Digital Empowerment in Healthcare

Dr. K. Ganapathy
Director, Apollo Tele Health Services
President, Apollo Telemedicine Networking Foundation

Introduction

Healthcare is one of the most essential services in any society. The Indian healthcare services is one of the biggest services in the world, with every sixth individual on the planet, being a participant. India is expected to rank amongst the top three healthcare markets by 2020.. India is also one of the biggest ***IT*** capitals of the modern world focusing on providing low cost solutions in the services business of global ***IT.*** *The Indian healthcare IT market* valued at Rs 6,650 crore is likely to grow 1.5 times by 2020, according to NASSCOM.

Background

Information technology (IT) has the potential to improve quality, safety, and efficiency of health care. Diffusion of IT in health care is generally low (varying, with the application and setting). Drivers of investment in IT include promise of quality and efficiency gains. Barriers include cost and complexity of IT implementation, which often involves work process and cultural changes. Characteristics of the health care market including payment policies that reward volume rather than quality, and a fragmented delivery system, act as deterrents. . Several multinational companies such as GE Healthcare, Intel, Hewlett Packard, Cisco Systems, Qualcomm, Microsoft, Google, IBM, Computer Sciences Corporation (CSC), Perot Systems, TCS and HCL have entered the health IT space. India has the fastest-growing health care IT market in Asia, with an expected growth rate of 25%, followed closely by China and Vietnam. IT is specifically used for computerization of medical records, networking various departments in the hospital, and providing telehealth services.

The private and public sectors have engaged in several efforts to promote the use of HCIT within and across health care settings. Delivering quality health care, requires providers and patients to integrate complex information from many different sources. Increasing ability of physicians, nurses, clinical technicians, and others to readily access and use the right information, at the right time and right place about their patients should significantly improve quality of care. The ability for patients to obtain information to better manage their condition and to communicate with the health system will contribute to a win win situation. Through information power that IT enables, capacities of decision-makers are continually transformed, in how they link with each other, in the here and now. This could also raise fears and anxieties , as the pervasive nature of IT and its uneven diffusion, increases vulnerability necessitating policy safeguards.

Advantages of enabling IT in hospitals:

1. Quality of service improves increasing reach and delivery of service.
2. Integrated EMR's facilitate research, as data is made available in structured manner, which helps in studying trends, identifying disease outbreaks etc.
3. Enables Customer Relationship Management (CRM
4. ***IT*** helps patients and their records move seamlessly across different geographical locations.
5. ***IT*** provides flexibility in procuring and billing.
6. ***IT*** also provides accounting framework, hence helps with entire billing, inventory management, store management, laboratory management, etc.
7. In ***IT*** enabled hospitals, the bed turnaround ratio has increased by 10%, justifying investment towards enabling IT
8. India has the advantage of a strong IT fibre backbone and indigenous satellite communication technology with trained human resources.
9. Makes hospitals filmless and considerably reduces paper work, faster patient throughput, faster diagnosis, reduced manpower requirement and captures patient history at one place
10. Faster more efficient pre hospital authorisation from insurance companies
11. Reliable, real time Big Data will enable health Insurance companies to more scientifically do India centric actuarial studies and compute premium values. This will ultimately benefit the public.

Challenges in implementing Healthcare Information Technology (HCIT)

- ***IT*** in healthcare had not taken off in India despite a strong healthcare market. Lack of regulations, standardization and reduced professionalism have contributed to this . Certification, authentication, registration, adoption of minimum safe standards, expanded efforts to standardize record formats, nomenclature, and communication protocols to enhance interoperability are essential.
- Major urban rural health divide with lop sided distribution of specialists. This leads to " poverty amidst plenty" and under-utilization of capacity (beds, doctors, nurses)
- Fragmentation of isolated bits of patient and medical know-how across entities in the ecosystem. High Cost / Low Productivity due to bottom-up re-creation of diagnosis/analysis for every patient, in the absence of a universally accessible record.
- Business models currently focus on acute care. It is necessary to look at preventive and chronic care with alternative delivery and transaction models to multiply reach.
- Integrated health records - A complete, updated / accurate one point patient database is not available - an integrated electronic medical record system (EMR) - This helps in capturing of information and maintaining continuity and granularity. Lack of a one-point, complete patient record
- Indian healthcare system is heterogeneous, diversified with considerable variations in demography, literacy, socio-economic profile and availability and access to health care.
- Necessity for financial incentives and disincentives as practiced in the USA with increased investments
- Acceptance of this modality by family physicians specialists, patients, administrators, government and society.
- Designing cost effective, appropriate, need based user friendly technology
- Ensuring reliable connectivity, hardware and software
- Running short term courses and subsequently refresher courses to train the trainers and the users . Introducing HCIT in the medical/ IT curriculum
- Enforcing regulations on HCIT and passing a HCIT Act for India
- Getting grants, subsidies and waivers as necessary to introduce HCIT in suburban and rural areas
- Lack of in-house IT expertise, reluctance of medical, nursing and other staff to change, fear of technology failing (paper systems appear more reliable)
- Poor support from vendors, reluctance of vendor to make changes in software when requested particularly customisation of software used to computerise manual processes without proper refinement in policies and procedures; lack of proper implementation methodologies (detailed process study and refinement strategy) ; to make the management aware about time and efforts required for successful computerisation and not using standard inter operable, scalable software

The Road Ahead

Corporatization of healthcare providers is contributing to a transformation in the Indian healthcare delivery system . Private participation is also a major force in tapping the huge Indian health insurance market. This sector calls for a higher level of technology requirement. Tracking premium payment, linking of branches, maintaining patient records and networking with hospitals requires HCIT. Changes in the regulatory framework, grading of hospitals, and government initiatives are also major catalysts. A major advantage that developing countries in Asia have, with regards to being ready for the rapid technological changes shaping healthcare globally, is the fact that they have no colonial legacy to 'disinherit' in the field of modern healthcare; for example, they do not have to 'unwire' to introduce mHealth. One does not have to undo to keep up with technology simply because e-Health is still not a reality. We do not have to follow the advanced countries. We do not have to piggy back or leap frog . We will pole vault !!

Information plays a key role in health care Adopting a health IT system involves more than just deciding to spend money; it is a major organizational commitment that, for hospitals in particular, will probably last for several years. To take full advantage of such a system, clinicians have to substantially redesign the way they practice medicine. EHRs are only as helpful as the information that goes into them. Some of that information is part of the system when it is purchased, but much of the technology's value *comes when physicians devote considerable time to training, to personalize the system, and adapting their work processes to achieve the maximum benefits*.

The Changing Landscape

Growth in data, digitization trends in health information and electronic medical records, improvements in collaborative data exchange, workflows and mobility, and need for better financial management are changing the needs of the hospital enterprise. Additionally, patient demographic changes and chronic disease growth, cost control considerations, and importance of patient safety, have all come together to heighten demand for HCIT, The increase in adoption of EMR, mHealth, telemedicine, and web-based services is making electronic patient data expand, necessitating the implementation

of robust IT systems in Indian healthcare institutions. Ease of integration with existing solutions and retrofitting is a sine qua non . The main challenge during and after implementation of EMR, is the time spent by doctors and employees on EMR system proving the importance of training, retraining, learning, relearning and unlearning. HIT services will initially be deployed in metros, Tier I and Tier II cities. The management needs to do a cost versus benefit comparison, Integration of user-friendly systems access to mobile devices such as tablets, more shareable information platforms and standardisation could lead to more usability. Integrated systems will enable developers to create cloud-based solutions, making upgrades and maintenance quicker and more efficient. Shift to wireless technology, mobile devices and cloud computing will reduce system costs and improve workflows.

Why digitise ?

Recognising the change in technological innovations, more hospitals are now adopting ICT to improve the quality of healthcare delivery. ICT bridges distances and provides access to clinical knowledge leading to better quality healthcare. Disseminating information and knowledge management with ICT will empower all stakeholders. This will improve outcomes faster and more cost effectively, than only developing better drugs, better surgical procedures or improved diagnostics. In the future integrated health records of patients, smart cards, radio frequency identification tags to track patients, medication management, etc will form the core of the health care system. Introducing new technology in an existing health care system is one of the foremost challenges of "Digitizing". "Digitizing" a medium sized hospital involves integrating 300-plus applications supporting thousands of processes operating simultaneously in a hospital at any given time. Process redesign to increase efficiency and efficacy is mandatory in the fast-changing healthcare environment. Hospitals are people intensive enterprises and capacity of the people to embrace change is a major challenge. The functional requirements for adequate automation support of clinical healthcare activities, far exceed those of any other industry. For instance, most industries do not need to maintain 24/7, 365-days-a-year service with absolutely zero tolerance of downtime. Ultimately, healthcare is delivered by the people for the people. The capacity for staff to accept and embrace change will make or break solutions because ultimately it is the people who are implementing the solutions. Large Investments in money and time is required.

Conclusion

The ultimate success or failure of implementation of HCIT will not be not due to technological glitches, or lack of funding , or even red tapism. It will be due to human inertia, lack of involvement, commitment and the passionate burning desire, so necessary to break traditional barriers. To paraphrase Don Quixote in "The Man from La Mancha" – " to reach the unreachable star, it is my quest to follow that star, no matter how hopeless no matter how far. " . What we require today are Don quixotes. History has shown time and again that what is unreachable today is reachable tomorrow.

It was Rudyard Kipling who once remarked "What do they know of England, who only England know". In the 21st century this aphorism could be replaced thus "What do they know of healthcare, who only medicine know". 21st Century is the age of informatics. Today's doctor needs to be as well versed in the basics of Information Technology as he/she is in anatomy, physiology and pharmacology No man is an island unto himself. In the 21st century the physician or surgeon is only a member of a multi-disciplinary healthcare team which necessarily must include experts from various domains. Information Technology should necessarily be an integral part of any modern healthcare system. Having been trained in the BC era (before Computers and Before Christ are essentially one and the same!!). the author has witnessed the growth and development of medical care in the last 42 years in India including the gradually increasing use of HCIT in the last few years. . It would be no exaggeration to state that IT has made, is making and will continue to make a significant difference in patient care. Whether it be in the field of diagnosis, investigations, treatment, documentation, retrieval of information, access to state of the art knowledge, medical instrumentation, teaching, research etc IT has made a major difference.

IT in healthcare will level the playing field. It will bridge the gap between the haves and the have nots. In spite of the obvious short term and long term benefits it is a matter of deep concern that the use of IT in the healthcare industry is far less than its use in banking, commerce, travel, automobile or almost any other industry. Less than 2 per cent of gross revenues are set apart for deployment of ICT, compared to 5 to 8 per cent in most other industries. IT improves patient care, by enabling processes and systems to be introduced and repeatedly monitored. Standard operating procedures and audit processes can be introduced in almost every aspect of healthcare. We not only have software and hardware we have the most precious commodity brainware.

Providing quality affordable health care to anyone, anytime anywhere, making distance meaningless and Geography, History will be the new mantra. This is what digital health is all about. In India, mHealth could be the specific answer to improve the quality of care, without significantly increasing costs. While several pilot projects and proof of concept validation studies have been carried out, confirming that IT in healthcare can make a significant difference, these need to be scaled up. A solution is not a solution unless it is universally available. The time is now ripe to go all out and make sure

that in the next decade India will be in the forefront of e-Health. Improbable? Perhaps. Imposible? No. Will non availability of HCIT in a hospital be considered malpractice in a court of law ? In a decade from now, the response to the above provocative query could very well be a resounding ***Yes ! Yes !*** For HCIT to be integrated into the health care system, social, ethical and legal issues need to be addressed. Organisational matters, absence of a self-sustaining / revenue generating model and human factors, not technology, will be the deterrent factors.

The most important enabler to make these breakthroughs come true, is not further advances in technology alone, but meticulous attention to **WiiiFM** for every single stakeholder in the entire ecosystem. The question "**W**hat **I**s **I**n **I**t **F**or **M**e" has to be satisfactorily addressed. With private players playing the major role, particularly in secondary and tertiary health care it behoves them to extend their reach, embrace HCIT and thro PPP modes join hands with the government and make universal health coverage a reality.

About the Author

K. Ganapathy MCh (Neurosurgery)FACS, FICS, FAMS, Ph.D

President, Apollo Telemedicine Networking Foundation & Director, Apollo Tele Health Services, is a Former Secretary & Past President Neurological Society of India, Telemedicine Society of India & the Indian Society for Stereotactic & Functional Neurosurgery.

Emeritus Professor Tamilnadu Dr MGR Medical University. He was formerly Adjunct Professor IIT Madras &Anna University

Homepage: www.kganapathy.com

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TRANSFORMER: Step up your dreams, passion & love. Step down your anger,worries & sadness

MOTOR: Keep moving fast & continuously with high efficiency

GENERATOR: Generate wisdom through your knowledge.

CONDUCTOR: Have least resistance for friends, good company & thoughts

INSULATOR: High resistance for your weaknesses

SEMICONDUCTOR: Enjoy your hard times; they will make you only strong because behind clouds sun is still shining

FUSE: Protect yourself first from danger

SWITCH: Have reliable control over emotions & feelings

BATTERY: Store energy & be strong

CAPACITOR: Lead your life during struggles

INDUCTOR: Avoid ego during your success

CIRCUIT BREAKER: Know the problem & take appropriate action before it affect you

CONTROLLER: Trust yourself, analyse your inputs & take proper decision, be smart & reliable, have high speed processor for fast actions & decisions

SENSORS: Keep analysing your self & keep measuring your values

LIGHT: Keep lighting through your knowledge when its dark

LIGHTNING ARRESTOR: Ground sudden surges in your life

EARTHING: Keep your feet on ground for your safety & maintaining relationships

Life is all about electricity... Electrical Engineering