Reflections on Pathology and “Web 2.0”

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In this issue of the Journal, Schreiber and Giustini provide a concise overview of the ways in which “Web 2.0” has affected—and will influence—the teaching and practice of pathology. As they indicate, the “2.0” designation has become a shorthand way of describing an enhanced capacity for interactivity on Internet sites through a number of associated applications. Another article in this issue, by Shirts et al, illustrates this very property.

Web 2.0: Current Structure and Related Issues

Web users now have the ability to build sites with integrated photographs, 3-dimensional images of various types, movies, music and other audio files, animated illustrations, “chat” functions, and Internet-based short message services (SMS, as exemplified by “Twitter”). In that context, Schreiber and Giustini outline the possibilities for the use of 2.0 capabilities by pathologists. As they indicate, continuing medical education (CME) is one of the principal targets of such technology. Without much exaggeration, one can envision a future situation in which real-time streaming audio-video presentations can be accompanied by high-resolution images, problems for the Web audience to solve—with immediate collation of results—and concurrent chat room or SMS-type interchanges between participants and presenters. This format could be used for medical school–level educational activities, off-site residency training, CME, or board-associated maintenance of certification processes. Indeed, at least 1 online professional school—Concord Law School of Kaplan University—already structures its mode of instruction along those lines, together with the use of reading assignments in hard-copy legal texts. That particular school of law is presently recognized only by the state of California, with regard to the eligibility of its graduates for the state bar examination. However, its dean, Barry Currier, JD, is a former consultant on legal education for the American Bar Association who believes that distance learning of the law is here to stay.

When the stress and cost of current air travel and the expense of several-day hotel stays are considered, it is fair to question why physicians should continue to have traditional national professional meetings when similar CME information could be obtained over the Internet in the comfort of one’s own office or home. This will be a difficult and pressing issue for the ASCP and other medical societies in the future, and it is a prime reason behind our efforts to expand online offerings in the “e-AJCP” arm of this Journal.

Schreiber and Giustini also discuss the prospect of “practice communities,” wherein instant availability of image transfer, SMS exchanges, and related Web resources could be used to mimic face-to-face interactions between a pathologist and her or his case-consultants at other medical centers. I have used a “low-tech” version of this system for several years, particularly with respect to overseas consultations in anatomic pathology. Colleagues wanting a diagnostic opinion have sent me several good-quality gross and microscopic images of a lesion in question by electronic (e)-mail, along with pertinent clinical information. In a reasonable proportion of cases, one can reach a confident interpretation under such circumstances. Even when that is not possible, a traditional consultation, with subsequent transmittal of slides and blocks, can be expedited in this scenario.

Nevertheless, like nearly everything in life, there are impediments attached to the foregoing possibilities. Schreiber and Giustini have touched on one of the most visible and important problems associated with scientific materials on the Web—they may be inaccurate, misleading, or outright fraudulent. There is still no universal “Wikipedian” mechanism for
correction or elimination of shabby medical entries on the Internet, and many laypersons are all too willing to take them at face value. As Guistinis has also stated, medical interns or junior-resident physicians who use the Web in an overly trusting way as a reference source may be badly misinformed. He goes on to say that “the consequences could be disastrous for any inexperienced trainee following [such] advice.”

In reality, even when reputable physicians are the authors of Web compositions, they may overstep the boundaries of their knowledge. This seems to be particularly true when discussions or illustrations of pathologic findings are attempted by nonpathologists, at least based on my personal experience. Our own specialty is not immune from criticism on that point either—many morphologic images that have been put up on the Internet—especially photomicrographs—are of atrocious quality, looking like bad 2" × 2" projection slides from 25 years ago that should never again see the light of day. I suspect that some contributors are loath to put their best-quality images online because of the fear that others might pirate them. But, isn’t that the point? Outside the confines of formal electronic publication (see subsequent text), medical e-contributions should be made in a spirit of altruistic education and with the foreknowledge that they are pragmatically in the public domain despite any disclaimers that might be made about copyright. Unless good illustrations can accompany such pieces, they should have none at all. Perhaps someday a rating system for photographs and other graphics can be devised that will automatically appear in Google, Yahoo, Bing, or AltaVista search-engine synopses. That way, Web users—especially visually oriented ones like pathologists—could skip over entries in which illustrations are likely to be unhelpful.

All in all, it would be wise for all medical societies to begin implementing plans to critique and police all Web entries that deal with their topical areas of specialty expertise. If nothing else, lists of credible and questionable Web sites could be housed on societal Internet servers for user access.

What about medical articles that are exclusively e-publications? There are now several journals in diverse specialty areas that feature only electronic contributions, with no parallel hard-copy versions. In brief, if the review and critique process is comparable to that of conventional scientific journals, there is no reason why accepted e-only articles cannot be of good quality. In fact, my view with specific regard to the AJCP is that articles with a low-priority score for hard-copy publication, but that may nevertheless contain useful information (eg, individual case reports), are ideal candidates for Web-only presentation. Again, the key to their acceptance by readers as credible submissions is a transparent description of the process by which they are vetted by e-journals that publish them. Nonmedical fields of scientific publication have begun to consider the mechanisms whereby “open-source” biotechnology might be accommodated by e-publications. However, in diagnostic pathology and other clinically applied areas of medicine, that topic is not particularly germane.

E-publication does make a certain form of plagiarism (“cut and paste”) particularly easy, including the copying of illustrations that can readily be lifted from Web pages. This represents another specific worry that is often expressed by authors of exclusive e-papers. However, I would argue that in this age of high-resolution scanners, the common publication of hard-copy color images, and widespread use of photo-manipulation computer applications (eg, Photoshop, Adobe Systems, San Jose, CA), e-images are no more prone to piracy than are paper versions. Moreover, plagiarism of the textual elements of e-publications is actually easier to detect than is hard-copy duplication. With the use of the powerful Web search engines that now exist, one can quickly match inappropriately copied text with a prior online source.

In the final analysis, the present dominating preference of pathologists for hard-copy publications seems to be a generational one. People in their mid 40s and older were educationally “imprinted” with conventional books and journals, which continue to have a psychologically preeminent place in their valuation of published materials. The majority of practicing US pathologists is now older than 55 years, largely explaining their relative aversion to preferential e-publication of new scientific information. This situation is expected to change as younger medical practitioners become the predominant population.

Despite my enthusiasm for Web-based dissemination of medical information, I take issue with at least one facet of the Web 2.0 movement. That is the notion that physicians and patients can use information on the Internet—interactive or otherwise—to structure a “personalized” profile of medical care (“boutique” management) for people with a specific problem. This concept emanates from the idea that population-based therapeutic data can be “back-extrapolated” to the planning of care for a single human being with a particular illness. The latter premise is statistically unsound, despite its appealing facade. Treatment for any given patient must be predicated on his or her singular biologic situation, including comorbid conditions, prior responses to specific therapeutic interventions, familial information, and other factors, essentially invalidating the reliability of algorithmic “plug-and-play” approaches to clinical management.

Other Elements of Electronic Medical Data Management

A central tenet of current proposals by the Obama administration for health care reform concerns the electronic “standardization” of medical records for all patients. Once again, the veneer of this idea is attractive, but its core is suffused with many serious obstacles. First, electronic records are not
always miscible with one another, even in the same medical institution. In particular, anatomic pathology data may not “translate” well in an otherwise hospital-wide computer system, leading to delays or misunderstandings regarding diagnostic information. The latter statement also may apply to radiologic results, psychometric testing data, and other pertinent facts. Second, even within 1 specific and important facet of medical care—nursing practice—it has been shown that there may be little e-transparency from one clinical unit to another. Third, a narrow emphasis on the generation of electronic records ignores the unfortunate reality that physicians (in all specialties) and other health care workers do not necessarily know how to access and use those records effectively. Moreover, given the currently chaotic climate of inpatient and outpatient care, it is increasingly uncertain that physicians will (or can) read and digest the electronic results of tests that they have ordered for their patients in a timely manner.

Predictably, there are 2 major issues that impede the effectualization of universally transparent electronic medical record keeping. The first, and the most important, is the proprietary nature of computer applications that are aimed at this process. A sizable number of commercial medical e-record generators exists, few if any of which are data-compatible with one another. Hence, it is very improbable that one could easily access complete electronic medical data for any given patient in another hospital system (or sometimes in the same system). Second, the draconian nature of regulations attached to the Health Insurance Portability and Accessibility Act (HIPAA) pushes barriers into place that impede the retrieval of patient-specific information, even for treatment purposes.

In particular reference to pathology practice, let us consider the scenario in which a case appears on the operative schedule for probable intraoperative consultation. The patient has had a prior biopsy at another hospital, but the surgeon has neglected to obtain the specimen for preoperative in-house pathologic review. If a frozen section is requested, the pathologist, without written permission from the patient, cannot easily access the diagnosis of the specimen obtained at the outside institution, and cannot see it, potentially compromising his or her interpretation of the instant specimen. Indeed, few patients realize the risks that HIPAA requirements potentially impose on the quality and scope of their medical care.

Where, then, does this leave the status of Web 2.0 with respect to medical issues? One may appropriately state that its potential for education and practice enhancement is real and considerable. It is also true that electronic publications of scientific data are easier than ever and more widely disseminated than hard-copy contributions. However, definite problems exist regarding the veracity of some e-articles in medicine, proliferation of “charlatan junior” entries in the electronic medical literature, misconceptions about the production of “personalized” e-medical data, and the lack of compatibility and accessibility of computerized information from one medical system to another. These issues must be resolved before Internet-centered facts can be integrated confidently into diagnostic and therapeutic paradigms.

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References