separate compartments. Although I never met him, I do not think Archie Cochrane would have been satisfied with the lack of overall co-ordination between various national and international initiatives, and particularly the lack of simultaneous attention to his five themes.

We owe it to him, and to our populations and ourselves, to follow Archie Cochrane's advice and tackle the current famine of proper information amidst plenty. There is much to be gained, and given the amount of money already being spent on various initiatives it need not even cost any more.

References


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Research and the Internet

Sirs,

Every computer-shy adult knows that the most effective way to sample the delights of the information superhighway is to recruit the services – by fair means or foul – of a moderately co-operative teenager. He or she will boot up, log on, drive the search engine and surf the net with a facility and stamina that will astonish the bemused onlooker.

There may be as many as 100 million current users of the World Wide Web and this figure will almost certainly have risen rapidly by the end of the century. As electronic communications are a fairly recent phenomenon, a disproportionately large number of users are likely to be under the age of 20. Their technical familiarity with computers, combined with the insatiable curiosity of adolescence, offers today's youth unprecedented access to massive quantities of electronically stored data.

The sword is, of course, double-edged. All human life is represented on the Net, encompassing the depths of crass commercialism and depravity as well as the heights of intellectual and cultural achievement. The clicking mouse crosses the boundaries of quality, taste and legality with unnerving ease. Understandably, much media interest has focused on the alleged dangers posed by the Internet to individuals and society. Attempts to police the system have failed dismally so far and this has led to frequently expressed concerns about the potentially corrupting influence of unsavoury material on vulnerable young minds. Less dramatically, the risks associated with the posting of misleading information and the direct marketing of medicines on the Internet have been highlighted recently.1,2

Although the enormous educational implications of cyberspace are widely acknowledged, its scientific possibilities have been relatively neglected. There are signs, however, that the extraordinary opportunities presented by these developments to medical researchers are beginning to be appreciated. Because the interactive capabilities of the Web are growing apace, users are increasingly contributing as well as accessing material. In theory, it is now possible to identify huge study populations of enthusiastic research subjects for the purpose of conducting surveys on an almost infinite variety of topics. Moreover, once a study population has been recruited, it could prove possible to maintain contact with it for months, years or decades. Because the sample sizes of these cohorts could run into millions, this scenario has been described as an epidemiologist's dream come true.3

The collection of research data from millions of people via electronic questionnaires may be technically feasible and methodologically attractive, but the conceptual and practical ramifications are formidable and hard to predict with certainty. How would ethical approval be obtained for undertaking a survey of the health and well-being of a global sample of, say, a million 10-year-olds? Should the approval of parents, guardians or teachers be sought, and if so how? Could children become unduly anxious or distressed by questions touching on potential sensitive areas of their lives? How would enquiries about the study from the study sample be dealt with? What measures can be taken to ensure confidentiality? As Internet users are volunteers, how representative are they of their reference populations? How would the response rate be assessed? What would be the implications of increasing non-response over time? Should non-responders be sent reminders, and, if so, how can those who have moved or died be identified? How would duplicate responses from the same individuals be recognized? Would the responses to specific questions be valid, and how would validity be measured? What are the analytical and statistical implications of hypothesis testing on such vast
samples? And are such samples really necessary for most research purposes?

Answers to these and related questions will doubtless be forthcoming as experience of Internet research accumulates. The research community should turn its collective mind to addressing the numerous ethical, scientific and technical problems that will inevitably arise if investigations are permitted to be conducted on the Web in an uncontrolled and uncoordinated manner. Perhaps we need to establish a global, multidisciplinary Internet research committee to monitor this activity. Meanwhile, editors of scientific and medical journals have a crucial role to play. They should make clear to all potential authors contemplating electronic data collection that the full rigours of the peer review process will be brought to bear at the point of submission for publication. A forceful declaration now that spells out the main ethical and scientific criteria by which research conducted on the Internet is likely to be judged by quality publications may prove the most effective means of avoiding future anarchy in cyber-research.

References

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A case of invasive serogroup C meningococcal disease after a community vaccination programme in Rotherham, South Yorkshire

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Keywords: Invasive meningococcal disease, outbreak, community immunization programme

Background
Between 8 December 1995 and 11 January 1997, five confirmed cases of septicaemia caused by serogroup C strains (four caused by serogroup C2b P1.5, P1.2) and one probable case were notified to the Department of Public Health, Rotherham Health Authority, South Yorkshire. In January 1996 a mass community chemoprophylaxis and vaccination programme was undertaken in response to this community outbreak of invasive meningococcal disease in Rotherham, South Yorkshire. A total of 8200 young people aged between two and 18 years received prophylactic antibiotics and vaccine during 12–23 January 1996 (92.2 per cent coverage). There were no further cases in the affected community during the following month and the outbreak was declared over in mid-February.

We report a case of invasive meningococcal disease caused by the outbreak strain in a teenage girl with a documented history of having received antibiotics and vaccine. The date of onset of illness was 21 February 1997 (ten days after the

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