# Chapter 16
# Clinical-Pull Approach to Telemedicine Implementation Policies using Health Informatics in the Developing World

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## ABSTRACT

*Telemedicine could effectively aid hospital referral systems in bringing specialized care to rural communities. South Africa has identified telemedicine as part of its primary health care strategic plan, but similar to many other developing countries, the successful implementation of telemedicine programs is a daunting challenge. One of the contributing factors is the insufficient evidence that telemedicine is a cost-effective alternative. Furthermore, many telemedicine services are implemented without a thorough needs assessment. Throughout this chapter, the authors investigate the use of medical informatics in quantitative telemedicine needs assessments. A framework is introduced to direct implementation policies towards a proven clinical need rather than pushing technology into practise. This clinical-pull strategy aims to reduce the amount of failed projects, by providing decision support to implement appropriate technologies that have the potential to contribute towards better quality healthcare.*

## INTRODUCTION

A primary goal for public health systems is to provide equal quality health services to the entire population. Most developing countries consider this to be a fundamental challenge. One of the largest constraints in developing countries' public health sectors is the acute shortage of financial resources that inevitably leads to a shortage of medical expertise. Referral systems aim to utilise scarce resources more effectively by ranking

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hospital services according to different levels of speciality and allocating resources accordingly. Patients are referred between the different levels, to have access to higher levels of care when needed. These referrals are expensive and contribute to the over utilisation of high-level care hospitals, which inevitably causes poor service delivery.

Telemedicine is identified as a possible solution to reducing patient transfer between hospitals. However, the success rate of telemedicine projects in developing countries is disappointingly low. A further concern is the fact that telemedicine is a complex field to evaluate due to its multi-disciplinary nature. Since evaluation plays a critical role in obtaining criteria for policy making, the result of inadequate evaluation has a ripple effect, threatening its sustainability.

A telemedicine project should be continuously evaluated throughout its lifecycle. Nevertheless, many projects are approached on a pilot basis, without the support of needs assessment and evaluation frameworks. At the other end of the spectrum, telemedicine systems are often designed from a technological point of view with too little consideration of the clinical needs. Wyatt (1996) refers to this phenomenon by suggesting that the primary objective is to put technology on the market as a 'technology-push' strategy. A 'clinical-pull' strategy is defined as the opposite of technology-push, being a practice that draws technology towards a proven clinical need. It is expected that systems that are developed and based on a proven need, have a better chance of being successful and sustainable than those without it (Wyatt, 1996).

'Evidence-based management,' is a term commonly used in healthcare policy making. It refers to the practice where decision-making is based on facts rather than opinions. Concrete data are used, together with analysis tools and frameworks, to gain evidence as a foundation for decisions. Literature studies have revealed that there is a lack of evidence that telemedicine is a cost-effective and beneficial alternative to patient referrals (Hailey, Ohinmaa, & Roine, 2004). To follow a clinical-pull approach in telemedicine projects, evidence can be gathered prior to implementation by conducting a needs assessment. Telemedicine systems that are implemented on the foundation of a thorough needs assessment will have the potential to benefit the health system. Although there is no guarantee of utilisation, if there is a proven need for a system, it does, however, validate the capital spent on implementation, since other issues preventing utilisation can be solved after implementation.

Most healthcare facilities that are enrolled in e-health start with the implementation of a patient record system. Hence medical informatics can be considered a predecessor of telemedicine. These information systems are capable of storing valuable data relating to telemedicine. However, few studies have been done where medical informatics are used to contribute to telemedicine needs assessments. Since data are crucial in making evidence-based decisions, the clinical-pull approach should draw upon relevant data to determine whether telemedicine would have the potential to be beneficial at a given facility or region.

South Africa is one of many developing countries that has identified telemedicine as an important new development in the health system. The first telemedicine pilot projects were initiated in 1997, but little success has been reported since. The South African Minister of Health reported in 2010 that of the 86 telemedicine sites in South Africa, only 32 were functional. He attributed the poor performance to a severe lack of leadership, inefficient use of funds and a lack of critical skills at provincial offices. The current poor performance of telemedicine systems indicates a desperate need for evidence that telemedicine can be beneficial (Sabinet, 2010). This chapter is therefore, dedicated to providing policy makers, in South Africa as well as in other developing countries, with a measurement tool to assess the needs and potential benefits of telemedicine systems, prior to implementation.

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