

Prelim Bits 13-04-2023 | UPSC Daily Current Affairs

Endometriosis

DotLab has discovered first of its kind non-invasive method to accurately diagnose endometriosis.

- Endometriosis is a painful chronic disease in which tissue similar to the lining of the uterus, or endometrium, grows outside of it.
- Endometriosis can start at a person's first menstrual period and last until menopause.
- Endometriosis was first characterised in 1860 but its first biomarkers were found only 150 years later.

Endometriosis affects roughly 10% (190 million) of reproductive age women and girls globally.

- **Cause** - The cause of endometriosis is unknown. It affects many women globally, regardless of ethnic origin or social status.
- **Symptoms** - A variety of symptoms, including severe pain in the pelvis, painful menstruation, urination, sexual intercourse, bowel movements, fatigue, and sometimes infertility.
- **Threat** - It is not a life-threatening disease
- **Diagnosis** - No reliable non-invasive diagnostic tools so far. Laparoscopic surgery is required for a definitive diagnosis.
- Now, a blood test to identify biomarker is considered as non-invasive definitive diagnosis.
- **Treatment** - There is currently no known cure for endometriosis and treatment is usually aimed at controlling symptoms.

Biomarker is a biological molecule found in blood, other body fluids, or tissues that is a sign of a normal or abnormal process, or of a condition or disease.

References

1. [The Hindu - Endometriosis: The long wait for a non-invasive tests](#)
2. [WHO - Endometriosis](#)

SaMD and SiMD

Medical technology devices usually connected to the internet, mobile phones, servers, and the cloud are under threat of cyber-attacks.

- **SaMD** - Software AS a medical device (SaMD) means that the software itself is the device.
- They are software solutions that do not reside in a medical device but are used for medical purposes.
- To qualify as SaMD, software needs to function completely independently of existing medical devices.
- **Examples** - Software that processes images, X-rays and scans to detect diseases.
- **SiMD** - Software IN a medical device (SiMD) means that the software is part of another medical device which helps it function in some way.
- SiMDs are software that powers the mechanics of a medical device or processes the information that is produced by a medical device is obviously considered.
- Software that controls the device remotely is also a SiMD.
- **Examples** - Oximeters, hearing aids, glucometers
- **Regulation** - Both SiMD and SaMD are subject to the medical device regulations of the country where they are used.
- **In India** - The Central Drugs Standard Control Organization (CDCSO) under the control of Drug Controller General of India (DCGI) classifies, regulates and registers medical devices.
- Medical Devices Rules, 2017 have been framed in conformity with Global Harmonisation Task Force (GHTF) framework.
- Medical devices will, under the new Rules, be classified as per GHTF practice, based on associated risks into - Class A (low risk), B (low moderate risk), C (moderate high risk) and D (high risk).
- Currently, there are **no guidelines on the regulation** of SaMD and SiMD, they are not even covered under this rule.

References

1. [The Hindu - Your medical device could be spying on you](#)
2. [Health Tech Zone - SaMD vs SiMD: What's the Difference?](#)
3. [PIB - Health Ministry Notifies Medical Devices Rules, 2017](#)

Jupiter Missions

The ESA's 'Jupiter Icy Moons Explorer' (JUICE) is set to launch on 13th April 2023.

Jupiter Icy Moons Explorer (JUICE)

- **Agency** - The European Space Agency (ESA)
- ESA is scheduled to launch a rocket carrying a spacecraft destined for Jupiter on April 13, 2023.
- The spacecraft '**Jupiter Icy Moons Explorer**' (JUICE) is planned to reach Jupiter in 2031.
- JUICE will spend at least 3 years on Jupiter's moons after it arrives.
- JUICE will make detailed observations of Jupiter and its 3 large ocean-bearing moons i.e. Ganymede, Callisto and Europa.
- **Moons of Jupiter** - Io, Europa, Ganymede and Callisto are 4 of Jupiter's moon which are relatively large, spherical complex worlds.

- Europa, Ganymede and Callisto - are home to large, underground oceans of liquid water that could support life.
- Ganymede is the largest moon in the Solar System and the only one to have its own magnetic field.
- **Other Jupiter Spacecraft** - Only 2 other spacecraft have ever examined Jupiter.
- The *Galileo probe*, which orbited the gas giant between 1995 and 2003, led to geological discoveries on all four large moons.
- *Juno*, which has been circling the planet since 2016, has provided unprecedented view into Jupiter's composition, structure and space environment.
- **Europa Clipper** - Upcoming Jupiter Mission
- **Agency** - NASA
- NASA is also planning to launch a robotic spacecraft named Europa Clipper to the Jovian moons in October 2024.
- Europa Clipper would arrive at Jupiter in 2030.
- It aims to study its Europa moon and will make dozens of close flybys of Europa.

References

1. [The Hindu - Two upcoming missions to Jupiter's moons](#)
2. [IE - ESA set to launch Jupiter Icy Moons Explorer \(JUICE\)](#)

Public Interest Immunity

The Supreme Court (SC) criticised the “sealed-cover” approach used in courts, while devising a new “public-interest immunity” principle.

- **Sealed cover jurisprudence** - '[Sealed cover](#)' refers to the practice of courts seeking or accepting information in “sealed envelopes”, which is only accessible to the judges.
- The 'sealed-cover' exercise has been frequently employed by courts in deciding sensitive matters such as the Rafale jet deal case
- **New Procedure** - It suggested by the SC allows an amicus curia (friend of the court) to be appointed by a court to evaluate whether there is a case for 'public-interest immunity'.
- The amicus will be given access to information that is sought to be withheld.
- The amicus will be given an opportunity to speak to both parties to make a reasonable decision on the necessity of disclosure, without disclosing it.
- Evaluation of whether the public-interest defence will succeed will happen in a closed setting.
- In all cases, the court must pass a reasoned order for allowing or dismissing the public-interest immunity claim.
- **Public-Interest Immunity** - The principle of 'public-interest immunity' allows the state to withdraw material from the public record if it 'injures public interest'.
- The principle does not allow any reliance by the court or parties involved on such material that has been submitted before the court.
- The public-interest immunity, effectively, renders the relevant document non-existent for the purposes of the case.
- It is 'least restrictive measure' which substantially realises the objective of protecting the interests of confidentiality and national security

References

1. [The Print - SC: Replace 'sealed cover' with 'public interest immunity'](#)
2. [IE - What is the SC's public interest immunity claim procedure?](#)

State of India's Environment Report, 2023

The 2023 State of India's Environment report was unveiled recently at India Habitat Centre (IHC), Delhi.

- The State of India's Environment (SoE) report is published every year and 2023 issue is the 10th edition.
- The SoE report is published by Down To Earth, the fortnightly magazine and Centre for Science and Environment (CSE).
- The 2023 report covers subject assessments ranging from climate change, agriculture and industry to water, plastics, forests and biodiversity.
- **Focus Areas** - This year's report mainly focuses on
 1. Humans: how will they evolve in future
 2. Himalayas: Climate change and the Third Pole
 3. Waste: India's legacy dumpsites
- **Report Highlights** - The report points out that solutions cannot be sustainable if they are not inclusive.
- India generates 150,000 tonne of municipal solid waste every day - more than half of this is either dumped in landfills or remains unattended.
- Four years and 11 months is the average duration of life lost to air pollution in India.
- Rural India is losing more years due to air pollution-related health issues than the urban belt.
- Between January and October 2022 (304 days), India witnessed extreme weather events on 271 days which claimed over 2,900 lives.

References

1. [Down to Earth - 2023 State of India's Environment report](#)
2. [CSE - Annual State of India's Environment report today](#)