Robotic Surgery

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Why in News

Recently, **Insurance Regulatory and Development Authority of India (IRDAI)** has standardised health policies across all health insurers to even cover **robotic and bariatric surgeries.**

- **Bariatric surgery** is an operation that helps **lose weight** by making changes to the **digestive system.**
- Recently, India became the **first country to perform a telerobotic coronary surgery** on humans.

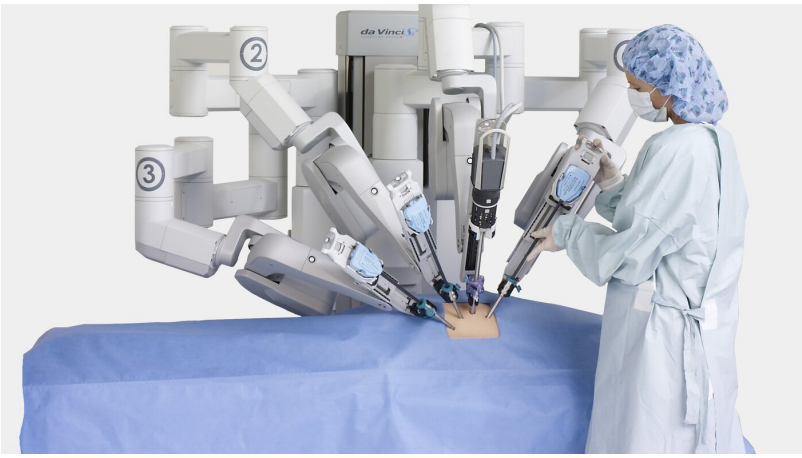
Key Points

- **Robotics:** It is the intersection of **science, engineering and technology** that produces machines, called **robots,** to **substitute for (or replicate) human actions.**

  Application of Robotics:

  - **Industrial Sector:** Industrial robots are electronically controlled, both programmable and reprogrammable to carry out certain tasks with high precision and accuracy.
  - **Aerospace:** Another application of robots is in aerospace for outer space exploration. **Aerospace robots or unmanned robotic spacecraft** play a key role in outer space probes.
  - **Outer Space: Robotic arms** that are under the control of a human being are employed to unload the docking cove of outer-space shuttles to launch satellites or to build a space station.
  - **Exploration:** Robots can **enter the environments that are injurious to human beings.** An illustration is observing the atmosphere within a volcano or investigating our deep marine life.
  - **Healthcare Delivery:** A highly possible advancement in healthcare is using robots in **Robotic Surgery.** Due to technological advancement, this is possible even if the patient is located in remote areas. This possibility defies distance.

- **Robotic Surgery:**



  - **Robotic or Robot-assisted surgery** integrates advanced **computer technology with the experience of the skilled surgeons.** This technology provides the surgeon with a **10x magnified, high-definition, 3D-image** of the body's intricate anatomy.
  - The surgeon **uses controls in the console to manipulate special surgical instruments** that are smaller, as well as more flexible and manoeuvrable than the human hand. The **robot replicates the surgeon's hand movements,** while **minimizing hand tremors.**

- **Benefits of Robotic Surgery:**
  - **Easy Procedures:** Makes the performance of complicated procedures much easier.
  - **Increases Flexibility, Precision and Control:** It allows doctors to perform different types of complex procedures with more **precision, flexibility, and control than possible with conventional techniques.**
  - **Reduces Trauma:** It reduces the trauma caused to the patient by allowing surgery to be performed through **small ports or 'keyholes' rather than via large incisions.**
  - **Simplifies Surgeries:** The instruments can access hard-to-reach areas of a patient's body more easily through **smaller incisions** compared with traditional open and laparoscopic surgeries.
  - **Reduces Recovery Time:** It helps in **shorter recovery times, with fewer complications and a shorter hospital stay.**
  - **Other Advantages:** Less pain and blood loss, and smaller, less noticeable scars.
- **Reasons for High Demand of Robotic Surgery:** Factors which are pushing the demand of robotic surgery are:
  - Advancements in technology.
  - Rising incidence of chronic diseases.
  - High incidence of medical errors.
  - Demand for faster recovery and reduction in pain.
  - Increase in awareness about the benefits of robot-assisted surgery.
- **Reasons for Slow Growth of the Sector:**
  - **High cost of installation:** Instruments are not only expensive but also incur a large **recurring cost due** to the **disposable nature** of instruments and ancillaries.
  - **Monopoly:** There exist only a **few companies that manufacture the equipment** for robotics surgery.the monopoly of few companies makes it difficult to expand robotics surgery in the Indian healthcare system.
  - **Untrained Resource:** Another challenge is the **unavailability of trained surgeons** for conducting robotic surgeries.
- **Robotic Surgery in India:**
  - **Quality:** India is the **most preferred destination** for getting **high-quality treatment across the globe,** and is dotted with various **multi-speciality hospitals and patient-care centres.**
  - **Infrastructure:** The hospitals are well equipped with advanced, highly sophisticated and **world-class infrastructure** facilities using state-of-the-art technologies for the treatment of various critical illnesses.
  - Cost: India is very **affordable** unlike in the U.S., U.K., and Canada. Overall, the cost of such procedures in India is **pocket-friendly,** that too, **without compromising on the quality of services and infrastructure.**

Way Forward

- Government should establish **fellowship programmes and offer structured training to surgical teams.** With the increase in the number of robotic surgeries, there will be an acute need for training of doctors for carrying out such surgical processes. In India, training and certifying of surgeons remains a challenge.
- It should also **promote collaboration between hospitals and insurance companies** to come up with innovative ways to tackle the high cost of robotic surgeries.

Source:TH