



Technology can help India leapfrog in Addressing Healthcare Challenges



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Indians have provided substantial inputs to digital revolution across the world. However within India we have only recently started efforts to harvest the benefits for the Indian population. The recently launched 'Digital India' strategy in 2014, has made many government services available online cutting down delays, red tapism and corruptions. The 'Make in India' launched in 2014, encourages Indian and multinational companies to manufacture technology and medical devices in India. Bharat Net's aim is to connect India's 250,000 Panchayats at an estimated cost of \$ 18 billion. Health and education have been identified as priority areas to benefit from this connectivity. The Digital India, National Skill Development Corporation, Swachh Bharat Abhiyan and Kayakalp Awards, creating 'Smart Cities' are some more opportunities to mention.

Ministry of Health & family Welfare promotes innovation in public health

Considering the tremendous potential in technology to compliment, accelerate effective implementation of health care, all the states have been encouraged to include innovations in the state programme implementation plans under National Health Mission (NHM). To facilitate this entire process including identification and review of such innovations a platform of 'www.nhinp.org' portal has been created. This allows uploading of innovations.

The technology innovations include medical devices, innovative technologies including healthcare IT, m-health, and Tele-health/ E-health.

Technology can help India leapfrog to improve health by addressing challenges, some examples:

Challenges

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How Technology can help: Examples

Preventive care

Health Promotion

Lack of physical activity, dietary intake, stress level

Mobile Apps to monitor physical activity, stress level, food intake etc

Lack of awareness of wellness, healthy lifestyle, mental illness, awareness on domestic violence

Films on youtube and smatphone, mobile apps, SMS, Cloud based screening and monitoring of mental health

Family Health including

MCH

Lack of health record

Electronic Family Health Record for all family members including those with NCDs linking it to UID,

ANM Online

Record of child and maternal care

Electronic Health record

Lack of awareness

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Mother and Child Tracking System

Sending SMS to beneficiaries to alert them regarding services due to them, or services which have become overdue using M-health

Curative care

Home care

Late detection of complications

Wearable devices to monitor heart, Blood Pressure and Pulse, arterial Oxygen, blood sugar sensorsetc can help in early detection and treatment

Communicable Diseases

Disease outbreak

Lack of clinical and personal health data

Machine Learning based Predictive Analytics for providing hyper-personal, actionable insights.

Lack of awareness and counselling (HIV/AIDS)

Mobile Apps for counselling, awareness, mobile apps for nurse, doctor for monitoring

Lack of real time monitoring (Lymphatic Filariasis Mass Drug Administration)

SMS Reporting Program for ASHA

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Access and Quality

Access to health care

Shortage of Doctors

E consultations, Any Time Medicine

Shortage of specialists

Telemedicine, teleradiology, teleophthalmology

Delay in fund flow and poor monitoring

Automation in Fund flow: PFMS

Stock outs of drugs and other consummables

online tendering and monitoring linked to supply chain management such as E aushadhi in rajasthan and similar initiatives in other states

Quality

Monitoring Performance

Unsatisfied beneficiaries and in extreme cases become violent against health care providers

Patient feedback and grievance redressal system using telephone, internet etc

long term patient records are not available

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Interoperable Electronic Health Records connected electric family health record

Delay in getting reports

Realtime online dash boards

Hospital care

Problems with Record keeping, symptom monitoring, Psychiatric Patient localization, inventory management, supply chain management, lack of real time monitoring of hospital activities and data, medical device tracking and management, dialogue between patients, or between patients and health professionals, health promotion

Linking Family Health records with Electronic Health Record, Radio Frequency Identifier Devices, Smart cards, Kiosk, dashboard for realtime hospital monitoring, Data Analytics, Social Media, Internet of Thing

Some Examples of Technology Innovations in India:

Below are the some of the examples of innovation which can revolutionise healthcare in India:

(a) Family health folders:

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This has been another initiative which looks at family as a unit and tries to maintain health record for each and every member which could be linked and segregated for individual service like immunization, antenatal care, postnatal care, spacing methods, next month's medicines, BP records etc. this initiative has been piloted in AIIMS and INCLIN projects in some of the states like Rajasthan called Jan Swasthya, Madhya Pradesh and in Himachal Pradesh by the name of ANMOL. There is a provision of print work plan for next day/ week/ fortnight/ month. Also, it can be linked with the Electronic Medical Record (EMR).

(b) Electronic Health Records (EHR):

Government is working on EHR to ensure continuity and quality of care. EHR will help in recording disease episodes and care plans and would allow data portability between different providers. Also, the metadata and data standards have been developed for it. Not only between clinical systems but also between support systems such as HR, Finance, Logistics, Lab, Emergency Transport FHR etc. There is also a possibility of establishing linkage to UID (Aadhar card).

(c) Access: free essential drugs:

To widen the accessibility of free drug services, there is a web based supply chain management system (e-Aushadhi) has been created. This system allows online tracking of drug inventory. It enables streamlining of inter-drug warehouse transfer and efficient control of inventory. Also, it enables multi-users and multi-location for storage. This initiative has been implemented by various states like Rajasthan, Tamil Nadu, Andhra Pradesh, Odisha, Jammu & Kashmir and at various stage in other states.

(d) Access: Healthcare Any Time Medicine (ATM):

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Presently, there are about 25 percent PHCs without a doctor, in India. This calls for innovative approach to address the challenges and originated an innovation called ATM. ATM, piloted by National Health Systems Resource Centre, New Delhi, provides Tele-consultation supported with mobile phone and the generic drug vending machine. The pilots have been conducted in five states [HP, Odisha, MP (3–4 each), UP (100) and AP (100)]. Total cost of this initiative per facility has been only 3 lakhs.

(e) Access: Telemedicine:

Yet another example for use of technology is 'Telemedicine' which is very successfully piloted in states like Tripura, Andhra Pradesh, Bihar, Maharashtra and Assam. With this technology, images and scans can be easily sent across the specialists for diagnosis and consultation for treatment; especially when specialized treatment is required and is not easily available nearby.

(f) Automation of fund flow:

It has been the experience so far that programme activities suffer due to delay in fund transfer and in this context establishing public fund management system with the use of technology is a bliss. With this, automation of recording, verification and calculation of payments are done a smoother and faster way and electronic fund transfer (EFT) towards payments into recipient's bank account becomes easy. This technology has been utilized in states like Rajasthan- with ASHA Soft, in Bihar- namely HOPE and Delhi.

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