Libri, 1999, vol. 49, pp. 43–50
Printed in Germany · All rights reserved

Libri
ISSN 0024-2667

Health Information Networks for Telehealth in Africa – Challenges and Prospects: a Review of the Literature

KGOMOTSO H. MOAHI
School of Information Science, University of Pittsburgh, Pittsburgh, PA, USA

This article reviews the literature on the state of electronic networks for the delivery of health information to health workers in Africa. It identifies the need for health networks and the challenges and prospects for providing them. It describes some examples of existing networks and projects providing health information including some more general initiatives that could be utilised for sharing health information.

Introduction

This article is a review of the literature on the state of, and the implementation of, electronic networks for the delivery of health information to health workers in Africa. It reviews the literature in terms of the need for health networks; the challenges and prospects of providing such networks; and examples of existing networks and projects. The literature contains very few examples of health networks *per se*; in fact it would seem that the predominant project in this area is the SatelLife Healthnet initiative. The literature focuses rather on the needs, challenges and the potential for electronic networking in Africa and how that may contribute to development. Some literature discusses other initiatives not geared specifically to health, but which, given the shortage of resources in the continent, could be utilised for that purpose as well.

There is a scarcity of papers that actually evaluate the use and success of these projects. Indeed, Odedra-Straub (1995) rightly asks the question of how, without evaluation, implementers of these projects can expect to show hard evidence of the benefits of such projects to the development process to the powers that be? How can the support and investment of the African leaders be obtained without this tangible proof of the significance of these projects to the development process? Are these projects actually helping to achieve better health care for the population?

The literature also clearly spells out the need for health networks in Africa given the paucity of modern, up-to-date health information available to health workers, as well as the problems involved in providing such services because of poor communications infrastructure.

Definitions

Telemedicine, telehealth, and telematics are sometimes used interchangeably in the literature about African health information networks, although they differ in scope of coverage:

> Telemedicine is the delivery of health care and the exchange of health care information across distances using telecommunications technology. It can include the transfer of basic patient information over computer networks

Kgomotso H. Moahi is currently a doctoral student at the School of Information Science, University of Pittsburgh, Pittsburgh, PA USA. Her permanent address is P. O. Box 50702, Gaborone, Botswana. After March 1999 she can be contacted at Moahi@noka.ub.bw.

(medical informatics), the transfer of images such as radiographs, CT scans, MRIs, ultrasound studies, pathology images, video images of endoscopic or other procedures, patient interviews and examinations, consultations with medical specialists, and health care educational activities (Ferguson et al. 1995).

Telehealth is defined as the use of computing and communications technology to support and provide health information to a variety of health professionals and on a variety of health issues, from the clinical to the general, telehealth is seen as a much broader concept than telemedicine, encompassing issues such as education and general communication. Mandil (1995) discusses the "telematics in health care" concept – which he defines as being "the use of computing and communications methodology and technology, to support health and health related fields such as medicine, pharmacy, dentistry and nursing." He refers to health informatics and telematics applications (HIT). This term was coined at a conference on "telematics in health in Africa" in 1993, to indicate the use of telematics (computing and communications) in health.

The term used in this paper is telehealth because it covers a broader spectrum of information provision to a wider community of health workers – doctors, nurses, public health personnel, health researchers, and many others.

The need for health networks

Mankind has two major traits, the need to be well and healthy and the need to communicate. These two traits converge to produce what Mandil (1995) calls "telematics in health". Countries in Africa and other parts of the developing world are fighting seemingly endless battles over poverty, hunger, and the scourge of natural disasters such as droughts, epidemics, etc. New viruses and bacteria, resistant to current drugs, are threatening not only developing countries but also developed countries. New diseases emerge and spread due to the fast pace of environmental change. The lack of nutrition in some areas brings about health problems – some 800 million people still suffer from malnutrition. At the end of 1994, 1.3 billion people were living in poverty – one fifth of those in Africa. Unlike other poor regions, Africa is continuing to move in the direction of greater poverty, political disorder, economic decline, and human distress (Raitt 1995).

There are disparities in the provision of health care within countries, where the health facilities in the urban areas are relatively well off in terms of manpower, other medical facilities, and resources as compared to those in rural areas. Three-fourths of Nigerian private and public health facilities are located in urban areas serving only 30% of the population. In Kenya the average is one doctor per 500 people in Nairobi, compared to one per 160,000 people in the rural Turkana district. Major urban hospitals often receive half or more of the public funds for health care (Addo 1996). Such disparities mean that rural areas are often at a disadvantage, with health workers facing daunting challenges. In order to provide basic health care for all populations, health workers need communication facilities to obtain advice and information from the more affluent urban health centres, as well as to transmit pertinent data such as epidemiology information.

In Africa, large amounts of energy and resources are expended on basic agriculture, education and health, and unfortunately, also on the military. Very little is left over for research and development or for science and technology. It is of no surprise therefore that most of the developments in technology have occurred in the West or in developed countries. The value of technology to the development process is generally accepted. In particular, electronic networking is seen as a tool for attacking developmental problems termed as the 7 D's: demography, desertification, drought, dependency, disequilibrium, debt and destabilisation (Adam 1995). Thus, there is a need for 'appropriate' technology to be deployed in all spheres of development; health is one of the more fundamental areas on which all the others depend.

Although countries in sub-Saharan Africa are hardly a homogeneous group, the kinds of problems they face in obtaining information are so similar that generalisations might be made about the kinds of challenges they face. These problems include the fact that most of their medical libraries subscribe to fewer than 50 journals, less than 1 library in 10 has a computer or CD-ROM player, and budgets for new books, software and online access charges are tiny or non-existent. In addition, the telephone and communications in-

frastructure is either very poor or very expensive, making access to networks such as the Internet a dream. Most African countries cannot afford to pay for information which despite falling information technology prices, continues to rise (Zielinski 1995).

Much of the concern about lack of information in African countries has centred on the fact that health workers in these countries have very limited access to the vast biomedical literature generated in the West or in developed countries. However the situation is more complex. There is a lack of information emanating from other African countries facing similar health and medical problems. Increasingly, epidemiological information from a country in Africa may be more useful to another African country than information from a developed country that probably faces problems of a different nature arising out of different lifestyles. Information networks are required to ensure that information flows not only in a north-south direction, but also south-south as well as south-north.

However, the foregoing does not mean that information from developed countries is not crucial. There is a need for state-of-the-art medical information that in most cases can be obtained from the West. For example, books in African medical libraries were reported to be 15 to 30 years old, and some libraries had not subscribed to journals for a long time indeed (Kale 1994). In addition, even though developing countries still deal with communicable diseases, chronic degenerative ailments also constitute a large part of the problem (Lown 1997).

Africa and other developing countries are faced with periodic natural disasters such as droughts bringing with them a myriad of diseases. There is a need for a disaster response program to cope with outbreaks such as the recent Ebola virus. The usefulness of international and national disaster response has been demonstrated, but Africa does not as yet have the communications infrastructure nor the medical resources required to employ telemedicine as part of a disaster response strategy (Ferguson et al. 1995). The proposed Global Health Network (GHNet) might provide this.

The conclusion that one makes despite stretched public health budgets is that African countries need to develop electronic networks that will support the provision of information and education for health.

Initiatives to build an electronic networking infrastructure

The networking projects in place in the African region mostly originate in Europe or the US, and are spearheaded by international organisations. What follows is a brief review of various projects.

NGONET is a network connecting non-governmental organisations in Africa, by providing electronic mail access throughout Africa using the Fidonet system – a PC-based electronic mail system.

ESANET is a research project funded by the International Development Research Center (IDRC), aimed at linking researchers in eastern and southern Africa by electronic mail.

SatelLife / Healthnet provides electronic mail-based health information exchange between developed and developing countries, as well as within the developing countries themselves.

The Pan African Development Information System network (PADISNET), is an interconnection of centres that document development information on Africa, and aims to facilitate the exchange of data between national centres that participate in the PADIS project.

WEDNET links researchers working on women's projects for the management of natural resources in Senegal, Ghana, Burkina Faso, Nigeria, Sudan, Kenya, Zimbabwe, Zambia and Canada.

MANGO is a Zimbabwe-based electronic billboard project, and ARSONEt is a CIDA project to link centres in Ethiopia, Senegal, Kenya and Egypt.

Of note is the CABECA – Capacity Building for Electronic Communication in Africa-project. This project initiated in 1993 (to last 3 years) promotes computer networks throughout Africa. CABECA seeks to build electronic networking through training systems operators train others, and setting up dial-up store-and-forward electronic communication systems. It also works hand-in-hand with other networking initiatives such as Healthnet. Among its successes is the fact that the "PADIS node in Ethiopia has more than a dozen subscribers to the AIDS daily summaries sent from the Netherlands. Many are

eager to receive the International Conference on Population Development documents that are e-mail accessible through the POPIN gopher, as well as the documents on the world Bank's population, health, and nutrition "flash" list server" (Hafkin 1994).

All these networks provide gateways to the Internet, enabling the users to exchange e-mail with any Internet address and to access off-line information services available over the Internet (Mandil 1995). There are many more such projects in existence in Africa, but unfortunately, little evaluation of them has made its way into the literature.

The challenges for networking

Electronic networking has many prerequisites: good telecommunications, availability of the equipment (computers, modems, etc.), and manpower to utilise the technology. It is the lack of these that is at the root of the problems besetting Africa in implementing electronic networks. All the above are not found as abundantly as they are in the West. But unlike 10 years ago, computers are making inroads into the lives of development workers in Africa. The reduction in the cost of technology, the role played by international organisations, and the realisation that Africa has to adopt technology or forever be left behind have resulted in improved use of technology (Addo 1996). However, despite this progress problems still abound. This next section looks at the challenges that are faced by African countries in attempting to establish electronic networks.

Technical

Chief among the challenges facing the establishment of electronic networks in Africa is the poor telecommunications infrastructure. "More telephones exist in Marseilles than in the whole of Africa, and in Ghana 60 researchers share one telephone – and it takes 5 years to get another one. Telephones in Tanzania do not work in the rainy season, and in Alexandria you may need to dial a number 65 times to get connected" (Addo 1996). Africa has 2% of the world's main telephone lines and 12% of its population. In most countries, the telecommunications authorities are run by the state, and therefore governed by bureaucratic regulations which tend to stifle any sort of liberal initiative. However this is changing in some countries; the Botswana Telecommunications Corporation was recently deregulated. This resulted in the immediate entry of private companies thus providing needed competition and services.

Writing about the Capacity Building for Electronic Communication in Africa (CABECA) project, Hafkin (1994) notes that due to communications problems experienced by PADIS members as they exchanged information, a realisation was made that the means for rapid and cheap exchange of information in the Africa region had to be found. Telephone lines are unreliable, as experienced by the River Blindness Foundation's experiment with electronic mail, where telephone lines would go down for days, often running into weeks.

There are electronic mail links in many African countries, but few are well-organised and well run. Data communication technology is not good, but most African countries have a telephone system. Leased circuits are available but expensive, so most links use dial-up connections. Speed of transfer varies from country to country. It is possible to transfer a megabyte of information to a country, like Ghana in 10 minutes, but it takes twice as long to Zimbabwe (Lawrie 1995).

Sustainability

Most of the networking initiatives are supported by donor agencies. This support cannot be expected to continue indefinitely, and often when donors withdraw, projects then fail.

Cultural

The biggest problem cited however is cultural. "The problem with introducing electronic systems is 10% technical, and 90% culture" (Kale 1994). Most health workers are simply not ready to acquire material electronically. Experience in international telemedicine has shown that practising telemedicine across language, cultural, and political barriers can be difficult. In fact, cultural and political issues are usually the most important factors limiting the effectiveness of medical and public health relief efforts to disaster stricken areas (Ferguson et al. 1995). A large part

of the problem is that these projects are initiated by development agencies that expect their ideas to be embraced wholesale. However participants in these projects need to be involved from the beginning to feel 'ownership' of the project, thus fostering the likelihood of acceptance and diffusion.

Management and strategy

Even with the problem of a lack of resources –fiscal, structural, and manpower based – there seems to be a number of electronic networking initiatives which are either blissfully unaware of each other, or are deliberately ignoring each other's efforts. Odedra-Straub reporting on the African regional Workshop on Telematics for Development in 1995 observed that the various networking projects exhibited very little co-operation or co-ordination.

> "Many reasons may be adduced from this lack of collaboration. It may result from genuine lack of knowledge of other initiatives, or a belief that nothing can be learnt from the experience of others. Otherwise the funding agencies may be playing 'turf wars' to maintain individuality" (Odedra-Straub 1995).

National and international organisations involved in providing health networks

The use of satellites to provide health care was first initiated in 1971 to provide healthcare services to remote villages in Alaska using the ATS-1 satellite. Since then there has been a number of cases of satellite communication being used to dispense health care, much needed information, and disaster warning systems (Rao 1995). By 1980, the Satellite for Health and Rural Education (SHARE) project by Intelsat for connecting countries in Africa was under way. SatelLife has followed suit, using low-earth orbiting satellites to distribute health-related information to a large number of African countries.

The infrastructure for international communications already exists in the form of satellites provided by INTELSAT, IMMARSAT, and INTER SPUTNIK. The introduction of mobile communication systems using low earth orbiting satellites in the very near future means that there can be increasing application for telehealth.

NASA

NASA has been the leading force in international telemedicine since the mid-1970s. NASA has been involved in providing S-band television, education, and support for agriculture and health in India. NASA also sponsors and collaborates with the University of Pittsburgh and others to develop the Global Health Network (GHNet) for the sharing of international preventive medicine and public health information. It also provides preventive medicine training with the Third World Foundation of North America to develop telemedicine programs in Africa and India; and with the Pan American Health Organization to develop a disaster preparedness and telemedicine network in Central America, South America and the Caribbean.

U.S. Department of Defense (DOD)

The main thrust behind the DOD's involvement is the need to develop an infrastructure for connecting military treatment facilities. The US Army has experimented with the use of Mobile Satellite Services to transmit X-rays and other medical images during the Somalia offensive in 1993 among other programmes.

SatelLife/Healthnet

SatelLife is a US-based international, non-profit organisation which uses micro-satellites technology (HealthSat 1 and HealthSat 2) to provide health communication and information services in developing countries. The primary project has been Healthnet, a system that links health workers in Africa and other regions.

Memorial University of Newfoundland (MUN)

MUN pioneered telemedicine through the Canadian Space Program in 1977. Over the years, MUN has participated in a number of international collaborative efforts in regions and nations including East Africa, and the West Indies.

International Medical Informatics Association (IMIA)

IMIA was founded in 1978 and designated as a

non-governmental organisation with special relations to the World Health Organisation. Its main objective is to serve specific needs in the application of information science and technology for medicine, health care, and biomedical research. The basic aim is to promote informatics in health care, medicine, and biomedical research through international co-operation, stimulation of research, development and applications, and dissemination and exchange of information. As of 1995, IMIA had 35 national members (Ferguson et al. 1995).

G7 – The group of the most industrialised nations in the world

In a special session held in Brussels in 1995, the G7 nations decided to develop a global telecommunications network that would, among other services, provide a backbone for the provision of global healthcare. The G7 Global Healthcare Application Project has six sub projects, the bulk of which cover the member states, and eventually the rest of the world. The sub-projects include the following: a global public health network; improving prevention, early detection and treatment of cancer; improving prevention, early detection and treatment of cardiovascular diseases; a 24-hour multilingual telemedicine surveillance and emergency system around the world; enabling mechanisms for global healthcare network; international harmonisation of use of data cards in healthcare (Global 1995).

Health network initiatives

Mandil (1995) describes the "HIT" applications by grouping them into the following: health literature; knowledge-based systems; epidemiological surveillance. This seems to be a fairly straightforward categorisation and therefore one that shall be adopted for the description of health network initiatives in this paper. Disaster preparedness may be added as a fourth category.

Health literature, communication and education

As noted, one of the major issues for African countries has been difficulties in obtaining state-of-the-art books and journals, and communication with peers all over the world. SatelLife has contrived to fill this gap by providing access through the low-cost alternative of using low earth orbiting satellites through the Healthnet project. Healthnet is a telecommunications network, enabling communication of health-related information between health professionals within Africa, and the rest of the world. Healthnet has been a useful tool, particularly in Africa, where it has empowered health professionals who otherwise had limited avenues for information-seeking purposes. The Healthnet in Africa Directory of users lists 132 users from 8 African countries: Burkina Faso, Ethiopia, Gambia, Kenya, Sudan, Tanzania and Zimbabwe. This number does not include 37 users in Botswana, and even more in Zambia and South Africa. Healthnet allows health professionals to obtain health and biomedical literature, as well as exchange experiences, and seek out information in particular areas. The Healthnet user directory also lists the subjects covered by the network's users including HIV/AIDS, community-based care, information systems, and reproductive health, to name but a few.

Healthnet is a service for health workers all over the world. It aims to reduce the isolation of health workers and link them with information sources. Healthnet provides two basic services: electronic mail and access to information sources. Electronic mail enables the Healthnet members to communicate with other members on a national, regional, and international level. Nationally, all the network members are connected through the local groundstation using the local telephone lines. Health personnel in rural areas can therefore communicate with their counterparts in urban areas to solve medical problems or even transmit important information. Members can also communicate with colleagues elsewhere by sending their messages routed through the groundstation. It is even possible to send email to someone who is on the Internet, since Healthnet also provides a gateway to the Internet.

Healthnet also provides access to publications, to library partnerships, and to participation in a number of electronic conferences, such as PROCOR, AfroNETS, and others. Thus, countries such as Zambia have been able to install earth stations with the help of SatelLife (Mandil 1995). South Africa has been able to set up the Health Link system as a partnership between the government and NGO movement

(Myers et al. 1995). Botswana has also successfully set up a Healthnet network.

House and MacLeod, writing in 1986, described a project between physicians in Canada, Kenya and Uganda, in which satellite links were instituted to facilitate weekly conferences and informal teaching sessions. The link also enables the libraries at the Universities of Makerere and Nairobi to make online literature searches on behalf of their medical community. The link also facilitates the communication between North American doctors based in Africa and their home laboratories. The satellite linkages are made possible through the SHARE project that makes satellite connections possible for agencies involved in health education.

Knowledge-based systems

The term knowledge-based system is defined loosely here. The knowledge could be within an "expert system," "decision support system," or a human expert located remotely (Mandil 1995). To a certain extent, the Healthnet system does make provision for this when physicians present their cases and request advice on how to deal with them. Mandil cites the malaria diagnosis system in the Cameroon, where an expert system is being used for tropical disease diagnosis.

The River Blindness Foundation (RBF) set up an electronic mail system between Jos, Nigeria, and the RBF's headquarters in Houston, Texas, USA. This was an experimental system that lasted six months, using an Intel 286 laptop, a 2400-baud modem, and the SEADOG communication software. Due to the lack of a direct dialling service in Jos, the connection had to be initiated from Houston, and only at night when the computer was not being used for daily work.

Epidemiological surveillance and disaster warning systems

The Pittsburgh based Global Health Network (GHNet) project is perceived as a communication system to be used in monitoring the incidences of diseases in order that prevention of large-scale outbreaks may be achieved. The underlying philosophy of this project is that the path to health for all is through preventive public health rather than curative. Curative health systems are very expensive and not affordable for most people, while preventive public health involves communication of information and education about health. The project also aims at providing its users with the information required for making diagnosis and treatment, i.e. it is also a consultative tool. The project is funded by a number of organisations, which include NASA, WHO, the World Bank, and PAHO among many others, and intends to use the Internet as the vehicle for transmitting data.

The G7 global healthcare applications project has as one of its sub-projects, a 24-hour multilingual and multidisciplinary telemedicine surveillance and emergency service around the world. The pilot phase of this project was scheduled in 1997 (Global 1996).

The opportunities/potential

A few countries already offer X.25 Public data networks. Djamen (1995) makes the suggestion to establish an electronic infrastructure by building on what already is available. All existing networks could be connected into an African network that would itself be connected to the Internet, thus providing connectivity for Africa. Currently there are networks, such as BITNET, Fidonet, and UUCP, existing in 30 African countries. Fidonet is the most widely used by non-governmental organisations in a number of countries. An example of a UUCP network is the Inter-tropical Network of Computers (RIO) which provides Internet access to ten African countries. In addition, there are the numerous network development projects mentioned earlier in this article.

Many organisations have proposed projects and unveiled plans to assist the African continent develop its electronic communication infrastructure. RINAF, which stands for the Regional Informatics Network for Africa Project, is a project that was to be implemented in 1996, aimed at bringing Internet connectivity to a number of African countries (Wang 1996). AT&T is soliciting investment for laying 33,600-kilometres of fibre-optic cable in Africa. This underwater cable is expected to be in place by 1999. The future does seem to be bright (Addo 1995). The Trinet data communication project sponsored by Trinity College, Dublin, two Irish business organisations, and Healthnet, plans to

design and implement a global communication network utilising radio and satellite technology. Such a network will not be solely for health-related use, but will also target academic and research institutions, state agencies, UN agencies and other international bodies, as well as national aid agencies (Foster nd).

Conclusion

Clearly, as shown in this article, there is a need for health information networks in sub-Saharan Africa. There has already been a great deal of groundwork in the area as evidenced by the projects that are already under way. The will to develop networks is there despite the potential problems outlined above. There is a need for health education communities (medical schools, nursing schools, etc.) to be involved in the various initiatives. The literature so far has not shown what role this community is currently playing. It is possible for them to get inexpensive connections, even from commercial database producers, as educational institutions in the business of teaching potential future users.

References

Adam, L. 1995. Electronic Communications Technology and Development in Africa. *FID News Bulletin* 45(10): 298–306.

Addo, D. 1996. So far and yet so near? Bulletin of *Medical Library Association* 84(1): 100–104.

Djamen, J-Y., D. Ramazani, and S. Soteg. 1995. Some Networking in Africa: an Unavoidable Evolution towards the Internet. Technical report 973, Dept d'Informatique et de Recherche Operationnelle (RIO), Universite de Montroel. 16p.

Ferguson EW, CR. Doarn, and JC. Scott. 1995. Survey of Global Telemedicine. *Journal of Medical Systems* 19(1): 35–46.

Ferguson, EW., A. Sarkisian, F. Young, and C. de Ville de Goyet. 1995. Telemedicine for National and International disaster Response. *Journal of Medical Systems* 19(2): 121–23.

Foster, G. and C. Dzidonu. The TRINET project overview. URL: http://homepages.iol.ie/~pobeirne/trinet.html

Global Healthcare Applications Project (G-7 Theme 8). 1996. 5th Progress Report, May. URL: http://www.ispo.cec.be/g7/projects/g7rep596.html

Groves, T. 1996. Further down the Information Highway. SatelLife: getting relevant information to the developing world. *British Medical Journal* 313: 1606–08.

Hafkin, NJ. 1994. Capacity Building for Electronic Communication in Africa: A Project of the Pan-African Development Information System (PADIS). *FID News Bulletin* 44(9): 175–78.

House, M., S. MacLeod. 1986. Into Africa: Telemedicine Links Canada with Nairobi and Kampala. 25 Sep 1986. Paper presented at the Annual Meeting of the Royal College of Physicians and Surgeons of Canada (Canada, September 25). (1 microfiche)

Inyang, S. 1995. Using E-mail for Communication in Jos, Nigeria, Problems and Prospects. Paper presented at African Regional Symposium on Telematics for Development. Ethiopia 3–7 April.

Kale, R. 1994. Health Information for the Developing World. *British Medical Journal* 309: 939–42.

Kostinko, G. 1996. Healthnet in Africa: Directory of Users. Support for Analysis and Research in Africa, USAID, May.

Lawrie, M. 1995. Southern Africa Internetworking: Where we are, where we could be. *The Electronic Library* 13(4): 397–99.

Lown, B. Health Technology, the Developing World and SatelLife. URL: http://www.SatlelLife.org/programs/procor/9702comm.html

Mandil, SH. 1995. Telematics in Health Care in Developing Countries. *Journal of Medical Systems* 19 (2): 195–203.

Merrell, RC. 1995. Telemedicine in the 90's: Beyond the Future. *Journal of Medical Systems* 19(1): 15–18.

Myers G., T. Nkabinde, and D. Blaauw. 1995. HealthLink: SatelLife and HealthNet in South Africa. *The Electronic Library* 13(4): 293–97.

Odedra-Straub, M. 1995. Contemporary Issues in electronic Communication in Africa: A Summary of the Addis Ababa Symposium. *FID News Bulletin* 45 (7/8): 225–27.

Raitt D. 1995. The World to come: what we can do now. *The Electronic Library* 13(4): 269–78.

Rao, UR. 1995. Keynote Address: Global Connectivity Through Telemedicine. *Journal of Medical Systems* 19(3): 295–304.

Wang, C. 1996. Global Networking, Internet and the Global Information Infrastructure (GII). *FID Bulletin* 46(12): 356–64.

Zielinski, C. 1995. New Equities of Information in an Electronic Age: The Third World needs First World Information – How about the other way round? *British Medical Journal* 310: 1480–81.