

growth. Secondly, they say that such extracts improve the quality of life in patients with cancer.⁴

Many clinical studies of mistletoe exist, but their findings are inconsistent. Most of them are methodologically weak, and the less rigorous they are the greater the likelihood of a positive result. The conclusions of systematic reviews are therefore contradictory. Anthroposophical doctors, who tend to include unreliable primary studies, arrive at positive conclusions.⁴ In contrast, independent reviewers tend to focus on the most reliable evidence and regularly find that neither of the above two claims is supported by good evidence.⁷⁻⁹

In this week's *BMJ*, Finall and colleagues report a case of subcutaneous inflammation mimicking metastatic malignancy induced by injection of mistletoe.¹ So how safe is this treatment? A wide range of serious adverse reactions have been noted, such as local reactions at the site of injection, anaphylaxis, dyspnoea, haemorrhagic colitis, herpes simplex, herpes zoster, joint pain, kidney failure, lymphangitis, paraesthesias, sarcoidosis, ulceration, and vertigo (Saller R. Zu den unerwünschten Nebenwirkungen von Mistelpräparaten. Drittens Mistelsymposium Otzenhausen, 20-22 November 2003).¹⁰

Findings from *in vitro* studies suggest that mistletoe extract may enhance the proliferation of some cancers.¹¹ In addition, some patients with cancer may use mistletoe as an alternative to conventional treatments for cancer, rather than as just a complementary treatment.

The claim frequently voiced by proponents of anthroposophic medicine—that mistletoe injections have no serious risks⁴—is therefore misleading.

Thus, mistletoe has been tested extensively as a treatment for cancer, but the most reliable randomised

controlled trials fail to show benefit, and some reports show considerable potential for harm. The costs of regular mistletoe injections are high. I therefore recommend mistletoe as a Christmas decoration and for kissing under but not as an anticancer drug. At the risk of upsetting many proponents of alternative medicine, I also contend that intuition is no substitute for evidence.

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How Web 2.0 is changing medicine

Is a medical wikipedia the next step?

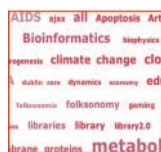
Few concepts in information technology create more confusion than Web 2.0. The truth is that Web 2.0 is a difficult term to define, even for web experts.¹ Nebulous phrases like “the web as platform” and “architecture of participation” are often used to describe Web 2.0. Medical librarians suggest that rather than intrinsic benefits of the platform itself, it's the spirit of open sharing and collaboration that is paramount.² The more we use, share, and exchange information on the web in a continual loop of analysis and refinement, the more open and creative the platform becomes; hence, the more useful it is in our work.

What seems clear is that Web 2.0 brings people together in a more dynamic, interactive space. This new generation of internet services and devices—often referred to as social software—can be leveraged to enrich our web experience, as information is continually requested, consumed, and reinterpreted. The new environment features a highly connected digital network of practitioners (medical or otherwise),

where knowledge exchange is not limited or controlled by private interests. For me, the promise of open access in Web 2.0—freed of publishing barriers and multinational interests—is especially compelling.

Web 2.0 is primarily about the benefits of easy to use and free internet software. For example, blogs and wikis facilitate participation and conversations across a vast geographical expanse. Information pushing devices, like RSS feeds, permit continuous instant alerting to the latest ideas in medicine.³ Helpful but lesser known website tagging and organising tools, such as Connotea and Delicious, are proving useful (table). Multimedia tools like podcasts and videocasts are increasingly popular in medical schools and medical journals.⁴ (This bird's eye view of social software can be fully explored with your favourite medical librarian, after the holidays.)

For now, let's examine the notion of a blog, which was the first of the social software tools. Blogs are interactive websites that consist of regular diary-like entries. Unlike static web pages (a feature of Web 1.0), blogs are



Web 2.0 examples in medicine

Application	Website	Purpose
Bloglines	www.bloglines.com	RSS reader
Citizendium	www.citizendium.org	Expert wiki
Connotea	www.connotea.org	Online reference organiser
Del.icio.us	http://del.icio.us	Website tagging
Flickr	www.flickr.com	Photo sharing
Ganfyd	www.ganfyd.org	Medical wiki
Google blogsearch	http://blogsearch.google.ca	Blog searches
Google health	www.google.com/coop/topics/Health	Create your own search tool
MedWorm	http://medworm.com	RSS aggregator
SlideShare	http://slideshare.net	Slide sharing
Wikipedia	http://en.wikipedia.org/wiki	All purpose wiki
YouTube	www.youtube.com	Video snippets

more dynamic and permit bloggers to write articles and engage in “one to many” conversations with readers. Political bloggers are said even to have influenced the outcome of elections.⁵

One of the best blogs in medicine is Ves Dimov’s *Clinical Cases and Images*. It contains a rich collection of “presurfed” material for busy clinicians and features interactivity and timely discussion. Dimov is also a supporter of medical librarian bloggers.⁶ Why waste time fumbling with search engines when you can consult this blog for timely updates? As well as case discussions, Ves provides links to today’s medical headlines from Reuters and clinical images via a dynamic, free photo sharing tool called Flickr. One of his slide presentations “Web 2.0 in medicine”⁷ is available on Slideshare (itself a fantastic new 2.0 tool). *Clinical Cases and Images* is a virtual laboratory for doctors and medical librarians interested in Web 2.0.

In the past year, several doctors and medical librarians have put Web 2.0 in the spotlight⁸; one excellent article even discusses its impact in clinical practice.⁹ What is obvious is that doctors are seeking new methods of information discovery because of the limitations of search engines. Even Medline, for all its benefits, is no longer a sufficiently detailed map of the medical literature. Busy but organised doctors need a variety of evidence sent to them in a single organising interface—easily accomplished using an RSS reader (ask your favourite medical librarian to show you how to use aggregators like Bloglines and MedWorm).

RSS may be a useful way to fight information overload. RSS feeds help to organise new web content sent to you in real time by the best medical blogs, evidence based sites like the Cochrane Library, and newly published video and audio from major medical journals. In fact, technology savvy doctors are keen to use RSS feeds on mobile devices, iPods, and Blackberries and scan research on their way to ward rounds. For those who prefer to play in the digital sandbox while on-call, try photo sharing software like Flickr and medical video sharing at YouTube,¹⁰ two of the more popular multimedia sites. By searching YouTube (bought by Google for £1bn (€1.5bn; \$2.0bn) in 2006), you can dazzle your family during the holidays.

Over the past year, as a medical librarian, I have watched the impact of Web 2.0 tools on access to information. A highlight for me was a recent *BMJ* article,¹¹ which concluded that Google—the quintessential Web 2.0 company—is a useful diagnostic aid. Google is a

useful tool if you know what to search for. Doctors can retrieve lots of evidence and open access material via search tools, and they need to learn how to use these tools responsibly. With its many multilingual editions, Google is a boon for developing countries with few information retrieval alternatives.

This tour through Web 2.0 ultimately returns to the idea of using software to create optimal knowledge building opportunities for doctors. The rise of wikis as a publishing medium—especially Wikipedia—holds some unexamined pearls for the advancement of medicine. The notion of a medical wikipedia—freely accessible and continually updated by doctors—is worthy of further exploration. Could wikis be used, for example, as a low cost alternative to commercial point of care tools like UpToDate? To a certain extent, this is happening now as the search portal Trip already indexes Ganfyd, one of a handful of medical wikis being developed.

Web 2.0’s push for openness has resulted in the expectation of equal amounts of transparency and openness in medical publishing. The collapse of *CMAJ*, the journal of the Canadian Medical Association, this past year¹² was, in a sense, due to the opposing tensions of openness exemplified by Web 2.0 and the monolithic lack of openness in old forms of media like *CMAJ*.

The web is a reflection of who we are as human beings—but it also reflects who we aspire to be. In that sense, Web 2.0 may be one of the most influential technologies in the history of publishing, as old proprietary notions of control and ownership fall away. An expert (that is, doctor) moderated repository of the knowledge base, in the form of a medical wiki, may be the answer to the world’s inequities of information access in medicine if we have the will to create one.

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