Chapter 22
E-Health as the Realm of Healthcare Quality:
A Mental Image of the Future

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ABSTRACT

E-health has widely revolutionized medicine, creating subspecialties that include medical image technology, computer aided surgery, and minimal invasive interventions. New diagnostic approaches, treatment, prevention of diseases, and rehabilitation seem to speed up the continual pattern of innovation, clinical implementation and evaluation up to industrial commercialization. The advancement of e-health in healthcare derives large quality and patient safety benefits. Advances in genomics, proteomics, and pharmaceuticals introduce new methods for unraveling the complex biochemical processes inside cells. Data mining detects patterns in data samples, and molecular imaging unites molecular biology and in vivo imaging. At the same time, the field of microminiaturization enables biotechnologists to start packing their bulky sensing tools and medical simulation bridges the learning divide by representing certain key characteristics of a physical system.

INTRODUCTION

There is a worldwide increase in the use of health information technology (IT), which holds promise of health system breakthroughs. Emerging information and communication technologies promise groundbreaking solutions for healthcare problems. Moreover, a global e-health consensus framework is beginning to take shape in IT discourse, which includes stakeholders, policy, funding, coordination, standards and interoperability (Gerber, 2009). However, in an unprecedented technological innovation, many aspects of health care systems require careful consideration due to error and inefficiency although e-health bridges clinical and nonclinical sectors.

The endorsement of information technology in the health sector is spreading slowly. Few companies focus on population-oriented e-health tools partly because of perceptions about the viability

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and extent of the market segment. Moreover, developers of e-health resources are a highly diverse group with differing skills and resources while a common problem for developers is finding the balance between investment and outcome. According to recent surveys, one of the most severe restraining factors for the proliferation of e-health is the lack of security measures. Therefore, a large number of individuals are not willing to engage in e-health (Katsikas et al., 2008). E-health presents risks to patient health data that involve not only technology and appropriate protocols but also laws, regulations and professional security cultures. Furthermore, breaches of network security and international viruses have elevated the public awareness of online data and computer security. Although the overwhelming majority of security breaches do not directly involve health-related data, the notion that online data are exposed to security threats is widespread. Moreover, as we understand the clinical implications of the genetic components of disease, we expect a remarkable increase in the genetic information of clinical records. As a result, there is likely to be considerable pressure in favor of specific laws protecting genetic privacy (Magnusson, 2002). Therefore, secure e-health requires not only national standardization of professional training and protocols but also global interoperability of regulations and laws. Professional health information organizations must take the lead in professional certification, security protocols and applicable codes of ethics on a global basis ((Kluge, 2007; Moor & Claerhoutb, 2004).

On the other hand, clinicians have moved toward the Internet within the last few years while purchasers seek higher quality and lower costs. The Internet offers an unprecedented opportunity to integrate various health-related sectors while some Internet-related trends and technologies will have a substantial impact on the design, content, functionality, dissemination, and use of future e-health tools. Moreover, quality assurance and improvement are key issues for the e-health sector while strategic planning could provide an insightful view of the impacts (Asoh et al., 2008). However, the accessibility and confidentiality of electronic resources does not guarantee quality access (West and E. A. Miller, 2006) and the current quality assurance strategies do not address the dynamic nature of e-health technologies. Furthermore, the contribution of various socio-economic factors to 'the digital divide', which refers to the difference in computer and Internet access between population groups segmented by various parameters, is controversial. However, recent data suggests that the digital divide may be closing in some aspects, due to access to PCs, and the Internet. Access, however, is only one facet of the digital divide, as health literacy (Bass, 2005), and relevant content are also key elements.

Moreover, there are overlapping and gaps in e-health content due to the uncoordinated and essentially independent efforts. Current market forces are driving e-health development in clinical care support, and health care transactions, but they do not provide population health-related functions. Therefore, increased information exchange and collaboration among developers may result in efficient use of resources. The challenge is to foster collaborative e-health development in the context of fair competition. Greater collaboration presents new communication challenges, which include a standardized communication and information flow (Lorence & R. Churchill, 2008), which will enhance:

- social support
- cognitive functioning
- clinical decision-making
- cost-containment

Many observers believe that a picture of interoperable clinical, laboratory, and public health information systems, will provide unprecedented opportunities for improving individual and community health care (Godman, 2008; Lorence & Sivaramakrishnan, 2008; Toledo et al., 2006).