

## UPSC Daily Current Affairs| Prelimbits 23-06-2025

### AC Control Bill, 2025

#### Why in News?

*Union Ministry of Power has plans to restrict the temperature range of new air conditioners in homes, hotels and cars.*

- **Short title** - This Act may be called the Ease of Cooling (Regulation and Control) Act, 2025.
- **Extent** - It extends to the **whole of a residential property's** super built-up area, and area encroached using flower pots.
- **Commencement** - It shall come into force on such date as any air-conditioner (AC) is appointed to serve in a residence.
- **Definitions**
  - **'Individual resident'** - It means any government-approved ID proof such as Aadhaar card, voter ID, or PAN, preferably linked to a carbon-based life form.
  - **'Permissible Temperature Range' (PTR)** - Means **20-28 degrees Celsius.**
  - **'Temperature Rakshak Sangh' (TRAKS)** - Means any volunteer group of vigilantes equipped with government-issued thermal scanners.
- **Aim** - To promote a climate-friendly approach to perspiration management and put more money in the hands of citizens by reducing their electricity bills.
- **Mandatory provisions** - All AC manufacturers and retailers shall ensure that:
  - Temperature controls are configured to prevent manual settings outside the PTR.
  - Customers complete Know Your AC (KYAC) formalities before taking possession of the AC.
- Individual residents, at the time of AC installation, must download **DigiTapMan app** and create an account using Aadhaar.
- **Enforcement and penalties** - Any TRAKS vigilante can enter any house, including the bedrooms, bathrooms, kitchen, and the utility area that has

no utility except as a potty zone for pigeons, to inspect the ambient temperature and the cooling devices installed.

- TRAKS vigilantes are authorised to enter an AC-enabled home at any time of the day or night, and
  - If they find either that the AC settings have been tampered with, or the ambient temperature is outside the PTR, or if the residents are found to be not sweating at all, then they shall:
  - Seize all non-compliant equipment.
- Have the option to seek voluntary donation to a political party of their choice, in exchange for letting the offender go scot-free.
- **Appeals** - Individual residents aggrieved by an order passed under this Act may prefer an appeal before an Appellate Authority as may be notified by the Central Government.

## Reference

[The Hindu | AC Control Bill, 2025](#)

## Hypnic Jerks

### Why in news?

*A recent study estimated that 80% or more people experience hypnic jerks at some point in life.*

- **Hypnic Jerks** - They are **involuntary muscle twitches or spasms** that occur as a person transition from wakefulness to sleep.
- They are not a medical disorder but a normal physiological response.
- **Occurrence** - Most commonly during the first or second stage of sleep.
- The brain interprets the body's muscle relaxation as a sign of falling, triggering a sudden contraction.

NREM Stage N1: Falling Asleep	NREM Stage N2: Light Sleep	NREM Stage N3: Slow Wave Sleep	REM Stage R:
<ul style="list-style-type: none"> <li>• heartbeat and breathing slow down</li> <li>• muscles begin to relax</li> <li>• Lasts: A few min.</li> </ul>	<ul style="list-style-type: none"> <li>• heartbeat and breathing slow down further</li> <li>• no eye movements</li> <li>• body temperature drops</li> <li>• brain produces "sleep spindles"</li> <li>• Lasts: About 25 min.</li> </ul>	<ul style="list-style-type: none"> <li>• deepest sleep state</li> <li>• heartbeat and breathing are at their slowest rate</li> <li>• no eye movements</li> <li>• body is fully relaxed</li> <li>• delta brain waves are present</li> <li>• tissue repair and growth, and cell regeneration</li> <li>• immune system strengthens</li> </ul>	<ul style="list-style-type: none"> <li>• primary dreaming stage</li> <li>• eye movements become rapid</li> <li>• breathing and heart rate increase</li> <li>• limb muscles become temporarily paralyzed</li> <li>• brain activity is markedly increased</li> </ul>

- **Prevalence** - Their frequency and intensity can vary from person to person and more than 80% experience it.
- **Evolutionary origins** - Theories suggests that hypnic jerks are evolutionary leftovers.
- Which means our ancestors who slept on trees may have benefited from these spasms as a safety check against falling.
- **Body-Brain disconnect theory** - During sleep transition, the brain slows down while muscles relax.
- Sometimes, mixed signals from the brain lead to muscle twitching as a false alarm.
- **Common triggers** - Stress and anxiety are significant contributors.
- Caffeine, sleep deprivation, and intense physical activity close to bedtime can also trigger jerks.
- **Typical sensation experienced** - Often feels like falling, tripping, or jerking awake suddenly.
- It can be accompanied by vivid dream-like imagery, like falling off a cliff or stumbling.
- **Implications** - No, hypnic jerks are harmless and normal.
- However, frequent or intense jerks might disrupt sleep quality or cause sleep anxiety in some individuals.
- **Management** - Stress management through meditation, yoga, deep breathing and avoid caffeine late in the day.
- **Sleep hygiene** - Maintain a regular sleep schedule and limit screen time before bed.

## Reference

[The Hindu| Hypnic Jerks](#)

## Management of Agricultural Residues

### Why in news?

*Recently, CSIR-Indian Institute of Chemical Technology (IICT), Hyderabad has developed a method to convert crop residue into nutrient-rich cattle fodder.*

- **Crop residue burning** - India faces a major challenge with agricultural residue, especially paddy straw and wheat husk, often burned by farmers.
- **Contribution to pollution** - This contributes significantly to air pollution and greenhouse gas emissions.
- **Ecofriendly Cattle Fodder** - Over the past few years, scientists at the premier institute have been working on converting rice straw and other crop residue into nutrient rich fodder for the livestock.
- Scientists have now shown that rice straw when treated with a relatively simple chemical process could effectively help bridge the gap in the country's fodder needs.
- **Delignification** - The process involves removing lignin (a complex polymer in plant cells) using a simple chemical method.
- Treated rice straw becomes more palatable and digestible for cattle.
- **Field trials and results** - The fortified fodder was tested at ICAR-National Research Centre on Meat, Hyderabad.
- Buffalo calves and sheep showed better food intake, digestion, and up to 3.7 times higher weight gain.
- Methane emissions dropped, making it climate-friendly.
- **Testing in dairy cattle** - The field trials of the fortified fodder showed "remarkable" improvements in digestibility of buffaloes as palatability (acceptability of a food) increased from 20% to 60%.
- It is also a cost-effective and sustainable cattle nutrition.
- **Compressed Biogas (CBG) from crop residue** - CSIR-IICT also developed a **Dry Anaerobic Digester** with Unique Hydrodynamics (DAD-UH) to produce CBG and Fermented Organic Manure (FOM) from rice husk/straw.

*An anaerobic digester is a system that uses microorganisms to break down organic matter in the absence of oxygen, producing biogas (a renewable energy source) and digestate (rich in nutrients).*

- From 1 tonne of biomass, about 100-140 kg of CBG can be generated.
- **Viable business model** - Under the Centre's SATAT (Sustainable

Alternative Towards Affordable Transportation) programme, 2-tonne CBG plants can be established.

*'SATAT' scheme on CBG encourages entrepreneurs to set up CBG plants, produce & supply CBG to Oil Marketing Companies (OMCs) for sale.*

- It ensures market linkage and guaranteed purchase.
- **Government support and industrial application** - Telangana's Agriculture Secretary supports the model for setting up Agri-based CBG plants on government land which aims to prevent stubble burning and promote Agri-industrial development.
- **Economic benefits for farmers** - The process helps address fodder shortages and reduces feed costs.
- Farmers become direct beneficiaries by increasing income through better livestock productivity.
- **Circular economy & environmental sustainability** - "Waste to value" concept: residue becomes fodder, gas, and manure.
- It promotes eco-friendly farming, supports clean energy goals, and strengthens the rural bioeconomy.

## Reference

[The Hindu| How Crop Residue Can Provide Nutritious Cattle Fodder](#)

## Gender Based Antibiotic Resistance

### Why in news?

*A recent study conducted by researchers at the University of Turku, Finland, analysed 14,600+ gut genomes and gave insights into how gender affects antibiotic resistance.*

- **Antibiotic Resistance** - Antibiotic resistance occurs when bacteria evolve to survive antibiotics that would normally kill them.
- It is a major global health challenge, projected to cause over 39 million deaths in the next 25 years.

### Key Findings

- **Gender differences** - The study found that antibiotic resistance trends

differ by gender, particularly in adulthood.

- These differences may arise due to lifestyle, biological, or healthcare-related factors.
- **HIC vs. LMIC Trends** – In High-Income Countries (HICs): Women had more antibiotic resistance genes (ARGs).
- In Low- and Middle-Income Countries (LMICs): Men had more ARGs.
- **Higher ARG load in women (HICs)** – On average, women in HICs had a 9% higher ARG load than men.
- They also showed slightly more diversity in resistant genes in the gut microbiome.
- **Possible reasons for gender disparity** – Women may be more exposed to antibiotics, resistant bacteria, or are frequent carriers of such bacteria.
- Differences may also stem from healthcare-seeking behaviour, biological makeup, or microbiome composition.
- **Effect on age** – The number and diversity of ARGs were highest in infants and the elderly.
- **Role of Antibiotic usage** – High antibiotic usage was directly associated with higher resistance gene load and greater diversity.
- This was especially noticeable in regions with poor hygiene and sanitation.
- **Importance of the study** – Highlights the need for gender-sensitive public health interventions.
- Helps design equitable antibiotic policies and personalized treatments for different populations.
- It aligns with global efforts to tackle antibiotic resistance through precision health strategies.

## Reference

[The Hindu| Gender Based Antibiotic Resistance](#)

## Razor Blade Variant

### Why in News?

*The variant NB.1.8.1 (Nimbus) is under the spotlight due to its unique 'razor blade' throat symptom and increasing global spread.*

- **Razor Blade variant** – The variant is officially named NB.1.8.1, which is a descendant of the Omicron variant.
- The term "razor blade" comes from patients reporting an extremely

**painful sore throat**, like “swallowing a razor blade.”

- **WHO classification** – On May 23, 2025, the World Health Organization (WHO) listed NB.1.8.1 as a Variant Under Monitoring (VUM).

*A Variant Under Monitoring (VUM) is a term used to signal to public health authorities that a variant may require prioritized attention, monitoring and investigate if this variant may pose an additional threat to global public health.*

- Existing COVID-19 vaccines are expected to remain effective against this variant for symptomatic and severe disease.
- **Symptoms** – Similar to other Covid variants,
  - Fever
  - Severe sore throat (razor-blade-like)
  - Cough
  - Runny nose
  - Tiredness
- **Current Global spread** – NB.1.8.1 is increasing in proportion globally, while other variants like LP.8.1 are declining.
- It has shown higher transmissibility due to **spike protein mutations**.
- **India's situation** – As of May 2025, 1 case of NB.1.8.1 was detected in Tamil Nadu and 4 cases of LF.7 were found in Gujarat.
- However, the dominant variant remains JN.1, comprising 53% of samples.
- A newer recombinant variant, XFG (Originated from two variants LF.7 + LP.81.2), has emerged since May 2025.
- **Surveillance & genome sequencing** – Genomic studies attribute recent surges to evolving Omicron sub-lineages.
- **Severity and hospitalizations** – So far, there is no evidence that NB.1.8.1 causes more severe disease than other circulating variants.
- Hospitalizations have increased in some countries, but not dramatically.
- **Expert view in India** – Indian doctors say COVID-19 is co-circulating with other seasonal infections and can expect spikes and dips, but no massive waves like in 2021.
- **Recommended safety measures**
  - Hand hygiene
  - Avoiding crowded places
  - Wearing masks, especially in vulnerable populations
  - Vaccination boosters as per national advisories
- **Public health measures recommended** – Continued emphasis on personal hygiene, masking in crowded areas, hand washing, and protecting the vulnerable population.
- The government advises vigilance but not panic, as health systems are

better prepared.

## **Reference**

[The Hindu| Razor Blade Covid Variant](#)