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(9) Outdated information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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on. NHS Direct, the telephone health advice and information line is nearly four years old.[1] How is it performing?

Three NHS Direct pilot sites were launched in March 1998 and the service now covers all of England. While not the first telephone health service in the world, it promised something more than triage of emergency calls.[1–4] Initially set up to provide clinical advice, health information, and referral to other NHS services via the telephone, it is now set to become the hub of out of hours care.[5] In January the National Audit Office, an independent body that scrutinises public spending on behalf of parliament, published its report on NHS Direct in England.[6]

NHS Direct is presented in a positive light, but not all is rosy. In addition to difficulty with meeting call handling targets there has been no visible effect on demand for NHS services overall.[7] The hoped for reduction in demand for other services might be achieved by the proposed integration of NHS Direct with existing out of hours general practice cooperatives and ambulance services.[5] Where such integration has taken place demand for general practice consultation has fallen, especially for telephone consultation.[8]

Despite shortcomings, customer satisfaction with NHS Direct is high[9]—that is, among those who use it. Sadly, the evidence indicates that they are the same people who use existing health services. It is underused by older people, ethnic minorities, and other disadvantaged groups. Rather than reach people who are currently failed by the health system NHS Direct may have discovered previously unexpressed demand among the worried and well middle classes.

What of NHS Direct online? The internet version of the telephone service makes only a brief appearance in the report, but its use is clearly limited to those with access to the internet and money to pay for it.

When callers reach a nurse the advice they get may vary—usually on the side of caution. This is predictable, but has inevitable consequences. The predictive value of a diagnostic test depends on the prevalence of the condition being tested for. The rarity of serious disease among callers to NHS Direct must mean that its computer based decision support system, however good, has a low predictive value for serious illness. For every caller with a serious condition detected by NHS Direct, many more with self limiting conditions will be directed into the health system. Consistently to err on the side of safety might seem logical, but the effect of doing so is to fill a health system with people who do not need to be there.[10]

Finally, is it worth the money? The report suggests that half of the £90m annual cost of NHS Direct has been offset by encouraging more appropriate use of NHS services. Cost savings are calculated according to other health service contacts avoided. These are determined on the basis of callers' stated future actions rather than on actual data. The savings are therefore speculative and in any case a maximum estimate.

Is £45m, the theoretical additional cost of NHS Direct, worth it for a system that eventually might work as a coordinator of access to health care? It seems unlikely that NHS Direct will do anything to address health inequality, and it may even serve to widen existing differences. Ask yourself. If you had £45m a year to spend on improving health, empowering the socially disadvantaged, and reducing health inequality what would you spend it on?

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SG was a member of the operational board of the Hampshire NHS Direct second wave pilot, and the Health Care Research Unit received funds to undertake an evaluation of the pilot and to train nurses to undertake telephone consultation.

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Three new initiatives involving bmj.com

Taming the information beast

The *BMJ*'s website is participating in three new initiatives that should make visitors' lives easier and more interesting. What each initiative shares is an attempt to make large amounts of information more manageable.

HighWire Library of Science and Medicine
(http://highwire.stanford.edu)
As well as hosting bmj.com, Stanford University's HighWire Press hosts the electronic versions of over 300 scientific journals, including the *New England Journal of Medicine* and *Science*. The full text of nearly half the world's 200 most cited science journals are now available from HighWire.

Only a dozen of these journals share bmj.com's policy of offering free access from the moment of publication, but most open up their archives within a year of publication. This means that HighWire now offers free access to the full text of over 400 000 articles, making it the largest archive of free, life science articles in the world.

But more is not necessarily better if it increases the difficulty of finding what you want.

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