

Chapter 15

Economic and Organizational Factors in the Future of Telemedicine and Home Care

Giuseppe Turchetti

Scuola Superiore Sant'Anna, Italy

Elie Geisler

Illinois Institute of Technology, USA

ABSTRACT

The chapter reviews the state of the art of telemedicine and remote care in the home and the economic and organizational factors that impinge on its future success. Because of the constraints of distance, costs, and availability of providers (doctors and nurses) in specific areas of medical specialties, the model of treating patients in the general hospital is losing its luster in favor of dedicated clinics dispersed in the community and remote care in the home. Such a trend of decentralization of medical services has been in existence for some time. Yet, although technologies are quickly evolving and the need for telemedicine and home care is increasing, the progress of this mode of delivery of medical services has not kept up with the demand. The chapter attempts to review the economic and organizational factors which act as facilitators and barriers to the rapid diffusion of telemedicine and home care. In particular, the chapter explores the case of chronic diseases, and also offers a valuable comparison between two systems of national healthcare: the Italian and the American.

INTRODUCTION

This chapter reviews the state of telemedicine and home remote care. We focus on the economic and organizational factors that impinge upon the adoption and implementation of these technologies by healthcare delivery organizations. Growing challenges to the healthcare delivery system include

issues of constantly increasing costs, limited access, and the quality of care. In addition, there is a demographic shift in the United States and Western Europe, whereby the population is aging, thus requiring additional care. Such care is also increasingly being directed to home care (Park, 2008).

Due to constraints of distance, costs, and the availability of providers (doctors and nurses) in specific medical specialties, the traditional model of treating patients in a general hospital is losing

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its appeal in favor of dedicated clinics dispersed throughout the community and the remote care in the home. Together, all these trends are making a strong case for the application of telemedicine technologies to service the emerging needs of delivering care over distances. The progress of this mode of delivery of medical services has not kept up with the demand. We therefore review the economic and organizational factors impinging upon the rapid diffusion and utilization of telemedicine technologies and home care (Wickramasinghe and Geisler, 2008).

THE SCOPE OF TELEMEDICINE

Telemedicine or telehealth is broadly defined as the practice of medicine over a distance. This means providing care remotely in the next room or across the globe (Institute of Medicine, 1995). There are two general modes of telemedicine. The first is remote monitoring, communication, and access to data. In this mode caregivers can monitor vital signs of patients, read and interpret test results, and access patient records and other databases from anywhere in the hospital or the world (Blount et al., 2007; Darkins and Cary, 2000).

The second mode is the practice of remote clinical services. Caregivers can order the administration of medications, and even conduct surgery, via robotic instruments or by providing real-time instructions to other caregivers who are on the scene in direct contact with the patient (Martinez and Gomez, 2008; Norris, 2007).

Telemedicine includes several clinical specialties that to varying degrees lend themselves to remote practice. Among the early specialties to make use of the technologies was radiology in the form of technology. With the introduction of Picture Archiving and Communication Systems (PACS), clinicians are able to store, access, and read x-ray tests without the need for costly films. These systems also allow for remote access of other tests, such as MRI (Magnetic Resonance Imaging),

from anywhere in the world with increasingly acceptable levels of clarity and precision of the images (Fraunholtz and Unnithan, 2007; Krizner, 2008; Kumar and Krupinski, 2008).

Other clinical specialties in telemedicine are telecardiology, telesurgery, telepathology, teleophthalmology, and teledermatology (Geisler and Wickramasinghe, 2009; Wickramasinghe and Geisler, 2008). As imaging and telecommunication technologies continually improve, more clinical specialties will be inducted into the realm of telemedicine. The growing ubiquity of the global Internet network allows for access to images and databases from any corner of the world. Real-time consultation and interface among clinicians across wide distances are becoming more commonplace as the technologies of transmission and communications continue to improve.

APPLICATIONS AND BENEFITS FROM TELEMEDICINE AND HOME CARE

The combination of the aging population, the prevalence of chronic diseases, and the emergence of telemedicine technologies have been instrumental in ushering home care as a viable alternative to the traditional in-patient model of care (American Medical Association, 2001; Davies et al., 2009). Home care has long been recognized as a less expensive mode of provision of care (Hayes, 2008). Some estimates suggest that the savings are in the range of 50-70 percent of in-patient costs for certain diseases such as chronic diabetes, cardio-pulmonary, and arthritis (Kvedar et al., 2006; Geisler and Wickramasinghe, 2009).

The categories of applications of telemedicine in home care are the two modes of telehealth: monitoring and administration of clinical service. The monitoring category includes routine collection of vital signs and specific tests for certain chronic diseases, such as levels of blood glucose for patients with diabetes. Administration of

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