

Telemedicine in Primary Health Care: The Road Ahead

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DEAR EDITOR,

The challenge that exists today in many countries is to reach the whole population with adequate health care services and to ensure their utilization. According to the World Health Report 2008, Primary Health Care, now more than ever, health systems in developing countries have not responded adequately to people's needs. The report argues that health systems are failing, because they have not kept abreast of the challenges of a changing world.^[1]

In India, healthcare follows a three tier system: Primary health center catering a group of villages, secondary level health center located at district level, and medical college hospitals constitute the tertiary level located in the big cities. Besides, there are few advanced medical institutes of national importance having clinical, teaching and research facilities in many super-specialties. In spite of well networked health care system, access to healthcare in rural areas is far from satisfactory. In the current scenario, 75% of the qualified consulting doctors practise in urban, 23% in semi-urban (towns) and only 2% in rural areas, whereas the vast majority of population lives in the rural areas. Hospital beds/1000 people are 0.10 in rural as compared to 2.2 in urban areas.^[2]

Telemedicine could be a way to bridge this gap but is not necessarily a panacea. There is a substantial skepticism among both doctors and patients.^[3] The European Commission's Health Care Telematics Program defines telemedicine as "rapid access to

shared and remote medical expertise by means of telecommunications and information technologies, no matter where the patient or relevant information is located."^[4]

Much has happened since India's first telemedicine center at Apollo Aragonda Hospital in the state of Andhra Pradesh which was inaugurated by the then US President Bill Clinton in 2000. Today, there are about 500 telemedicine centers linked with about 50 specialist hospitals across the country. The centers, operated by a mix of private hospitals, state, and union governments, and public-private partnerships, have so far provided tele-consultations to an estimated 0.15 million patients, according to the consultancy firm Frost and Sullivan, which has been following the Indian telemedicine market closely.

This figure is expected to increase rapidly in the next few years. The government's 11th Five-Year-Plan (2007-2012) allocated 2000 million rupees (about US\$50 million) to telemedicine. Most of the funding will be channeled through public-private partnerships. According to the Ministry of Health and Family Welfare, the necessary infrastructure in the form of satellite or broadband connectivity is already in place in large parts of the country.^[3]

Among the major telemedicine service providers/supporters in India are: Indian Space Research Organization; Department of Technology, Ministry of Communication and Information Technology, Government of India; Ministry of

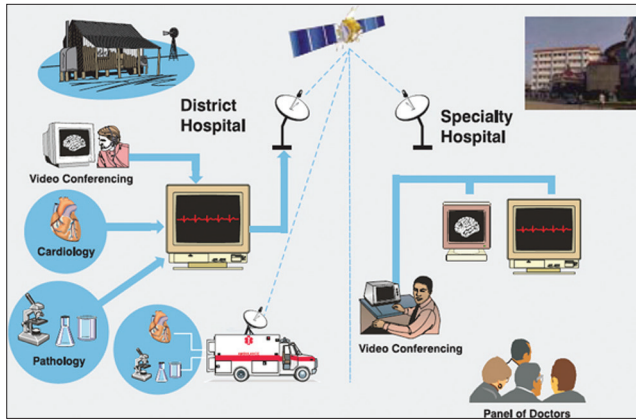


Figure 1: Telemedicine concept (Courtesy: Indian space research organization)

Health and Family Welfare; State Governments; All India Institute of Medical Sciences; Center for Development of Advanced Computing, and Sanjay Gandhi Postgraduate Institute of Medical Sciences in Lucknow. Also, Private firms like Apollo Telemedicine Network Foundation in South Asia, Narayana Hrudayalaya, Banaglore, Arvind eye hospital based in Madurai^[5] and KLE Hospitals, Belgaum^[6] deserve special mentions.

However, still there are concerns both from patient and doctor's perspective. Patient has a concern with respect to cost. There is less awareness among the rural population. Manik Debnath in Assam, a small-scale businessman, can afford to spend 900 rupees (about \$22) for a tele-consultation with an Apollo Hospital specialist. His poorer counterparts in a country where nearly two-thirds of the population live on less than \$2 a day cannot afford this cost. Among those who were affordable, the initial wariness seems to fade once patients have tried and tested telemedicine. Indian doctors, used to conventional consultations where they can diagnose their patients in person, are generally sceptical of the technology. They share this scepticism with many patients who find tele-consultations to be impersonal.^[3]

Recent research by a group of scientists has shown point to point (P2P) systems to be scalable and robust. Hence, they propose a large-scale telemedicine solution consisting of multiple hospitals (across the country) acting as peers. As of now, there is no dedicated infrastructure connecting all the hospitals in the country. The telemedicine services with P2P technologies using internet as backbone will facilitate cost-effective utilization of the existing hardware

resources and in future (if at all) an easy integration with dedicated infrastructure. The recent advances in broadband technology for mobile phones add a new dimension to telemedicine by facilitating any time-anywhere computing. Figure 1 depicts the concept of telemedicine. Here there is interaction between different centres and the core centre via usage of satellites.

Now, the specialist located anywhere could use his mobile device to access the patient reports via the Internet and provide advice. With WiMax/GPRS capable of providing cheap Internet access in rural areas, it is possible to provide mobility support even at the patient's end. This will enable a nurse-led (health worker) mobile telemedicine unit and lead to better coverage in the rural areas.^[4]

Telemedicine cannot be the answer to all problems, but it can be very important in addressing a vast range of problems.^[4] The success of the tele-health project indicates the potential for the use of information and communication technology in the rural areas. Effective leadership, dedication and commitment among the project staffs, effective training and development programs for the doctors are the critical success factors. A public-private partnership may provide a viable option for this to happen.^[6]

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