Chapter 3.5
Wireless for Managing Health Care:
The Wirhe Framework

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ABSTRACT

The Wirhe project is an international collaborative study that focused on the future of healthcare needs, technology requirements and solutions for effective use of wireless technologies for health care delivery. This paper presents results of a Wirhe survey of 85 experts and individual interviews with 35 experts. Key findings include: 1) both notable quality improvements and process enhancements can be expected from effectively utilizing wireless technologies and mobile solutions, 2) integration of personal health monitoring and professional health management is a key issue to be addressed and 3) health promotion and illness prevention efforts can grow by utilizing mobile solutions. We propose a framework that can be used in developing wireless health care solutions for managing diseases and related health problems. This framework can also be used to structure and stratify the needs of technologies and solutions, and to estimate their market potential.

INTRODUCTION

Healthcare is a large industry that spends globally USD 6 trillion per year (in 2008). The US alone spent USD 2.3 trillion on health care in 2007, and spending is growing at a rate of 8 percent annually (Kalorama, 2007). An aging population, changes in environment such as global warming and industrial pollution, and infectious diseases that are non-responsive to treatment set major challenges to manage in human health and health care.

Many leading information technology companies like IBM, Intel, Microsoft, Google, HP and Cisco have started to focus on health care technology solutions. Online health record systems offer people the opportunity to input their health data including diagnostic and care history into forms, which they can share with their peers, nurses or doctors through the Internet. Kalorama's market study (2007) also shows rapid growth in IT; in particular, wireless technologies are seen to have big potential. They are expected to: improve patient care; reduce costs; streamline processes; help with regulatory compliance; and provide many other benefits. Healthcare professionals need real-time access to data at the point of care for improving their decision making and enhancing processes. Remote patient monitoring, e-prescription, asset management and tracking are also potential application areas of wireless technologies in health care.

The total market for wireless technologies in US health care in 2005 was USD 1.8 billion, expected to grow 33 percent annually until 2010, reaching a total market size of USD 7.3 billion.

Microsoft Health Vault is the first trial for a major generic commercial Personal Health Record (PHR). The dominance of Microsoft in personal computing makes this trial especially interesting. One big challenge is the connectivity throughout the health ecosystem and how users can browse their personal information in a wide range of health and wellness IT applications. Google emphasizes the continuity even more. They speak of a Continuity of Care Record (CCR). The health record system has to communicate both with people and machines, and simultaneously maintain the high privacy and security of people's health data.

An IBM research team (Adams et al., 2006) summarizes the challenges of the world's health care this way: "Change must be made; the choices left to the stakeholders of today's health care systems are when and how. If they wait too long to act or do not act decisively enough, their systems could 'hit the wall' – in other words, be unable to continue on the current path – and then, require immediate and major forced restructuring."

Among IBM's recommendations are that: health care providers enhance management of chronic diseases and prevention of illness; consumers take personal responsibility for their health and maximize the value they get from the health care system; societies make better decisions regarding lifestyle expectations; and governments provide the leadership and political will power needed for innovative, sustainable solutions. Three methods to improve health care systems are proposed: 1) transforming value, 2) transforming consumer responsibility and 3) transforming care delivery.

The same IBM research team also describes the major changes needed in typical successful U.S. health plans in 2015; one of them is that business processes should be greatly improved and enhanced with IT-related capabilities (Adams et al., 2007).

Intel's research team (Intel Health, 2007) proposes rethinking the disease management process, emphasizing development of IT solutions for chronic diseases. Patients with chronic conditions account for 83 % of US health care spending; 81 % of inpatient stays; 91 % of prescriptions; 76 % of physician visits; and 98 % of home health care visits (Anderson, 2004). New technical solutions could strengthen patients' long-term engagement in their care. Healthcare providers could get accurate, relevant and timely information from their patients. Patients could have intuitive, enjoyable

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