

The right to a fair trial at the crossroads

Prelims: General Studies Paper - 1
Indian Polity and Governance-Constitution, Political System, Panchayati Raj, Public Policy, Rights Issues, etc.

Mains: General Studies - 2
Government policies and interventions for development in various sectors and issues arising out of their design and implementation.

1. What is the issue?

- The **Supreme Court** denied bail to **Umar Khalid** and **Sharjeel Imam** in the **Delhi Riots case**.
- Both have spent **nearly six years in jail without trial** under the **Unlawful Activities (Prevention) Act (UAPA)**.
- The case has reignited the debate on **prolonged pre-trial detention**

2. Why is prolonged detention without trial a concern?

- Article 21** guarantees the **right to life and personal liberty**, including the **right to a speedy trial**.
- Keeping an accused in jail for years without completing the trial can violate **fundamental rights**.
- It also weakens the principle that an **accused is presumed innocent until proven guilty**.

3. Why is bail difficult under the UAPA?

- The **UAPA** contains **stringent bail provisions**, making bail difficult to obtain.
- Courts have taken inconsistent views on granting bail** due to prolonged delay in trial.
- For example, the **Delhi High Court** granted bail to **Khurram Parvez**, a **Kashmiri human rights activist**, considering his **over four years of incarceration without trial**.

- This has led to concerns over **lengthy pre-trial detention** in UAPA cases.

4. What should the judiciary ensure?

- Courts should uphold the **right to personal liberty** and ensure **speedy trials**.
- Pre-trial detention** should not become a form of **punishment**.
- Judicial decisions should remain **consistent** and prevent the **misuse of stringent laws** such as the **UAPA**.
- Courts should not rely solely on the **gravity of the alleged offence** to deny bail when there is **prolonged delay in trial**.

A shot at life, Mandsaur's model for HPV vaccination

Prelims: General Studies Paper - 1
Current events of national and international importance

Mains: General Studies - 2
Issues relating to development and management of Social Sector/Services relating to Health, Education, Human Resources.

Why is HPV vaccination important in India?

- Cervical cancer is the **second most common cancer among Indian women**.
- India contributes **nearly 25% of global cases**, with **1.2 lakh cases and 80,000 deaths annually**.
- About **95% cases are caused by HPV (Human Papillomavirus)**, making vaccination highly preventive.

Human Papillomavirus (HPV) is a common viral infection spread mainly through skin-to-skin and sexual contact, with certain high-risk types causing **cervical cancer and other cancers**.

- Social stigma, gender bias, and low awareness hinder uptake.
- The government launched a campaign on **Feb 28, 2026** to vaccinate **1.15 crore girls (14-15 years)** free of cost.

2. What challenges affect vaccine coverage?

- **Cultural taboos** around sexual health and gender bias.
- **Vaccine hesitancy** due to myths (e.g., infertility fears).
- **Data gaps** exclude school dropouts, nomadic tribes, slum populations.
- **Hard-to-reach groups** like Banchhada community.

Banchhada community : **Denotified Tribe** mainly found in **Madhya Pradesh and Rajasthan**, traditionally associated with **hereditary sex work** where girls are often expected to be primary earners, reflecting social stigma and marginalisation

- **Access issues** (transport, facilities).
- Resistance often appears as **delay and doubt**, not outright refusal.

3. What strategies were used in Mandsaur (Madhya Pradesh)?

- **Data-driven approach** using:
 - ➔ **RBSK (Rashtriya Bal Swasthya Karyakram-** a government programme for early detection and free treatment of health issues in children, focusing on defects, diseases, deficiencies, and developmental delays)
 - ➔ **SAMAGRA MP (Integrated Social Security Platform of Madhya Pradesh)**
 - ➔ **Ladli Laxmi Yojana data** (scheme promoting welfare and education of girl children)
- Created **village-level lists** via surveys and SAMAGRA IDs.
- Prioritised **missed populations** and mapped high-resistance areas.
- **Nudge approach:**
 - ➔ Presented vaccination as **default ("due"- making vaccination feel like the normal and expected choice)**.
 - ➔ Repeated counselling and transport support.

Awareness efforts:

- ➔ Used influencers, doctors, religious leaders.
- ➔ Countered myths and used peer recognition/ events.

Integration:

- ➔ Linked with immunisation days and **ANC (Antenatal Care) clinics**
- ➔ Used **Pradhan Mantri Surakshit Matritva Abhiyan** (a government programme providing free antenatal care to pregnant women)

4. Outcomes and key lessons

- Achieved **100% target in <40 days**.
- Conducted **493 sessions** at **12 permanent + 27 temporary sites**.
- Covered **893 villages and 190 urban wards**.
- Lessons:
 - ➔ **Data + local action** ensures last-mile delivery.
 - ➔ **Behavioural nudges** reduce hesitancy.
 - ➔ **Cultural sensitivity and community participation** are crucial.
 - ➔ Need shift from **coverage to care, data to impact**.
- Scaling such **data-driven, culturally sensitive and behaviour-based strategies nationwide**, while strengthening **awareness, last-mile delivery, and integration** with existing health programmes to achieve **universal HPV vaccination coverage**.

Can space oncology revolutionise cancer treatment?

Prelims: General Studies Paper - 1
Current events of national and international importance

Mains: General Studies - 3
Awareness in the fields of IT, Space, Computers, robotics, nano-technology, bio-technology and issues relating to intellectual property rights.

1. What is Space Oncology?

- An **emerging field** that studies the effects of **microgravity and cosmic radiation on cancer progression and treatment**.

- **Uses space as a natural laboratory** to understand cancer biology.
- **Accelerates tumour modelling** and drug discovery.
- Has led to innovations such as **3D cell-culture systems, protein-crystal studies, and biomarker discovery.**

2. Why is Microgravity Important for Cancer Research?

- Microgravity is a **condition in which the force of gravity is extremely weak (near weightlessness), allowing objects and living organisms to experience only tiny residual gravitational forces** while in continuous free fall, such as aboard spacecraft orbiting the Earth.
- **Improves drug delivery through better nanoparticle formation** for targeted chemotherapy.
- **Alters cancer cell behaviour** by changing cell shape, membrane function, and gene expression.
- **Enables advanced biologics and precision medicines** that are difficult to develop on Earth.

Biologics are medicines made from living organisms or their cells, such as bacteria, yeast, or animal cells, rather than being chemically synthesized like conventional drugs.

3. How Does Space Oncology Improve Cancer Treatment?

- **Reduces the spread of breast cancer by making cancer cells less aggressive** in microgravity.
- **Slows tumour growth by reducing the activity of proteins** (Cyclin D1 and Cyclin B1) that help cancer cells divide.
- **Makes stomach cancer cells more responsive to chemotherapy** by lowering drug resistance.
- **Helps scientists develop better** and more personalized cancer treatments.

4. What are the Recent Global Developments in Space Oncology?

- In **2025**, the **U.S. Food and Drug Administration approved the formulation of Pembrolizumab, an immunotherapy drug for cancer**, based on protein crystal research conducted aboard the International Space Station.

- **Rebecsinib became the first cancer drug tested using space research** to enter human clinical trials.
- The **United Kingdom introduced a regulatory framework to support the manufacturing of pharmaceutical products** in space.
- The **global microgravity pharmaceutical manufacturing market is expected to grow from US\$1.5 billion in 2025 to US\$9.8 billion by 2034.**

5. What are India's Opportunities in Space Oncology?

- India is **expected to record 1.87 million new cancer cases in 2026, with 1 in 9 Indians at lifetime risk.**
- Cancer **causes an annual economic burden of approximately ₹3,400 crore** in direct and indirect medical costs.
- **ISRO is the third-largest space-tech power globally** and among the top five government space agencies.
- **Declining launch costs and growing private space startups** make space pharmaceutical manufacturing increasingly viable.
- India has the **potential to become a global hub for space-based cancer research and drug development.**

KEYWORDS

I-2SEA Cable System

- I-2SEA is a **next-generation submarine fibre-optic cable system** being developed to connect **India, Malaysia, and Singapore.**
- It is **being implemented through a consortium comprising Lightstorm, Microsoft, Singtel, and Tata Communications.**
- The **system will have dual landing stations in India at Machilipatnam (Andhra Pradesh) and South Chennai.**
- The **I-2SEA cable system is designed to support artificial intelligence (AI) training, hyperscale cloud computing, and low-latency, high-capacity data transmission.**
- It will **directly connect India's east coast with Singapore and Kuala Lumpur**, strengthening digital connectivity between India and Southeast Asia.

Nord Stream Gas Pipelines

Nord Stream pipelines from Russia

Leaks detected on both pipelines near Bornholm



- Nord Stream gas pipelines consist of two offshore natural gas pipelines: **Nord Stream 1 and Nord Stream 2, each with two parallel lines connecting Russia and Germany through the Baltic Sea.**
- Nord Stream 1 became operational in 2011, while Nord Stream 2 was completed in September 2021 but never entered commercial operation.
- Each pipeline has an annual capacity of 55 billion cubic metres (bcm) of natural gas, giving the two pipelines a combined capacity of 110 bcm per year.
- The **pipelines pass through the Exclusive Economic Zones (EEZs) of Russia, Finland, Sweden, Denmark, and Germany, and the territorial waters of Russia, Denmark, and Germany.**
- In **September 2022, underwater explosions severely ruptured three of the four Nord Stream pipeline lines**, including one line of Nord Stream 1, disrupting a major gas supply route to Europe.

World Population Day (WPD)

- World Population Day (WPD) was **established by the Governing Council of the United Nations Development Programme (UNDP) in 1989**, following the global attention generated by **“Five Billion Day” on 11 July 1987, when the world’s population reached 5 billion.**
- The idea of commemorating the day was proposed by K. C. Zachariah, a senior demographer at the World Bank.
- In **December 1990, the United Nations General Assembly decided to observe World Population Day annually on 11 July.**
- The **first World Population Day was celebrated on 11 July 1990** in more than 90 countries.
- It aims to raise awareness about **global population issues and their links with sustainable development, environmental protection, reproductive health, gender equality, and human rights.**

MeriPehchaan

- **MeriPehchaan - National Single Sign-On (NSSO)** is a **user authentication service** that lets users access **multiple online services with one login.**
- It removes the need to remember **different usernames and passwords** for each service.
- It helps users identify **genuine government websites and applications.**
- It saves **time, effort, and cost** for service providers by using a **single authentication system.**

Places in news

Gulf of Aden

- The region is in focus after the **Indian Navy's stealth frigate INS Trikand** successfully intercepted and secured the **bulk carrier MV Golden Arsenal** following a **pirate attack** about **300 nautical miles off Djibouti**.
- It is a **strategic waterway** located between the **Arabian Peninsula (Yemen)** to the north and the **Horn of Africa (Somalia and Djibouti)** to the south, acting as an **extension of the Indian Ocean**.
- It is a **maritime chokepoint**, serving as the **gateway to the Bab-el-Mandeb Strait**, which links the **Arabian Sea to the Red Sea** and forms part of the **Suez Canal trade route**.
- It holds **global economic importance**, carrying about **11% of the world's seaborne petroleum** along with a **significant share of global container trade**.
- The region faces **security and geopolitical challenges**, including **piracy, armed robbery, and instability in Yemen and Somalia**, requiring a **continuous international naval presence** to protect shipping lanes.

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