of a local pediatrician. After obtaining the information I needed, I was curious to see what information Health Grades had about me. Health Grades had me listed as a Pediatric Neurologist in Pennsylvania...just SLIGHTLY incorrect. I was unable to correct the information immediately. I had to create an account and certify that I was in fact, Dr. Catherine Mazzola. The whole process was not too difficult.

There are several “physician search sites” including Health Grades (www.healthgrades.com), Vitals (www.vitals.com), UCompareHealthCare (www.ucompare.com), and RateMDs (www.ratemds.com), that you should regularly check to update your profile and correct any misinformation. While much of the information on these doctor search sites is helpful for patients, the information must be correct in order to be “useful” and valid. Recently I updated my HealthGrades profile; while it took about an hour-and-a-half, it was relatively easy.

Additionally, physician rating sites allow patients and their family and friends to say pretty much anything they feel through public patient portals that allow patients – both grateful and sometimes disgruntled – to submit their opin-
ions about the care provided. Of course, we would all like to see glowing evaluations of our practice and performance. However, occasionally angry or dissatisfied patients can vent their frustration online and that can create a problem. Patients may become disgruntled for real or imagined reasons, some of which you have little or no control over. Patients may become angry about an insurance or payment issue or if you are delayed in the operating room, and they had to wait an excessive amount of time for their appointment. I have also had a patient become angry with my refusal to give her teenage daughter Oxycontin. Whenever the topic arose, I always had a witness with me and repeatedly referred her daughter to pain management and psychology for narcotic addiction. There are patients who may have psychological issues, or who may be in denial of their diagnosis. Some patients may have gain-seeking behavior, and those patients may become angry if you do not deliver the “diagnosis” or “disability status” they want. I have had patients become very angry when I have refused to complete “permanent disability requests” for them. I think that as a physician, it is important to realize that you cannot satisfy everyone. You have a higher responsibility to do the “right thing” for the patient, and this is not necessarily what the patient WANTS.

So how should you react to negative or inflammatory comments made online on one of these websites?

Use caution against a quick response. Make sure to develop a careful and calm comment, realizing that the patient who wrote the negative evaluation may see your response. Given HIPAA regulations, be careful to NEVER divulge anything about the patient’s identity or situation. Even if they use dates and times, you can’t refer to an actual event or occasion. Ask other patients to submit good evaluations which should “push down” the negative comments. You may also write a letter to the website manager, and ask them to take the negative comment down and “block” the sender, especially if the comments are untrue and hurtful. Again, in doing this, the author of the initial comments may become even angrier and submit more negative comments. In that type of situation, I would recommend speaking with a lawyer.

It’s also important not to forget about other online platforms (in addition to rating websites) which could house information about you and your practice. For most physicians there are some very simple steps you can take in order to protect yourself in this arena as well. You may go to Google, Yahoo or Bing to search for yourself. Look at the first three pages of each search. Read what comes up in the searches. If there are postings that are incorrect, you may want to know more about who posted the information and where the information is stored. Then I would suggest that you write a letter, requesting that the post be corrected or removed altogether. I would also recommend that you set up alerts on Google or Yahoo using different variations of your name (Dr. Jane Smith, Jane Smith MD, etc.). These alerts use keywords that search the internet looking for any mention of the keyword and when it finds a new mention it sends an email detailing where the keyword was found. Setting up the alerts is very easy. Simply visit http://www.google.com/alerts/create and put in the appropriate information.

Lastly, the best way you can steer online conversations in the direction you want is to be in control of your own brand by personally creating the content people see about you online.
In late 2009, Editor-in-Chief, Dr. Nelson M. Oyesiku directed the Editorial Office to develop a social media strategy that would promote the journal’s content via alternate methods of distribution, and reach audiences that existed on the fringe of the neurosurgical community. Rather than attempt to develop content solely for social media, as other journals have attempted with decidedly mixed results, Neurosurgery®’s social media would act as an independent distribution channel for content that had already been peer-reviewed and accepted for publication. Social media would act as a publicity stream for the journal’s newest content, extending and augmenting the traditional promotional strategies employed by the journal’s publisher, Lippincott, Williams & Wilkins.

**Neurosurgery Report**

Updated twice daily, Neurosurgery Report (http://neurosurgerycns.wordpress.com) serves as the starting point for almost all subsequent social media ventures. Receiving approximately 10,000 visitors per month, Neurosurgery Report publishes the abstracts of newly accepted articles, links to article collections and supplemental content, and news and updates from the Neurosurgery® Editorial Office. In addition, the past week’s posts are aggregated into a single email that is distributed weekly to blog subscribers, authors and reviewers.

**Facebook, Twitter, Google Plus and Reddit**

Since Neurosurgery Report creates a unique syndication (RSS) feed, converting the blog content into a standardized format, the Editorial Office can effortlessly populate a series of
other social media sites:

- Facebook (http://www.facebook.com/neurosurgerycns) the dominant social networking service, founded in 2004. The Neurosurgery page currently boasts more than 7000 followers worldwide.
- Twitter (http://www.twitter.com/neurosurgerycns), a microblogging service that allows its users to send and read text-based messages of up to 140 characters, known as “tweets”. More than 2600 people currently follow Neurosurgery on Twitter.
- Google Plus (http://plus.google.com) is a multilingual social networking service launched in 2011 by Google Inc., with over 250 million registered users worldwide.
- Reddit (http://www.reddit.com/r/neurosurgerycns) a social news website where users submit content, in the form of either a link or a text “self” post.

YouTube

Before 2010, videos submitted to the journal as supplemental content were accessible online as a link at the end of the full-text HTML page. The journal’s YouTube channel (http://www.youtube.com/neurosurgerycns) provides an opportunity for these videos to actively promote their related article, rather than simply be ancillary. Over 150 videos are currently housed on the YouTube channel, including tutorials produced by the Editorial Office, with over 213,000 video downloads to date. Additionally, YouTube’s sophisticated mechanism for the handling of 3D video has been essential to the launch of the new 3D video article type, featured in Operative Neurosurgery.

In April 2010, Neurosurgery® introduced QR codes into the print journal, providing direct access to supplemental videos via smartphone. When an article’s QR code is scanned, the reader’s smartphone plays the related video from YouTube, allowing a reader to view supplemental content without putting down the print issue, an example of technology enhancing the print experience, rather than replacing it.

Mendeley

Founded in 2007, Mendeley combines both a desktop reference manager with an online social network component. Mendeley users can research, collaborate and promote their work. Neurosurgery® maintains a series of article collections on Mendeley (http://www.mendeley.com/profiles/neurosurgery-cns/) that highlight Editor’s Choice articles and Top Cited articles by subspecialty.

Together these sites represent an audience of more than 12,000 readers. Since each piece of promoted content links to a published article online, the Editorial Office can track the impact that the social media sites have on overall viewership of the journal’s official web site (http://www.neurosurgery-online.com). In 2012, the traffic from social media sites grew more than 54% from the previous year, and now represents more than 2% of the total viewership of Neurosurgery® Online. Concurrently, direct traffic to Neurosurgery® Online has increased 7%, suggesting that social media users may transition from one time visitors introduced by Facebook and Twitter, visiting the site directly rather than being referred to from Google or other search engines.

Neurosurgery® has established itself as an “early adopter” in the social media realm, and the Editorial Office will continue to assess new avenues for the distribution of our content through new services. We sincerely believe that our efforts in social media improve the visibility of our content, providing better exposure for our authors and a multitude of options for our readers. We hope to see many of you following, liking, tweeting and sharing our content in the coming months.
Facebook launched a social media revolution in 2004 and now has over one billion active users. These social software mediums allow people to communicate by both one-way dissemination of news and two-way communication in a digital forum in a near real-time fashion. Since the advent of social media, businesses have been trying to cultivate the power of these large number of subscribers who “like,” “friend,” “invite,” “digg,” or “pin,” their way across the Internet. Although companies struggle with how best to utilize social media formats, one thing is certain — social media is rapidly becoming the preferred mechanism by which people are choosing to obtain news and interact.

The Congress of Neurological Surgeons (CNS) has been gaining experience with social media networks for the past two years. The initial goal of the CNS Facebook (www.facebook.com/cns.update) and Twitter (www.twitter.com/CNS_Update) pages were to provide quick, up-to-date information about educational offerings and neurosurgical news (Table 1). However, this approach was not taking advantage of the open, two-way dialogue of social media outlets like Facebook and LinkedIn (Table 1). Therefore, in January of 2012 the CNS Facebook page allowed followers to post comments and encouraged open dialogue. So far, with 862 followers, Facebook comments have mostly been in response to the very popular CNS Case of the Month posts. This and other experiences with our early social media efforts have made it clear that the CNS needs to focus on consistently providing relevant neurosurgical content for our members and followers. Our future efforts will aim to increase this content and engage members in open dialog, while ensuring that we respond to questions on social media platforms in a...
timely manner. We also understand the need for improved privacy to encourage neurosurgeon-to-neurosurgeon interaction. Facebook postings are public and easily searchable, making open dialogue on patient care issues problematic from both a HIPAA and professional standpoint.

Unlike Facebook’s mostly social bent, LinkedIn is a professional social media site, whose goal is to create connections amongst business acquaintances. One advantage of LinkedIn is that it offers an option for members-only private groups, which allows the CNS as a group organizer improved privacy control over which only approved subscribers can see posts, helping to ensure that comments are not open to the general public. As a start, along with our 2013 launch of a new CNS LinkedIn company page, the CNS will begin to introduce members-only groups, in which neurosurgeons will be asked to comment on the pitfalls and possible solutions of the mandated electronic health record (EHR). An additional members-only group is being added for Residency Program Directors, and others will be added as we assess member interest. If you have an idea for a members-only discussion group, please send it to the CNS at membership@1cns.org

The CNS continues to gain social media experience with the goal of providing neurosurgeons with relevant up-to-date educational content, as well as, an outlet in which to socialize on topics relevant to the management of our medical practices and surgical care of our patients.

### Table 1: Social media outlets currently being used and under development by the Congress of Neurological Surgeons. (Numbers as of December 2012)

<table>
<thead>
<tr>
<th>Social Media Outlet</th>
<th>Followers</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FACEBOOK:</strong> Congress of Neurological Surgeons (CNS)</td>
<td>974</td>
<td>The CNS shares regular updates about programs and activities available to members, shares information from the Neurosurgery editorial office and the AANS/CNS Washington Office, posts photos and video of CNS educational activities and gives users a chance to comment on Case of the Month and other questions of neurosurgical interest.</td>
</tr>
<tr>
<td><strong>TWITTER:</strong> @CNS_Update</td>
<td>429</td>
<td>240 characters, text only “tweets” to anyone who “follows” the CNS twitter feed offers members quick, continual updates on CNS activities, products and services.</td>
</tr>
<tr>
<td><strong>YOUTUBE:</strong> Congress of Neurological Surgeons</td>
<td>33 subscribers, 1,707 video views</td>
<td>The CNS hosts a library of webinar excerpts on various topics. Non-members and members can get a glimpse of offerings before accessing full webinars via the CNS University of Neurosurgery.</td>
</tr>
<tr>
<td><strong>LINKEDIN:</strong> Congress of Neurological Surgeons</td>
<td>N/A</td>
<td>The CNS Company page features detailed information on the organization and its products. New members-only discussion groups are being added on an ongoing basis to facilitate closed online conversations on topics of clinical and non-clinical interest.</td>
</tr>
</tbody>
</table>

Key: N/A = Not Applicable
THANK YOU

to the following companies for providing educational grants in support of CNS programs and activities!

LEADER

INTEGRA

LIMIT UNCERTAINTY

BENEFACTORS

Codman

DePuy Synthes

COVIDIEN

Wolters Kluwer Health

Lippincott Williams & Wilkins

stryker

SUPPORTERS

ZEISS

Medtronic

MicroVention Terumo

CONTRIBUTORS

AESCULAP

BIOMET Microfixation

MIZUHO

APEX Medical INC

Penumbra
THE GLOBAL NEUROSURGICAL COMMUNITY:
RECYCLING MEDICAL EQUIPMENT

The neurosurgical world continues to flatten with time. With faster internet connections, ever increasing membership in international neurosurgical societies, and growing awareness, the global neurosurgical community finds more and more ways to reach out and help.

For several years, the WFNS and CNS have worked together to distribute surplus equipment from the United States and other countries to developing nations. This model enables companies that have shunts, pedicle screws, or other equipment that would ordinarily be destroyed, to instead direct that equipment to a neurosurgical organization that needs it. This has been done at the WFNS meeting every two years providing the host country has no duty restrictions.

Using the annual World Bank Data listing of Low Income and Low Middle Income countries, the WFNS is able to identify the economic status of countries and thus neurosurgical centers in need. This is a win-win situation – companies in the U.S. receive tax exemptions for their charitable donations, and neurosurgical centers around the world receive much-needed equipment. In the past, the WFNS has distributed equipment to neurosurgical centers in dozens of countries, from Uruguay to Tanzania, and Romania to Vietnam. For a complete listing of equipment donations and destinations, visit www.wfns.org, and search the website for “Neurosurgical Equipment Dispatched.”

Normally, these donations include simple instrumentation, drill bits, shunts, and various items that may have expired in the United States, but can be re-sterilized and used in a different setting. This does not preclude the donation of large units such as microscopes, bipolar cautery units, and pneumatic/electric drills. These are items that neurosurgical units in developing countries cannot afford.

This year, the Willis-Knighton Health System in Shreveport, Louisiana has graciously contributed a warehouse in which these international goods will be temporarily stored. In 2013, they will all be shipped to Korea. In addition to Willis-Knighton, Dr. Merwyn Bagan from the WFNS has helped immensely with this as well as Dr. Scott Robertson from AANS. The CNS has teamed up with them to make sure all surplus equipment can be shipped.

Kindly let us know if you have any surplus equipment or know of industry members that could help make this drive more successful. We will readily provide the appropriate IRS information so that you can obtain a deduction for your company. Please feel free to contact the WFNS, or talk to Merwyn Bagan or myself.
The past decade has witnessed an explosion of new surgical and radiation techniques that have significantly improved the treatment of metastatic and primary spine tumors. Surgical advances for metastatic tumors include minimally invasive decompressive techniques, segmental screw-rod fixation, and percutaneous cement augmentation. As the trends in spine surgery for degenerative conditions and trauma become more minimally invasive, en bloc resection of primary tumors remains one of the last vistas of “maximally invasive” spine surgery. Despite these tremendous surgical advances, the greatest impact on patient outcomes has been the evolution and application of spine stereotactic radiosurgery (SSRS).

Based on extremely encouraging outcomes data from multiple institutions, SSRS is a technology that is here to stay. A number of platforms have been developed that can deliver cytotoxic doses of radiation while sparing normal tissue tolerance, particularly to the spinal cord, kidneys and bowel. Intracranial SRS is a well-established technique that has been accepted by the neurosurgical community. Unfortunately many radiation oncologists are accustomed to longer-course, fractionated radiation and ultimately may have a harder time transitioning to SRS. Convincing evidence that
the radiobiology of single fraction or high-dose hypofractionated radiation is different from conventional dose radiation may help persuade some of the merits of this technology, but clinical trials are essential for providing data that will shift current practice. Currently large prospective trials are being conducted using SRS for lung, pancreas, and liver; however, by far the largest impact on outcomes may be seen in the treatment of spine tumors.

Currently a large prospective trial is ongoing for spine metastases comparing SSRS to conventional radiation which may provide a definitive answer. To date, multiple retrospective studies have demonstrated 3-year control rates greater than 90% using SSRS as definitive therapy for metastatic tumors. These responses are remarkable when compared to other solid tumors, such as renal cell carcinoma and melanoma, where demonstrated responses of 20% at 3 months have been reported using conventional radiation.

On the basis of a systematic review of existing literature, the Spine Oncology Study Group made a strong recommendation that “radiosurgery should be considered over conventional fractionated radiotherapy for the treatment of solid tumor spine metastases in the setting of oligometastatic disease and/or radioresistant histology.”

Improved local tumor control rates greater than 90% are also being seen using SSRS as salvage therapy following failed conventional radiation and as adjuvant therapy in the postoperative setting or following percutaneous cement augmentation. More recent evidence suggests that primary tumors such as chordoma may benefit from single fraction SSRS used either as neoadjuvant or definitive therapy. Ultimately, SRS may reduce the need for en bloc resection or at least minimize the role of surgery for primary spine malignancies.

With mounting evidence demonstrating the efficacy of SSRS, why might this technology still become a passing fad? The stumbling blocks are principally financial, availability, and applicability. The technology to deliver spine SSRS is relatively inexpensive, especially compared to other technologies such as proton beam systems. The financial issue centers on insurance reimbursements. Despite the obvious benefits of shorter course radiation and significantly better control rates compared to conventional radiation, cost effectiveness has yet to be definitively demonstrated. The second issue centers on the concept that it is not the technology, but how you use it. Having a machine that can deliver high-dose conformal radiation using SSRS strategies is relatively meaningless if it is used to deliver conventionally fractionated or low-dose hypofractionated radiation.

It has become clear that dose does matter. In a study from MSKCC, patients receiving 24 Gy single fraction demonstrated significantly better control rates than those receiving 18 or 21 Gy. This was also seen in the postoperative adjuvant setting where patients receiving 24 single fraction or high-dose hypofractionated SSRS (8 to 10 Gy in 3 fractions) did significantly better than those receiving low-dose hypofractionated radiation (6 Gy in 5 fractions). Part of this problem lies in the failure of academic centers reporting SSRS outcomes to standardize reporting. Efforts of the International Spine Radiosurgery Consortium (ISRC) are ongoing to determine dose toxicity levels for organs at risk and to standardize dose prescriptions and contouring.

MEETING THESE GOALS ALONG WITH EXTENSIVE EDUCATION EFFORTS FROM SOCIETIES REPRESENTING NEUROSURGERY AND RADIATION ONCOLOGY WILL HELP CHANGE CURRENT PRACTICE TO MAKE SSRS SAFER AND MORE EFFECTIVE.

References:


The Congress of Neurological Surgeons (CNS) had a busy and highly successful year. Under the leadership of President Christopher E. Wolfla, President-Elect Ali R. Rezai, Vice President Daniel K. Resnick, Secretary Nathan R. Selden, and Treasurer Russell R. Lonser, the CNS continued to provide leading education for neurosurgeons at all career stages, premiere member services, and vigorous public advocacy.

The 2012 CNS Annual Meeting was held from October 6-10 in Chicago, Illinois, celebrating the theme *Our Future is Now!* Annual Meeting Committee Chair, Dr. Ganesh Rao, and Scientific Program Chair, Dr. Alan Scarrow, and Vice Chair, Dr. Ashwini Sharan, gathered a faculty of internationally renowned leaders in neurosurgery, science, policy and technology. Outstanding presentations by the CNS Honored Guest, Dr. Ralph Dacey highlighted the meeting, along with invited speakers including Walter E. Dandy Orator, Raymond Kurzweil, noted author, inventor and futurist, and John Thompson Lecturer, Dr. Anne Osborn, leading neuroradiologist and author.

Other special lecturers included Dr. Albert Rhoton on navigating the final frontier of human neuroanatomy, Dr. Nadar Sanai on human glioma dissemination, Dr. John Donoghue on mind-machine interfaces for movement, Dr. Jonathan Skinner on technology and cost in health care, Geoff Colvin on talent and change leadership, Michael McMillan on the future of healthcare delivery, and Dr. David Weinberger on expertise and knowledge in the internet age.

The Central European Neurosurgical Society (CENS) was the 2012 Guest Society at the CNS Annual Meeting. CENS President, Dr. Eduard Zverina, addressed the general scientific session of the CNS. Earlier in the year, a CNS delegation, led by International Division Chair, Dr. Anil Nanda, along with President-elect, Dr. Ali Rezai, Secretary, Dr. Nathan Selden, and Scientific Program Vice-Chair, Dr. Ashwini Sharan, attended the CENS Annual Meeting in Prague, Czech Republic.

The 2012 CNS Annual Meeting was characterized by an array of innovative, interactive educational programs, including CNS Consensus Sessions, 3D Operative Sessions, and a live telemedicine broadcast of an aneurysm reconstruction with flow diversion. In addition, the Annual Meeting Program included the traditionally wide array of Practical Courses, Luncheon Seminars, and Special Courses. The popular Dinner Seminar program was expanded to five of Chicago’s leading restaurants with cutting-edge topics in patient care and practice management.

Just-in-time neurosurgical knowledge was presented in the CNS Original Science Program, including specialty section platform presentations, the Neurosurgical Forum, and CNS Digital Posters. Additional original science was highlighted during two multidisciplinary oral presentation sessions. All of this original neurosurgical science has been added to the archive of CNS Annual Meeting material available at the CNS University of Neurosurgery online.
> UNDER THE LEADERSHIP OF PRESIDENT CHRISTOPHER E. WOLFLA,
PRESIDENT-ELECT ALI R. REZAI, VICE PRESIDENT DANIEL K. RESNICK,
SECRETARY NATHAN R. SEDLEN, AND TREASURER RUSSELL R.
LONSER, THE CNS HAS CONTINUED TO PROVIDE LEADING EDUCATION
FOR NEUROSURGEONS AT ALL CAREER STAGES, PREMIERE MEMBER
SERVICES, AND VIGOROUS PUBLIC ADVOCACY. <

For the second year, the CNS joined with
the Society of Neurological Surgeons, which
represents U.S. residency program directors,
taking on administrative and financial respon-
sibility for management of the national PGY1
Neurosurgery Boot Camp Courses. Again this
year, every entering PGY1 resident attended
the courses at one of six regional centers (over
200 residents total from 101 programs). The
courses, which are exceptionally highly rated
by both trainees and faculty, have become a
model for similar initiatives by other specialties
and by neurosurgical training systems in
other countries.

The CNS remains vitally engaged in resident
education in the U.S. and abroad in a number
of additional ways. The very popular CNS 3D
Surgical Anatomy Course for Senior Residents
in the United States was held this year in Houst-
on under the supervision of Dr. Michael Law-
ton. The CNS welcomed a number of guest
senior residents from Europe to the Chicago
course this year. Conversely, CNS faculty and
U.S. residents with CNS scholarship support
participated in a number of surgical dissection
based courses led by the European Association
of Neurosurgical Societies (EANS) in various
European cities. The Chair of our International
Division, Dr. Anil Nanda, has also partnered the
CNS with other neurosurgical organizations,
including the World Federation of Neurosurgical
Societies, to deliver vitally needed “software”
and “hardware” for neurosurgery (expertise and
equipment) to the developing world.

All of these CNS educational efforts de-
pend, in different ways, on simulated surgical
experiences, some with traditional cadaver dis-
sections or physical model based simulators,
and some with modern computer generated
simulators. The role of simulation in neuro-
surgical education for residents was further
explored in a multi-simulator training and as-
essment course at the CNS Annual Meeting,
conceived and implemented by Drs. Ali Rezai
and James Harrop.

As reported by its Treasurer, Dr. Russell Lon-
sor, the CNS has preserved a strong financial
position during the past year through careful
management, prudent cost savings, and ef-
cient performance in each major area of or-
ganizational activity. CNS finances received a
‘clean’ review by our external auditors again
this year. In addition to generous discounts
for CNS Annual Meeting registration and other
educational events, membership provides nu-
umerous additional benefits, including subscrip-
tion to the Neurosurgery® journal, Congress
Quarterly, and Clinical Neurosurgery, as well
as access to a wide array of online educational
products and webinars.

The Self Assessment in Neurological Surgery
(SANS) program, SANS Lifelong Learning, contin-
tues to serve as a major tool for lifelong learning
and self-assessment within the American Board
of Neurological Surgery MOC process. Under
the supervision of the CNS SANS Committee
Chair, Dr. Jason Sheehan, other SANS programs
provide additional learning, CME and review op-
portunities, through SANS Competencies, SANS
Neurotrauma and SANS Neurosurgery.

The CNS Education Committee, supervised
by Chair, Dr. Jamie Ullman, and Co-Chair, Dr.
Zoher Ghogawala, has continued its series
of high-quality webinar programs with faculty
drawn from leading experts in all areas of
neurosurgical endeavor. The CNS University
(led by Dr. Elad Levy) continues to add new
offerings, including the soon to be released
interactive case-based learning modules. Dr.
Nicholas Bambakidis leads the rapidly expand-
ing universe of the CNS NeuroWiki, providing
one of the most frequently accessed public re-
sources for expert neurosurgical information.
Drs. Brian Ragel and Ashok Asthagiri supervise
the sophisticated information technology nec-
essary to support the breadth of CNS online
education and assessment, much of which un-
derwent substantial and strategic renewal and
reinvestment this year.

Dr. Steven Kalkanis leads the CNS Guide-
delines Committee, which is now professionally
staffed to assist subspecialty specific efforts to
formulate, review and publish high quality medi-
cal evidence guidelines. This effort represents
an entirely new capability within the neurosurgi-
cal community, critical for defining and justifying
the most effective interventions and best prac-
tices available to our patients. The CNS Guide-
delines Committee also works hand in hand with
the AANS/CNS Guidelines Committee to sup-
port the endorsement of guidelines by the par-
et organizations and circulation of guidelines
information to important stakeholders.

Finally, the CNS, represented by board ap-
pointee Dr. Zoher Ghogawala, supports the
mission of NeuroPoint Alliance to create high
quality, validated neurosurgical outcomes
data. Overall, the efforts of organized neuro-
surgery to measure and report on the scientific
validity, quality and effectiveness of neurosur-
gical care will help to preserve patient access
to life and function saving interventions.

The CNS has completely re-organized its
powerful fellowship program for mentoring
The CNS has preserved a strong financial position during the past year through careful management, prudent cost savings, and efficient performance in each major area of organizational activity. CNS finances received a ‘clean’ review by our external auditors again this year.<p>

future leaders and innovators within our specialty, supported by the Industry Sponsored Initiatives for Teaching and Education (InSITE) foundation. The CNS Fellowships Committee Chair, Dr. Steven Kalkanis, announced the first ever CNS Christopher C. Getch Fellowship winner in 2012. This generously funded year-long fellowship has immediately garnered spectacular interest and applications from transformational candidates. The CNS Getch Fellowship will undoubtedly become a signal honor for a young neurosurgeon each year, and serve as part of the permanent fabric of North American neurological surgery. In addition, the CNS continues to offer numerous other specialty focused clinical and educational fellowships. Under the leadership of Dr. Richard Byrne, philanthropy is playing an expanded role in the funding of CNS educational and fellowship endeavors.

The CNS publications group continues to thrive. The official journal of the CNS, Neurosurgery®, led by Editor-in-Chief Dr. Nelson Oyesiku and assisted by Managing Editor, Mr. Duncan MacRae, has pushed to the cutting-edge of digital medical and social networking innovations. The journal continues to publish some of the highest quality scientific content in our field. Under the direction of its Editor, Dr. James Harrop, the Congress Quarterly informs CNS members of timely developments within our organization and specialty. Clinical Neurosurgery, edited by Dr. Gerry Grant, has continued to highlight the top peer-reviewed science and leadership presented at our Annual Meeting and will soon include additional strategically important neurosurgical content.

The CNS and AANS serve as partners in supporting neurosurgical advocacy via the AANS/CNS Washington Committee. Over a third of CNS dues support neurosurgical advocacy via Washington Committee and Office support. Dr. Alex Valadka is just finishing a term of very strong leadership as Washington Committee Chair during a time marked by considerable external challenges to organized medicine. The AANS/CNS Washington Office is staffed by a strong team of health care advocacy experts and benefits greatly from the very experienced and vigorous direction of Ms. Katie Orrico, JD. The CNS also continues to strongly support the activities of the Council of State Neurosurgical Societies (CSNS), through the CNS Caucus, Chaired by Dr. Darlene Lobel. Drs. Mark Linskey and Charles Rosen have led substantial efforts in the past year to sharpen both the effectiveness of CNS driven advocacy and to seek opportunities to serve the community of neurosurgery more actively at the state level.

The CNS Research Committee, led by Dr. Aviva Aboisch, promotes the success of neurosurgeons in obtaining federal research funding and by supporting optimal research training for neurosurgical residents. The Committee supported and promoted the launch of a new NIH funding mechanism for young neurosurgical scientists this year and has published data carefully analyzing the necessary ingredients for starting a successful career as a neurosurgical researcher.

As of November 2012, CNS Membership has grown to record levels. There are currently 8,357 CNS members (a 9% increase from a year ago), including 3,471 Active members, 1,568 Resident members, 388 Active International members, and 791 International Vista members. Membership growth has been ably promoted by Committee Chair Dr. Shekar Kurpad and Resident Chair Dr. Aviva Aboisch.

During the past year, Dr. Alan Scarrow led the CNS in the recruitment of an industry leader to serve as the CEO of the CNS. Mr. David Westman, MBA was educated in Illinois and has additional qualifications as a certified public accountant and certified association executive. He brings to the CNS extensive previous experience as CEO of the Emergency Nurses Association, Interim CEO of the American Association of Diabetes Educators, and as an associations management consultant. Mr. Westman is a passionate organizer of strategic planning, corporate best practices, board governance, and health care education. He leads a team of highly effective professionals at the CNS Headquarters Office, including Deputy CEO, Ms. Regina Shupak, and Department Directors, Mr. David Berg, and Ms. Michele Lerman, and Ms. Deanne Starr.

Under the leadership of Bylaws Committee Chair, Dr. Cathy Mazzola, CNS governance structures were also revised to further enable this invigorated professional leadership team.

The Executive Committee warmly thanks Dr. Chris Wolfla for his diligent and highly effective tenure of service to the CNS. In addition, we welcome Dr. Ali Rezai as the new CNS President and Dr. Daniel Resnick as the new President-elect. We also mourn the untimely and unexpected passing during the year of our immediate Past-President, Dr. Christopher Getch. In addition to his unswerving commitment to the mission and vision of the CNS, Dr. Getch was a consummate neurosurgeon, wonderful husband and father, and loyal friend. He is sorely missed by all.

Finally, on a personal note, it has been my singular honor to serve the membership of the CNS as Secretary for these past three years. The power of this organization resides in the dedication of its members to promoting human health and to professional excellence. The position of Secretary has allowed me to interact with so many of my neurosurgical colleagues, and in so doing confirming my strong conviction that our specialty represents the pinnacle of medical and surgical practice.
51-year-old female, found to have a Rathke’s cleft cyst (Figure 1), underwent transphenoidal endoscopic fenestration. Returned two weeks later with persistent rhinorrhea, headaches, and nausea, but no focal neurologic symptoms. She was found to have impressive pneumocephalus secondary to a CSF leak (Figure 2). She did well after definitive repair of her anterior skull base defect.

Submitted by: Chengyuan Wu, MD, MSBmE
Thomas Jefferson University Hospital
One week before the ABNS Maintenance of Certification Cognitive Exam, the CNS SANS MOC Board Review Course offers a broad and comprehensive review of the neurosurgical specialty. Designed for those preparing for recertification, this new course is also open to anyone who wants a refresher or update on the changing field of neurosurgery – from entrapment neuropathies and brachial plexus to vascular malformations or sellar tumors and cysts.

- Expert faculty lecture on high-yield material pertinent to the ABNS MOC examination
- Utilizes the unique tools of the CNS Self-Assessment in Neurological Surgery (SANS) with questions modeled after those on the actual ABNS exam.
- Offers 11.5 hours of CME and an additional 5 CME hours for a special CNS SANS test designed specifically for those taking this course.

COURSE DIRECTOR
Mark E. Shaffrey

ASSOCIATE COURSE DIRECTOR
Nader Pouratian

March 9-10
JW Marriott Desert Ridge
Phoenix, Arizona

COURSE FEES
- $1,000 for CNS Members
- $1,200 for Non-Members
- $700 for attendees of the 2013 Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves

Registration and preliminary course details available at www.cns.org/sansmoc!