By Maurice Mars and Richard E. Scott

Global E-Health Policy: A Work In Progress

doi: 10.1377/hlthaff.2009.0945
HEALTH AFFAIRS 29,
NO. 2 (2010): 239–245

ABSTRACT **E-health (information and communication technology that facilitates health and health care) is expanding in developed, developing, and least-developed countries. E-health's ability to transcend sociopolitical boundaries holds the potential to create a borderless world for health systems and health care delivery. But the policy needed to guide e-health development is limited and just now emerging in developed countries. What's needed to foster e-health growth in the developing world is thoughtful policy to facilitate patient mobility and data exchange, across both international borders and regional boundaries within countries.**

Maurice Mars (mars@ukzn.ac.za) is professor and head of the Department of Telehealth at the Nelson R. Mandela School of Medicine, University of KwaZulu-Natal, in Durban, South Africa.

Richard E. Scott is a professor in the Global eHealth Research and Training Program, Department of Community Health Sciences, University of Calgary, in Calgary, Alberta, Canada.

Some would argue that globalization is no longer driven by powerful governments, countries, or large multinational companies, but by the new-found power of individuals to collaborate and compete globally.[1] E-health (the use of information and communication technology in the health sector) provides an example of this new-found freedom to function in a borderless or interjurisdictional environment. However, reality has yet to live up to expectations. In the developing world, policy makers face critical challenges as they attempt to develop borderless[2] e-health policy[3] amid competing demands on funds and resources. This risks further broadening the "digital divide"—the longstanding gap between those with and without access to electronic information and communication.

In sub-Saharan Africa, for example, existing regional health strategy documents fail to even mention e-health, telehealth, or telemedicine.[4,5] At yet, pressing issues afflicting developing countries could be profitably addressed through e-health applications. These include shortages of health care providers, greater burden of disease, lack of education opportunities for health care providers and others, poorly coordinated disease surveillance, and lack of confidence in reported data.

Developing countries need assistance to establish policy and strategies to address their own needs. At the same time there should be a global approach that facilitates telehealth and health informatics applications. This paper presents the current state of e-health policy globally, and argues for "glocal" e-health policy—policy that engages the wisdom and experience of stakeholders at the global *and* local levels. The current parochial, nation-centric approach threatens to create permanent e-health silos, negating the potential benefits of e-health in a borderless global environment.

Experience With E-Health Practice Across Borders

Unfettered, routine e-health practice across domestic and international borders currently does not exist, beyond some limited agreements. A Canadian study found that most telehealth programs—programs that use video or telephone transmission to provide remote care—reflect, rather than overcome, existing geographical boundaries and referral patterns. Political power imbalances between sites further limit cross-border e-health practices.[6]

At the same time, there is evidence that some regions around the world are slowly gaining ex-

perience in cross-border e-health. For example, in Latin America, six countries are engaged in cross-border telehealth practices. They are also examining such issues as minimum data transmission and infrastructure requirements to promote and deliver services through telehealth; guidelines for regional management of telehealth; strategies for creating a network of research on issues of telehealth; and models for training and certification.[7] The European Union has similar initiatives, examining issues surrounding patient mobility[8] and interoperability.[9]

These activities promise to provide practical insight and guidance, but they have not yet resulted in clear guidance. They also are not yet addressing many important and recognized e-health policy issues such as networked care or ethical issues.[10] Further, the European Union has already issued directives that have had global impact, without prior consultation outside of its pact.[11]

According to the World Health Organization (WHO), "the most favorable approach to the implementation of e-health at the national level is to have a framework of strategic plans and policies which lay the foundations for development."[12] Strategic plans and policies should protect citizens, promote equity, observe cultural and linguistic issues in cyberspace, ensure interoperability (the ability of different technology systems to work together), and allow for capacity development so that all citizens can access e-health solutions.[12] But the call for collaborative approaches to e-health policy that will enable global e-health[13]—that is, a "glocal" e-health policy development process[14]—is not mentioned in the WHO's guidance.

A "Glocal" Perspective

Our networked world has established unprecedented and growing interdependence. Sustainable and smart policy will need to facilitate e-health activity regardless of national or regional boundaries.[15] The inherent networked and virtual nature of e-health that enables it to transcend geopolitical barriers does not fit easily with traditional domestic or local health systems. Policy[16–20] to determine the rate and direction of development of health care initiatives is needed to guide the process, at local and global levels.[11,15,21]

Currently, with few exceptions, e-health-related policy decisions are being made by individual professional organizations, health institutions, regions/provinces/states, and countries, largely in isolation from one another. This is of concern, because inappropriate policy in any single jurisdiction may hamper or even cripple the ability of e-health to fulfill its global potential.[3] The Malaysian Telemedicine Act exemplifies a well-intentioned law to protect its citizens; however, as discussed below, several of its requirements (including requirements to register with the government and submit to close supervision) put in place impracticable barriers to cross-border e-health.

As noted, what's needed instead is a "glocal" approach. The term—a combination of "global" and "local"—provides a succinct reminder that what happens locally has global impact, and what happens globally has local impact. It is important to respect local perspectives and traditions on well-being and healing, particularly in developing countries.[13] Given that the developing world represents approximately 80 percent of the global population, a "glocal" perspective is essential to develop global e-health policy that will ensure equitable adoption and implementation of e-health. This will require a shift in domestic health and e-health policies from parochial to "glocal." As noted by Inge Kaul and Michael Faust: "The best way to ensure one's own well-being is to be concerned about that of others."[22] Shariq Khoja and colleagues identified ninety-nine e-health policy issues that policy makers should address, but, to date, a full understanding of the entire spectrum of cross-border e-health policy issues, their relatedness, and their potential consequences is lacking.[10] Also lacking is a process or framework to use in addressing broad e-health policy development needs.[14]

Who Has E-Health Policies?

Information on country-level e-health policies and strategies is not readily available. This is, in part, because policy can be nebulous, being defined as a principle, or a plan of action, or merely a line of argument to justify a course of action[23,24] or considered to be any related "strategy, program, roadmap, implementation plan, national action plan etc."[25] E-health policy specifically has been defined in stronger language as "a set of statements, directives, regulations, laws, and judicial interpretations that direct and manage the life cycle of e-health."[3]

E-health policy can be "hidden" as part of larger e-government policy, or part of social welfare or health policy, or it can be called by another name. So although a country may not have clearly stated e-health policy, there may be a telemedicine or telehealth policy, or an e-health roadmap or strategy. Given the complexity of cross-border e-health, we would argue that it is better to have clear e-health policy documents but to make certain that these are aligned with,

and identified in, related health, education, information and communication technology, and e-governance policy and strategy.

One report that attempted to assess e-health policy presented data from 112 of 192 WHO member states on several aspects of national policy, including information policy, e-policy, and e-health policy.[12] Seventy-one of the responding countries (63 percent) reported having an e-health policy in place by the end of 2005. That number was expected to grow to ninety-five countries (85 percent) by 2008. However several prominent WHO member states did not respond to the survey and might be expected to have e-health policies. Some are known to have a roadmap or strategy. Twenty-five of twenty-seven member states of the EU reported having at least an e-health roadmap by 2006; the other two member states were working on e-health roadmaps.[25–27] Yet there's no indication as to whether identified policies, strategies, and roadmaps are being executed.

Are E-Health Policies Similar?

Current e-health policy development is strongly shaped by local health, social welfare, and telecommunications needs; multiple ministries and stakeholders; and individual country legislative organization (for example, federal, regional, or decentralized control). Policy may also be driven by a government's need to provide an enabling environment for e-health through specific actions such as funding, legislation, or special programs. In some countries, industry groups, standards organizations, or even academic institutions and health service providers may initiate e-health activities.

Furthermore, policies are, in effect, living documents that change over time. Issues under active policy-level discussion will change as responsibilities are moved from policy makers to those who implement the policies and confront the new issues that will inevitably emerge.

E-Health Policy In The EU

The European Union's experience offers some insight into differences in e-health policy. The EU comprises twenty-seven countries of differing economic levels that share a vision of health care that is universal; that provides access to good quality, equity, and solidarity; and that is "patient-centered and responsive to individual need."[28] The EU's 2004 e-health Action Plan called on member states to develop an e-health roadmap to 2010.[26] Part of achieving the Lisbon Strategy—an EU plan to create a dynamic and competitive knowledge-based economy—the e-health Action Plan anticipates the creation of a European e-health area, with free patient mobility[27] and empowerment of the citizen through e-health services.[29] An important part of the plan is a Roadmap for Interoperability of e-Health Systems Programme (RIDE), which will develop communitywide recommendations for fostering e-health technologies that share a common "vocabulary" or operating platform.

Throughout the EU, there is no uniformity in who drafts e-health "policy."[30] The Ministry of Health is the sole policy developer for health policy in sixteen countries; in other countries, policy is developed by the Ministry of Health and the government[6] or the prime minister's office.[1] In four federally structured countries, the federal council or ministry shares the responsibility with regional authorities.

Surprisingly, in thirteen countries the main health policy makers differ from those who set e-health policy. For e-health policy, multiple ministries and or national stakeholders are also involved in planning policy (see the Online Appendix).[31] On the one hand, this diversity ensures that ministries directly engaged or indirectly supportive of e-health can align and coordinate their efforts; on the other hand, differing expectations and tensions between ministries can lead to unclear policy expectations.

The most common aims of EU member states' e-health policies and roadmaps are listed in Exhibit 1. Policy target areas vary across countries, perhaps reflecting the different levels of maturity in e-health policy and activity in the different countries. However, this may signal a cause for concern in seeking "glocal" e-health policy. Another contributing factor could be that e-health policy is seen as a standalone policy process in thirteen countries, whereas in the remaining member countries, the e-health policy document is part of a broader national information society program.

Also of concern is the lack of adherence to seemingly common goals. For example, despite the call for free patient mobility in the EU e-Health Action Plan,[27] only Luxembourg and Slovenia have included this as a policy target. Another policy that is neither well addressed nor resolved[30] is the issue of provider remuneration. This may prove to be a major obstacle to both local and cross-border telemedicine.

Even when policy is established, there is no evidence that the policies affect real-life practice. In an interview in May 2008, Martin Denz, president of the European Health Telematics Association, stated: "E-health is as much about policy framework as it is about a large scale infrastructure and a precondition to apply health care with modern tools. The vast majority of EU countries

EXHIBIT 1

Most Common Aims Of E-Health Policies And Roadmaps For European Union (EU) Member States

E-health aim	No. of EU member states with aim
Improving efficiency and quality of care in health system performance	11
Health care system reform	10
Citizen-oriented, patient-centered health care	10
Quality of care	10
Better data for system management	9
Better communication between stakeholders	7
Efficiency	7
Access to care	7
Promoting quality of life	7
Improving economy via e-health technology	6

SOURCE Hamalainen P, Doupi P, Hypponen H. The European e-health policy and deployment situation by the end of 2006. Deliverable 2.2 of the e-health ERA project. Helsinki: Stakes; 2008.

have e-health strategies but they are absolutely not connected to the health care delivery reality."[32]

Legislation And Global E-Health

E-health law is a relatively new aspect of health for legislators. In many developed countries it is an ad hoc patchwork that focuses on only a handful of the ninety-nine e-health policy issues that have been identified.[10] For example, Canada has some federal legislation around e-health privacy. British Columbia became the first Canadian province to create a specific legislative framework governing provincial e-health initiatives in 2008.[33] Similarly, France has legislation for data protection, telemedicine, e-health service provision, health information technology product liability, and electronic health records.[34]

Developing or emerging nations, and some international organizations, such as the International Standards Organization, also have approved or are considering e-health policy or legislation. Malaysia's Telemedicine Act addresses the international practice of telemedicine. India has preliminary documents to address international telemedicine in an e-health act. The World Medical Association has a telemedicine policy that addresses the international practice of telemedicine.

MALAYSIAN TELEMEDICINE ACT Malaysia is one of the few countries with specific e-health legislation, including the Laws of Malaysia, Act 564, the Telemedicine Act of 1997. The act "provides for the regulation and control of the practice of telemedicine; and for all matters connected therewith." The Malaysian Telemedicine Act aims to protect citizens from doctors or others who might not be clinically competent. However, as written, it imposes impractical process restrictions such as requiring health care providers to register with Malaysia's Director General, a measure that can limit practices and practitioners.

Also, nurses in primary health facilities must be under the "supervision of registered medical practitioners" to provide care. This means that those without access to medical practitioners may not practice telehealth. Those who breach these restrictions are subject to significant fines or imprisonment. Although well-intentioned, this legislation is an impediment to e-health. Unfortunately, as one of the few available telemedicine acts, it sets a standard that some developing-country legislators may emulate. Moreover, the Malaysian Telemedicine Act has not been reviewed and updated as planned, and it no longer reflects contemporary telemedicine practice.

INDIA In India, policy makers are considering e-health laws[35] that address current limits to international practice of telemedicine across borders. Options being considered are as follows: (1) mutual recognition between countries for the medical license granted by a physician's home country; (2) reciprocity between countries to allow licensed doctors to practice via e-health in both countries; (3) registration, which would ensure that physicians are liable under medical negligence and malpractice laws in the country where the e-health patient resides or communicates from; (4) limited licensure, an arrangement that allows a physician to obtain limited licensure through a licensed referring doctor in the country where the e-health patient resides or communicates from.

WORLD MEDICAL ASSOCIATION Policies developed by this group over several years[36] reflect the tension between ideal goals and technical limitations and reflect how e-health policy development is complex and evolving. The group's 2007 "Statement on the Ethics of Telemedicine"[37] addresses data security: "The physician

must aim to ensure that patient confidentiality and data integrity are not compromised. Data obtained during a telemedical consultation must be secured through encryption and other security precautions must be taken to prevent access by unauthorized persons." However, this language raises new questions: Do digital telephones transfer or transmit data, and what of videoconferenced teleconsultations?

E-Health Policy Development In The Developing World

A fundamental dichotomy exists between the developing and developed worlds with respect to markedly different e-health expectations and requirements. The developing world seeks ways to overcome extreme health care worker shortages and improve rural health care, at the same time improving or perhaps implementing district-level electronic health information systems. E-health policy issues in the developed world relating to data security, data quality, licensure, patient confidentiality, and privacy may be major impediments in the developing world. Indeed, developing countries are in danger of being led, unwittingly, into adopting so-called international best practices, which may well be inappropriate for the developing world.

A natural response would be to boldly formulate new and alternative "international best practices" for the developing world. This has the danger of not just broadening the digital divide, but causing a fundamental "digital split" with developed-world and developing-world policies that may well be incompatible. A better route would be to strive for "glocal" e-health policy tailored to the specific needs of a given locality and population. But here, too, much remains unknown.

E-health policy makers face many challenges (Exhibit 2). Using Africa as an example, there are very few people with the "glocal" expertise to advise African governments on e-health policy development appropriate for the continent.[38] Politicians must weigh allocating sparse budgets to e-health and its infrastructure or to potable water, medicines, medical equipment, or health staff salaries. Given the competition for resources, perhaps it is not surprising that there are very few e-health policies or sustained e-health activities in developing countries.

As developing countries face these challenges and decisions, the experiences of the European Union, Malaysia, India, and the World Medical Association provide important lessons and guidance in establishing e-health policy. For example, the need for complementary and "glocal" e-health policies is not widely recognized; indeed, the focus appears to be on macro policy at the national level. Given that establishing e-health policy in the developing world is likely to be regionally focused, finding a process to encourage collaborative e-health policy development will be important.[14]

In practice, what many African, Asian, and Latin American countries need at this time is internationally supported telehealth to assist in overcoming the shortage of health care professionals, as well as functional district health information systems that provide accurate, timely, and shared health data to health managers and planners.

Conclusions

The full potential of global e-health to meet both national and global health objectives is not being tapped. This will remain the case until a conducive environment and appropriate global e-health policy are in place. An initiative begun by the Rockefeller Foundation to establish a global e-health convention may establish the required awareness. In defining appropriate e-

EXHIBIT 2

Challenges Facing Information And Communication Technology And E-Health Policy Makers In Developing Countries

- Weak strategic planning
- Inconsistent leadership
- Lack of human resources at all levels
- Inadequate funding
- Limited experience with complex technology implementation
- Undue influence of vendors
- Changing priorities
- Lack of integration between departments and ministries
- Lack of information sharing between agencies
- Resistance to change
- Lack of continuity of effort
- Lack of data collection and interpretation culture
- Need to develop an information culture
- Technophobia
- Poor computer literacy
- Weakness in the conceptualization of the e-health framework
- Emerging cultural challenges
- Lack of "glocal" perspective

SOURCE Authors' analysis.

health policy—applying an expansive interpretation of what constitutes "policy" (legislation, strategic plan, roadmap, or action plan)—it would appear that about half of the world's nations have some form of e-health policy but little commonality in what they aim to achieve. Attention needs to be directed toward policy issues that will enable and facilitate patient mobility, data mobility, and sharing, across both international borders and regional boundaries within countries.

Developing countries already find themselves disadvantaged from the standpoint of access to information and communication technology, human resource capacity, and economic capacity. They require assistance with developing relevant of e-health strategies and policies that fit their needs and infrastructures, and which will also allow for cross-border e-health. Failing this, there is a real danger that developing countries will be unable to obtain much-needed international e-health support (for example, telemedicine services).

When viewed from a global perspective, e-health policy is being formulated in a parochial manner as nations, states, and regions introduce e-health policies that meet only their own needs. Such national and local e-health policies may entrench a silo mentality in e-health, so that instead of e-health leading to a borderless global environment,[1] the developing world will be further isolated from the international benefits of global e-health. That would be a tragedy—especially since the world has so much opportunity at the moment to get these policies right. ■

Partial funding for this work was provided by the World Health Organization and the Rockefeller Foundation. A version of this paper was presented at Making the eHealth Connection: Global Partnerships, Local Solutions, a conference sponsored by the Rockefeller Foundation at its Bellagio Conference Center in Bellagio, Italy, 13 July–8 August 2008.

NOTES

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