

# Chapter XXX

## Mobile Telemonitoring Insights

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### ABSTRACT

*Technology advances create new possibilities for healthcare monitoring, management, and support, focusing on prevention rather than disease management. The provision of personalized healthcare applications is also greatly supported. Developments in the wireless and mobile markets are capitalized by the medical device industry. Services are becoming personalized and location independent to fulfill the increasing patient needs for self-empowerment and quality in the healthcare delivery away from the traditional nursing areas. This overview discusses the new opportunities for the healthcare domain in the mobile times we live.*

### INTRODUCTION

The healthcare industry is experiencing a substantial shift to care delivery away from the traditional nursing areas due to the convergence of several technology areas. Increasingly capable health-monitoring systems are moving the point of care closer to the patient, while the patient, better informed and aware now, undertakes an active role to self-care and/or -prevention. Emerging ICTs in conjunction with the medical device industry development (intelligent devices, biosensors, novel software, etc.) demonstrate personalized healthcare

delivery's potential without geographical limitations.

The concept of prevention prevails now against disease management and treatment plans. As patient-centric processes emerge, the citizens and patients undertake an active role in monitoring their health status. Meanwhile, e-wellness evolves to address the rising expectations of the e-health consumers, who are better informed, more demanding, and empowered. The empowered, worried-well consumers require quality health services on the spot. The drivers are now connectivity, speed, and personalization (McKnight, 2000).

## **MOBILE HEALTHCARE PROVISION**

Waves of technology incorporation and scientific discoveries have driven the sector from reliance on direct communication and physician experience to a higher reliance on technology and community information. This new Web-enabled environment has taken healthcare from local areas, where telemedicine left it, literally into the patient's home and, more recently with m-Internet, to wherever the patient might be and whenever he or she needs it (Simão, 2001).

M-Internet enables information exchange and promotes the availability of services and communication modes to serve working teams with increasing mobility requirements.

Services are becoming personalized and location independent to serve increasing patient needs for self-empowerment and quality in healthcare delivery away from the traditional nursing areas.

Furthering the new approaches in the provision of healthcare services in the frame of e-health, wireless developments create new opportunities for healthcare professionals, individuals and organizations, patients, and health authorities. The scope of mobile health addresses clinical, administrative, and consumer health-information applications and, as it could contribute to the improvement of health outcomes, m-health may be utilized to measure health status and population welfare.

Many healthcare organizations are investing in IT projects that take advantage of new technologies in the mobile healthcare application space. Functionality that augments the capture of evidence-based patient plans of care is essential and must map and bridge the information flow for both inpatient and outpatient work-flow clinical-practice guidelines. As the medical community continues to embrace these new technologies, system integrators must pro-

vide functionality that reduces costs, improves the quality of care, and improves the ease with which caregivers can perform their everyday tasks (Wolf, 2001).

The most significant challenge posed by mobile technology is the seamless integration of multiple hardware and software platforms with reliable, uninterrupted wireless services in a secure manner, which will become mission critical to successful healthcare organizations, payers, and providers (Wolf, 2001).

The current state-of-the-art technology in medical sensors allows for the easy and unobtrusive electronic measurement of several health conditions. The sensors are often stand-alone devices and sometimes comprised of two or more elements connected by a cable or wireless technology. Medical sensors have the capability to measure vital signs such as blood pressure, pulse rate, respiration frequency, and so forth. Based on these medical parameters, the medical professionals can monitor the patient's health condition and act in case of an anomaly.

The application areas of the medical-device wireless telemonitoring capabilities include the following:

1. Assistance in case of accidents and emergencies
2. Increased capacity and lower costs for hospitals
3. Assistance and monitoring in a home-care setting
4. Monitoring of chronically ill patients
5. Patient involvement in setting a diagnosis
6. Medicine dosage adjustment
7. Physical-state monitoring in sports
8. Monitoring of sporadically occurring symptoms
9. Emergency alarms (Fosse & Haug, 2003)
10. Improved health management

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