Topics

- FLiRT
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- Mains

By saurabh Pandey

THE HINDU

Target Mains -2024/25

Q ‘’INSACOG has important role to play in prevention of disease surveillance ‘’ Elaborate.

प्रश्न "रोग निगरानी की रोकथाम में INSACOG की महत्वपूर्ण भूमिका है" विस्तार से बताएं।

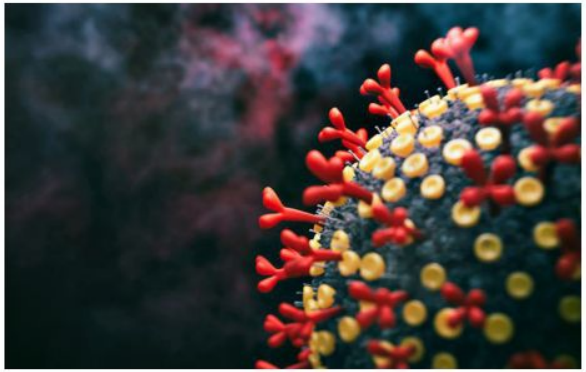
All about FLiRT, the new COVID-19 variants

Saumya Kalia

The COVID-19 cycle is active again with new variants in circulation. KP.2 and KP1.1, are dubbed 'FLiRT' variants, and are descendants of the Omicron JN.1 which spread globally over the winter last year.

The downstream variants are linked to new cases and a small surge in hospitalisation in the U.S., according to the Infectious Disease Society of America (IDSA). FLiRT cases have also soared in the U.K., South Korea and New Zealand, renewing fears of a fresh COVID-19 wave.

The Indian SARS-CoV-2 Genomics Consortium (INSACOG) has detected 238 cases of KP.2 and 30 cases of KP1.1 circulating in India, as of May 6. The new variants appear to outstrip their ancestor and other Omicron variants. KP.2, the more dominant strain of the two, in particular, is believed to leap past immunity built up from vaccines and previous infections.



KP.2 has been detected predominantly in Maharashtra, Odisha, Goa and West Bengal; KP1.1 in West Bengal, Maharashtra and Gujarat; KP.3 in Uttarakhand. GETTY IMAGES

However, the periodic COVID-19 spikes are routine and to be expected as "COVID-19 will continue to morph into, not an endemic, but a cyclical disease", says Rajeev Jayadevan, co-chairman of the National Indian Medical Association (IMA) Covid Task Force in Kerala.The FLiRT variants reframe COVID-19 management as a longer affair, one that demands sustained surveillance, customising precautions and ensuring universal protection for the vulnerable.

The FLiRT variants

KP.2 and KP1.1 sublineages are descendants of the JN.1 variant of the SARS-CoV-2 virus with two new added spike mutations. They are nicknamed the FLiRT group of variants; the acronym indicates two specific mutations, which when they occur together, end up conferring greater invasive properties to the virus. The U.S. Centre for Disease Control and Protection says KP.2 accounts for approximately 25% of new cases as of April 27.

In India, "we can confirm that COVID-19 cases are rising , and KP.2 is a commonly found variant," says Dr. Jayadevan. According to INSACOG, KP.2 has been detected predominantly in Maharashtra, Odisha, Goa and West Bengal; KP1.1 in West Bengal, Maharashtra and Gujarat; KP.3 in Uttarakhand. This is not to say that the variants are not circulating in other regions, but the proactive tracking in these states have identified JN.1's descendants. The symptoms of the new variant are similar to those of other Omicron subvariants: sore throat, cough, nausea, congestion, fatigue, headache, muscle or body ache, loss of taste or smell.

Immune evasive

Researchers at the Kei Sato lab in Japan showed the KP.2 variant had an "increased immune resistance ability... more than previous variants including JN.1". Their preliminary evidence found that KP.2 was able to escape the immune protection derived not only from the most updated vaccine (the monovalent XBB.1.5 vaccine) but also from the breakthrough infection with JN.1 afterwards. KP.2 has "profound immune evasive properties", notes Dr. Jayadevan. The research, published on the pre-print server *bioRxiv*, showed the variant is thus able to leap over the most recently built immunity fence. More research is needed to understand how deeply and permanently the new mutations evade the immune system, researchers note.

Although immunisation with up-to-date SARS-CoV-2 vaccine produces antibodies recognising JN.1, experience indicates vaccination done earlier is still effective in preventing severe COVID-19 from newer variants. The European Medicine Agency recently recommended "updating COVID-19 vaccines to target the new variant JN.1" before another round of vaccinations is undertaken. Meanwhile, AstraZeneca on May 7 said it has initiated the worldwide withdrawal of its COVID-19 vaccine due to a "surplus of available updated vaccines" since the pandemic.

In India, experts have also detected a new surge of cases since early April, with approximately one in six tests turning positive, compared to zero in March. With limited testing, however, the exact prevalence and geographic spread are unknown. It is too early to say if all the new COVID-19 cases or hospitalisations are due to KP.2 or KP1.1 in India, explains Dr. Jayadevan. Moreover, increased transmissibility does not necessarily mean the new variants will cause more severe COVID-19 illnesses. Precautions and prescriptions remain similar: maintain hygiene, wear masks in crowded places, stay home if unwell, and vaccinate.

(saumya.k@thehindu.co.in)

FLiRT -Mutation , variants and strain

- **The COVID-19 cycle is active again with new variants in circulation. KP.2 and KP1.1, are dubbed 'FLiRT' variants, and are descendants of the Omicron JN.1 which spread globally over the winter last year.**
- **When a virus replicates, it doesn't always manage to produce an exact copy of itself. This means that, over time, the virus may start to differ slightly in terms of its genetic sequence.**
- **Any change to the viral genetic sequence during this process is known as a mutation, and viruses with new mutations are sometimes called variants. Variants can differ by one or multiple mutations.**
- **When a new variant has different functional properties to the original virus and becomes established in a population, it is sometimes referred to as a new strain of the virus**
-

INSACOG

- The Indian SARS-CoV-2 Genomics Consortium (INSACOG), jointly initiated by the Union Health Ministry of Health, and Department of Biotechnology (DBT) with Council for Scientific & Industrial Research (CSIR) and Indian Council of Medical Research (ICMR), is a consortium of 54 laboratories to monitor the genomic variations in the SARS-CoV-2.
- INSACOG is a multi-laboratory, multi-agency, Pan-India network to monitor genomic variations in the SARS-CoV-2 by a sentinel sequencing effort which is facilitated by the National Centre for Disease Control (NCDC), Delhi involving the Central Surveillance Unit (CSU) under Integrated Disease Surveillance Programme (IDSP).
- The data from the genome sequencing laboratories is being analyzed as per the field data trends to study the linkages (if any) between the genomic variants and epidemiological trends

An AI-infused world needs matching cybersecurity

Charu Kapoor

is Country Director, NIIT Foundation

Last year, an incident of a frantic mother who had received an ominous call from "kidnappers" who had 'kidnapped' her daughter, raised an alarm in the U.S. Senate about the detrimental impact of artificial intelligence. The news took the nation by a storm as the said "kidnappers" and the daughter's voice were nothing but hackers utilising generative AI to extort money. With such instances on the rise, the human perception of what is real and what is merely generative AI is slowly eroding.

Sophisticated cyber threats

While it is true that generative AI has exceptionally transformed how we operate, with its integration into sectors such as education, banking, health care, and manufacturing, it has also transformed the paradigm of cyber-risks and safety as we know it. With the generative AI industry projected to increase global GDP by as much as $7 to $10 trillion, the development of generative AI solutions (such as ChatGPT in November 2022) has spurred a vicious cycle of advantages and disadvantages. According to a recently published report, there has been a 1,265% increase in phishing incidents/emails, along with a 967% increase in credential phishing since the fourth quarter of 2022 arising from the exacerbated utilisation/manipulation of generative AI.

With sophisticated cyber threats on the rise, organisations and individuals are susceptible to the novel avenues of cyber-attacks, pushing firms to adapt to ever-evolving technology. As per a study conducted by Deep Instinct, around 75% of professionals witnessed an upsurge in cyberattacks in the past year alone, while 85% of the surveyed respondents have attributed the increased risk to generative AI.

It becomes imperative now, more than ever, to develop solutions through collaborative avenues to safeguard confidential information, identities, and even human rights.

As generative AI continues to mature, newer, more complex threats have arisen: through cognitive behavioural manipulation, critically dangerous incidents have surfaced, with voice-activation toys and gadgets that encourage dangerous behaviours in children and/or posing a grave threat to one's privacy and security. Simultaneously, remote and real-time biometric identification systems (such as facial recognition) have further jeopardised the right to privacy and massively endangered individuals on several occasions in recent times.

While generative AI has significantly impacted productivity across the industrial realm with 70% of professionals reporting increased productivity, increasing manipulation via generative AI (specifically over the past couple of years) has resulted in the the spiralling vulnerability of organisations to attacks, with most organisations citing undetectable phishing attacks (37%), an increase in the volume of attacks (33%), and growing privacy concerns (39%) as the biggest challenges.

The recent identification, by several cybersecurity conglomerates, of complex hacker groups using generative AI solutions has raised an alarm – with AI models being leveraged for translating and identifying coding errors to maximise the impact of cyberattacks.

With such multifaceted cyberattacks on the rise, robust initiatives have become necessary. While stringent ethical and legislative frameworks are underway to combat growing cybercrimes due to AI, loopholes and a lack of industrial understanding/comprehension in regulating generative AI persist.

The Bletchley Declaration

Considering the growing concerns amidst increasing misuse of generative AI, it becomes imperative to safeguard consumers against the challenges posed by such advanced technologies, allowing them to navigate digital spaces safely.

World leaders, too, have initiated collaborative efforts to understand the potential catastrophic harm caused by the detrimental utilisation of AI, as seen in the recent signing of the Bletchley Declaration at the AI Safety Summit. The countries that signed the agreement include China, the European Union, France, Germany, India, the United Arab Emirates, the United Kingdom and the United States.

At the institutional level, stern policy-led efforts are pivotal to bolstering the stance against increasing challenges via solutions such as enhancing the stance for watermarking to identify AI-generated content. This could aid in reducing cyber threats from AI-generated content, warning consumers to take appropriate actions. Further, a collaborative effort between institutional and industrial stakeholders could necessitate the process of improving and implementing a realistic, practical, and effective framework, with the inclusion of feedback from the public to further strengthen the drafting of these regulations.

Foster digital awareness

At the corporate level, greater emphasis is required to accommodate digital awareness via occupational media and digital literacy training sessions, fostering robust digital fluency in the workspace while identifying and tackling gaps in digital knowledge among employees. This could further equip the workforce to efficiently navigate the digital landscape, identify credibility, and verify the sources for authentication.

However, for a truly holistic approach to cybersecurity in an AI-driven world, we cannot overlook the crucial role of non-governmental organisations and other outreach organisations that introduce individuals to the wonders of the digital world, and simultaneously equip them with the essential tools of cyber literacy. By fostering a digitally savvy citizenry from the ground up, we can build a more robust defence against the evolving threats in this AI-driven digital landscape.

As we move towards developing more sophisticated systems and technologies, collaborative efforts are paramount to harbour a sense of security, enabling individuals and organisations to further empower communities to safeguard their personal interests and identities.

With increasing misuse of generative AI, ensuring that consumers can navigate digital spaces safely has become crucial

Bletchley Declaration

- the world's first AI Security Summit was hosted within the UK. Representatives from 28 nations, including the USA, China, France and Japan, all convened in Bletchley Park to discuss the implications of the rapid advancement of highly capable general purpose AI models known as 'Frontier AI'.
- The declaration commences with two key acknowledgements. Firstly, emphasis is put on the significant global opportunities and challenges presented by AI.
- Secondly, it recognizes that the AI phenomenon is no longer a futuristic concept, as it is already deployed in various aspects of our daily lives

- The statement elaborates on the dual nature of AI – representing disruptive potential and offering transformative opportunities, but also posing major risks regarding human rights, fairness, transparency, safety, accountability, ethics, and bias mitigation.
- Particular focus is devoted to the safety risks that highly capable AI models entail.
- The declaration recognizes the paramount importance of international cooperation to address these risks effectively.
- In light of such, the statement calls for collaboration across nations, international organizations, businesses, civil societies, and academia.

Why did Interpol issue a blue corner notice against Prajwal?

How is a blue corner Interpol notice different from a red corner notice? What does it mean for the SIT probe in the Prajwal Revanna sexual assault case? How does Interpol alert member countries about fugitives?

Sumeda

The story so far:

Amid a political storm in Karnataka over grave allegations of sexual abuse against Prajwal Revanna, sitting Hassan MP and grandson of former Prime Minister H.D. Deve Gowda, the International Criminal Police Organisation, commonly known as Interpol, has issued a blue corner notice against the absconding politician. The MP has been on the run since late last month following the leak of thousands of explicit video clips that allegedly show the 33-year-old sexually abusing multiple women, prompting the JD(S) to suspend him.

How does the Interpol alert countries?

The Interpol is an inter-governmental law enforcement organisation which assists and facilitates cooperation between national law forces in 196 member countries to combat transnational crimes. The organisation shares information regarding crimes and wanted criminals globally, and provides technical, operational, and investigative support to locate fugitives.

It manages a database of critical data about wanted criminals, which member countries can use to trace such individuals.

The agency has a National Central Bureau in all member countries which is a single point of contact between law enforcement agencies of that country and Interpol.

The Central Bureau of Investigation (CBI) is officially designated as the nodal agency for India.

The agency uses a 'colour-coded' system to alert and share requests for crime-related information among member countries and global organisations. Notably, member countries are not bound by international law to abide by Interpol notices as they are entirely discretionary.

Why did Interpol issue a blue corner notice against Prajwal Revanna?

The international organisation issues a blue corner notice when the case is related to missing persons. Also called an "enquiry notice," such an alert is sent for additional information from member states about a person, to verify their identity, location, or criminal record concerning a criminal investigation.

It is different from a red corner notice, considering that the purpose of a blue notice is information about a person of interest in an investigation, while the former is generally issued against a person wanted for extradition, or serve a sentence based on a court decision, or a similar lawful action.

Interpol issued a blue corner notice against Mr. Revanna after the Special Investigation Team (SIT) formed by the Karnataka government sought the help of the CBI for further inquiry.

The SIT first issued a look out circular against the Hassan MP after he failed to appear before the panel.

The request came days after the Hassan MP remained untraceable. As per reports, the MP left for Munich, Germany using his diplomatic passport a day after his constituency went to the polls in the second phase of the Lok Sabha elections on April 26, and hours before the SIT was constituted.

Mr. Revanna's advocate sought seven days for his client to present himself before the panel.

The investigating team, however, ruled out the possibility and moved for a blue corner alert against Mr. Revanna, considering that the investigation is in the early stages and the police are yet to file criminal charges.

The SIT officials told Karnataka Chief Minister Siddaramaiah that they intend to arrest the accused to expedite the investigation as soon as they receive information about his whereabouts.

THE GIST

- Prajwal Revanna, sitting MP and grandson of former Prime Minister H.D. Deve Gowda, is accused of sexual abuse, prompting his suspension from JD(S).
- Interpol has issued a blue corner notice against him. Blue corner notices are issued for missing persons to gather information about their identity, location, or criminal record for ongoing investigations.
- The Special Investigation Team formed by the Karnataka government sought CBI's help in the case, leading to the issuance of the blue corner notice.

TYPES OF INTERPOL NOTICES

RED NOTICE: To seek the location and arrest of wanted persons with a view to extradition or similar lawful action.

YELLOW NOTICE: To help locate missing persons, often minors, or to help identify persons who are unable to identify themselves.

BLUE NOTICE: To collect additional information about a person's identity, location or activities in relation to a crime.

BLACK NOTICE: To seek information on unidentified bodies.

GREEN NOTICE: To provide warnings and intelligence about persons who have committed criminal offences and are likely to repeat these crimes in other countries.

ORANGE NOTICE: To warn of an event, a person, an object or a process representing a serious and imminent threat to public safety.

INTERPOL-UN SECURITY COUNCIL SPECIAL NOTICE: Issued for groups and individuals who are the targets of UN Security Council sanctions committees.

PURPLE NOTICE: To seek or provide information on modus operandi, objects, devices and concealment methods used by criminals.

Source: www.interpol.int

NATION GRAPHICS

RINL's operational woes worsen; strike at Gangavaram Port leaves coal supply stranded

Abhishek Law
NEW DELHI

RINL (Rashtriya Ispat Nigam Ltd.), the State-owned steel major and one of the rare long-steel makers in the country, is in a tight corner, grappling with severe operational constraints.

Raw material shortages have slashed its production capacity by 60% and only one of its three blast furnaces is currently operating.

The ongoing strike at Adani-owned Gangavaram Port has further exacerbated the company's struggles, leaving crucial coking coal and limestone worth ₹650 crore stranded. Coal and limestone are key steel-making feedstock.

Lifeline in jeopardy: The average daily requirement of coal is about 12,000 tonne for normal production. THE HINDU

'Stocks fast dwindling'

Despite attempts to secure commodity loans and explore alternative ports, current stocks are dwindling fast and are currently "at a few days".

With the spectre of colossal debt looming large, borrowing for additional raw materials is "not an immediate option".

The Ministry had earlier ruled out a recapitalisation of RINL, and the steel-maker is on the Centre's disinvestment radar.

"If the situation is not resolved, there will be an imminent shutdown that threatens extensive damage and exorbitant restoration costs," a Steel Ministry official told *businessline*.

RINL has approached the Andhra government for intervention and has also taken legal action to get its raw materials supply on track. The Steel Ministry has reportedly been apprised, too.

Curtailed operations

Operations are forcefully curtailed, dramatically reducing coke oven pushings and hot-metal production.

The coke oven pushings per day were brought down to 140, down 56% from 320 pushings, and the hot-metal production was brought down to 5,600 tonne per day from about 14,000 tonne a day.

Steel Ministry had earlier ruled out recapitalisation of RINL and it is on disinvestment radar

Coal awaiting evacuation at Gangavaram includes 142,000 tonne of hard coking coal, 90,000 tonne of pulverised coal injection and about 82,000 tonne of limestone.

The typical blend of coking coal is about 50-70% hard coking coal, 30-40% soft coking coal and another 10-20% indigenous coking coal.

The average daily requirement of coal was about 12,000 tonne for normal production, which included about 8,000 tonne of hard coking coal (HCC), 2,500 tonne of soft coking coal (SCC) and 1,500 tonne of indigenous coal .

"The absence of coking coal jeopardizes equipment and safety, risking gas leakages and blasts," the Ministry official said.

In 2014, RINL entered into a 15-year contract with Adani Gangavaram Port Ltd (AGPL), formerly GPL (Gangavaram Port Ltd.), to facilitate the handling of imported raw materials.

Logistics wall

The disruption at AGPL has halted coal transfer, leaving more than 314,000 tonne stranded, while vessels carrying soft coking coal are diverted, exacerbating the scarcity.

Alternative berthing arrangements at Vizag Port bring along logistics issues, including elongating coal transfer times.

A 20-minute transfer time from Gangavaram port to the plant through a conveyor belt now increases to "at least 24 hours" in view of the availability of rakes, berthing spaces, etc.

(The writer is with The Hindu businessline)

Gangavaram Port

- Gangavaram Port is a port located in Visakhapatnam, Andhra Pradesh. Inaugurated in July 2009, it has a depth of 21m.
- It is managed by Gangavaram Port Ltd.
- The Gangavaram Port Ltd. plans to build conveyors for taking imported raw materials directly to the Vizag Steel plant, in order to reduce the railway transportation costs.

Green steel needs tiered incentives to become a reality in Asia: Russell

Steel is the biggest industrial contributor to global carbon emissions, accounting for around 8% of the world's total, making efforts to decarbonise the sector vital to meeting net-zero ambitions; the important question is how to introduce incentives to decarbonise the sector to achieve net-zero steel

COMMENT

Clyde Russell
SINGAPORE

It's time for a reality check about decarbonising Asia's vast and growing steel sector. Reducing the carbon footprint is possible, but only in stages, and over a far longer than ideal time period, and only if incentives to do so are available.

Steel is the biggest industrial contributor to global carbon emissions, accounting for around 8% of the world's total, making efforts to decarbonise the sector vital to meeting net-zero ambitions.

Asia's iron ore and steel industry gathered this week in Singapore and delivered both encouraging and disconcerting news about efforts to decarbonise steel production.

The good news is that virtually every player in the market, from iron ore miners through to steel mills is taking the issue seriously, and more than that, actually putting time, effort and capital toward solutions.

Sops crucial: There needs to be price incentive to decarbonise steel. REUTERS

'Pipe dream'

The bad news is that meeting net-zero emissions by 2050 in Asia appears largely a pipe dream with the current and likely available technology.

A further looming and massive obstacle is the current pricing structure for steel, given that as yet there is no real premium for producing low-carbon metal in Asia and little sign that is on the horizon.

The current situation is one where iron ore miners and steel mills are largely undertaking decarbonisation efforts as part of voluntary commitments to reduce carbon emissions.

Investor pressure

These commitments are mostly the result of bending to pressure from shareholders, some governments and the general public to be seen to be doing something to mitigate the expected adverse impact of climate change.

> If a steel mill could lower emissions by a third, it could be rewarded with a carbon credit, or avoid paying a carbon tax of a set amount per tonne of emissions reduced

This is all well and good, but it means that any costs incurred in decarbonising are effectively stripped from a company's bottom line as there is no financial reward in Asia for producing green, or even slightly less dirty, steel.

The question is how to introduce incentives to decarbonise, right from the relatively easy and low-cost initial steps through to the much more difficult and capital intensive ambition of net-zero steel.

One way would be to introduce a tiered system of incentives. Let's assume a baseline of 2.1 metric tonne of carbon emissions per tonne of steel produced in the current predominant method of iron ore fines through a blast furnace and then a basic oxygen furnace (BOF).

If a steel mill could lower emissions by a third for example, it could be rewarded with a carbon credit, or avoid paying a carbon tax of a set amount per ton of emissions reduced.

For the sake of example let's assume this first third reduction is worth $60 a ton, which is roughly the price of a carbon credit in the European Union.

Now, assume the steel mill can cut emissions by a further third, but only by investing in new processes, such as using direct reduced iron (DRI), or its shippable equivalent hot briquetted iron (HBI) in an electric arc furnace (EAF).

This reduction could be rewarded with a higher price on carbon, say $120 a tonne The final steps to completely decarbonise steel production by using green hydrogen to produce the HBI, green electricity to run EAFs, and using sustainable shipping fuel such as methanol to transport materials, could attract an even bigger carbon credit to offset the vast capital that needs to be deployed to get there.

Incentives crucial

One thing became clear from the presentations at the Green Steel Forum this week in Singapore, is that without incentives only the first, and relatively easy steps to decarbonise will become reality.

These involve maximising the efficiency of BOFs, increasing the use of higher grade iron ore and agglomerates such as DRI and HBI, boosting the use of recycled steel in EAFs and decarbonising mining iron ore by limiting the use of diesel power generation at remote mines and electrifying vehicles and trains.

The problem is that all these efforts will likely cut only about 20% of steel's global emissions.

The next steps involve doing things like using natural gas to turn low-grade iron ore into DRI and HBI for use in more advanced BOFs or even EAFs, and then switching this process to green hydrogen.

Higher costs?

But it's here where costs become real, and where shareholders are likely to ask what's in it for them.

Ultimately, for steel to decarbonise beyond the low-hanging fruit, there needs to be a price incentive, and the market by itself is unlikely to provide this, given cost is likely to trump climate concerns for the vast majority of consumers.

This means regulations such as carbon taxes or credits need to be implemented, and likely coordinated across numerous countries, but especially the top iron-ore exporters, Australia, Brazil and South Africa, as well as China, which produces half of the world's steel, as well as emerging major producers such as India.

(The opinions expressed here are those of the author, a columnist for Reuters)

Green steel

- Steel manufacturing produces more CO2 than any other heavy industry, comprising around 8% of total global emissions.
- Efforts are under way to move steel production away from coal-fired furnaces to ones powered by electricity or hydrogen.
- But producing green steel is an expensive process - and the industry needs to scale up rapidly to hit net-zero targets

What is green steel?

- Essentially, green steel is the manufacturing of steel without the use of fossil fuels.
- So-called “green hydrogen” is one solution that could help reduce the steel industry’s carbon footprint.
- “When burned, hydrogen emits only water.
- And if that hydrogen is produced via electrolysis using just water and renewable electricity, then it is completely free of CO_2 emissions,

China's aircraft carrier *Fujian* completes 8-day sea trial

Dinakar Peri
NEW DELHI

China's third aircraft carrier, *Fujian*, has successfully completed its eight-day maiden sea trials. *Fujian* is an 80,000-tonne supercarrier with electromagnetic catapults for launching aircraft, making China the second country after the U.S. to field a supercarrier with this technology.

"During the sea trial, the aircraft carrier tested its propulsion, electrical systems, and other equipment, and achieved the expected results. In the next stage, People's Liberation Army Navy Ship (PLANS) *Fujian* will conduct follow-up tests according to established plans," according to *China Military Online*, the English language news website of the Chinese People's Liberation Army (PLA). The aircraft carrier set sail for trials from Jiangnan Shipyard in Shanghai on May 01.

The developments will be watched very closely by India and other countries in the region which are also planning to build aircraft carriers as Beijing rapidly expands its maritime power and presence.

Named after East China's Fujian Province and given the hull number 18, the carrier was launched in June 2022. Last month, China announced that it is building its fourth aircraft carrier, likely a nuclear-powered supercarrier, to be unveiled very soon. China's first aircraft carrier *Liaoning* was commissioned in 2012 and the second carrier *Shadong* was launched in 2017.

Setting sail: China's third aircraft carrier, *Fujian*, conducts its maiden sea trial on May 01. AP

In an interview last week, outgoing Commander of Hawaii-based U.S. Indo-Pacific Command (INDOPACOM) Adm John Aquilino said that in the three years since he's been in command, China has built more than 400 aircraft, 20 major warships, and doubled its missile inventory.

Indian Navy's carriers

Indian Navy currently operates two aircraft carriers - refurbished Russian carrier *INS Vikramaditya*, commissioned in 2013, and indigenously designed and built *INS Vikrant*, commissioned in September 2022.

In the second half of last year, the Indian Navy has moved the case for a second Indigenous Aircraft Carrier (IAC-II), a repeat of a Vikrant-like carrier which has been approved by the Defence Procurement Board last September. It is now awaiting approval by the Defence Acquisition Council, expected to be taken up after the elections.

It will take around eight to 10 years to build a new carrier, Madhu S. Nair, Chairman and Managing Director of Cochin Shipyard Limited, told *The Hindu* as reported earlier, as long as the basic design, engines and propulsion are kept intact.

Fujian

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- Fujian is an 80,000-tonne supercarrier with electromagnetic catapults for launching aircraft, making China the second country after the U.S. to □eld a supercarrier with this technology.
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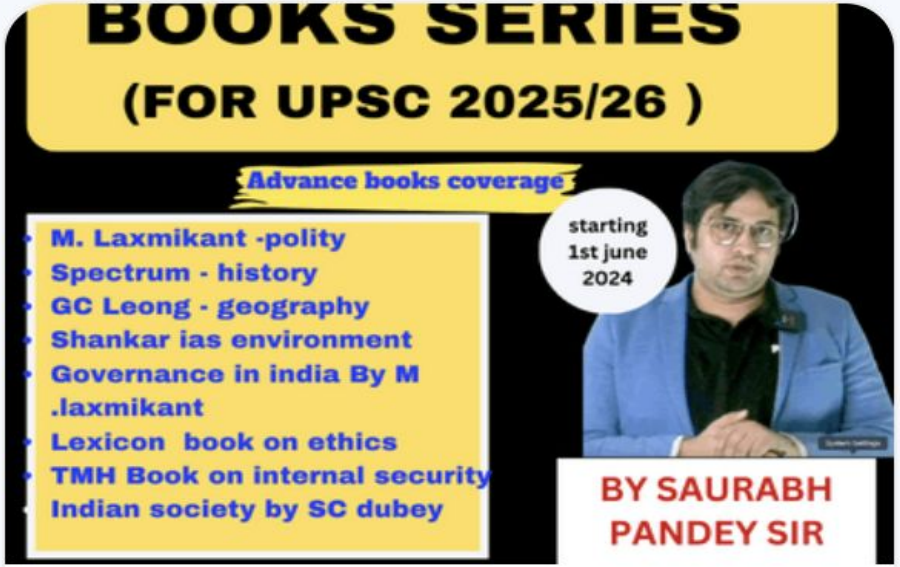

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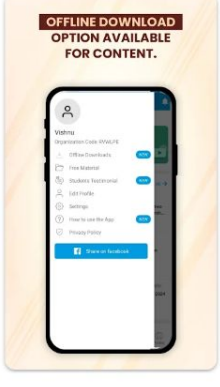

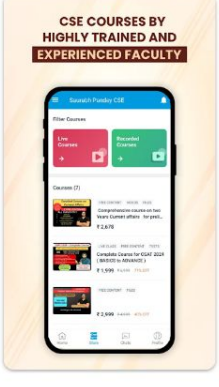

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Target Mains -2024/25

Q ‘’INSACOG has important role to play in prevention of disease surveillance ‘’ Elaborate.

प्रश्न "रोग निगरानी की रोकथाम में INSACOG की महत्वपूर्ण भूमिका है" विस्तार से बताएं।

For pdf

Telegram - The hindu analysis by saurabh sir

Link

https://t.me/gesreporter

Link in description