The bigger picture for e-health

For this e-health theme issue, the *Bulletin* brought together leading thinkers in the field of e-health to discuss how new technologies can lead to better health for all

Desmond Tutu is chairman of GeHAP, the Global eHealth Ambassadors Program of the International Society for Telemedicine and eHealth, which aims to raise the profile of e-health worldwide, through advocacy activities

Q: Can e-health help narrow gaps in social inequality across the world? If so, how?

A: Technology is a major driving force of our civilization. Whether through medicines to heal the sick or products for growing food to feed the hungry, or most recently information and communication technology to fuel economic and social growth, technology has always been intertwined with human development. Today the technology most accessible to the poor and disenfranchised is the mobile phone. If we want a vehicle for reaching the underserved with interventions from health and other sectors of the economy, the mobile phone is the technology of choice.

Q: Can e-health help to tackle the social determinants of health?

A: Definitely. What we need is a paradigm shift from information and communications technologies for health to a greater emphasis on information and communications technologies for development, which benefit health but also have an effect on education, agriculture, commerce, governance and other social determinants of health. What the poor and the vulnerable need is not only good health but good lives.

Q: What can governments and international agencies do to promote the benefits of e-health?

A: Governments set the rules of the game and international agencies have great influence on all players. The right policies and strategies for development of e-health, with proper emphasis on reducing inequalities can play a big role in promoting adoption of e-health technologies and thereby extend their benefits. Once people enjoy the benefits themselves, they will become agents of further promotion and drivers of future adoption. Developing national policies and strategies which create a fertile regulatory environment for e-health, building capacity through, for example, training programmes and on-the-job training for all health workers – these are some of the mechanisms through which governments and international agencies can help provide an enabling environment for the growth of e-health in countries.

Hamadoun Touré is secretary-general of the International Telecommunications Union, a United Nations specialized agency which aims to improve the standards of information communication technologies in underserved areas, including e-health.

Q: How can e-health technologies help to improve health systems' performance?

A: In a world with a growing and ageing population, information and communication technologies will play a vital role in the provision and delivery of health care. In terms of patient care, e-health technologies enable remote patient monitoring; better dissemination of information to patients; improved access to health advice; access to remote consultations and telemedicine and quicker access to emergency services. E-health technologies also help to deliver better training for health-care workers, and they improve disease surveillance, data collection and the management of patient records, thereby increasing transparency and accountability.

Q: Are there areas where there is not enough evidence of the impact of e-health technologies, evidence that is needed for sound policy-making and investment decisions? If so, which areas?

A: Yes, we still need more comprehensive and rigorous empirical evidence for the social and economic benefits of e-health that can be measured, but there are nonetheless clear signs that e-health technologies are effective in specific areas. These areas include: text or voice messages sent to patients to remind them to take their medicines or come in for a check-up and the training of community health-care workers and rural doctors. It is also becoming apparent that m-health applications using mobile phones are particularly well suited for data gathering, the tracking and analysis of health-related surveys, and registering and monitoring patients.

Q: What are the challenges to the successful implementation of e-health programmes?

A: There are several barriers, ranging from technical to financing to political issues. One of the biggest challenges is scalability: while pilot projects have generally been successful, when taken to scale, they resulted in costly and inefficient programmes due to the proliferation of discrete and independent systems. Success in the future will depend on achieving much more interoperability and cooperation than is today the case, between all the major stakeholders.

Tore Godal is Special Adviser to the Norwegian Prime Minister on global health. The Norwegian government supports the Health Information Systems Programme, a nongovernmental organization that specializes in the development and maintenance of district health information systems and other e- and m-health projects in developing countries.

Q: How can e-health technologies help to improve health systems' performance?

A: By incrementally improving existing health-care systems, and by opting for radically new ways of delivering and monitoring care. Entering patient data on a phone or a tablet in a rural clinic, transferring this electronically and extracting required information from this avoids the slow and labour-intensive steps of paper-based systems. But more importantly, e-health technologies can totally change the way health care is delivered and monitored. Front-line workers can now have tools for making decisions available at their fingertips and telemedicine can provide them with expert help. Thus new roles can be defined and patients empowered with information and a voice in monitoring.

Q: Are there health areas where there is not enough evidence of the impact of e-health technologies, evidence that is needed for sound policy-making and investment decisions? If so, which areas?

A: Evidence is, as far as I can see, lacking in much of what we call e-health, not least from many of the pilots using mobile phones in health-care delivery. However, I am not really worried about this. It will come. The challenge is for evidence to be relevant, since the pace of development is so fast and will increase. Focusing on evidence rather than development is risky: imagine if Steve Wozniak

and Steve Jobs had to provide evidence that the computer they made in 1976 was useful. They would not have been able to do so, but some investors believed that they had the potential for changing the world. As an international development community we have to be willing to make some bets as well in the field of e-health, based on limited evidence.

Q: *What are the challenges to the successful implementation of programmes using e-health?*

A: A key challenge is financial: how will local and international providers of innovative e-health solutions find sustainable financing and business models that allow them to attract the necessary capital for scaling up projects? National governments will have to increasingly focus on this. Another challenge is how to introduce simple solutions in a complex and often rigid health system. A third is prejudice against innovation that threatens conventional roles and power structures.

Ariel Pablos-Méndez is Assistant Administrator for Global Health at the US Agency for International Development (USAID)

Q: *How can e-health technologies help to improve health systems' performance?*

A: E-health is beginning to have a transformative effect on the equity, efficiency and quality of health systems. Take, for example, the health workforce. The challenges facing the global community go well beyond the extreme shortages of health-care providers, to include the management, training and supervision of health workers; the decision support and other quality improvement tools available for their use; and their access to other components of the health care system – for example, patient information and essential medicines. E- and m-health can help overcome these challenges.

Q: *Are there health areas where there is not enough evidence of the impact of e-health technologies, evidence that is needed for sound policy-making and investment decisions? If so, which areas?*

A: Many of these technologies appear to make intuitive sense, so people may not feel they need evidence before using them. But solid evidence of their effectiveness, efficiency and cost-effectiveness is essential for their adoption and scale-up by governments and donors alike. Given the speed of innovation in this area, we need creative and adaptive

evaluation methods to make informed choices. The *Global Observatory for eHealth*, a World Health Organization initiative dedicated to the study of e-health, launched in 2005, is one example of monitoring global progress, and many other organizations are collating evidence on specific applications.

Q: *What are the barriers to the successful implementation of programmes using e-health?*

A: The ability of diverse components in a system to work together is essential for e-health technologies to succeed when taken to scale. Lack of interoperability has been a drag on scaling up e-health technologies in the United States of America. It is being fixed, at great cost, whereas addressing interoperability before too many incompatible applications crowd into developing countries costs relatively little.

Country ownership is critical in health systems, and local capacity is an essential ingredient. Such capacity involves not only connectivity and digital expertise, but also the ability of health ministries to develop e-health policies and set standards for e-health procurement.

The challenge of implementing an e-health programme – as opposed to an individual e-health project or activity – is that the broader health systems context must be considered. For a given e-health solution to achieve scale and sustainability, it must be effective and efficient in its own right and it must be seamlessly integrated into the health system.

Eric Goosby is Global AIDS Coordinator with the US Department of State. In this role, Ambassador Goosby leads all US government international HIV/AIDS efforts and oversees the implementation of PEPFAR, the President's Emergency Plan for Aids Relief

Q: *How can e-health technologies help to improve health systems performance?*

A: Efficiently integrating complex information from many sources is fundamental to delivering quality care. Health information technologies provide health system participants, including patients, better access to health information. These technologies are beginning to demonstrate their ability to improve the quality, safety, and efficiency of care – including in the developing world.

The same data used in care delivery in countries hard-hit by HIV/AIDS can be used for programme evaluation, disease surveillance and research purposes as well.

Q: *Are there areas where there is not enough evidence of the impact of e-health technologies, evidence that is needed for sound policy-making and investment decisions? If so, which areas? How?*

A: Policy-making and investment decisions are limited because there is insufficient evidence of the impact of e-health tools, particularly when scaled up to support national systems in low- and middle-income countries. PEPFAR is working to find ways in which e-health tools can increase effectiveness of health service delivery. We are also interested in identifying a tool's 'value for money' to increase our programme's impact.

The prevailing assumption is that e-health systems – when appropriately designed – will be transformative. But before that assumption can be fully supported and used to drive evidence-based policy, a rigorous approach to the assessment of implemented e-health systems is needed.

Q: *What are the barriers to the successful implementation of programmes using e-health?*

A: Particularly in the developing countries, there are significant barriers to e-health implementation. There are not enough skilled e-health practitioners in these countries. Many e-health systems fail to replicate the paper systems they mirror and these systems are often not interoperable across specific disease and programme domains. And there is the issue of cost as well.

Q: *How is PEPFAR involved in e-health programmes or projects?*

A: We are leading research and we are working with other donors to create a common repository of reusable e-health system designs, documents, tools and codes. We are in the process of publishing standards, funded through the World Health Organization, which is in turn co-ordinating with the International Telecommunications Union, related to health systems interoperability so that the myriad health information systems currently in operation can begin to come together to function as a viable whole.

We are taking steps to support the development of country e-health capacity, such as assessing the level of local expertise. Taken as a whole, we are focusing our investment in health technology on solutions that work, and that work for our host countries – solutions that are appropriate and scalable and that can be locally maintained. ■