

publication screened and acknowledging that material may contain useful information despite falling short of quality criteria.¹² Such initiatives will enable the user to supplement information found by using professionally developed databases and to build a set of core skills that can be applied in the dynamic context in which health information is available. These strategies will help users of all types of information. (They cannot, however, address the persisting inequalities of access to internet resources.¹⁵)

Concerns about the quantity of available information and how it is delivered and accessed are valid, but these are separate from the issue of quality and should not deflect attention from the standards that need to apply across all information types and media.¹⁴ Future initiatives focusing on core standards and transferable skills will equip users, providers, and producers of health information to deal with rapidly developing new technologies, and the increasingly dynamic context in which health information is available.

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The quality of health information on the internet

As for any other medium it varies widely; regulation is not the answer

This week's theme issue attempts to provide a framework for thinking about the quality of health information on the internet—a source of anxiety almost since its first appearance.

Five years ago Impicciatore and colleagues reviewed website advice on managing fever in children and concluded that it varied widely in terms of accuracy, completeness, and consistency.¹ Pick any medical problem today, and the chances are you'll find the same. With at least 80 studies reporting similar findings (G Eysenbach, personal communication), we need no more convincing that the quality of information on the web varies as widely as it does in other media.

In 1997 Gagliardi and Jadad identified 47 instruments for measuring healthcare quality on the internet. Four years later, they found another 51—all of them unvalidated (p 569).² Generating yet more unproved instruments looks like another activity that researchers could usefully stop. However, the proliferation of tools for assessing quality continues unabated, fuelled by anxieties about patient harm. As our international roundup shows (pp 566-7), countries now seem poised to get in on the act, although little beyond urban myths exists to justify the level of their concerns.³

Health information on the internet ranges from personal accounts of illnesses and patient discussion groups to peer reviewed journal articles and clinical decision support tools. Defining a single quality standard for such a disparate collection of resources is challenging. Furthermore, different users may have different criteria for quality. Patients and caregivers

may want simple explanations and reassurance, whereas healthcare professionals may want data from clinical trials.

Criteria for determining quality can be organised by their applicability to various dimensions of online health information, such as content, type, and intended audience. For standards pertaining only to content we can use traditional metrics, such as the levels of evidence and strength of recommendations.⁴ The type of information also affects which measures are applicable. Medical knowledge can be evaluated by scientific standards, whereas literary or journalistic criteria may be more appropriate for personal narratives. And the intended audience influences the measures of quality that are applicable to a particular type of content. Consumer health information should be written at a comprehensible reading level; often patients want pragmatic information, such as how long their illness will prevent them from working, before scientific details.⁵

Shepperd and Charnock argue against “exceptionalism” for medical information on the internet and support standards of quality that apply across media (p 556).⁶ While this approach may be appropriate for many aspects of electronic health resources, some features warrant special consideration. The interface to online information can be distinguished from the content, and the criteria for quality of an interface depend on the communication technology used. Principles for good web design differ from those for creation of high quality handheld applications. Furthermore, our concepts of quality change as the technology evolves.

Jakob Nielsen's top 10 mistakes in web design (1996)⁷

- (1) Using frames
- (2) Gratuitous use of bleeding edge technology
- (3) Scrolling text, marquees, and constantly running animations
- (4) Complex URLs
- (5) Orphan pages
- (6) Long scrolling pages
- (7) Lack of navigation support
- (8) Non-standard link colours
- (9) Outdated information
- (10) Overly long download times

Nielsen's top 10 mistakes in web design remain relevant today (box),⁷ but their implications for usability have changed over time.⁸ Patients who seek online health information may have a variety of physical impairments, and it is important to develop resources that are usable by individuals with disabilities. The Web Accessibility Initiative provides guidelines for assuring broad accessibility to internet based information.⁹

Ethical considerations are also important in considering the quality of an online resource. Early codes of conduct focused on honesty and disclosure. As websites have become increasingly interactive—recording and storing information about patients and professional users—issues of privacy and security have become important components of rating systems.

In the final analysis, however, quality, like beauty, is in the eye of the beholder, and it is users' views we should be seeking. Many rating systems use surrogates for quality that do not identify sites that meet the needs of users. For example, assessing breast cancer sites, Meric and colleagues found that popularity did not correlate with traditional standards of quality (p 577).¹⁰ Eysenbach and Köhler observed that consumers are finding the correct answers to medical questions without looking for seals of approval (p 573).¹¹ Ferguson describes the evolution from passive patients to empowered endusers who are active participants in their health care through interactions with internet-based resources (p 555).¹² Ultimately, it seems likely that the market will decide.

If healthcare information on the internet is already achieving such desirable outcomes, why is so much effort still being expended on defining, mandating, and regulating quality? A historical perspective may be instructive. Comparing the social effects of the telegraph and the internet, Tom Standage wrote that given a new invention, optimists see only its potential

for good, while pessimists see only its potential for harm. "The hype, skepticism, and bewilderment associated with the Internet ... are direct consequences of human nature, rather than technology."¹³

While the telegraph spawned new laws to minimise its potential harms, new practices evolved that largely circumvented them (human nature, again). Failing to fulfil either the extreme hopes or fears held out for it, the telegraph eventually settled into a useful role in communication, before being rendered obsolete by newer technologies such as the telephone.

Regulation does not seem like the right strategy for improving the quality of health information on the internet. Other approaches, such as educating the producers of this content, look like a better long term bet. However, such initiatives should not hinder the evolution of communities, resources, and processes that are improving healthcare outcomes.

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NHS Direct audited

Customer satisfaction, but at what price?

NHS Direct—"the gateway to the NHS." An all singing, all dancing mega-service that will give you health advice and information when you ask for it; make sure that you receive the urgent care you need but did not realise you did; stop you demanding care you did not need by encouraging you

to undertake self care, or by diverting you to a more appropriate source of care if you cannot manage by yourself; find you a dentist or a pharmacy open outside shop hours; and will soon be able to book you your appointment with your general practitioner, remind you of your hospital appointment, and... the list goes

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