

should be programme based rather than project based, and should make a more serious commitment to building local, national, and regional institutions. What must be different, above all, and no doubt will be most difficult for funding bodies to accept, is the need to at least share the driver's seat when it comes to making decisions. From this starting point, the governance of health research would need to be very different.

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## Global information flow

*Publishers should provide information free to resource poor countries*

Might information flow be one of the most important factors for improving health and development in resource poor settings? Development organisations have not thought so. They have concentrated on infrastructural projects, increasing the number of health workers and clinics, and programmes to eradicate infections. But now we are at the start of the information age, and we understand better the importance of information. The recent millennium assembly of the United Nations emphasised this in its statement on the right of access to information and communication. Information underpins the learning, research, and debate that drives a country forward. Access to information is essential for describing and understanding the deficiencies of the present, building visions of a better future, developing practical ways to achieve those visions, and educating and inspiring those who must make the future. Information empowers, and those who work with information must realise that its flow, like good communication, must be two way.

The information gap between the rich and the poor is currently widening, both between and within countries.<sup>1-2</sup> The digital divide is more dramatic than any other inequity in health or income.<sup>1</sup> This lack of information persists—those medical libraries in sub-Saharan Africa that have had no current journals for years still don't have them.<sup>1-5</sup> Meanwhile, the electronic revolution is providing scientists and health workers in the developed world with unprecedented access to information. Whereas doctors in rural Africa may not have access to any information apart from outdated textbooks, doctors in the United States or Britain may be able to access hundreds of journals and other databases from their homes and hospitals.

Yet the electronic revolution that is currently widening the information gap will eventually narrow, and perhaps even abolish, the gap. It will always be expensive and slow to send journals to the developing world. The marginal cost of sending the paper editions of the *Lancet* or the *BMJ* every week for a year to Africa is well over £50, and they can take months to arrive. In contrast, the marginal cost of giving access to

electronic editions is zero (or close to zero if a password must be provided). What is more, those in resource poor countries can access electronic journals at exactly the same time as those in the developed world. Even better, they can access what is relevant rather than what was provided, much of which wasn't relevant. Best of all, they can participate in the debate in a way that was almost impossible with the slowness of distribution on paper.

The problem with this vision is the lack of access to the world wide web in the developing world. While tens of millions of people have access in the United States, it is only thousands in most African countries; and access in Africa is often painfully slow, intermittent, and hugely expensive relative to access in the United States (where it's often free). Power cuts happen every day in many resource poor countries. Yet there's every reason to expect that access should increase dramatically. India currently has a million people with internet access, but this is expected to rise to 40 million within five years. Similarly dramatic increases are expected in Nigeria. Technological developments like access to radio and the proliferation of satellites will render irrelevant the many problems of telephone access in Africa. Rapid progress will also be made because many international organisations—such as Unesco, the British government, the World Bank, and the Bill and Melissa Gates Foundation—are increasingly interested in helping improve information access in resource poor countries.<sup>6</sup>

The challenge will be sustainability. It is easy for donors to invest money and reap the rewards of short term success. But enhancing information flow will make no impact on health if projects continue only as long as their funding lasts. Information cannot be separated from the capacity of a healthcare system to work effectively over time. How is it possible to influence the context within which information will flow, the apparently intractable political, economic, and organisational constraints that disable rather than enable information to work for people?

Publishers in the rich world have a part to play. *Bmj.com* will continue to be free to those in the developing world whatever happens in the developed world,

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and access to the electronic editions of the journals of the BMJ Publishing Group and *Clinical Evidence* will be provided free to those who apply from countries defined as poor under the human development index by the United Nations (for more information phone the UN information line on 001 212 415 4000 or email publications@un.org). Access to primary research articles published in BioMed Central (see www.biomedcentral.com) is free to all; and people in resource poor countries will also have free access to all editorials, reviews, and commentaries once this material has been developed. Commercial publishers—such as Academic Press, Blackwell Science, and Reed-Elsevier (publisher of the *Lancet*)—have their part to play too. Their scale gives them the market share and technical infrastructure to turn the information balance from one of debt to one of surplus. We urge all publishers to join this initiative. The income that publishers get from resource poor countries is minimal; and improving information supply should encourage development and eventually create a market.

The information flow should not be one way. The appearance of PubMed Central, BioMed Central, and eprint servers at the *Lancet* and *BMJ* make it easier for those from the developing world to bring their research to the world's attention. BioMed Central also offers free technical support and hosting to people wanting to start new electronic journals or to move existing journals to the web. The health problems of the world are concentrated in the developing world, and those who live with those problems have more to offer each other than those who view them from the comfort of London or Geneva. We also learn repeatedly that understanding reached in the developing world is applicable in the developed world. Many

regions are establishing free networks for the exchange of health information. Good examples include the Scientific Electronic Library Online (www.scielo.org), Bioline International (http://bioline.bdt.org.br), and African Journals Online (see www.inasp.org.uk).

The ecology of information will change dramatically in the next 20 years in ways that we cannot fully understand. There seems, however, every chance that information exchange among those interested in health should improve dramatically, leading ultimately to an improvement in health itself.

This editorial is being published simultaneously in the *Lancet* and BioMed Central. We thank Paul Garner and Neil Pakenham-Walsh for comments. Those who would like to continue discussions might join the "Health Information Forum-net at WHO," a dedicated email discussion list run by the Health Information Forum (which includes INASP-Health and International Network for the Availability of Scientific Publications) and the WHO. To join, send an email to INASP\_Health@compuserve.com with your name, affiliation, and brief description of your professional interests.

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## The ethics of international biomedical research

*Needs a commitment to high values in an open discussion with a variety of partners*

The combination of the increased burden of AIDS in the developing world and the absence of affordable therapies and vaccines has raised the sensitivity of health professionals to issues of ethics and equity in international biomedical research. Foremost among the concerns is whether new treatments should be compared against Western standards of care or against existing local standards. Other thorny issues include whether communities can benefit from research they have taken part in when they may not be able to afford the new interventions that they have helped prove efficacious<sup>1</sup> and how researchers and their institutions in developing countries can be strengthened through international collaboration.<sup>2</sup> Strong emotional responses and increased trenchment have begun to characterise the discussion on how to design and conduct international biomedical research.<sup>3</sup>

The importance of these issues for the international research community is reflected in the current debates on revising the World Medical

Association's Declaration of Helsinki<sup>4</sup> and the Council for International Organisations of Medical Sciences' *International Ethical Guidelines for Biomedical Research Involving Human Subjects*,<sup>5</sup> as well as in some of the considerations in the WHO's *Operational Guidelines for Ethics Committees That Review Biomedical Research*<sup>6</sup> and the Joint United Nations Programme on HIV/AIDS (UNAIDS)' guidance document, *Ethical Considerations in HIV Vaccine Research*.<sup>1</sup> These discussions bring out the concerns of the international community of researchers, ethics committee members, sponsors, and others regarding research in developing countries. The importance of these issues to society as a whole is further reflected by the recent public inquiries into the ethics of biomedical research in developing countries by the Nuffield Council on Bioethics in the United Kingdom<sup>7</sup> and the National Bioethics Advisory Commission in the United States.<sup>8</sup> The draft reports of these groups examine complicated and difficult issues, such as differences in cultural values and levels of healthcare, informed consent,