



# OPPORTUNITIES IN IMPLEMENTATION OF E -HEALTH

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**Abstract--** *Over the last couple of decades, developments in the information and communication technology have made the most palpable impact on health care management all over the world. Newer terms like telemedicine, e-health, tele health and digital health surfaced to encompass broad concepts like electronic medical records and hospital automation, telemedicine, e-learning in health sector, e-governance and so forth. Tele-medicine refers to the application of various telecommunication and networking systems in the delivery of appropriate health care to individuals without limitations of time or distance. It involves the speedy transmission of patient data related to consultations, diagnostic and therapeutic services, patient education and rehabilitative services among the providers, the consumers, the planners and researchers. E-Health, broadly defined as the use of Information and Communication Technology (ICT) in health, can make a world of difference in all developed and developing countries. Most notable attribute of e-Health is that it is enabling the transformation of the health system from one that is narrowly focused on curing diseases in hospitals by health professionals, to a system focused on keeping citizens healthy by providing them with information to take care of their health whenever the need arises, and wherever they may be. The present paper discusses the challenges and opportunities in ICT implementation in health care specific to Indian scenario.*

**Keywords:** *palpable impact, telemedicine, telemedicine, attributes, narrowly focused, system focused.*

## INTRODUCTION

India is a vast country of 1.4 billion populations occupying an area of 3,287,268 sq. km. It consists of 29 states and 6 Union Territories governed by a federal system. It has been observed that there is a great deal of disparity in quality and access to healthcare between urban and rural regions. E-health is a relatively recent term for healthcare practice which is supported by electronic processes and communication. Definition published by E-Health researcher Gunther Eysenbach in the article what is e-health? is among the most frequently cited and reads: "E-health is an emerging field in the intersection of medical informatics, public health and business, referring to health services and information delivered or enhanced through the Internet and related technologies."

Overburdened and collapsed public health care system is also taking ICT route in various part of the country. Changing the dynamics of healthcare is the prime objective. Web services are essential for medical professionals, administrative members and patients to organize, share and access medical services. Improving health care involves not only improving the knowledge and skills of medical

Professionals, but also empowering people with the knowledge needed to make informed decisions about how to live healthier. ICT offers a plethora of alternatives to communicating important health messages to the public.

The present day medical graduates and practitioners in most countries are well-equipped with both e-skills and knowledge to take up e-medical practice. The database creation, storage, transfers and archival within a span of a few minutes have opened up new vistas for health information sharing and research. Web-casting, teleconferencing and live transmissions of surgeries or procedures to any corner of the globe have added new dimensions to the means of sharing and updating medical knowledge.

Efficient health management systems have facilitated delivery of high quality care at lesser costs. With the implementation of newer communication and networking systems, several components of medical care like clinic appointments, in-patient services, and management of operation theaters, stores, laboratory and imaging services have allowed delivery of health care in a more effective manner with little chance for error or strain on time and manpower.

Distance and location have become less relevant. High-tech home monitoring, electronic medical record maintenance, online health care services to patients and counseling results in saving time and the stress of personal appearance of the patient to the doctor's clinic.

### CURRENT E-HEALTH SCENARIO IN INDIA

The Indian health care services are highly skewed in favor of urban population which is 28% of Indian population. Nearly one million Indians die every year due to inadequate healthcare facilities and 700 million people have no access to specialist care and 80% of specialists live in urban areas.

There has been undue delay in implementing e-governance and e-healthcare in India due to following reasons

- (1) *Absence of competition in health sector for long time healthcare is handled by Public Health System (PHS) with no competition.*
- (2) *Weak customer with low bargaining power.*
- (3) *Non-existence of funding system like insurance or social security agency.*
- (4) *Strong professional culture among doctors hostile to new ICT applications.*
- (5) *Doctors and nurses believe on their skill than on computer.*
- (6) *Lack of computer-aid in medical and nursing education.*

The National Health Policy endorsed by the Parliament of India in 1983 and updated in 2002 encourages the introduction of electronic communication media in health sector. The government of India has launched "National Rural Health Mission" aiming at equity in best health care to this target group. The Ministry of Health & Family Welfare and the Ministry of Communication and Information Technology (ICT) are jointly creating a national health information infrastructure, for easy capture and dissemination of health information. There are more than 165 telemedicine platforms supported by the Indian Space Research Organization (ISRO) and 76 by Communication and IT Ministry. The Ministry of Health had formed "Telemedicine Task Force" to address many issues relating to e-health technology based healthcare which will facilitate in forming a framework for e-health application for the country. The union government also recognizes ICT as the most efficient enabling tool for achieving the said goals. This is having the desired trickle-down effect and several state governments have earnestly taken up e-Health monitoring and reporting systems for their public health programmes. Disease surveillance systems under IDSP in Andhra Pradesh and Tamil Nadu, and ICDS surveillance system in Orissa are some examples of such initiatives. Public-private partnership has been successfully used to achieve a convergence of technical resources and personnel in the e-Health sector, for such projects. Funding and technical assistance has also been received from several external agencies such as the World Bank and WHO.

### SITUATION IN INDIA NOW

India, like most other developing nations, is facing several public health challenges like communicable diseases, malnutrition, and cardiovascular disorders. The diversity and heterogeneity of basic facilities and health care delivery mechanisms in different parts of this vast country is an area of concern for any nation-wide program. Several paradoxes and unresolved challenges still exist in the present health care system. While we boast of the recent launch of 'Tele-ICU' – an internet based ICU 24x7 Health Care in New Delhi<sup>1</sup>; there are several pockets in the country facing the everyday challenges of poor transport systems, poverty, illiteracy and large families.

The doctor-population ratio in India has been worked to be around 1 per 2000<sup>2</sup>. The disparity in urban and rural doctor distribution is dismal. In the rural settings, it is as low as 1 doctor per 25000 people<sup>3</sup>. It is largely because, 68.8% of the population lives in villages<sup>4</sup> but only about 2% of doctors practice in urban areas<sup>10</sup>. About 75% practice in urban areas and 23% practice in semi-urban areas<sup>10</sup>. Many young medical professionals are reluctant to work in rural areas due to the challenges of ill-equipped hospitals in poorly accessible location with limited physical facilities. Telemedicine can be a potential answer to the herculean task of reaching the masses and delivering the basic health services to one and all.

### FUTURE PROSPECTS

India has already emerged as one of the world leaders in IT and networking and also has huge skilled IT man-power. Technological advances such as mobile phone net-working, banking and e-governance are already attaining high levels of proficiency in our country. Being a country spread over a vast geographical area with predominant rural population, India can be an ideal setting for telemedicine<sup>5, 9</sup>. Interestingly, many of youngsters with MBBS and BDS degrees are exploring career options in e-Health and Tele-medicine<sup>10</sup>. Net-working of all peripheral health centers in the country is a big technical challenge. Never the less it is an achievable project for India in view of already available low cost terrestrial telecommunication, country wide internet connectivity and indigenous satellite services. It is heartening to see that Government of India is committed to implement e-health and the steering committee of planning commission for the 12th plan (2012-17) strongly suggested that all district hospitals and primary health centers and sub-centers be connected with telemedicine, Skype or similar audiovisual media and to encourage M-health (health care through mobile phones) to reach the remote corners of the country<sup>13</sup>.

India has started successful programs to extend the telemedicine services to neighboring African and SAARC countries 14. There is no doubt that India is very close to catch up with the rest of the developed world in the practice of e-health for all.

#### CHALLENGES FOR E-HEALTH IN INDIA

The challenges for an efficient, sustainable E-Health system are numerous:

**Incentivisation:** Incentivizing all the stakeholders involved is a major challenge and raises the question of who will pay the bill since the cost of infrastructure, medical drugs, doctors' fees, and other operating costs could be very high. Hence, there is a need to divide these costs among different entities.

**Cost Containment:** Providing health care to India's population is costly, and introducing ICT would require extra upfront investment. There is a need to manage the costs in such a way that the overall cost of health care goes down. This could be achieved if the overall health care budget includes more money for ICT. An eHealth programme would need to generate large numbers of beneficiaries for costs to be justified.

**Information Exchange:** Health information exchange needs to be demand driven, with proper access and control mechanisms in place. The challenge is to motivate and encourage key stakeholders—patients, medical service providers, insurance companies and the government—to pull as well as push the right kind of information from the system. David Thomas, Managing Director and Head of Global Health at the Matrix Knowledge Group, UK, said, "Informatics is a major challenge in India and telematics is a major challenge in government hospitals."

**Adoption and Resistance:** In India and across the globe, there is reluctance on the part of patients and doctors in fully adopting eHealth. The right kind of technology must be utilized in the right way so patients as well doctors feel comfortable in adopting eHealth practices. Companies not only have to prepare the best technical systems but also make sure that they are easy to understand and use. Success will require multiple public awareness programmes on the benefits of eHealth.

**Staffing at Different Levels:** eHealth is not just about having technology in place. It should also have an identifiable, approachable and well-qualified human interface. Getting the right people to use these technologies in order to provide proper health care services is very important. Hence, there is a need to hire the right people and train them properly so that they are well equipped to carry out the task of providing health care to remote areas.

**Evaluation:** Evaluation of the processes needs to be fair and done by an independent third-party observer. There is a need for benchmarks in order to track progress. These could be taken from best practices from local projects or from notable projects in other countries such as Sweden, Singapore, etc. An independent body could be created for this purpose which would provide ratings. The resulting evaluation would provide a continuous learning loop which would also inform the eHealth framework itself.

**Power Sharing:** The entire system of health care should be such that it can be driven by both central and state government. Power, responsibility, accountability, rewards and risks must be well defined in advance so as to avoid any conflict of interest.

**Managing Information:** The information collected should be media rich (containing video, image, text, etc.). This information should be properly archived, accessible, retrievable, secure, and readable from remote locations using different technology platforms. "One patient, one record" needs to be implemented, so as to avoid duplication of information. Innovative and cost-effective health informatics solutions need to be created to meet this goal.

**Education:** eHealth is not just about providing health care service when someone is unwell, but it should also be used to promote preventive health care to improve the standard of living and reduce health care costs in the medium-to-long term. This will also help in improving and enabling higher productivity elsewhere in society. But achieving this requires bringing people into the system and educating them about the different preventive measures to avoid disease outbreaks like H1N1, or other seasonal diseases.

#### CONCLUSION

ICT can support improvements in the quality of health care by helping to increase the qualifications and skills of health and medical professionals and thereby improve the delivery of health services. However, access to information may not be sufficient in and of itself. Health professionals need to gain an understanding of how to evaluate, interpret, and apply this information to their specific practice. India faces a number of challenges in the development of effective e-Health solutions like the inertia of traditional agendas, and ways of doing things. Divisions between health-professions, the public-private sectors, facilities, levels of government and cultural communities generally mitigate against large national inter-jurisdictional projects in the public sector, and new large-scale investments in the health sector. The technologies themselves, as well as their deployment, are challenging matters. There are questions about how to properly automate the health-system, which technical standards are to be adopted, Is the current level of technology and technological sophistication of the providers and public sufficient to the task. ICT can also be instrumental in helping the public to become more informed about their health and how to be healthy, though until a greater percentage of the population is on-line and technologically literate, low-tech solutions are likely to be more effective. Finally, Information and Communication Technologies can play a powerful role in improving the efficiency of health services. Through computer-based records and other technological infrastructure-building, health care institutions can better manage and share information, thereby improving the efficiency of the health system as a whole.

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