

3. Proton Beam Therapy (PBT)

Why in News?

- There are no government facilities that offer proton beam therapy treatment in India. The treatment is considered a viable alternative to radiation for treating solid tumours, especially for head and neck cancers.

Highlights

- PBT is a type of cancer treatment that uses a beam of high-energy protons to destroy cancer cells.
- A proton is a positively charged elementary particle that is a fundamental constituent of all atomic nuclei.
- Unlike traditional radiation therapy, which uses X-rays, PBT can precisely target the tumour while minimising radiation exposure to surrounding healthy tissue.
- PBT is typically delivered via a large, complex machine called a cyclotron, which accelerates protons to high speeds and delivers them to the tumour site.
- Setting up a PBT centre is fraught with infrastructural and regulatory challenges stemming from safety concerns from the Department of Atomic Energy.
- There are concerns about safety since hydrogen is a highly volatile element, and daily checks are required to prevent leaks.
- A PBT machine is a huge contraption, up to three storeys tall and costs nearly ₹500 crore.
- Apollo Hospital in Chennai is the only centre in South and West Asia that offers PBT.
- The hospital has treated up to 900 patients, and 47% of cases were brain tumours.
- Prostate, ovaries, breast, lungs, bones, and soft tissues cancer patients have also seen promising results through PBT.