

## Chapter 7

# Extending Health Services to Rural Communities: Telepediatrics in Queensland

**Anthony C Smith**

*University of Queensland, Australia*

**Sisira Edirippulige**

*University of Queensland, Australia*

### **ABSTRACT**

*Providing quality healthcare services to geographically isolated communities remains a considerable challenge to health service providers throughout the world. The conventional approach of referring patients to specialists often requiring the patient to travel long distances still remains mainstream. Meanwhile, the advancements in information and communication technologies (ICT) have acted as a catalyst for substantial changes in human activities in areas such as communication, commerce, and education. Researchers are exploring the potential of ICT to improve health services for patients in rural and remote areas. This chapter provides an overview of telemedicine applications and the experience of a research and health service which has pioneered the delivery of specialist pediatric services at a distance (telepediatrics) in Queensland, Australia.*

### **INTRODUCTION**

New technology has helped overcome barriers in distant communication and improve delivery of services in various fields of human activity. However, the impact of information and communication technologies (ICT) in health delivery has been somewhat slower than predicted – but its potential remains. This chapter provides an overview of telemedicine services that have been established in Queensland,

Australia by the Centre for Online Health (COH). Important factors related to the design and development of these services are explained.

### **BACKGROUND**

Geographic isolation and restricted access to specialist health services are main contributing factors to the inequality of health care around the world. Remote communities often have limited health facilities and access to health care, particularly spe-

DOI: 10.4018/978-1-61520-733-6.ch007

cialist care, compared to their urban counterparts. Consequently health status of rural and remote populations is generally inferior. This is evident in both developed and developing countries. Rural communities are generally characterized with high rates of poverty, mortality, and limited access to primary health care services.

Recruitment and retention of health workers in rural areas is a problem characteristic of both developed and developing countries. For example, a US report indicated that there were only 55 primary care physicians per 100,000 residents in rural areas compared to 72 per 100,000 in urban areas. This number was significantly lower (36 per 100,000) in isolated and smaller rural areas (Fordyce, Chen, Doescher, & Hart, 2007). According to the same study, the number of specialists per 100,000 residents in rural areas was less than half that compared to urban areas, while the number of psychiatrists was three times less (Fordyce et al., 2007). Various studies have shown the disparity of specialist care in rural and urban communities. For example, studies have revealed that 25% of Americans living in rural areas receive suboptimal stroke care due to lack of facilities, specialists, and funding (Callison & Leira, 2008; Leira, Hess, Torner, & Adams, 2008). Another study has shown that people living in medically underserved areas have higher rates of cardiovascular morbidity and mortality (Colleran, Richards, & Shafer, 2007). Reports on rural America show that the level of care for patients with diseases such as diabetes is noticeably lower compared to their urban counterparts (Health Care in Urban and Rural Areas, Combined Years 2004-2006).

The situation in the developing world is even more daunting. The majority of the population in developing countries lives in rural areas where health facilities are significantly scarce. Lack of funding and low socio-economic development, coupled with difficult geography and topography, can be identified as some of the reasons for the poor health care in developing countries (Chou & Wang, 2009; Joshipura, 2008).

Thus, providing services to rural communities remains a serious challenge for health systems around the world. The conventional method is patient transfer from rural areas to urban centers. In some countries, systems are in place to refer patients from rural areas to urban tertiary centers and in some cases, governments provide subsidies to cover transport and other expenses of patients. The Royal Flying Doctor Service in Australia is an example of governments making special arrangements to transfer patients from rural locations (<http://www.flyingdoctor.org.au/>). Typically in developing countries patients voluntarily travel to urban hospitals to seek specialist care. Outreach services are another way to provide specialist care to rural areas; occasional visits of specialist health professionals to rural areas are arranged to meet the needs of local communities. Many of these methods involve long distance travel for patients, families, and/or health professionals. These methods are also costly, time consuming, and usually a major inconvenience.

## **THE AUSTRALIAN CONTEXT**

In Australia, there are small townships which are located thousands of kilometers away from metropolitan regions. Access to health services and health facilities in such distant locations is often restricted. The difficulty of accessing health and medical services (particularly specialist care) in rural Australia is well documented (Humphreys, 1990; Judd & Humphreys, 2001). Consequently, rural communities often have poor health outcomes compared to their urban counterparts. The report published by the Australian Institute of Health and Welfare (AIHW) suggested that people living in remote communities have a higher mortality rate due to burns, fall, stroke, asthma, diabetes, homicide, suicide, and cancers (AIHW, 2008). There is also a significant increase in injury, mortality, hospital separation, and socio-economic disadvantages in rural and remote locations com-

9 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

[www.igi-global.com/chapter/extending-health-services-rural-communities/42707](http://www.igi-global.com/chapter/extending-health-services-rural-communities/42707)

## Related Content

---

### Detection and Segmentation of Medical Images Using Generic Algorithms

Hardev Mukeshbhai Khandhar, Chintan M. Bhatt and Simon Fong (2021). *International Journal of Extreme Automation and Connectivity in Healthcare* (pp. 39-46).

[www.irma-international.org/article/detection-and-segmentation-of-medical-images-using-generic-algorithms/271452](http://www.irma-international.org/article/detection-and-segmentation-of-medical-images-using-generic-algorithms/271452)

### Community Health Workers (CHWs) as Innovators: Insights from a Tele-Education Pilot for CHWs in Detroit, Michigan

Tyler Prentiss, John Zervos, Mohan Tanniru and Joseph Tan (2018). *International Journal of Healthcare Information Systems and Informatics* (pp. 15-28).

[www.irma-international.org/article/community-health-workers-chws-as-innovators/192184](http://www.irma-international.org/article/community-health-workers-chws-as-innovators/192184)

### Potential of GIS and Spatial Knowledge in Health Care and Public Safety

Eilon Blanc and Iris Reyshav (2013). *Handbook of Research on ICTs and Management Systems for Improving Efficiency in Healthcare and Social Care* (pp. 734-749).

[www.irma-international.org/chapter/potential-gis-spatial-knowledge-health/78052](http://www.irma-international.org/chapter/potential-gis-spatial-knowledge-health/78052)

### 3D and 4D Medical Image Registration Combined with Image Segmentation and Visualization

Guang Li, Deborah Citrin, Robert W. Miller, Kevin Camphausen, Boris Mueller, Borys Mychalczak and Yulin Song (2008). *Encyclopedia of Healthcare Information Systems* (pp. 1-9).

[www.irma-international.org/chapter/medical-image-registration-combined-image/12915](http://www.irma-international.org/chapter/medical-image-registration-combined-image/12915)

### Personalized Mobile Applications for Remote Monitoring

Miguel A. Laguna and Javier Finat (2013). *International Journal of E-Health and Medical Communications* (pp. 1-11).

[www.irma-international.org/article/personalized-mobile-applications-remote-monitoring/77301](http://www.irma-international.org/article/personalized-mobile-applications-remote-monitoring/77301)