New Media

[1] Clinical Workgroups on the Web: A Future Tool in Anesthesia Practice?

Wouldn't it be nice if it were always easy to put your hands on your departmental call schedule (or telephone directory, vacation schedule, schedule of meeting dates etc.) instead of constantly having to rummage around through a set of paper documents or having to call the departmental secretary for assistance?

For some people the answer is to make everything available on the Web. This approach also has the added advantage of reducing the need to distribute paper documents. With this scheme, as long as you know the correct Web address (with a possible access password), sought after information is only a few key-strokes away.

Making communal departmental information available in this way involves forming a virtual entity known as a "work group" – a group of colleagues who have electronic access to a set of key documents and a means to communicate and collaborate electronically. Work groups may be restricted to a particular intranet or may allow for world-wide collaboration across the Internet.

High-tech businesses were among the first to use networked computers to help workers coordinate and harmonize their efforts. Sophisticated systems such as Lotus Notes™ are frequently used for this purpose but these packages may be far more powerful and expensive than is needed in many cases, such as in a typical hospital anesthesia department. (According to the official Web site, Lotus Notes "is an integrated, Web-like environment that provides users with quicker access to and better management of many types of information including Domino and Internet-based e-mail, calendar of appointments, personal contacts and to-dos as well as Web pages, News Groups and intranet applications.")

A clinical workgroup is merely the extension of the concept of a work group to the clinical world. A clinical workgroup is a means by which a group of clinicians might share, exchange, review, update and archive information related to their general clinical

practice. This does not include patient records but rather focuses on logistical concerns such as reporting equipment problems, soliciting requests for call schedule preferences or making departmental telephone directories available by electronic means. Clinical work group systems might also provide an electronic means to make work-related suggestions, securely submit incident reports, and look up clinical protocols or request that certain equipment is ordered.

If you want your anesthesia department to start a Web-based clinical work group it is possible to start simply and very inexpensively using a free Web page hosting service such as homestead.com or freeyellow.com. (Both services add a small banner ad in exchange for being free. The freeyellow site provides a massive 50 MB of free disk space to users). Alternately, far more sophisticated Web hosting services without banner ads are available for about \$40 monthly from topchoice.com (my favourite) and dozens of other reputable companies.

Once the Web-hosting service has been selected, decisions must be made about what kind of information to place at the site. Although making the site password-protected is not particularly difficult with most modern Web-hosting packages, remember that patient information should, as a rule, never be accessible from a clinical work group site – that is a job for a hospital information system only, where an auditing trail for information flow is always (I hope) maintained. Instead, information provided at a clinical work group site should only include information dealing with departmental and hospital policies, schedules and clinical protocol information (e.g., acute normovolemic hemodilution, AHA guidelines for antibiotic prophylaxis, guidelines for using antifibrinolytic agents, normal ranges for common and uncommon laboratory tests), along with practical clinical information such as drug dosage charts and differential diagnosis information.

The easiest way to proceed is to start with a completed document in Microsoft Word and simply upload the file "as is" to your Web site's root directory using an FTP (file transfer protocol) program (such

as "WS_FTP LE", available by free download at http://www.ipswitch.com/Support/ws_ftp_le_support.html.)

For instance, suppose that all of the information you want to share between colleagues is in a single file in the root directory called *info.doc* and further suppose that your group's Web address (URL, Universal Resource Locator) is *gaspassers.org*. (This URL was still available at the time of writing). Then the URL for the information file would be *gaspassers.org/info.doc* and that is what users would merely have to type into the browser address box to access the posted information.

The one drawback to this particular solution is that while recent versions of Microsoft Internet Explorer will correctly display the file with its formatting intact, other browsers like Netscape Navigator or Opera will generally not do so, at least not without the bother of installing a "plug-in", a software upgrade usually obtained by download.

An alternate means to post the group information would be to automatically convert the Microsoft Word file (called, say, *info.doc*) to HTML format (with a new name, say, *info.htm*). This is almost trivial to do with recent releases of Word (versions 2000 and 2002) but the process suffers from the drawback that the automatic conversion often produces a Web page that is "esthetically awkward" and occasionally produces a page that is simply dreadful. Consequently, post conversion editing by hand (using Microsoft FrontPage™ or other Web page development environment) is frequently necessary to obtain a respectable result.

One alternative idea especially worth considering that is both easy to implement and browser-friendly is to make group documents available in PDF format (PDF = "portable data format") using a program called Adobe Acrobat. Acrobat installs into the Windows operating system as a virtual printer, which can be selected just like a real printer on your computer. The difference is that when a job is printed using the Acrobat virtual printer a new file is generated in PDF format. This means that generating PDF files using Acrobat is as easy as simply selecting a new printer and printing to it. In the case of the scenario discussed earlier, where all information was placed in a Word file called *info.doc*, the mere act of printing the file to the Acrobat virtual printer will result in a file called *info.pdf* being generated in the appropriate directory. By uploading this file to the Web site's root directory, the document becomes available in PDF format at URL *gaspassers.org/info.pdf*. Finally, note that Adobe Acrobat should not be confused with Adobe Acrobat Reader, a free program that is frequently used to display PDF files (but cannot generate or edit them).

Readers may have noted that the discussion so far indicates merely how "read only" information can be shared between group members. What about electronic communication between group members? Certainly, the easiest option is for every group member to know everyone else's e-mail address, perhaps because it has been made readily available at the group's Web site (which is one reason why password access for such a site may be desirable). More sophisticated solutions for electronic communication are also possible, but ordinary e-mail has enormous potential and is cheap. For example, the group might use the e-mail address *vacationrequests@gaspassers.org* as the address used to let the group executive know about vacation plans, while requests for conference leave might be sent to *conferencerequests@gaspassers.org* (should there be a need to separate the two kinds of leave requests). Similarly, e-mail addresses such as *equipmentrequests@gaspassers.org*, *callrequests@gaspassers.org* and *suggestions@gaspassers.org* could all be used to route their respective information. Note that most Web hosting services provide a number of free e-mail addresses that can be used in such a manner.

All that remains is to consider how one might integrate everything together into an easy-to-use, menu-driven departmental "portal". This too is not especially difficult to do in an elementary but functional way using advanced HTML, and might include some or all of the following menu selections, each implemented as a hyperlink:

- Departmental telephone directory
- Departmental notices
- Report an equipment problem
- Report a clinical incident
- Report an administrative problem
- Make a suggestion
- Recommend an item for purchase
- Submit call request
- Submit vacation request
- Submit conference request
- Review conference dates
- Get call schedule
- Review vacation days remaining
- Drug infusion protocols
- Clinical protocols
- Useful links
- Medline search

For a look how this might all look on the Web take a look at the sample opening page I have placed at canmed.net/portal.htm.

All that remains is for some entrepreneur to provide such a service.

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[2] Web-Based Systems in Anesthesia: A New Series in CJA New Media

Starting next month (January 2002) the CJA New Media section will include a series of short articles on anesthesia and the Web based on the preliminary outline provided below. We invite any suggestions you might have for the series or for other contributions to the New Media section.

Outline

[1] Using the World Wide Web for Medical Education: Start With a Needs Assessment

Web pages, HTML, browsers, servers. Web page use in medical education. Content users and content providers. Your own teaching page. Web page construction done easily and inexpensively. The joy of freeware software. First Page 2000 – a free Web authoring package. Web hosting options. Table of favourite Web resources.

[2] Using HTML and FTP: Keeping Things Simple with Simple Tools

Basic HTML constructs. Copy and paste HTML code. The case against learning HTML. HTML files on disk versus HTML files on a server. Using FTP to Upload Files to a Web-Hosting Service. WS_FTP and WS_FTP LE. Cute FTP. Shareware versus freeware. More Web resources. Using FTP to maintain a shared data archive.

[3] Content-Focussed Web Page Production Made Easy Using Word and Acrobat

Content-focussed Web pages versus form-focussed Web pages. Advantages and disadvantages of pure text, HTML, Word and Acrobat as formats for medical publishing on the Web.

[4] Basics of Web Page Design for Use in Medical Education

What is different about Medical Education web pages? HON guidelines. Needs assessment. Educational objectives. Taxonomy of Web page elements. Page aesthetics. Use of visuals. Interactivity. Table-based design. Backgrounds. Using templates. Student evaluation. Web page evaluation criteria.

[5] Introduction to Advanced Web Page Design and Web-Based Interactivity

Form-focussed Web pages. Advanced Web page elements. Good and bad web page designs. Types of Web-based interactivity. Implementing Web-based interactivity.

[6] Web-Based Interactivity Using JavaScript

Means of achieving programmed interactivity: CGI scripts versus Java versus JavaScript. Advantages and disadvantages of JavaScript. Special features offered by JavaScript. Finding the JavaScript program that suits your needs.

[7] Audio and Video Web Technologies in Medical Education

MP3 and WAV sound files. AVI, MPEG and QT video files. Downloading versus streaming. Bandwidth considerations. Selecting a player.

[8] Web Page Evaluation Methods in Medical Education

Informal and formal evaluation strategies to ensure highest quality Web pages in Medical Education. Peer review methods. Encouraging user feedback. Critical appraisal.

[9] Medico-Legal Issues and the Internet

Medical advice on the Web. Information versus misinformation. E-mail communication with patients. Authentication. Encryption. Privacy. Selling drugs and herbal preparations via the Internet.

[10] The Future of the Web in Medical Education

The challenges that await us. Medical publishing and scholarly journal issues. Information philanthropy. Academic credit. Open sources movements for software and data.

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