Chapter 83
Home Telecare, Medical Implant, and Mobile Technology: Evolutions in Geriatric Care

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ABSTRACT
With a rapidly expanding global aging population, alternatives must be developed to minimize the inevitable increase in acute and long-term care admissions to the health care system. This chapter explores the use of home telecare as an alternative medical approach to managing this growing trend, while also providing superior care to geriatric patients. To address some of the emergent disadvantages of home telecare concerning usability, self-management, and confinement to the home, the use of a cardiac implant in conjunction with a mobile device—to assist in the management of chronic heart failure in seniors—is proposed as a promising technological solution to overcoming these limitations. Ultimately, it seems that the growth of home telecare, as well as the great potential to enhance its services with the use of mobile wireless technology, stands to drastically improve clinical decision-making and management of health services in the future.

INTRODUCTION
We are living in an era when the world’s aging population is rapidly expanding. In the year 2000, 600 million people were aged 60 and over, with this number projected to increase to 1.2 billion in 2025 and 2 billion by the year 2050 (WHO, 2006). At this rate of growth, the inevitable increase in acute and long-term care admissions is a significant concern for policymakers, managers and providers of health care. Concerns arise from the increased economic cost, as well as the potentially lower standard of care that is likely to result from a higher volume of patients seeking treatment in
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an over-burdened system. Currently, international

trends indicate that health care needs increase

as people become older, and that the number of

people requiring daily health care over the age of

85 is now four times more than those aged 65 to

75 (Botsis et al., 2008). One proposed solution
to managing this problem is home telecare – a

sub-specialty within the larger field of telemedici-

ne. This involves a shift in care with the use of

new and emergent information technology in the

home, utilizing an array of hardware, software and

network services (Robjack & Herzog, 2003). With

this system, patients can be monitored, consult

with their physicians, and receive care without

physically leaving their private homes; thereby

allowing them to maintain their independence,

more conveniently and efficiently manage chronic

conditions, and ultimately reduce health care costs
to the system (Hébert et al., 2006; Koch, 2006).

In this chapter, we examine the growing arena

of home telecare and assess its potential to enhance
treatment and clinical decision-making in geri-

atric medicine. Following a review of important

facets of home telecare, as well as a discussion

of the advantages of this medical technology for

policymakers and patients, we then outline the

challenges that arise with this system, proposing

the use of an implantable device–under the skin–as

a means through which to increase convenience

and overcome user-related challenges for seniors

with chronic Heart Failure (HF). The use of a car-
diac implant in conjunction with mobile wireless
technology is a potentially promising solution that
addresses some of the emergent challenges of home

telecare concerning usability, self-management,

and confinement to the home. This proposed tech-
nology would allow seniors in chronic HF, and

under the monitoring of a home telecare system,
to leave their home while maintaining a similarly

comprehensive level of medical monitoring and

management for their condition. Ultimately, it

seems that the growth of home telecare, as well

as the great potential to enhance its services with

the use of mobile wireless technology, stands to
drastically improve clinical decision-making and

management of health services in the future.

BACKGROUND

Telemedicine refers to the delivery of medical
care–and the sharing of health knowledge–from

distance with the use of telecommunication
devices, the Internet, and various monitoring

technologies (Allen & March, 2002; Hersh et al.,

2002). Home telecare operates on the same prem-

ise, allowing health care practitioners to manage

and treat patients in their homes from a remote

location (Celler et al., 2003; Coughlin et al., 2006).

Services encompass a wide array of technologies,

including “virtual visiting, reminder systems,

home security, and social alarm systems,” all of

which support the larger goal of home telecare: to

manage the care of geriatric patients where they

live, and avoid lengthy stays in hospitals or nurs-
ing homes (Magnusson, 2004, pp. 224-225). It is

a method of health care delivery that addresses

many of the existing gaps and weaknesses in the

current primary health care system, by providing

a higher level of monitoring and medical con-

sultation for patients in their everyday lives. The

services provided by this branch of telemedicine

are meant to increase convenience for patients,

their families, and practitioners, where a higher

level of patient autonomy and independence is

supported, while also enhancing clinical manage-

ment and decision-making.

Much of the strength in this system lies in the
ability to extensively record and monitor patient

suggest that the availability of patient information

in an electronic format has been one of the most

valuable and widely used Decision Support Sys-
tems (DSS) in health care. With patient informa-
tion stored and tracked through home-based DSS,

clinicians can potentially make more informed
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