Establishing an evidence base for e-health: the proof is in the pudding

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Seven years have passed since the World Health Assembly adopted resolution WHA58.28 urging the World Health Organization and its Member States[1] to endorse e-health as a way to strengthen health systems. In defining e-health as "the cost-effective and secure use of information and communication technologies in support of health and health-related fields", the resolution offered a definition that was comprehensive and generic, yet specific enough for researchers wishing to evaluate the impact of e-health to know what to evaluate. Specifically, the resolution urged Member States to "mobilize multisectoral collaboration for determining evidence-based e-health standards and norms, to evaluate e-health activities, and to share the knowledge of cost-effective models, thus ensuring quality, safety and ethical standards and respect for the principles of confidentiality of information, privacy, equity and equality".

This theme issue has three main objectives, as explained in a call for papers[2] published in June 2011:

- to provide an authoritative, critical and independent overview of current knowledge about appropriate, transdisciplinary methods and applications in e-health;
- to include contributors from developing countries, who seldom have the opportunity to publish in international journals;
- to strengthen the commitment of high-level decision-makers to address e-health interoperability issues and seek to widened the application of e-health.

Researchers, academicians and practitioners from all over the world responded to the call for papers with more than 90 submissions, 14 of which are published here.

Van Gemert-Pijnen et al.'s editorial[3] makes a worthy point: e-health development must be holistic, evidence-based and people-centred; it must take into account how people live within their own environments and respond to stakeholders' needs. In the research section that follows, Wootton et al.[4] examine the characteristics of long-running telemedicine networks and conclude that "improved collaboration between networks could help attenuate the lack of resources […] and improve sustainability". In a study of the health-related uses of information and communication technologies (ICT) in low- and middle-income countries, Lewis et al.[5] find three leading purposes: to extend geographic access to health care, to improve data management, and to facilitate communication between patients and physicians outside the physician's office. The authors highlight the need for more sustainable sources of funding, greater support for the adoption of new technologies, and better ways to evaluate impact. A review by Piette et al.[6] of the published literature on e-health systems of three types – systems facilitating clinical practice, institutional systems and systems facilitating care at a distance – shows that e-health can improve clinical care in low- and middle-income countries, but that more research is needed on its economic benefits and impact on patient health.

In a revealing Perspective, Thirumurthy & Lester[7] find evidence that mobile health (m-health) can enable behaviour change and improve health outcomes in resource-limited settings. Van Heerden et al.[8] argue, in the same section, that the real challenge for the deployment of e-health lies in establishing country-level best practices that are both cost-effective and supported by rigorous research and evaluation. Policy-makers and funders must promote, legislate and fund programmes and interventions that integrate and build upon a common m-health framework. Kwankam[9] identifies further challenges facing e-health: creating a platform for knowledge sharing; scaling up interventions; designing integrated e-health systems; conducting professional training on e-health; integrating e-health into the social and economic context, and building ICT into the health systems of the future.

Alkmim et al.,[10] in a Lesson from the field, describe a telehealth network in Brazil and how in just five years there was a notable increase in the number of professionals trained in telehealth and in the number of electrocardiograms and teleconsultations performed through the network. The authors caution, however, that to succeed, a telehealth service needs to be collaborative, to meet the real needs of local health professionals, to employ a simple technology and to have at least some face-to-face components. According to Braa et al.[11], data use workshops have strengthened the health management information systems by improving the quality of public health data in Zanzibar, United Republic of Tanzania. In Madagascar,[12] Rajatonirina et al. found evidence of improved disease surveillance capacity despite resource constraints owing to an innovative sentinel system based on a short message service.

The factors promoting or inhibiting the implementation of e-health systems were the subject of a systematic review, by Mair et al.,[13] that shows a growing research emphasis on "workability", or the work that health professionals must undertake to make e-health systems function well in practice. The review also points to the need for more research on the impact of e-health services on everyday clinical practice.

This theme issue highlights what we have learnt from e-health projects throughout the world in terms of feasibility, acceptance and impact on processes. The recipe may seem familiar and replicable, but the proof is in the pudding, in the clear demonstration that e-health can result in economic benefits and improve health outcomes. Programme evaluators and implementers face the challenge of generating such evidence, a prerequisite for the widespread adoption of e-health.[14] ■

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