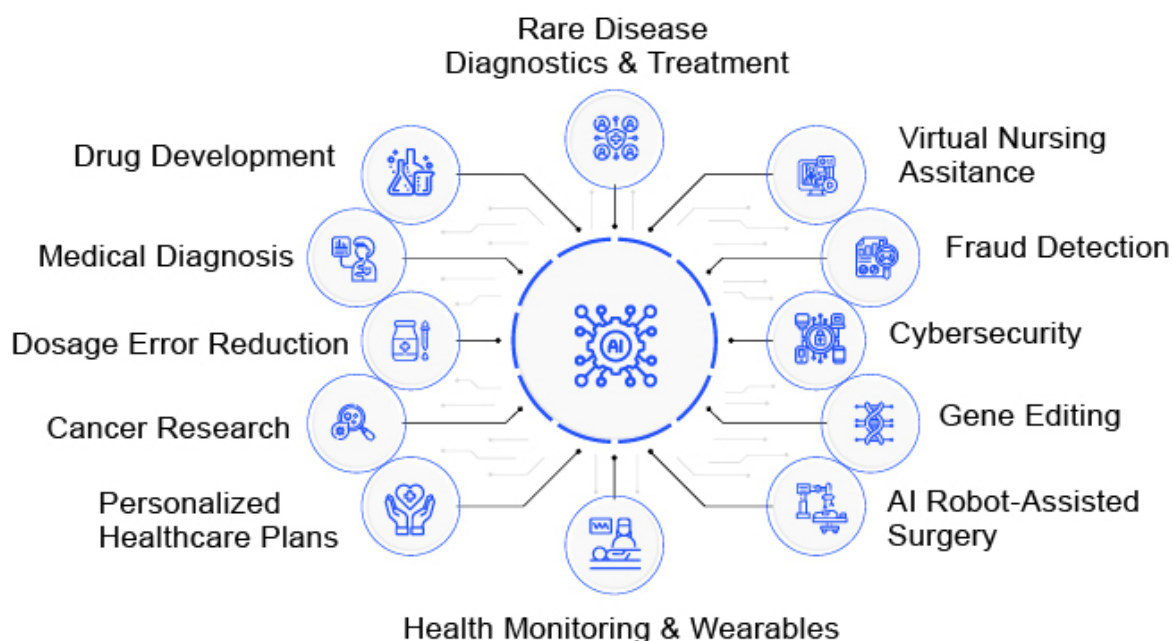# AI in Healthcare

Why in news?

At a time of mounting healthcare challenges, Artificial intelligence (AI) is adding new capabilities to the health sector with astonishing speed.

What is Artificial intelligence (AI)?

- Artificial intelligence (AI) – It is when computers and other machines _mimic human cognition_, and are capable of learning, thinking, and making decisions or taking actions.
- AI in healthcare is an umbrella term to describe the application of machine learning (ML) algorithms and other cognitive technologies in medical settings.

Applications of AI in Healthcare

What is the scenario of AI healthcare in India?

- India is one of the few developing countries leading the way on AI in health.
- By 2025, India would invest 11.78 billion USD in India's AI in the primary sector, which will enhance the country's GDP by 1 trillion USD by 2035.

  As per the Indian AI Healthcare Market 2019-2025 report, AI in the Indian healthcare industry is estimated to grow at a CAGR of 50.9% during the forecast

period.

- **Present case -** Indian start-ups are continuing to refine and prioritise increased personalised medical care by using AI tools.
- Some of the AI healthcare start-ups in India that are reshaping the industry are:
    1. **HealthifyMe -** Harnesses AI to provide personalised diet and fitness information and coaching.
    2. **Tricog -** Offer virtual cardiology services to distant clinics.
    3. **Dozee -** Contactless health monitors that enable early detection of any health deterioration.
    4. **Niramai -** Early-stage detection of breast cancer.

How AI is leveraging healthcare systems?

- There are several ways AI can improve health outcomes.
- **Diagnosis -** AI can improve diagnosis and risk stratification.
- The large and untapped potential of AI is it can diagnose a range of diseases at scale and earlier than clinicians.
- AI can suggest early interventions for those whose genetics, environment or behaviours place them at greater risk.
- **Infectious disease intelligence -** Climate change and human migration increases the risk of future occurrences of infectious disease.
- AI-driven systems can predict outbreaks and map their spread and deliver customised mitigation suggestions.
- For example, by testing wastewater, analysing web traffic and modelling mosquito movement patterns can help map the spread.
- **Clinical trial optimisation -** Clinical trials are expensive, time-consuming and under representation of underserved groups and women.
- AI can select optimal trial sites, recruit and retain participants and create more representative synthetic data.
- New therapies and treatments that work optimally across demographic groups will be faster in time to market through AI optimised clinical trials.
- **Others -** AI also offers the promise of greater transparency into the medical supply chain.
- AI tools based on deep learning offers insights about the mechanisms underlying disease.
- Identifying the patient subgroups most likely to respond to a given treatment and discovering new therapeutic assets.

What are the challenges for AI in healthcare?

- There are 4 major barriers to leverage healthcare system through AI.
    1. Insufficient high-quality data.
    2. Low doctor trust of AI solutions.
    3. Over-emphasis on flashy pilots at the expense of easily scalable solutions.
    4. Inadequate technological infrastructure, especially in low- and middle-income countries.

What should be done to overcome these challenges?

- **Stakeholders –** All stakeholders should come together to ensure AI in healthcare is ethical, responsible and equitable resulting in improved outcomes for all.
- Stakeholders from across healthcare, government and beyond must ensure that algorithms are developed and work *responsibly and transparently*.
- **Data privacy –** Governments must strengthen data privacy laws regulating the use of anonymised patient data to train algorithms.
- **Data ownership –** They must also help *codify data ownership* and security policies to encourage interoperability of data across borders and corporate walls.
- Governments must incentivise *private investment* in AI and allocate funds to scale solutions that are already working elsewhere.
- **Partnerships** – The partnerships between countries must also be cultivated to ensure AI innovations accessible across borders, especially reaches low and middle income countries.

References

1. Business Line - Leverage AI in healthcare
2. Financial Express - Healthcare AI advances rapidly in India