1. **Nipha virus :** Kerala recently reported a fresh case of Nipah virus infection, signaling the state's renewed struggle with the rare but deadly zoonotic virus, known for its high fatality rate and potential to trigger epidemics.
   - **About Nipah virus :** According to WHO, the Nipah virus infection is a newly emerging zoonosis, that is, a disease transmitted from animals to humans.
     - The virus, which primarily spreads through fruit bats and contaminated food, poses a significant public health threat due to its rapid progression and lack of specific treatment
     - **Zoonotic pathogen:** Zoonotic pathogen known for its high fatality rate and potential for human-to-human transmission.
     - **Family**: The virus belongs to a new genus termed Henipavirus (subfamily Paramyxovirinae).
     - **Origin**: First identified in Malaysia in 1998; outbreaks have since occurred in South and Southeast Asia, including India and Bangladesh.
     - **Transmission:** Through contact with infected bats, pigs, or humans; often via contaminated fruits or bodily fluids.
     - **Symptoms:** Fever, headache, respiratory issues, followed by encephalitis (brain inflammation) in severe cases.
     - **Fatality Rate**: Can range from 40% to 75% depending on outbreak conditions and response.
   - **Recent Developments:** State health departments in vulnerable regions such as Kerala and West Bengal have activated rapid response teams .
     - Guidelines issued for infection control, hospital isolation protocols, and community awareness .
     - WHO and ICMR are monitoring the situation closely, with efforts to expedite vaccine research and diagnostics .

2. **Operation Abhyaas:** Recently,conduct nationwide civil defense exercise designed to enhance emergency preparedness in India and their experiences with the drills and blackouts that have come on the back of Operation Sindoor.

- **Purpose and Context:** It aims to improve the country's ability to respond to various emergencies, including natural disasters, terrorist attacks, and potential conflict situations.
  - **Rising Tensions**: The drills are being conducted in response to increased tensions with Pakistan, including recent military strikes and terror attacks.
  - **Broad Coverage**: The exercise involves a nationwide effort, with mock drills being conducted in 244 civil defense districts across various states and union territories.
- **Activities During the Mock Drills**:
  - **Air Raid Simulation**: This includes activating air raid warning sirens and implementing blackout procedures.
  - **Fire Emergencies**: Simulating fire incidents and training on rescue operations and firefighting.
  - **Search and Rescue**: Practicing search and rescue operations in fires or other disasters.
  - **Casualty Evacuation**: Training on evacuating injured civilians and providing temporary hospital setups.
  - **Civilian Evacuation:** Practicing evacuation procedures for civilians to safe zones.
- **Examples of Mock Drills:**
  - **Blackout Drills**: In some areas, blackout procedures are being simulated to prepare citizens for a potential loss of power in the event of a conflict.
  - **Evacuation Drills**: Mock drills are being conducted to train individuals on how to evacuate buildings and move to designated safe zones.
  - **Fire and Rescue Drills**: Simulating fire scenarios and practicing rescue operations are also part of Operation Abhyaas.

3. **Monogenic diabetes**: Recently, MDRF, U.S. researchers call for precision treatment following discovery of a new subtype of monogenic diabetes have discovered a previously unrecognised subtype of Maturity-Onset Diabetes of the Young (MODY).
   - **About:** Monogenic diabetes, also known as monogenic diabetes mellitus (MDM), is a type of diabetes caused by a single gene mutation, rather than multiple genetic factors or lifestyle influences.

- This condition accounts for a small percentage of all diabetes cases (around 1-5%) and includes conditions like Maturity-Onset Diabetes of the Young (MODY) and Neonatal Diabetes Mellitus (NDM).
- **MODY** is a rare, inherited form of diabetes caused by mutations in a single gene, typically appearing in adolescents and young adults.
- **Neonatal Diabetes Mellitus (NDM**) is a rare form of diabetes that develops in infants within the first 6 months of life, often due to a genetic mutation.

- **Need for genetic testing in diabetes management**
  - **Improved Treatment**: Diagnosing monogenic forms of diabetes, like MODY, allows for tailored therapies. For example,oral medications rather than insulin.
  - **Accurate Diagnosis**: Genetic testing clarifies the diagnosis, leading to more appropriate treatment plans and potentially better outcomes.
  - **Prognosis and Risk Assessment**: Genetic testing can help predict the course of the disease and identify individuals at higher risk of developing complications.
  - **Family Risk:** Genetic testing enables the identification of family members at risk of inheriting the same genetic mutation, allowing for early screening and preventative measures.

4. **HAROP drones:** Recently, Indian armed forces reportedly deployed Israeli-origin Harop drones to carry out precision strikes on air defence systems in Pakistan as part of their ongoing.



- **About HAROP drones**: A loitering munition, a type of drone, developed by Israel Aerospace Industries (IAI).
  - It combines the capabilities of an unmanned aerial vehicle (UAV) with a precision-guided missile, allowing it to loiter for extended periods before striking a target.
  - The explosive payload that they carry, earning names such as “suicide drones” and “kamikaze drones”
- **Key Features of the HAROP:**
  - **Loitering Capability:** The HAROP can loiter in a holding area for several hours, gathering intelligence, surveillance, and reconnaissance (ISR) data**.**

- **Target Selection**: A remote operator can select static or moving targets detected by the HAROP's electro-optical (EO) sensor**.**
- **Precision Strike:** Once a target is selected, the HAROP proceeds to attack, detonating itself on the target.
- **Man-in-the-Loop:** The HAROP operates with a "man-in-the-loop" control mode, where a remote operator is involved in target selection and the attack phase**.**
- **Range and Endurance:** The standard HAROP has a range of 200km (effective range) and an endurance of over 6 hours of flight.
- **Smaller Version (Mini HAROP):** IAI also developed a smaller, more tactical version called Mini HAROP, designed for shorter-range missions and launch from tactical vehicles.

5. **Arnala Submarine:** Recently, Arnala', the first of the Eight ASW SWCs (Anti-Submarine Warfare Shallow Water Craft), indigenously designed and built by Garden Reach Shipbuilders and Engineers (GRSE), Kolkata.



- **Highlights:**
  - **Indigenous Content**: With over 80% indigenous content, INS Arnala exemplifies India's commitment to self-reliance under the "Aatmanirbhar Bharat" initiative.
  - **Unique Propulsion:** It utilizes a diesel engine-waterjet propulsion system, making it the largest Indian warship with this combination.
  - **Shallow Water Capability**: The ship is designed for operation in shallow coastal waters, boosting the Indian Navy's anti-submarine warfare capabilities in these areas.
  - **Multi-Mission Capabilities**: INS Arnala is equipped for underwater surveillance, search and rescue operations, low-intensity maritime operations, and anti-submarine warfare (ASW).
  - **Advanced Mine Laying**: The ship also has advanced mine-laying capabilities, enhancing its coastal defense capabilities.
  - **Named after a Fort**: Arnala is named after the historic Arnala Fort in Maharashtra, reflecting India's rich maritime heritage.

6. **Seed Scheme:** The Department of Social Justice has formulated a Scheme namely, Scheme for Economic Empowerment of DNTs (SEED) for the Development and Welfare of DNT/NT/SNT.
   - **About:**
     - **Denotified Tribes (DNTs):** Tribes are Indian communities that were once labeled as "criminal" under the British-era Criminal Tribes Act of 1871 and subsequent acts.
     - **Nomadic tribes**: NT are groups of people who travel from place to place rather than living in one permanent settlement.
     - **Semi-nomadic tribes**: SNT represent a hybrid lifestyle, combining settled and nomadic elements.
     - **The objectives of the Scheme are as follows:**
     - **Educational Support**: Free coaching for DNT/NT/SNT students preparing for competitive exams.
     - **Livelihood Initiatives**: Financial aid and skill development programs to promote self employment.
     - **Healthcare Access**: Mobile health clinics to serve remote tribal communities.
     - **Housing Assistance** :Linkage with government housing schemes such as PMAY.

7. **Pwani Molecular Form :** Recently, researchers identified a new mosquito species in the coastal regions of Tanzania and Kenya, provisionally named the Pwani molecular form.
   - **About Pwani Molecular Form:** The mosquito is part of the **Anopheles gambiae complex**, a group that includes some of the world's most significant malaria vectors.
     - Genetic sequencing reveals clear genetic divergence from other members of the Anopheles gambiae complex, suggesting the species may have unique ecological or behavioral adaptations.
     - Geographically restricted to coastal regions in East Africa, specifically Tanzania and Kenya.
     - Unlike other known malaria vectors, the Pwani mosquito lacks the typical genetic markers for insecticide resistance, which may indicate a new resistance mechanism or greater susceptibility to existing insecticides.