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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

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