Chapter 12
E-Health for Older Adults

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ABSTRACT

e-Health has become a major focus for research in healthcare, with significant funding and political support at an international level. Older people stand to benefit more than others, as e-Health aims to facilitate provision of care at a distance and promote independent living for as long as possible. However, barriers remain including an immature evidence-base; questions about risk and safety; and variable rates of uptake in this population. This chapter explores these issues and reviews the literature on e-Health for older adults. Successful clinical trials are identified and the e-CAALYX project is described in detail as a case study. E-Health has presents many exciting opportunities but needs further development and guidance.

INTRODUCTION

This Chapter discusses recent developments in the area of e-Health, or electronic health, for older adults. As with traditional healthcare, e-health aims to promote independent living for as long as possible. Older adults are frequent users of healthcare resources, but unlike in younger groups there is a focus on keeping seniors out of hospital. Areas of e-Health such as telemedicine help to remotely monitor their health; consumer informatics promotes access to their own health information as well as furthering their health education, in particular through the Internet; and in healthcare institutions Electronic Health Records (EHRs) and Clinical Decision Support Systems (CDSS) are helping to improve patient safety. We begin by outlining the need for new models of healthcare provision for older people, then review how recent trends in e-Health are helping to accomplish this. We look at examples of e-Health interventions that are evidence-based, and also provide a case study of a recently developed e-Health home and mobile monitoring system. Finally, future research

DOI: 10.4018/978-1-4666-1966-1.ch012

opportunities are outlined and we conclude with a call for more funding and a strengthening of the evidence base in this area.

HEALTHCARE FOR OLDER ADULTS

As this section of the population is expanding rapidly, there is a pressing need to redesign service provision. In particular, physicians have recognised that there is a much greater role to be played by preventive medicine. Traditionally healthcare has been concerned with treatment of disease rather than prevention, but increasingly there is a need to focus on how we can promote greater periods of healthy active living. Figure 1 shows the most common disease trajectories. Where once seniors experienced a short period of accelerated decline in their health towards the end of their lives, it is now more common to see a slow deterioration in function over several years. The "compression of morbidity" scenario is now changing to a situation where better treatment options ensure that chronic disease has a less progressive course. Sometimes this is associated with intermittent episodes of reduced function for a short period of time, which may be reversible with brief hospitalisations or a period of rehabilitation in a multidisciplinary environment.

Healthcare is not without its risks: in terms of encounters for each fatality it is more hazardous than driving, using a scheduled airline, or nuclear power (Commission on Systemic Interoperability, 2005). Typically 10% of inpatients are the victims of medical error (Leape, 1994). Hospitals harbour many pathogens and hospital-acquired infections are more common in older people. The development of specialty training for the care of older people is not widespread, and many older patients are treated by physicians without relevant specialist qualifications. This can lead to inappropriate interventions, or indeed under-treatment. Contact with physicians may in itself result in more prescriptions, and even community dwelling older adults take an average of 6 drugs (Barry, Gallagher, & Ryan, 2008). In short, healthcare does not always prioritise patient safety. It is this potential for adverse outcomes that has promoted the development of e-Health.

e-Health

Many may be familiar with the term 'e-Health' (electronic health) but a concise definition for this term remains elusive, with over 50 definitions in use. Eysenbach's (2001) appears to be the most accepted and states that:

"E-health is an emerging field in the intersection of medical informatics, public health and business, referring to health services and information delivered or enhanced through the Internet and related technologies. In a broader sense, the term characterizes not only a technical development, but also a state-of-mind, a way of thinking, an attitude, and a commitment for networked, global thinking, to improve health care locally, regionally, and worldwide by using information and communication technology" (p. E20).

Numerous other terms such as telehealth, telemedicine and m-health (mobile health) are often used interchangeably with e-health, and a range of definitions for each term exist. However, these are now recognised to be individual entities within the broader area of e-Health. The themes of health and technology and the interaction between these fields appear to be common links across all attempts to define such a broad construct (Oh, Rizo, Enkin & Jadad, 2005).

Classifying the components of e-health is challenging because of this variation in terms and definitions. Tulu, Chatterjee and Laxminarayan (2005) attempted to create a single taxonomy for telemedicine with the aim of clarifying its components and functions, which can be used to consider the broad definition of e-health referred to in this chapter. Their taxonomy included the following main dimensions: