

The Path towards eHealth: Obstacles along the Way

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Summary

Objectives: The two authors of this article share both a strong interest in, and deep concerns about, the use of eHealth (electronic information and communication technologies for improving or maintaining health). In this article, we identify some unanticipated obstacles to effective use of eHealth.

Methods: We reflected upon the potential of information and communication technologies to transform the health system and its failure to achieve that potential.

Results: We chose seven obstacles: the insufficient emphasis on health in eHealth, the lack of time for reflection, the development of a fortress mentality, poor evaluation of efforts, lack of involvement of youth, inequity, and a parochial attitude that precludes economies of scale. Whenever possible, we provided examples of innovative initiatives that illustrate potential ways to meet our current challenges.

Conclusion: We believe that the obstacles we describe in this article can be overcome. The impediments are not only technological, but also cognitive, financial and political. To succeed will require a major shift from our ethic of competition to one of generosity, commitment, and collaboration: enlightened, as opposed to narrow, self-interest.

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Keywords

e-health

“I began to improve for the worse”

Gabriel Garcia Marquez in *Living to tell the tale*

‘e’ words have become a part of our daily language, a veritable alphabet soup that spans the electronic dictionary from A to Z, running the gamut from ‘eAssets’, through ‘eBusiness’, ‘eCommerce’,.... all the way to ‘eZpass’. Not surprisingly, health could not escape this neologistic frenzy. The term ‘eHealth’ means different things to different people [1]. We like to think of it as the use of electronic information and communication technologies for the purpose of improving or maintaining health.

The *e* in eHealth is usually viewed as representing the word electronic. A few years ago, Eysenbach challenged us all to expand it to include ethics, equity, efficiency, empowerment, encouragement, education, enhancement of quality, evidence-based decisions, extension of the scope of health care, and enablement of information exchange and communication in standardized ways across institutions, in a format that is entertaining, exciting, and easy-to-use [2]. We are confident that the potential for benefit from eHealth is enormous, but we are concerned that it may also turn out to be elitist, exclusive, exhausting, ephemeral, and exasperating.

Modern communication technologies have exponentially increased the speed and efficiency with which information can be transmitted or disseminated. Information that was once the private

domain of a privileged few can now be available to all. Reciprocal and multi-directional communication is now possible among researchers, clinicians, policy makers, patients and the public. We are concerned that along with these unquestionable benefits may come some unintended, unwanted, and unpleasant side effects. Some of the obstacles to optimal use of eHealth will remain unexpected and unforeseen, but others may be identifiable and preventable. We would like to draw attention to some of these, in the hope that by keeping them in mind we may overcome them. Within each of the sections, we will provide specific examples of initiatives that could help us succeed in making ICTs relevant to real health.

Obstacle #1: There is too Little Health in eHealth

eHealth may share the misguided emphasis of the health care system as a whole, on treating disease rather than promoting health [3]. Most of the investments in the health sector are devoted to diagnostic or therapeutic measures rather than to health enhancement. Prevention, health promotion and supportive care measures have been chronically underfunded, undervalued, and poorly distributed. We have paid far too little attention to the underlying causes of poor or suboptimal health [4]. Concentration on the economic, rather

than the health enhancing aspects of eHealth substitutes a side effect for its primary purpose. The demand for health services is infinite, while resources are limited. No health system can be long sustained if it continues to behave as an inefficient franchise of repair shops [5]. To move beyond this, eHealth must be more broadly conceived. It must evolve to help the health care system adapt to the pursuit of health, rather than restrict itself to the curing of disease. Examples worth considering and supporting include the World Health Organization's Global Alert System (<http://www.who.int/csr/outbreaknetwork/en/>) and GLOBALink (<http://www.globalink.org/>), two initiatives designed to mitigate the impact of global health threats such as a flu pandemic and tobacco-related disease, respectively.

eHealth must also strive to create flexible services that adapt to people's needs, rather than rigid structures to which people must adapt. An example of such services is the Association of Cancer Online Resources, which includes over 100 unmoderated discussion lists designed to meet the supportive care needs of patients and loved ones dealing with cancer, regardless of who or where they are (<http://www.acor.org>).

Obstacle #2: Too Little Time to Reflect

The Internet is faster, and provides access to more information than any other means of communication. This speed of access and volume of data can be a bane as well as a boon; humans need time to reflect and to consider. The amount of information that we can absorb and process is limited, and the limit has already been exceeded. A search of

the Web leads to thousands of potentially valuable (or misleading) sites on any topic. The Internet abounds with both valid information and misinformation. We have not developed adequate mechanisms to differentiate the two.

Email, perhaps the most powerful tool for human communication yet invented, is becoming unmanageable. Spam and unwanted messages overwhelm us, making it more and more difficult to find the messages that are worth considering. Viruses are a never-ending threat. The instantaneous responses we are demanding preclude thoughtful answers. The original dream of a life made more comfortable by rapid information transfer is turning into a nightmare. Perhaps the time has come to bring some of the principles and practices of the so-called "Slow Movement" to the world of eHealth (http://en.wikipedia.org/wiki/Slow_Movement).

Obstacle #3: The Fortress Mentality

With increasing connectivity comes the danger that information can be intercepted, copied, and read by others than those for whom it is intended. The openness of the Internet increases its vulnerability to sabotage and abuse. Privacy and security can be increased by firewalls and encrypting information, but these protective measures restrict the ability to share information. Our preoccupation with 'security' is leading to a laager mentality, in which information is jealously guarded, and essential communication and connectivity inhibited. The eHealth landscape is becoming one of isolated islands of information. We must draw a clear distinction between protection and isolation, and design systems that encourage connectivity and sharing

while still preserving privacy and dignity [6]. An organization that is breaking many traditional barriers is the Canadian International Scientific Exchange Program (CISEPO, <http://www.cisepo.ca>), which since 1995 has been developing and implementing viable and sustainable cooperative health-related activities in the Middle East between Arabs and Israelis, establishing cross-border partnerships in education, training, scientific exchange and research among individuals, faculties, students, institutes and universities, and contributing to peace building in the region [7].

Obstacle #4: The Evaluation Vacuum

Understanding the effects of eHealth applications is not, and is not likely to become, easy. Developers of new applications are engaged in a frantic race to outperform their competitors, to secure financial support for their work and to gain the lion's share of any potential market. Determining the real effect of new products is all too frequently neglected [8].

Most of our current evaluative tools and methods cannot produce results in "real-enough time" to match the fast changes in technology, or to avoid disrupting the rapid application development process. They also lack sufficient flexibility and power to handle the complex, dynamic and rapidly expanding nature of the Internet and information and communication technologies in general. A further challenge is to identify situations in which the pursuit of overly rigorous evaluation could hinder the adoption of an effective innovation. Although we are far from reaching an evaluation "nirvana", with fast tools that yield valid, timely and relevant

data, efforts such as those spearheaded by the Journal of Medical Internet Research through its institutional membership could one day lead to the creation of a true Global Network of Centres of Excellence in eHealth and Internet Research (http://www.jmir.org/?Support_%26amp%3B_Membership).

Obstacle #5: Ignoring Our Young

Young people are the most enthusiastic users of information and communication technologies. They have developed a new language, and have become accustomed to short text messages through mobile phones and instant messaging. With prices declining and bandwidths expanding, multimedia communication through mobile devices is becoming the norm. The health system cannot remain oblivious to this rapidly changing technological landscape and mindset. We must learn from our young, and work with them as partners to design, develop and use eHealth applications to improve their own health and that of others [5]. The young can be knowledge brokers for an older generation less familiar with information and communication technologies. They must participate in the priority setting process. Initiatives such as TakingITGlobal and TeenNet, are paving the way towards a world in which young people have a voice and can influence health-related decisions. The former is an international organization “led by youth and empowered by technology”, designed to connect young people from around the world to enable their involvement in improving their local and global communities (<http://about.takingitglobal.org/>). The latter focuses on the generation of new knowledge, and on the development of practical tools for engaging youth in health

promotion using interactive technology, by involving young people from diverse backgrounds in all stages of program design, development and dissemination (<http://www.teennetproject.org>).

Efforts like these illustrate how harnessing the insights, the power and the energy of our children may prove to be the most effective way to secure the sustainability and fairness of the health system in the information age

Obstacle #6: Inequity

Thanks to the Internet, for the first time in history we have a mechanism that could allow all human beings the same opportunity to access, share and exchange health-related information and services. Paradoxically, the Internet is widening information gaps across the world. In theory it is open to all, and can democratize information; in practice the affluent, both nations and individuals, have more ready access to telephones, computers, information, and to the power that information brings. If we fail to equitably share the power of the Internet we will render the world more divided than ever. We must find a way. Strong partnerships among industry, governments, professional organizations, consumer groups and academic institutions, along with innovative national and international alliances and collaborative efforts are essential first steps. A group worth considering as an exemplar of international collaboration using the Internet to promote equitable health services across the world is Cure4Kids, a not-for-profit initiative that supports clinicians in more than 130 countries, through an online learning center comprising an online digital library of reference material, a discussion area for physician exchange of advice and

information, and access to over 500 online seminars and lectures (<http://www.cure4kids.org>).

Obstacle #7: Parochialism

Modern information and communication technologies have given us the capacity to ensure timely and efficient management of new knowledge, and to deliver effective and efficient health care for all. Health systems around the world face similar challenges, differing in magnitude rather than in type. Problems shared by all include providing continuity of care; ready access to services, from health promotion through disease treatment to supportive care; quality improvement; efficient use of resources; and accountability.

It is time to create a system that goes beyond our conventional catchment areas, disciplinary lines, institutional walls and cultural boundaries. We can look on our local efforts not only as a means to meet our own immediate needs, but also as a contribution to global issues of common interest. By harmonizing initiatives at different levels in different areas of the world we could create a global health system, one that could make knowledge and services available to those who need them, regardless of who they are, where they live, or what they can afford to pay.

The Global Observatory for eHealth (GOe, <http://www.who.int/kms/initiatives/ehealth/en/>) may fill this gap. Established in 2005 by the World Health Organization, the GOe will attempt to provide timely and high-quality evidence and information to help national governments and international bodies improve policy, practice, and management of eHealth services; raise awareness and commitment of governments and the private sector to

invest in, and advance, eHealth; collect, analyse and distil knowledge which will make a significant contribution to the improvement of health using ICT; publish an annual report, and special guidelines, on key eHealth research topics as a reference for governments and policy makers; and build capacity in eHealth research, analysis and reporting in all countries around the world.

Conclusions

Overcoming the obstacles we have highlighted in this article will not be easy, but steps in the right direction are within our grasp. The main impediments to making eHealth a vehicle for real health are not only technological, but also cognitive, financial and politi-

cal. To reach this goal will require a shift from our ethic of competition and narrow self-interest, to one of generosity, commitment, and collaboration. It will require courage, foresight, and a will to succeed and to do what we all know is right.

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