

Pharmacy Automation and Technology

How Web 2.0 Literate Are You?

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We believe that, by now, even the pharmacists who try to avoid computers are at least vaguely aware of major changes in the ways the Internet has been used in the last 5 years. If you miss your favorite TV show, you can go to Hulu.com (or directly to the network Web site) to catch up. Arguing with your significant other about factual information is never necessary; as one of the de facto portals to accessing information, Google.com receives over 31 billion searches per month. Do not argue; just “Google” it. There are now more text messages being sent every day than there are people on the planet, and many are reporting that they spend more time online at home than they previously spent watching television. What does all of this mean for the health care profession?

Since 2003 the advent of social networks has affected the online world by adding a new primary function to the use of the Internet. Previously, the Internet was described using the 3 “Cs”; almost all activity fell into the categories of communication, content, and/or commerce. The fourth category is now community. The aspect of social networking has been labeled *Web 2.0*, and when describing how this phenomenon relates to health care, we use the term *Health 2.0*. We have been investigating how the tool kit of Web 2.0/Health 2.0 capabilities could affect the practice of pharmacy. To find out how literate you are in this emerging domain, determine how many of the following tools you have incorporated into your personal and/or professional life.

SOCIAL NETWORKING

We are confident that nearly all readers of this article have heard of MySpace and Facebook,

whose user populations now exceed the populations of countries like Brazil. These resources provide the medium through which many computer-savvy people (including student pharmacists, as well as some pharmacists who are no longer students) interact with their friends, colleagues, and even complete strangers. Network users can connect at no charge, and these sites are financially supported by advertisers who desire a connection with the “eyeballs” of the millions of site users.

Similarly, business professionals use sites like LinkedIn and Plaxo to network with their counterparts. Pharmaceutical companies are spending increasing amounts of money for direct-to-consumer advertising on these sites. Other Web sites like Jigsaw.com provide business directories for over 1 million businesses. Patients frequent health care-related social networking sites such as RevolutionHealth.com and Patientslikeme.com. We are promo-

ting the idea that pharmacists need a pharmacist-only social networking site, similar to the physician-only Web site Sermo.com.

BLOGGING NETWORKS

The word *blog* was created from a combination of the words *Web* and *log*. Blogging provides a global publishing platform for anyone who has something to say. Bloggers offer commentary, describe events, and distribute graphics and video, while also allowing their visitors to comment on what is published. An online nursing degree program lists the top 50 pharmacist blogs; this list can be accessed from <http://tinyurl.com/3qhaxy>. Microblogging is one of the most popular variants of blogging. Microblogs are exemplified by Twitter.com, which limits postings to 140 characters. Sites like Seismic.com use narrated Webcam messages and are categorized as video microblogging sites. Many bloggers maintain anonymity, which allows rants such as that published at TheAngryPharmacist.com to occur without repercussion.

CHAT NETWORKS

Some sites that allow chat permit real-time communication between users. This format is being increasingly employed by patients who have various physical impairments and who desire communication with health care providers through this channel. For example, if a patient has a speech impairment that precludes use of a voice telephone call, the patient can go

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to a chat mode with a pharmacist and carry on a dialogue to get pharmacotherapy advice. The environment is “copy-and-paste friendly” and allows for multitasking during communication. Increasingly, technology help desks are employing chat mode options in addition to telephone communication. We suspect that these technicians likely are working at least 3 calls simultaneously, as evidenced by some long pauses between replies. Many readers may have participated in a chat session as an alternative to remaining on hold when calling for technical support with an information technology problem. Pharmacy sites that employ chat include WebRx Pharmacy Palace, PharmWeb, and Pharmacy Choice.

E-MAIL

Although e-mail does not fit the prototypical collaborative mold found in many Web 2.0 applications, its use as a communication tool between patients and providers is an emerging Web 2.0 activity. Many patients choose this channel as their preferred method of communication, and it is extremely low cost for providers. Payers are already reimbursing physicians for these communications. E-mail can be structured to ensure consistent collection and distribution of information. Educational content can be attached to e-mails to provide the information necessary so that patients know what to do and how to do it. Attachments can even include multimedia files of graphics, video, and/or audio. A single e-mail can be communicated to hundreds of people who may be interested in its particular content. We find it interesting that all major pharmacy chains are collecting patient e-mails and allowing embedded e-

mail functions on their Web sites to enhance privacy for drug-related questions.

BOOKMARKING NETWORKS

When presented with a problem, many of us appreciate the preselection and precertification of informational resources. Bookmarking Web sites (also called tagging sites) allow identification of resources within a given subject, and those resources are grouped as an informational resource for anyone interested in that topic. For example, to find resources available for facilitating communication with patients with lower English proficiency, go to a bookmarking site like delicious.com and search for that topic. Others interested in the topic already will have identified their preferred Web sites with resources for addressing this problem. Whether selecting a professional interest like pediatric asthma or a hobby like road bicycling, there will be an aggregation of resources on these sites addressing the area of interest. If a site visitor desires knowledge of what news Internet users find most interesting at the moment, Digg.com is a popular source of this information. A site of interest to pharmacists specifically is Connotea.com, which identifies and aggregates full-text literature within topical areas.

GAMING TOOLS AND WEB SITES

Learning and implementing health behaviors can be challenging for patients. Games are growing in popularity as tools for educating and motivating portions of the patient population, especially as they relate to self-care management skills. Games can be used to create a fun environment while engaging children in active learning, which fosters their retention. Games may even be used to measure cognitive

abilities and cognitive status by comparing performance longitudinally. Sites to explore in this category include Myonlinewellness.com for a variety of different health games and <http://starlight.org> for asthma-related games.

WIKI NETWORKS

Wikis offer a collection of Web pages that allow contribution by users implementing a simple markup language. Companies are currently replacing the content of their Intranet sites with these wiki-type environments. Users can update monographs, and moderators caution readers whenever a potential conflict of interest may prompt the changing of the publication. Wikipedia.com is perhaps the most recognized wiki, but RxWiki.com produces drug monographs that are available for updating exclusively by pharmacists.

OTHER TOOLS

Social networking is also growing in popularity in the travel world; with music and video; and through podcasting, Webinars, Internet-based telephony, and voice-over-Internet protocol channels. There are digital photo sites, as well as corporations that create social networks to capture and disseminate knowledge-management capabilities. Shopping and consumer goods comparison sites are popular, and entire virtual worlds have been created that allow users to explore alternate realities.

SUMMARY

We encourage consideration of the list of tools described here. For which topics did you already have foundational knowledge? Which topics are new to you? We recommend exploration of the new topics in which you are interested to see if the resources will make you

more efficient and effective in your practice. Many organizations employ people who understand the benefits of this new way of interacting in online, trusted communities. We welcome your anecdotes on how you are using these tools in your practice. Feel free to e-mail either felkebg@auburn.edu or foxbren@auburn.edu with your comments or questions. ■