

Disruptive technology in India's health sector

- Application of future Digital technologies in the health sector can lead to **accessible, affordable, and quality health care**.
- Further, it can reduce human involvement in risky functions.

Disruptive Technology

- **Disruptive technology** is an innovation that significantly alters the way that consumers, industries, or businesses operate.
- It **displaces a well-established product or technology**, creating a new industry or market.
- New technology can either **be sustaining or disruptive**.
- While sustaining technology depends on the incremental improvements in the already existing technology, disruptive technology is a completely new one.

Background

- With a **population of 1.3 billion scattered across urban and rural India**, the country poses a unique healthcare challenge.
- According to a **report by the United Nations, 75% of all healthcare infrastructure** including medical specialists and doctors are concentrated in urban areas where only 27% of the Indian population live.
- **Private hospitals and quality healthcare** are limited to urban areas.
- Meanwhile, around 716 million people that make up the remaining **72% of the population stay in rural areas** with a chronic lack of primary health care facilities.

Is technology the answer?

- **Technology and Indian Healthcare**
- **National Digital Health Mission (NDHM)** intends to digitize healthcare in India, by bridging the existing gap amongst different stakeholders of Healthcare ecosystem through digital highways.
- It is intended to significantly improve the efficiency, effectiveness, and transparency of health service delivery overall and achieving SDGs related to health.
- **Proposed National Health Stack by Niti Aayog**, a nationally shared digital infrastructure usable by both Centre and State across public and private sectors, to enable rapid creation of diverse solutions in health.
- **Telemedicine Practice Guidelines, 2020** for regularization and diversification of tele-consultation services across the country.
- If India is to realise its goal of **universal health coverage (UHC)**, it is imperative that technology and healthcare talk to each other seamlessly.
- **Technology will be the backbone:** Adoption of electronic health records (EHRs) is key to improve care, reduce errors and bring about cost efficiencies by streamlining the clinical care processes to improve outcomes.
- New-age cloud-based solutions and mobile apps that seamlessly integrate provider and patient interactions will further boost the adoption of EHRs.
- **Data gathered through EHRs**, over a period of time, can help in further refining the analytics models to improve clinical outcomes.
- **With increasing awareness of health and wellness issues**, patients will soon start playing a major role in the overall process of care.
- Already, **consumerism of healthcare is driving many of the new-age apps** dealing in prevention and continuous monitoring of health.
- **Artificial intelligence (AI)-enabled recommendation** engines are helping consumers make choices that they never knew they could make.
- A high degree of personalisation and care has been made possible through the use of technology.
- This is the need of the hour since chronic diseases are on the rise, as is the demand for personalised care depending on the illness and psychological make-up of the patient.



Use of disruptive technologies for hospital care

- According to global media reports, some established innovative field hospitals are using robots to care for COVID-19 affected patients.
- Hospitals in China, are using 5G-powered temperature measurement devices at the entrance to flag patients who have fever-like symptoms.
- Some robots are being used to measure heart rates and blood oxygen levels through smart bracelets.
- In India too, the Sawai Man Singh government hospital in Jaipur held trials with a humanoid robot to deliver medicines and food to hospitalized COVID-19 patients.

Role Of Disruptive Technologies In Medical Sector

- **Blockchain technology:** It can help in addressing the interoperability challenges that health information and technology systems face.
 - o The health blockchain would contain a complete indexed history of all medical data, including formal medical records and health data from mobile applications and wearable sensors.
 - o This can also be stored in a secure network and authenticated, besides helping in seamless medical attention.
- **Big data analytics:** It can help improve patient-based services tremendously such as early disease detection.
 - o AI and the Internet of Medical Things, or IoMT are shaping healthcare applications.
- o **Challenges**
 - Standardisation of health data
 - Developing a template for sharing data
 - Reengineering many of the institutional and structural arrangements in the medical sector
 - Organisational silos in bureaucracy
 - Data security and Data privacy
 - High investments

IoMT is defined as a connected infrastructure of medical devices, software applications, and health systems and services.

- **Medical autonomous systems** can also improve health delivery to a great extent and their applications are focused on supporting medical care delivery in dispersed and complex environments with the help of futuristic technologies.
 - o This system may also include autonomous critical care system, autonomous intubation, autonomous cricothyrotomy and other autonomous interventional procedures.
- **Cloud computing is another application facilitating** collaboration and data exchanges between doctors, departments, and even institutions and medical providers to enable best treatment.

Way Forward

- India needs to **own its digital health strategy** that works and leads towards universal health coverage and person-centered care.
 - o It should emphasize the ethical appropriateness of digital technologies, across the digital divide, and ensure inclusion across the economy.
 - o **Online consultation through video conferencing** should be made a key part of India's digital health strategy.
- **Using Local Knowledge:** In addition to robust health systems, an effective national response must also draw upon local knowledge. Primary health centres in India could examine local/traditional knowledge and experience and then use it along with modern technology.

Conclusion

- **India's efforts in this direction should involve synchronization and integration**, developing a template for sharing data, and reengineering many of the institutional and structural arrangements in the medical sector.