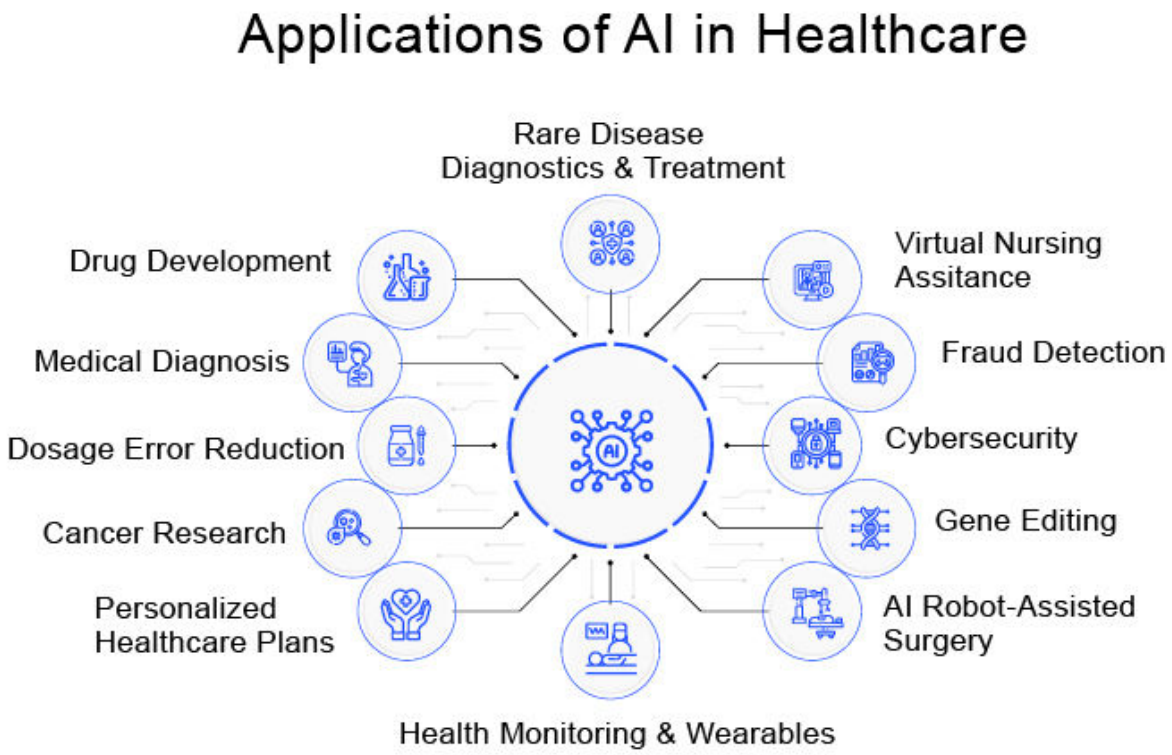
AI in Healthcare

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.



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