

Information epidemics, economics, and immunity on the internet

We still know so little about the effect of information on public health

Information in practice p 1496

For several years we have been warned of the internet's rapid growth and potential to spread poor information to the public.¹ Now there are anecdotes of patients coming to harm because of information obtained on the internet.² Are we witnessing the beginning of an epidemic of misinformation or nothing more than a variation of what is endemic? Patients have always obtained information outside the formal healthcare system. Perhaps now there is simply a new carrier called the internet, and nothing else has changed?

The truth is we know very little about epidemiology in medical informatics, so it is hard to identify which information processes lead to unfavourable health outcomes. Encouragingly, new studies show surprising regularities when we look at population behaviour on the internet.³ Perhaps we will soon inject information "tracers" into our information and communication systems and observe their effect as they course through the social decision making apparatus.

In the meantime we should do what we know best and focus on the public's health. Though there is poor quality health information on the internet,^{4,5} no one has yet shown it has a positive or negative impact on public health outcomes.⁶ No one has shown that the quality of information on the internet is different from that in other media or that it leads to different health decisions by the public. Clearly such studies are needed, but they will take time and the internet continues to grow. Some people might therefore want to invoke a "precautionary principle": acting now while the problem is potentially controllable may be less risky than awaiting firm evidence of a phenomenon that is by then out of control.

This begs the question about what we need to control. We need a model of the public's information behaviour to guide our actions. Here we may get help from a surprising source. Economists have long modelled population phenomena that emerge out of the seemingly erratic decisions of individuals. When attempting to explain consumer behaviour on the internet economists see the outcome shaped through the interaction of information suppliers and the public's demand for information.

Unlike traditional media, electronic information can be infinitely duplicated at minimal cost and cheaply distributed.⁷ Indeed, the largest cost is probably that of creating the information. Given the effort required to generate high quality information (such as evidence based guidelines), it becomes cheaper to produce poor quality information that looks good than high quality information that is less well packaged. Consequently, producers of poor information may be at an advantage on the internet and flood the market.

Solutions to this "quantity" problem may require changes to the way the marketplace for health information is structured. Some form of protectionism

may be needed, where producers of good quality information are subsidised. Some nations may wish to legislate to exclude poor information producers, but the reach of the internet is global, and individual nations cannot control what is published there. Consequently, the World Health Organisation has convened a group to recommend how nations can act in concert to control cross border advertising, promotion, and sale of medical products through the internet.⁸ Such controls are anathema to the spirit of free speech that permeates the net and are likely to be strongly resisted.

If controlling the supply of health information is problematic we may be able to do something on the consumer side. Official health information standards could be used voluntarily to label information and help the public make better choices. In this issue Eysenbach and Diepgen provide sophisticated proposals along these lines (p 1496).⁹ However, a recent review identified 47 proposals for internet standards to label health information and concluded that it was unclear "whether they measure what they claim to measure, or whether they lead to more harm than good."¹⁰ Much of the problem lies in the inherent subjectivity of information.¹¹ Quality can be measured only within the context of use, and public health information is used in many ways. Often simplicity and intelligibility needs more emphasis than scientific rigour, as it needs to be understood by people with widely varying knowledge and abilities.

Assuming such information standards are created, how would they be used? The television industry has come up with one mechanism. Using electronic labels embedded in the broadcast signal, the V chip can block reception of material deemed unacceptable—for example screening violent material from children. Eysenbach and Diepgen suggest that we use similar internet technologies to help the public sift good from bad.

Effectively it is a proposal to create an immune system at information access points by placing recognition markers on documents. In a future where we might imagine new epidemics of misinformation spreading across the internet such immunity will never be perfect. Finding ways to attach labels is also a problem. Eysenbach and Diepgen propose to distribute the load across the medical community, and in principle this is a beguiling call to arms. However, given the opportunity to review material on the internet, the medical community has so far shown only low levels of participation.¹² As the authors suggest, we may need an automated process for the scheme to succeed. Perhaps software agents will one day comb the internet like "cyber-immune" cells, attaching labels to all that they touch or copying key fragments and bringing these "info" antigens back to enhance their host's immune memory.

These are all important, complex, and intriguing issues, but today we are caught between the defensible

urge to act on an emerging public health issue and the need to learn more. In either case we need testable hypotheses about the influence of the internet on public decision making. Current proposals to control quality on the internet must be tested by trials of their effect on health outcomes. If we cannot answer the simple question, "How will we know when we have succeeded in improving public health?" then we need much clearer thinking.

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Sexual health

Is an important part of people's lives and doctors need to understand its variety

The political events of the past few weeks, when three British cabinet ministers were either forced to admit their homosexuality or had it exposed by others, illustrates how difficult individuals, the press, and society find it to deal with sexual matters and sexual identity. Like any other members of the public, doctors will at times grapple with their own sexual orientation and problems and have varying views and value systems about sexual matters and morality. But they also have a responsibility to be well informed about sexual health so that they can educate and help patients at the same time as adopting a neutral and non-censorious position. It is bad manners and bad medicine to force one's own personal moral attitudes and beliefs about sexual matters on patients.

Are members of the medical profession knowledgeable and comfortable enough about sexual health to be able to help their patients? Probably not. If undergraduate education is anything to go by, the omens are poor. A survey of undergraduate teaching of genitourinary medicine in Britain reported that only a third of teachers felt that most students (over 80%) from their medical schools would be able to take a sexual history or perform a genital examination on qualifying as doctors.¹ This survey also showed that the amount of time available for undergraduate teaching of genitourinary medicine had decreased during the decade before the survey. A further survey showed that a substantial proportion of Cambridge medical students thought that patients with HIV infection were to blame for their condition, that some did not deserve treatment, and that homosexuality could not be seen as part of an acceptable lifestyle.² Some hope came from the fact that London undergraduate students were more accepting of people with HIV; this might be because greater experience of dealing with patients has helped to create a more tolerant attitude.

The Medical Society for the Study of Venereal Diseases has now developed its own national consensus document on the essential topics in genitourinary medicine that should be included in the undergraduate core curriculum of all medical schools. It emphasises the fact that no other specialty deals so specifically with sexuality and that students should be encouraged to develop non-judgmental approaches towards patients with sexually transmitted diseases and sexual health problems.

This lack of training in sexual health at an undergraduate level must mean that doctors are ill prepared for this branch of medicine. The *ABC of Sexual Health* launched in this week's issue is, therefore, to be warmly welcomed (p 1509). The two current *ABCs*, on *AIDS* and *Sexually Transmitted Diseases* (the second out in a new edition also this week), have dealt primarily with the clinical aspects of these diseases.^{3 4} The new *ABC* is a much more detailed examination of sexual problems and variations. This makes sense only if done in an open and explicit fashion, covering a wide variety of sexual habits and practices. Some readers may find the series too explicit for them, but ultimately it will help them to understand a variety of problems and behaviours so as to be able to deal with everyday issues presented by their patients. The new series will put the profession in touch with the real people with real problems and fill a large gap in our knowledge.

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