Delivering Health Care in Rural India Using Information Technology

Er. Ravish Sagar* and Er. Shubhra Sagar **
* Assistant Professor, BCIIT, New Delhi and ** Sr. Lecturer, GNIM, New Delhi

ABSTRACT
“On global scenario the health status of a great majority of the people in India is yet far from satisfactory as compared to other countries. The rural and remote areas in India continue to suffer much more from absence of health facilities and quality health care than in cities. Telemedicine is emerging Information and Communication enabled health technology which has the potential to facilitate access to healthcare in underprivileged population if absorbed into existing healthcare delivery system.”

INTRODUCTION
In a developing country such as India, there is huge inequality in health-care distribution. Although nearly 75% of Indians live in rural villages, more than 75% of Indian doctors are based in cities [1]. Most of the 620 million rural Indians lack access to basic health care facilities [2]. The Indian government spends just 0.9% of the country's annual gross domestic product on health, and little of this spending reaches remote rural areas [3]. The poor infrastructure of rural health centers makes it impossible to retain doctors in villages, who feel that they become professionally isolated and outdated if stationed in remote areas. The rural and remote areas in India continue to suffer much more from absence of health facilities and quality health care than in cities. The country with only 0.9% of GDP for health, 0.6 doctors per 1000, bed-population ratio 1: 1333 etc.[4], have multifold reasons for the same. The studies have also highlighted that of the existing 90% of secondary and tertiary health care facilities are available in cities and towns away from rural India [5], with availability of specialists restricted to cities. Health workers in rural health care being isolated from specialist support and up to date information with lack of infra structural and other facilities. In present scenario of health status in rural India and development of information technology at higher pace, an attempt has been made in the present study to highlight the use and applicability of information technology in delivering or access to health care in rural India in order to provide quality health care to underprivileged. The patients in remote locations could be successfully managed locally with the advice and guidance from specialists or super-specialists available at far off places, without having to be physically present. It has been observed that there is a great deal of disparity in quality and access to healthcare between urban and rural regions. This healthcare divide needs to be bridged since most of the Indian population lives in rural areas. Telemedicine is emerging Information and Communication enabled health technology which has the potential to facilitate access to healthcare in underprivileged population if absorbed into existing healthcare delivery system [6].

1. Building hospitals in rural India:- if it wants to create physical infrastructure to cover all the people in the rural areas at current population levels, the government would have to set up 700 hospitals, each with 250 beds. The bed-population ratio is 1:1,333, against the World Health Organization (WHO) recommended 1:500. Barely 9 per cent of the population is covered by health schemes. Also, while 2.2 beds are available per 1,000 people in urban areas, the figure is a meager 0.19 in the rural areas[7]. Building hospital in rural India problem is that there will be only health workers available because there is shortage of doctors. India suffers an acute shortage of medical care workers, including 600,000 doctors, 200,000 dental surgeons, one million nurses as well as x-ray technicians, dental hygienists, physiotherapists and lab technicians. There is one nurse to 1,000 patients in India, compared to about 11 nurses to 1,000 patients in Europe [9].

2. Mobile hospital: - Mobile hospital consists of a doctor, sitting inside it with basic medicines and very basic equipments for checkup. The doctor provides the people of a particular area regular check ups, once a fortnight or according to an effective timetable. The Mobile hospitals attempt to mitigate the problems of people, suffering from various types of diseases, especially for the aged and children who cannot travel distances to receive medical attention.

It is available only according to its schedule date and time or day. The doctors may not be able to serve all sections. Healthcare workers on a regular basis need to follow up with those who have sought services from mobile clinic. In emergency contact to mobile hospital is not easy.

3. Telemedicine: - Telemedicine is a technology-enabled marketing tool as well. It makes it possible for hospitals to address the needs of patients who might otherwise have not used their services. It is increasingly projected by corporate hospitals as a tool for competitive advantage. Several corporate hospitals have set up video conferencing facilities with super specialty hospitals abroad. During transmission of medical information there is lack of security while using encrypted video signals and during its storage and access. Need training facilities with regard to the application of information and communication technology in medicine. In rural India quality of communication service are poor.
A model of “Telemedicine”, in context to rural India with its various applications and on development technology has been discussed in details. Telemedicine is a method, by which patients can be examined, investigated, monitored and treated, with the patient and the doctor located in different places. Tele is a Greek word meaning “distance” and Mederi is a Latin word meaning, “to heal”[8]. A major goal of telemedicine is to eliminate unnecessary traveling. Acquisition, storage, display, processing and transfer of images represent the basis of telemedicine. “In terms of disease management, there is a 99% possibility that the person who is unwell does not require an operation. If you don't operate you don’t need to touch the patient. And if you don't need to touch the patient, you don’t need to be there. You can be anywhere, since the decision on healthcare management is based on history and interpretation of images and chemistry … so technically speaking, 99% of health-care problems can be managed by the doctors staying at a remote place—linked by telemedicine.”

Telemedicine which primarily refers to use of electronic information and communication technologies for diagnosis and treatment of disease can be used for providing health care where there is none and to improve health care where there is some. The connectivity of remote/rural areas with the District centers in Towns and to cities with available communication and emerging technologies will bridge the gap of availability of health care to patient. Transferring of data and video conferencing with specialists and super-specialists may not only help in early diagnosis and prognosis, but will also provide quality health care to underprivileged. A minimum infrastructure for the applications of transferring of data and pictures is to be set up at the remote place to be benefited. Since 2001, when the space-based telemedicine network was established, Indian Space Research Organization (ISRO) has been providing telemedicine technology and connectivity between rural/remote hospitals and super speciality hospitals and connectivity for mobile telemedicine units in rural areas, especially in the areas of ophthalmology and community health. Starting as a point-to-point system connecting the doctor and the patient alone, it has evolved into multipoint connectivity through servers, linking remote hospitals, rural units and super speciality hospitals in different parts of the country.

The Telecom regulatory Authority of India has defined broadband services as those provided with minimum data rate of 256 kbps [4]. At this bit-rate, browsing is fast, video conferencing can be supported, and application such as telemedicine and distance education using multi-media are feasible. The broadband facility in existing setup in the country ends abruptly at the town levels and beyond this the telecommunication services fades out after a small distance of cover. This problem of transmission can be overcome by using emerging wireless technologies. As being used in different models like being used for stock exchange and its terminals and Satellite phone. A model for the transmission of data and information of patient from remote area to expertise available at different place can be traced as:

The building of infrastructure for transfer/receiving of data and pictures at the remote area has other constraints associated with it. The computer with high resolution web cam, scanner etc., has to be made available with power supply. The alternate forms of generating power supply by generators etc., needs to be made available for operation of the system. The health professional needs proper training to operate the system for transmission and receiving of data. The patients have to be made ready for utilization of health care through the telemedicine besides overcoming the psychological and cultural barriers.

Design, implementation and development of low cost rural telemedicine infrastructure consisting of fixed, mobile and hand-held platforms and web technology based broad band wired or wireless wide area network centering around the district hospital acting as hub. A telemedicine network incorporates following components in addition to Consulting Doctors and Super Specialty Consultants at both recipient and referral hospitals

- Tele-consultation room
- Patient engagement facilities (bed, scopes, etc.)
- Telemedicine Platform
  - Selective medical and medico-IT equipments, preferably IT compatible, with interface to Telemedicine and/or other software / hardware
  - Computer hardware / software platform (PC, switch, etc.) and IT electronics equipments
- A high-speed network Connectivity / bandwidth requirements (e.g. ISDN, Leased line, VSAT, Broadband, Wireless)
- Point-to-Point video-conferencing system (may be portable)

**Conclusion**

“Telemedicine”, for distribution of health care delivery and quality health care will definitely make an impact on improving the health status and meeting health care needs of its vast population groups living in rural India. This may in turn ensure accessibility, efficiency, equity and quality of health care and thereby achieving the objectives of growth with equality and social justice to all, for fighting diseases and reducing poverty. The quality health care at global level can be provided to underprivileged at the remote area.

Continued on Page No. 42
There are greater implications for telemedicine, because once we have local clinics with high bandwidth that can then hop on a larger national network, we can have doctors all over the country (or world) contribute hours towards diagnostic work, benefits to patients for example, reduced travel or quicker access to appropriate expertise outweigh the increased costs to the providers, telemedicine is worth considering.

However, it is worth bearing in mind that it is much harder to change attitudes and organizations than simply to deliver new equipment. Performance and cost effective Wireless broadband technologies for rural India needs to be made available. The support of extension of broad band local –area technologies can also work for the model along with proper linking of remote or rural area to urban area. Telemedicine kiosks can be set up throughout the length and breadth of suburban and rural India not only to provide quality health care but also to educate major population on health and related issues.

REFERENCES
8. Telesurgery (Book) by Sajeesh Kumar and Jacques Marescaux