Improving the credibility of electronic health technologies

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Geissbuhler & Al-Shorbaji's call for papers on e-health is a landmark in the development of the field of e-health.[1] Rising health-care expenditures, the demographic transition, the threat of infectious diseases and increasing multimorbidity make innovation in global health care delivery necessary,[2] and e-health technologies are a promising innovative tool for meeting these challenges. In 2005, a World Health Assembly resolution acknowledged e-health's potential for improving health systems and safety, quality and efficiency in health care.[3] E-health can also improve health equity by facilitating access to health information and services. However, the success of e-health is lagging behind expectations. Studies have shown health care innovation to be very complex and there is little evidence that e-health technologies can improve health care.[4] Why is this so and how can we erase current doubts about the value of e-health?

The classic approach to e-health development has generated scepticism because it is technology-driven, thereby fostering the notion that e-health is merely about technological intervention. This has led to the design of stand-alone devices and device-based applications that ignore the complexity of real life. The classic model has also slowed the diffusion of innovations into care. Innovation calls for education and training rather than for specific applications. It also calls for better models of reimbursement and governance tailored to patient engagement and home care. The fallacy that implementing e-health is a one-step process leads organizations to budget for implementation and to neglect maintenance. This often results in financial disaster, under-used technologies and stakeholder dissatisfaction.[5] No wonder evaluations show disappointing results, not to mention the fact that classic evaluation methods are seldom appropriate for assessing e-health interventions.

E-health's suboptimal impact and the rapid proliferation of emerging technologies point to the need to replace the classic e-health model with a new, "holistic" view that sees in e-health a means for reforming health care by creating an infrastructure for participation and eliminating the traditional division of labour and time- and place-dependent delivery modalities.[6] Based on our experience and research, we have constructed a holistic perspective on the international evidence base needed to crank up e-health's credibility:

- To optimize health care delivery, we must integrate traditional care with care enhanced by information technology and address policy barriers to e-health. This will avoid waste and replace high-cost hospital care with low-cost primary care and prevention.
- To ensure safety and efficacy we must create systems that enhance treatment adherence and reduce costs. We need to introduce e-health curricula in medical and nursing schools, facilitate continuing medical education and tele-learning, and increase collaboration in health informatics.[7]
- To make care accessible, we must enhance transparency and accountability, implement appropriate business models for e-health, and develop appropriate indicators to assess process, maturity, productivity and outcomes.
- To implement evidence-based e-health interventions, we must collaborate internationally to evaluate the impacts of such interventions, generating indicators to guide investment.

Credibility is reinforced by experiences in developing countries, where e-health projects seek mainly to expand health services to poor and remote rural areas. Teleconsultations among health-care professionals are educational and save transportation costs. For instance, over 90% of patients infected with the human immunodeficiency virus (HIV) have skin lesions whose nature is indicative of the stage of infection. In South Africa, teledermatology has resulted in competent, referral-free local management of many HIV-associated skin problems.[8] Many tele-education programmes for health-care workers and telesurveillance programmes for disease detection have also been successful in developing countries.[9]

Technologies designed for developed countries are often incompatible with developing countries' infrastructure, habits and culture. Local users must therefore develop their own e-health interventions. Disease management projects should cease being "disease-centred" and become "people-centred", with a shift from institutional care to community- and home-based care. This would entail parallel changes in funding, training, administration and treatment formats.

Now it is time to recapitulate the lessons learnt. We need a holistic approach to e-health development that is evidence-based and people-centred, that takes into account how people live within their own environments and that focuses on responding to stakeholders' needs and improving care. Clarity regarding financial responsibility for e-health interventions is important. In the recent debate on a new definition of health,[10] the value of self-management was underscored. This is precisely what e-health supports. *Better* research is crucial, not necessarily *more* research.

Technological and social innovations go hand-in-hand, and the capacity for innovation is increasing in developing countries. This, together with a growth in local public–private research and development partnerships, may represent the only sustainable means of improving health systems' effectiveness in developing nations.[11] E-health's potential is far from being exploited, but its proven successes are reason for confidence. ■

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