Chapter 50
Telemedicine in Low Resource Settings:
A Case for Botswana

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ABSTRACT

Telemedicine is a means to support health-care provision utilizing information and communication technology (ICT) tools and telecommunication services. This chapter focuses on telemedicine practices in low resource settings, referencing key telemedicine initiatives in Botswana. Telemedicine is highly practiced in the developed world, and recently there is an increasing interest in the developing world. Current literature suggests telemedicine as an important tool for improving healthcare delivery for low resource settings. Hence the authors' interest in exploring the current status of telemedicine practices with reference to telemedicine projects from low resource settings such as Botswana. The chapter reveals that telemedicine in such settings is mainly implemented through mobile phones, also known as mobile health (mHealth). In this chapter, the authors discuss factors influencing successful implementation of telemedicine solutions in Botswana. Furthermore, the chapter discusses telemedicine implementation challenges in each of the projects and presents possible mitigation strategies. The chapter concludes by affirming the feasibility of successfully practicing telemedicine in low resource settings; notwithstanding challenges such as lack of legal and eHealth frameworks in most developing countries.

INTRODUCTION

One of the global health challenges in the 21st century is the ability to reach and maintain the highest available level of health for all humankind throughout their lifespan. Such a vision has been expressed by the World Health Organization (WHO) in its health-for-all strategy in the 21st century (WHO, 1997). According to the World Health Organization (WHO) report on the second global survey on electronic health (eHealth), telemedicine as a term is traced as far back as the 1970s, and it literally means "healing at a distance" (WHO, 2009). The report further mentions telemedicine as a solution utilizing information and communication technologies (ICT) to improve patient outcomes by increasing access to care and medical information. The WHO acknowledges that there is no one definition of telemedicine and indicates existence of one hundred and four (104) peer-reviewed definitions of the word. WHO adopted the following broad descriptions of telemedicine (WHO, 2009, p. 9):

The delivery of health care services, where distance is a critical factor, by all healthcare professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities.

According to WHO, the terms telemedicine and telehealth are in most cases used interchangeably in various texts and the following four key elements are essential for telemedicine to occur (WHO) 1998):

1. Provision of clinical support.
2. Overcoming geographical barriers and connecting users not in the same physical location.
3. Utilization of various types of ICT tools.
4. A focus on the improvement of health outcomes.

Realizing the WHO vision of making high-quality healthcare available to all is incredibly difficult if not impossible. This is a result of the fast-growing burden of new disease patterns, and socioeconomic issues that have widened the gap in health status among countries. Traditionally, the main challenge to achieving equitable access to health care has been that the clinician and the patient must be present in the same place and at the same time. Advances in ICT for both developed and developing worlds, however, have created unprecedented opportunities for overcoming this by increasing the number of ways in which healthcare services can be delivered.

Telemedicine has also been defined as *the delivery of health care and the exchange of health-care information across distances* (Craig & Patterson, 2005, p. 4). Craig and Patterson (2005) further indicate that the prefix 'tele' derives from the Greek for 'at a distance'; hence, more simply, telemedicine can also mean medicine at a distance. Telemedicine encompasses the whole range of medical activities including diagnosis, treatment and prevention of disease, continuing education of health-care providers and consumers, research and evaluation (Craig & Patterson, 2005).

According to a study by Craig and Patterson (2005), the first public health surveillance networks were in the middle ages, when information about bubonic plague was transmitted across Europe by such means as bonfires. The study further indicates that during the mid-19th century, developments in national postal services provided the means by which more personal health-care delivery at a distance

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