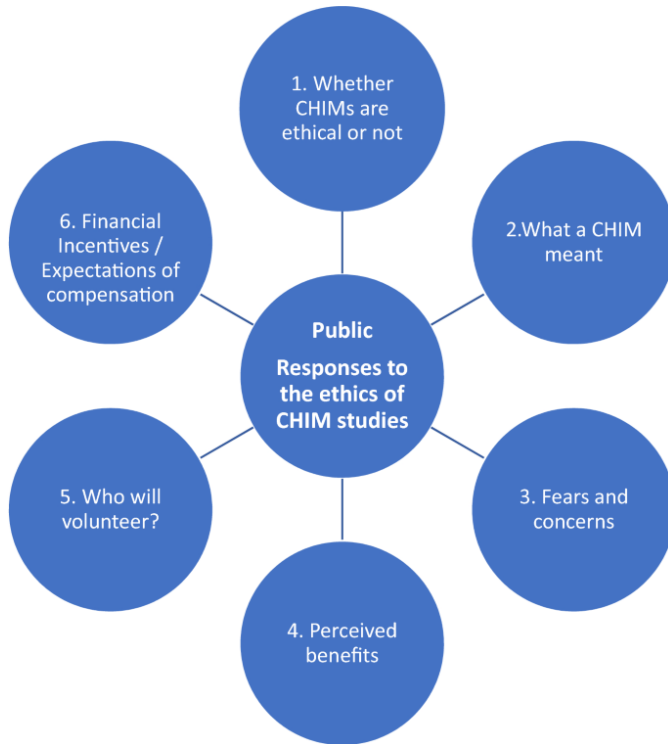


1. Controlled Human Infection Studies

Topic: Polity and Governance



In News: India has taken its first step to introduce Controlled Human Infection Studies (CHIS), used in many countries for vaccine and treatment development.

More on the Topic:

- Outside of India, this relatively new research model which involves **intentionally exposing healthy volunteers to pathogens in a controlled environment**, has been used to study malaria, typhoid, dengue, etc.
- ICMR's Bioethics Unit has introduced a consensus policy statement which is now open for comment and argues the case for bringing in CHIS.
- The document talks of the need, benefits, and challenges associated with CHIS.

Background:

- ICMR notes that India has so far stayed away from CHIS because regardless of the potential scientific benefits, these studies are **ethically sensitive and raise concerns about contentious research ethics — issues like deliberate harm, possible disproportionate payment and hence inducements, third-party risk, withdrawal from the study and research with vulnerable participants.**

Why CHIS is important for India?



- India carries a high burden of morbidity and mortality from infectious diseases. They contribute about **30% of the disease burden in the country.**
- Finding novel, efficient, and cost-effective alternatives to existing methods of research in these diseases and their prevention is imperative to reduce this burden.
- CHIS is a **relatively new research model** that helps provide unique insights into disease pathogenesis and can accelerate the development of novel medical interventions.

Benefits of CHIS:

- CHIS offers **accelerated, cost-effective, and efficient outcomes** using smaller sample sizes in comparison to large clinical trials.
- Its social value includes **potential contributions to public health response to diseases of concern, healthcare decision-making, policies and economic benefits, improved pandemic preparedness, and community empowerment.**

Source: The Hindu

2. New Health Bills

Topic: Polity and Governance



In News: The government has introduced two health Bills National Dental Commission Bill, 2023 and National Nursing and Midwifery Commission Bill, 2023 in Parliament.

More on the Topic:

- The Bills seek to **repeal the Dentists Act, of 1948 and the Indian Nursing Council Act, of 1947**, and propose to form regulatory bodies for dentists and nurses and midwives on the lines of the National Medical Commission (NMC).
- The medical commissions will have **autonomous boards for undergraduate and postgraduate education, an assessment and rating board, and an ethics and registration board** that will look at different aspects of dental and nursing education.

- Both Bills also have a provision for **creating live national registers**.
- Medical professionals currently **need to register with their respective state councils**. The registers created under the new Bills will be dynamic, with the state and the national registers syncing automatically, and the qualifications of the professionals will be updated from time to time.
- The National Dental Commission Bill will make **provision for an exit test for dentists** on the lines of the National Exit Test that is likely to be implemented for those completing MBBS from the next batch.

Source: PIB

3. Mhadei Wildlife Sanctuary



Topic: Environment and Ecology

In News: The Goa bench of the Bombay High Court has directed the Goa government to notify the Mhadei Wildlife Sanctuary and other areas as a tiger reserve under the Wildlife Protection Act.

More on the Topic:

- Spread over 208 sq km, Mhadei Wildlife Sanctuary is located in the northeastern part of Goa adjoining Karnataka.



- This area has waterfalls such as **Vazra Sakla Falls and Viridi Falls**.
- One of its significant features is the presence of **nesting sites for critically endangered Long-billed vultures**, particularly near Vazra Falls.
- The landscape is characterized by a **diverse mix of thick moist deciduous forests and evergreen species**.
- Notably, the region is also renowned for its **sacred groves**, which play a crucial role in safeguarding rare and indigenous trees.
- **Mhadei River**, a lifeline of Goa, originates in Karnataka, passes through the sanctuary, and meets **the Arabian Sea at Panaji**.
- The sanctuary acts as a catchment area for the Mhadei River.

Tiger Conservation in India:

- **Project Tiger**: India launched "Project Tiger" in 1973, which was one of the world's most successful and pioneering wildlife conservation programs. The project aims to identify and protect tiger reserves across the country, providing a safe habitat for tigers to thrive.
- **Tiger Reserves**: India has established numerous tiger reserves across various states to provide protected areas for tigers and other wildlife. These reserves are carefully managed to ensure the well-being of tigers and their prey species.
- **National Tiger Conservation Authority (NTCA)**: The NTCA was established in 2005 to oversee and implement tiger conservation efforts at the national level.
- It works in collaboration with state governments, NGOs, and other stakeholders to formulate and execute conservation policies.
- **Tiger Census**: India conducts regular tiger population surveys using advanced methods. The All India Tiger Estimation is carried out once in every four years to assess the tiger population and the effectiveness of conservation efforts.
- **International Cooperation**: India collaborates with international organizations and neighbouring countries to tackle transboundary issues related to tiger conservation and illegal wildlife trade.

Source: The Hindu

4. Friends of BRICS Meeting

Topic: International
Relations



In News: National Security Advisor (NSA) Ajit Doval has attended the 'Friends of BRICS' meeting in the South African capital of Johannesburg.

More on the Topic:

- In the meeting, the issue of cybersecurity was discussed at length.
- In addition to BRICS, the following Friends of BRICS countries - Belarus, Burundi, Iran, UAE, Saudi Arabia, Egypt, Kazakhstan and Cuba - also participated in the discussions.
- The main aim of the Friends of BRICS initiative is **to foster engagement between BRICS nations and their close allies**, thereby strengthening their collective influence.
- India has emphasized the growing concerns related to cyber risks, particularly in light of the rapid emergence of disruptive technologies like **Artificial Intelligence (AI), Big Data, and the Internet of Things (IoT)**.


Source: The Indian Express

5. Hygroelectricity

Topic: Science and Technology

HYGROELECTRICITY

- Concept: Extracting electricity out of humidity
- Not just a pie in the sky
- Atmosphere : A great source of electricity
- Could be of great utility in region of high humidity



In News: Scientists achieve a remarkable milestone in renewable energy with hygroelectricity.

More on the Topic:

- The innovative technology allows for the generation of electricity from moist air, presenting a promising avenue for clean and sustainable energy solutions.
- The origins of the hygroelectricity concept can be traced back to the brilliant mind of renowned physicist **Nikola Tesla**.
- At the heart of this groundbreaking technology lies a **small yet ingenious device comprising two electrodes and a thin layer of material infused with nanopores**.
- These nanopores, measuring less than 100 nanometers in diameter, **facilitate the passage of water molecules from the upper chamber to the lower chamber** of the device.
- As the water molecules traverse the nanopores, **they interact with the edges, creating an electrical charge imbalance between the cells**.
- This phenomenon effectively transforms the device into a miniature battery, capable of generating electricity continuously.

- Analogous to a man-made cloud, **the device converts the moisture in the air into useful electricity, much like how natural clouds produce electric charges during storms, leading to lightning.**
- This pioneering technology boasts a plethora of potential applications, ranging from **powering small computers and sensors to providing a sustainable energy source for remote and resource-limited locations.**

Significance:

- Hygroelectricity stands out due to its **remarkable versatility**, unlike solar and wind energy, which depend on specific conditions.
- Moisture in the air is always available, serving as a perpetual energy source.
- Additionally, this technology is **adaptable to different materials** like wood and silicone, as long as they have the required nanopores, allowing for widespread use in various industries.

Source: The Hindu

6. Fluorochemicals Production

Topic: Science and Technology



In News: Scientists from the University of Oxford have come up with a new way to obtain fluorine atoms, used to manufacture important chemical compounds used in industry and research, in a much safer and less energy-intensive way.

More on the Topic:



- The novel approach draws inspiration from **the natural Biomineralisation process** responsible for the formation of teeth and bones.
- This innovative method involves **the direct synthesis of fluorochemicals from Fluorspar**, eliminating the need for producing HF separately.
- Fluorochemicals find extensive use in various industries, such as **polymers, agrochemicals, pharmaceuticals, and lithium-ion batteries.**
- Presently, all fluorochemicals are obtained through a highly energy-intensive process involving the reaction of Fluorspar (Calcium Fluoride) with toxic and corrosive HF gas.
- The new method bypasses this hazardous step and offers a more efficient and environmentally friendly way to produce essential fluorochemicals.

Source: The Hindu

7. Cannabis

Topic: Environment and Ecology



In News: Jammu is going to pioneer India's first cannabis medicine project.

More on the Topic:

- The project undertaken by the CSIR-IIIM will produce **export-quality medicines meant for different kinds of neuropathies and diabetic pains.**
- Cannabis-based products are derived from the dried flowering tops, leaves, stems, and seeds of the Cannabis sativa (hemp) plant.
- These products contain compounds that offer **medicinal benefits, including euphoric, pain-relieving, and psychoactive effects, among others.**
- The primary psychoactive component in cannabis is **Δ -9 tetrahydrocannabinol (THC).**



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- It is important to note that cannabis remains the most extensively cultivated, trafficked, and misused illicit drug.

Source: The Hindu

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