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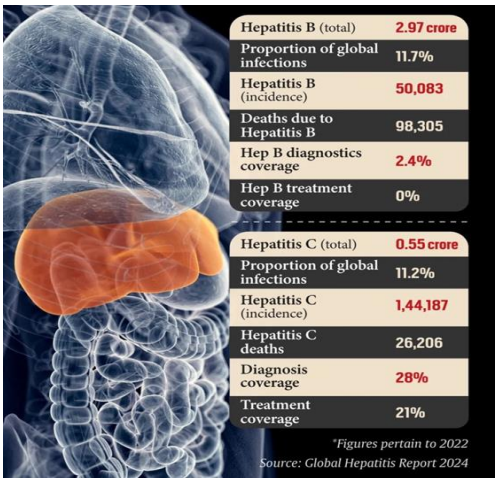
Current affairs summary for prelims

10 April, 2024

Global Hepatitis Report, 2024

Context: *India has one of the highest burdens of viral hepatitis, causing liver inflammation, damage, and potential cancer, as per WHO's Global Hepatitis Report 2024.*

- **Burden of Viral Hepatitis in India:**
  - Hepatitis B affects 2.9 crore people, while Hepatitis C affects 0.55 crore people in India.
  - Notable numbers of new cases reported in 2022: over 50,000 for Hepatitis B and 1.4 lakh for Hepatitis C.
  - Deaths in India in 2022: 1.23 lakh due to these infections.
- **Transmission and Prevention**
  - Routes of transmission include mother-to-child transmission, unscreened blood transfusions, and needle-sharing among drug users.
  - Hepatitis B can be prevented through vaccination, emphasizing the need for complete coverage.
  - Hepatitis C is curable with medication.
- **Understanding Hepatitis B and C:**
  - Hepatitis B causes acute symptoms like nausea and yellowing of the skin and eyes, leading to chronic liver disease, cirrhosis, and liver cancer.
  - Symptoms of Hepatitis C may not be initially apparent but can include jaundice, fatigue, and joint pain.
- **Global Impact:**
  - Globally, viral hepatitis kills around 1.3 million people annually, posing a significant health challenge comparable to tuberculosis.
  - Diagnosis and Treatment Coverage:
  - Diagnostic and treatment coverage for Hepatitis B and C in India remains low, with only a small percentage diagnosed and receiving treatment.
  - Despite affordable treatments available, utilization of free diagnostics and treatment remains limited.
- **Challenges and Solutions:**
  - Challenges include predominant mother-to-child transmission for Hepatitis B and limited needle-stick transmission in healthcare settings.
  - Vaccination programs target high-risk groups, but broader coverage and treatment accessibility are crucial.
  - Improvement in treatment accessibility and eligibility is necessary to reduce health consequences.
- **Hepatitis C Treatment:**
  - Short-duration treatments for Hepatitis C can cure 80 to 90% of patients within 12 to 24 weeks.
  - Early diagnosis and treatment are essential for better outcomes for those affected.



Dark Energy Spectroscopic Instrument (DESI)

Context: *On April 4 observations by DESI were published, featuring 5,000 robotic 'eyes', each capturing and processing light from galaxies.*

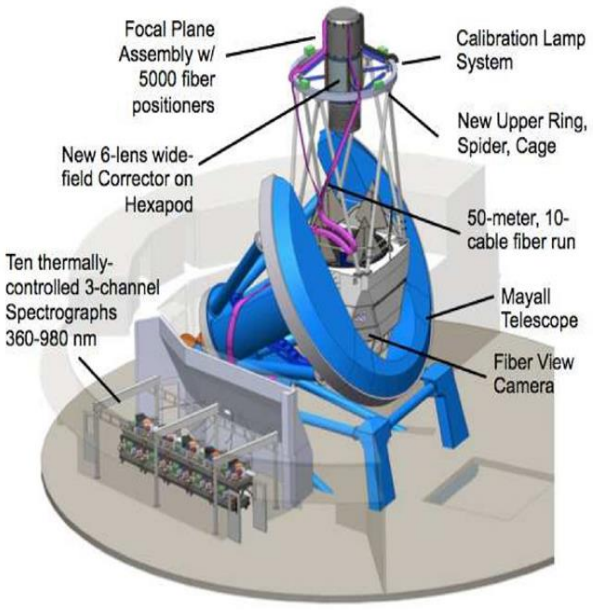
- **Background:**
  - Edwin Hubble's observations in 1929 established the universe's expansion.
  - In the late 1990s, scientists discovered the accelerated expansion, leading to the hypothesis of 'dark' energy.
- **DESI Experiment Overview:**
  - Utilizes the Dark Energy Spectroscopic Instrument (DESI) with 5,000 robotic 'eyes' to capture and process light from galaxies.
  - Mounted on the Nicholas W Mayall 4-meter Telescope at Kitt Peak National Observatory.
  - Capable of observing 5,000 galaxies simultaneously.
  - Operational for three years, with plans for at least two more years.
- **Significance of DESI Results:**
  - Data from the first year used to create a comprehensive three-dimensional map of the universe.
  - Captured light from 6 million galaxies, some existing 11 billion years ago.
  - Precise distance measurements allow mapping of galaxy distribution and movement over tLime.

➢ **Expansion Rate of the Universe:**

- DESI data reveals the universe's expansion rate, increasing by 68.5 km per second after every 3.26 million light years of expansion.
- Some calculated values deviate from current theoretical models.

➢ **Dark Energy Intensity:**

- Theoretical models suggest constant energy density for dark energy.
- DESI results hint at changes in energy density, although confidence levels are cautious.
- Excitement within the scientific community for potential insights into the nature of dark energy and new physics.
- **Future Analysis:** DESI collaboration to analyse subsequent years of observation data promptly.



Higgs Boson

Context: *Nobel laureate physicist Peter Higgs, known for proposing the "God particle" explaining matter formation after the Big Bang, has passed away at 94.*

➢ **Introduction to the Higgs Boson:**

- The Higgs boson, also known as the Higgs particle, is an elementary particle in the Standard Model of particle physics.
- It is produced by the quantum excitation of the Higgs field, which is one of the fundamental fields in particle physics theory.

➢ **Properties of the Higgs Particle:**

- In the Standard Model, the Higgs particle is a massive scalar boson with zero spin, even parity, no electric charge, and no colour charge.
- It interacts with mass and is highly unstable, decaying into other particles almost immediately upon generation.

➢ **The Higgs Field and Mechanism:**

- The Higgs field is a scalar field with neutral and electrically charged components forming a complex doublet of weak isospin symmetry.
- Its "Sombrero potential" results in a non-zero value everywhere, breaking the weak isospin symmetry and giving rest mass to all massive elementary particles of the Standard Model, including the Higgs boson itself.

➢ **Origin and Discovery:**

- Proposed in 1964 by Peter Higgs and others, the Higgs mechanism explained how particles acquire mass.
- A 40-year search culminated in the discovery of a subatomic particle matching the expected properties of the Higgs boson in 2012 by the ATLAS and CMS experiments at the Large Hadron Collider (LHC) at CERN.
- Peter Higgs and François Englert were awarded the Nobel Prize in Physics in 2013 for their theoretical predictions.

Aspect	Details
Composition	Elementary particle
Statistics	Bosonic
Symbol	H0
Theorized	R. Brout, F. Englert, P. Higgs, G. S. Guralnik, C. R. Hagen, and T. W. B. Kibble (1964)
Discovered	Large Hadron Collider (2011–2013)
Mass	125.11 ± 0.11 GeV/c²
Mean Lifetime	- Predicted: 1.56 × 10^-22 s
	- Tentatively measured: 1.2 – 4.6 × 10^-22 s at 3.2 sigma significance
Decays into	- Bottom–antibottom pair (observed), Two W bosons (observed)
	- Two gluons (predicted), Tau–antitau pair (observed)
	- Two Z bosons (observed), Two photons (observed)
	- Two leptons and a photon (Dalitz decay via virtual photon) (tentatively observed), Muon–antimuon pair (predicted), Various other decays (predicted)
Electric charge	0 e
Colour charge	0
Spin	0 h
Weak isospin	-1/2
Weak hypercharge	+1
Parity	+1

NEWS IN BETWEEN THE LINES

NEWS IN BETWEEN THE LINES

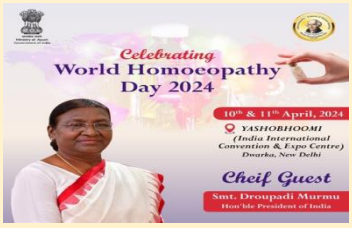
Major Pier

Recently, admiral R. Hari Kumar inaugurated a 350-meter-long major pier for Offshore Patrol Vessels (OPVs) at Naval Base, Karwar in Karnataka.

About:

- The Pier **3 OPV Pier is 350 meters long**, providing ample berthing space for naval vessels.
- It is **designed specifically to accommodate Offshore Patrol Vessels (OPVs),** large survey vessels and mine countermeasure vessels.
- It is a part of a broader initiative under Project **Seabird Phase IIA,** emphasizing integrated development to meet evolving naval requirements.
- The scope of Project Seabird Phase IIA encompasses **accommodation for 32 ships** and **submarines, facilities for 23 yard craft**, a **dual-use naval air station**, a full-fledged naval dockyard, construction of four covered dry berths and provision of logistics support for ships and aircraft.

World Homeopathy Day



Today, the President of India will inaugurate a two-day Homeopathic Symposium on World Homeopathy Day 2024 at Yashobhoomi Convention Centre Dwarka, New Delhi.

About World Homeopathy Day:

- World Homeopathy Day is celebrated **annually on April 10th** to commemorate the **birth anniversary of Dr. Samuel Hahnemann**.
- Recognized internationally by homeopathic practitioners, organizations and enthusiasts, World Homeopathy Day aims to **promote the principles, practices** and **benefits of homeopathy on a global scale**.
- The theme for World Homeopathy Day **2024 is "Homeoparivar: One Health, One Family."**
- It is **celebrated to raise awareness about homoeopathy** and to improve its accessibility to people.
- The aim of this day is also to bring together practioners, enthusiasts and supporters from across the world.
- The symposium is organized by the **Central Council for Research in Homoeopathy (CCRH) under the Ministry of Ayush.**
- The symposium is **themed 'Empowering Research, Enhancing Proficiency,'** aiming to promote holistic health and wellness while advancing homoeopathy research techniques.

National Green Hydrogen Mission

नवीन एवं नवीकरणीय ऊर्जा मंत्रालय
MINISTRY OF NEW AND RENEWABLE ENERGY
सत्यमेव जयते

Recently, the Central Government extended the deadline for Research and Development proposals under the National Green Hydrogen Mission to 27th April from the initial date of 12th April.

About National Green Hydrogen Mission:

- The National Green Hydrogen Mission is a **government initiative launched on January 4, 2023,** to make India a global hub for the production, use and export of green hydrogen.
- The mission **aims to reduce dependence on fossil fuels** and **provide a reliable source of energy** through the use of renewable energy sources like **solar**, **wind** and **hydropower**.
- The mission sets a target to develop a green hydrogen production capacity of at least **5 MMT per annum by 2030**,
- The Research and Development scheme seeks to make the production, storage, transportation and utilization of green hydrogen more affordable.
- It also aims to **improve the efficiency**, **safety** and **reliability** of the relevant processes and technologies involved in the green hydrogen value chain.
- Green hydrogen is **produced using electrolysis of water with electricity generated by renewable energy.**

	▪ The carbon intensity depends on the carbon neutrality of the source of electricity. ▪ The more renewable energy there is in the electricity fuel mix, the **"greener" the hydrogen produced.** ▪ The National Green Hydrogen Mission is administered by the **Ministry of New and Renewable Energy.**
Teleophthalmology 	▪ Teleophthalmology is a **specialized form of telemedicine tailored for eye care**, allowing remote consultations with ophthalmologists through internet-based video chat platforms. ▪ It **reduces carbon emissions** by minimizing the need for travel, particularly significant in India where a significant portion of the population resides in villages and requires expensive long-distance travel to urban centers for hospital visits. ▪ Teleophthalmology sessions can be facilitated **through smartphone apps or with assistance from technicians at primary healthcare centers**, allowing patients to book appointments, receive consultations, and e-prescriptions online. ▪ It primarily **targets individuals with minor eye problems** or regular preventive eye check-ups, highlighting its potential in efficiently addressing non-urgent healthcare needs.
Place in News **Ireland**	*Recently, Simon Harris became Ireland's youngest ever Prime Minister on as the country's parliament voted 88 to 69 in favour of him.* **Ireland (Capital: Dublin)** **Location:** Ireland is an island nation in the North Atlantic Ocean, located in northwest Europe. **Boundaries:** ▪ Ireland is bordered by the **Atlantic Ocean** (West), the **Irish Sea** (East) and **the Celtic Sea** (South). ▪ It shares its only **land border with Northern Ireland**, which is part of the United Kingdom, to the northeast. **Physical Features:** • The highest point in Ireland is **Carrauntoohil,** which is located in the Macgillycuddy's Reeks mountain range in County Kerry. • The major rivers in Ireland include the **Shannon**, **Barrow**, **Suir**, **Blackwater** and **Nore**. • reland has significant mineral resources including **zinc**, **lead**, **silver**, **gypsum** and **limestone**, with zinc and lead being the most economically important.

POINTS TO PONDER

- Where was the inaugural 'Parivartan Chintan' tri-service armed forces planning conference held recently? **– Delhi**
- Who recently assumed office as the new president of Slovakia? **– Peter Pellegrini**
- In which state/UT is the Sukhna Wildlife Sanctuary, recently in the news, located? **– Chandigarh**
- Which country recently declared a federal emergency in the Orenburg region due to flooding caused by the Ural River in Orsk? **– Russia**
- At which location was the Yoga Mahotsav recently organized? **– Pune, Maharashtra**