

Chapter 6

CNS Internet Tools and Neurosurgery

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INTRODUCTION

One of the primary components of the mission of the Congress of Neurological Surgeons (CNS) is to promote the public welfare by supporting neurosurgeons in training and in practice. The Congress has invested heavily in the development of online resources and applications for both its members and the entire neurosurgical community to help achieve this goal. The Internet provides a powerful infrastructure for rapid information retrieval and asynchronous communication as well as software development and distribution. The suite of software solutions hosted by the CNS is accessible using a standard desktop personal computer and web browser. Most people have experience using a web browser to navigate the Internet and, therefore, the CNS products are easy to find and learn to use.

Increasingly, the Internet is influencing all aspects of neurosurgical education and practice management. A complete discussion of the impact of the Internet on the specialty on neurosurgery would obviously be beyond the scope of this report. This chapter will focus instead on detailing the efforts that the CNS has undertaken on behalf of its membership and neurosurgeons around the world to develop online member services, educational references, and practice management resources.

THE CNS WEBSITE

The CNS website (www.neurosurgeon.org) is the main gateway for neurosurgeons and public visitors to access the information and tools provided by the CNS (Fig. 6.1). The homepage is designed with a familiar tab-driven interface. The structure of the website and the organization of its content were carefully planned by the CNS website committee under the direction of its editor, Dr. Ali Rezai. The goal was to create a logical and efficient schema so that users can locate their desired information within two to three clicks of the homepage. Since its inception in late 2002, the CNS website has experienced a gradual increase in usage. The site traffic currently stands at approximately 12,000 unique visitors per month.

Each of the main sections of the homepage has a particular function. The Announcements section displays late-breaking news and hot topics that are hyperlinked to their source articles. The tabs across the top of the window serve to navigate to specific areas of content (Fig. 6.2). The navigation bar along the left side of the window contains both static and dynamic links. The static links appear on every page and include a series of Quick Reference links and graphic buttons (Fig. 6.3). These Quick Reference links include the CNS central office, the Find a Neurosurgeon Service, the Job Placement Service, the official CNS Meetings Calendar, a site map, and a link for members to update their contact information. The buttons link to the CNS Personal Assistant, the Online Calendar, and the Resident On-Call section (Fig. 6.4).

Public visitors to the website can use graphic buttons at the bottom of the navigation bar to access the definition of neurosurgery, the Glossary of Neurosurgical Terms, as well as patient education materials and the Find a

Neurosurgeon system. The Find a Neurosurgeon system is a search engine that allows visitors to identify neurosurgical clinicians by geographic location (Fig. 6.5). The dynamic links on the navigation bar are context sensitive and relate to the section being viewed. The links in this portion of the navigation bar will vary depending on the selected tab. In the Membership Section, for example, the navigation bar includes a link to access the Online Member Directory. The remainder of the homepage along the right edge of the window is dedicated to notices for coming events and online publications (Fig. 6.6). The search tool on the homepage rapidly returns a list of articles containing a specified key word. The articles are listed according to relevance (Fig. 6.7).

The Public Tab

The Public Tab is designed to provide the lay public visitor a way to investigate neurosurgical disorders and treatment options (Fig. 6.8). In the left-side navigation bar, a series of hyperlinks include basic primers on anatomy, diagnostic studies, and neurosurgical terms. Furthermore, an extensive list of articles covers the spectrum of neurosurgical pathologies that focus on the issues relevant to the patient. Articles on topics such as head injury and low back pain describe the basic information on the disorder in a way that the nonmedical reader can understand.

The Sections Tab

The Sections tab provides rapid routing to each of the subspecialty Joint Sections of the American Association of Neurological Surgeons and the CNS (Fig. 6.9).

Hyperlinks quickly route to each of the subsidiary websites and provide a pathway to access disorder-specific information.

The Meetings Tab

The Meetings tab is designed primarily to subserve the need of the annual meeting (Fig. 6.10). The content on this page changes each year as a new Annual Meeting cycle begins. The navigation bar will, at different times of the year, provide hyperlinks to the Abstract Center and the Online Registration System. The preliminary program for the forthcoming annual meeting is also posted in this area as soon as it is available.

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The Membership Tab

The Membership tab displays aggregate statistics of the current membership of the CNS. The navigation bar provides a number of very useful tools, including hyperlinks to apply for CNS membership and access to the various online directories including the Online Membership Directory, The World Directory, and the Young Neurosurgeons Directory (Fig. 6.11). Additional resources in this area include a Job Placement Service and Practice Management resources. The Job Placement Service is a clearinghouse for those seeking job opportunities and prospective employers with vacancies (Fig. 6.12). The user can configure a profile with desired job attributes such as geographic location and practice type and prospective practices can list characteristics of their particular opportunity. As with most pages on the CNS website, there is a dedicated link at the bottom of the navigation bar to update current contact information.

The Education Tab

The Education Section of the website houses a wealth of resources for learning (Fig. 6.13). In the navigation area, several educational tools are available, including an extensive abstract archive with a search engine that can rapidly retrieve abstracts presented not only at previous meetings of the CNS but also at many other ancillary neurosurgical meetings (Fig. 6.14). A rotating Case of the Month presents a diagnostic or treatment dilemma in a case conference format and compiles aggregate responses from each visitor to a series of clinical questions (Fig. 6.15).

A rich repository of guidelines is also available; these documents provide a series of thoroughly referenced treatment recommendations on the basis of available literature regarding clinical questions ranging from treatment of brain injury to spinal disorders. There is also an image database that contains a series of case-based multimedia assets (Fig. 6.16). For example, the user could retrieve a collection of images of subdural hematomas including all of the computed tomography (CT) slices for a particular case. Most major neurosurgical pathologies are represented. The image database is a valuable source for images to include in presentations.

A major component of the Education section is devoted to resources for neurosurgeons in training. The navigation bar contains several hyperlinks that are specific to this population, including a litany of fellowship opportunities, grants, and the Job Placement Service. Furthermore, hyperlinks are provided to the medical student and resident curricula as well as to the residency programs around the country.

The Resident On-Call page is tailored to the specific needs of the neurosurgical resident and can be viewed by clicking on the beeper icon (Fig. 6.17). This page contains a series of resources geared toward resident education

(Fig. 6.18).

The video library is a collection of short movies on a variety of clinical topics. These movies focus on surgical technique and are meant to serve as a quick review. The neuroanatomy page houses a series of anatomic atlases. Several other features are available, including a Lab Data page with links to clinical calculators and miscellaneous textbooks and neurosurgical resources. Finally, the Case of the Month, Visiting Professor's Corner, and Neurosurgery Trivia game can all be accessed from this area.

The Publications Tab

The CNS devotes substantial resources to generating publications (Fig. 6.19). Foremost among these is the monthly NEUROSURGERY journal. In the Publications area, the navigation bar provides hyperlinks to display the current complement of the Editorial Board and staff as well as link to NEUROSURGERY ONLINE, the online version of the published journal. Additional publications include Neurosurgery News, a quarterly newsletter that focuses more on late-breaking socioeconomic and policy issues than on scientific content. The Clinical Neurosurgery hyperlink accesses a compilation of articles documenting the proceedings of the Annual Meeting. The Practice Guidelines are also available through the Publications section.

The Advocacy Tab

The Advocacy page displays content that relates to the legislative efforts of the CNS on the national level (Fig. 6.20). At any given time, a wide spectrum of issues impacts the specialty of neurosurgery either nationally or regionally. The efforts of the Washington Committee are reported regularly on this page. The navigation bar provides a series of very useful links to other socioeconomic and regulatory entities. The Counsel of State Neurosurgical Societies and the Doctors for Medical Liability Reform both have links on this page. There are a series of position statements generated by the CNS as well as links for practice management resources, such as coding and reimbursement, training courses, Health Insurance Portability and Accountability Act recommendations, and liability reform resources. The Think First organization and Women in Neurosurgery are also accessible from this page.

CNS WEBSITE SUPPLEMENTAL TOOLS

The CNS website is the center of the online presence for the CNS. Its resources are extensive and designed to meet

the needs of both neurosurgical patients and practitioners. Paralleling these wide-ranging features offered on the homepage and its subpages are several associated websites that are more specific to the needs of physicians, which can be accessed from multiple locations on the website. The CNS Personal Assistant (PA) and Self-Assessment in Neurological Surgery (SANS) Wired both provide value-added functionality to the CNS homepage for many neurosurgeons.

The CNS Personal Assistant

The CNS Personal Assistant (PA) is a user-specific portion of the website that is designed to create a personalized experience for each member. This application is a collection of customized tools that reflect information for an individual member. Some of the functions of the CNS PA allow a member to manage his or her own account information without calling the central office. To enter the CNS PA, the user clicks on the PA icon from any of the pages on the CNS website (Fig. 6.21). The user is then prompted to enter a unique username and password. Once logged in, the welcome page greets each visitor with a message containing late-breaking news from the CNS administration. The welcome page also displays pending messages for the user to address (Fig. 6.22). The navigation of the CNS PA is similar to that of the CNS website. Tabs across the top of the window allow the user to select the different features of the PA.

The Personal tab allows the user to view and edit basic contact information, subspecialty interests, and academic background. Maintaining accurate contact information is essential so that the central office can communicate effectively with the member. The navigation bar along the left edge of the page displays each of the subsections of the personal profile.

The portfolio tab generates a curriculum vitae of contributed abstracts and volunteer efforts for the CNS. This information is automatically fed into the CNS leadership development process.

The Continuing Medical Education (CME) tab provides a mechanism for the user to research and printout documentation for CNS-sponsored CME activities (Fig. 6.23). The user can print certificates for CME credits earned at past annual meetings. In the near future, the user will also be able to view and print certificates for credits earned using the SANS Wired Self-Assessment test.

The Tasks tab is used to manage the Annual Meeting production process. Prospective faculty members and participants for courses at the Annual Meeting are notified through the CNS PA. The Tasks area will allow the user to respond to invitations to participate in the meeting and complete the requisite disclosures. Once the user agrees to participate in the Annual Meeting by accepting an invitation, the activity will be posted to the personal calendar and portfolio.

The Calendar tab displays a wide variety of neurosurgical-related meetings and provides mechanisms for individual users to enter their own events. The display of events can be filtered so that only meetings of a particular subspecialty will be displayed. Confirmed speaking engagements for the Annual Meeting and other CNS activities are automatically posted to the calendar. All of the schedule information on the calendar can be exported in a format readable by handheld computing devices.

The Preferences tab allows the user to change the login password and set configurations for the behavior of the CNS PA interface. Filters for the calendar events as well as other configurations can be assigned.

The CNS PA is a powerful member service that enables the individual member to manage activities with the CNS.

SANS Wired

SANS Wired is the online evolution of the classic self-assessment test for neurosurgical surgery. The test is available from many areas of the CNS website by clicking the SANS Wired icon (Fig. 6.24). The original version of the SANS test was paper-based. It was designed to serve as a guide for written neurosurgical oral examination preparation. Before SANS Wired, the most recent iteration was distributed in 1996 on CD. That iteration, version 6, included some multimedia content but was not interactive and was basically an economical method for production and distribution.

SANS Wired markedly extends the value of the original self-assessment test by leveraging the functionality of the internet. The current test is an extensive collection of questions organized in clinical and basic science categories. Questions are presented in a multiple-choice format (Fig. 6.25). If the user answers a question incorrectly, a carefully referenced critique of the question is displayed. The real power of the system is the ability to hyperlink to additional content outside of the SANS test if the user wishes to undertake further study (Fig. 6.26). As an example, the critique for the question in Fig. 6.26 regarding glossopharyngeal neuralgia not only discusses the regional anatomy but also

links to the original research papers on which the question is based. This paradigm enables the user to achieve the goal of self-assessment using one system for study. The advantages of this single interface for test preparation purposes are obvious. Because of the need for neurosurgeons to demonstrate ongoing self-assessment and learning to comply with the Maintenance of Certification requirements, the American Board of Neurological Surgeons has recently adopted the SANS test as the official mechanism to demonstrate these activities.

SUMMARY

The CNS has developed a collection of online tools for the benefit of the public and the neurosurgical community. The CNS website, CNS PA, and SANS Wired all facilitate information access, communication, and education. Each of these applications takes advantage of the power of the Internet as a high-speed, asynchronous digital data storage and retrieval system. The CNS has designed and compiled these features with the objective of making these tools an easily accessible and integral part of neurosurgical education and practice.

RESOURCES

CNS official website: <http://www.neurosurgeon.org>

CNS PA: <http://cnspa.neurosurgery.org>

SANS Wired online self-assessment examination: <http://www.sanswired.com>