

EVERYDAY CURRENT AFFAIRS-SEPTEMBER 10, 2020

TAMIL NADU

- **On September 9, School education minister K A Sengottaiyan- said there will be no online classes in all schools from September 21 to 25 due to quarterly holidays.**
 - ✓ Also, telecast of video lessons on television channels run by the State government will not be conducted during these days
 - ✓ The move is intended to reduce stress among school students and to keep them refresh.
 - ✓ The department usually declares quarterly holidays in the last week of September.
 - ✓ Due to Covid-19, schools could not conduct quarterly exams this year.
 - ✓ The minister also instructed schools not to give any weightage to the assignments and assessments given during online classes for calculating the final exam marks.

- **The Tamil Nadu government - has granted administrative sanction to construct a barrage across River Cauvery in Nanjai Pugalur in Karur district at a cost of ₹406.5 crore**
 - ✓ The approval for the construction was given in anticipation of loan assistance from Nabard (National Bank for Agriculture and Rural Development).
 - ✓ The loan from Nabard was sought for to facilitate the project, as the Centre is not ready to fund the state's Nadanthai Vaazhi Cauvery project
 - ✓ The ₹11,000 crore ambitious project was announced by the state to restore and rejuvenate the Cauvery river and its tributaries.
 - ✓ The plan is to build five barrages across Cauvery and Coleroon as part of the river restoration programme.
 - ✓ Chief minister Palaniswami announced the project on the lines of Namami Gange, the integrated conservation mission of the centre with an outlay of ₹20,000 crore.
 - ✓ The state also set up a 16-member multi-disciplinary committee to execute the programme and appraised the Centre of its plan, but the latter hasn't shown much interest in the project.

- ✓ The state's plan is now to integrate its schemes for components like sewage treatment plants, common effluent treatment plants, besides seeking Centre's assistance under National River Conservation Plan.
 - ✓ The state submitted its feasibility study for the multi-crore project for seeking Central funds last year for various components from river front development to barrages for storage and artificial recharge.
 - ✓ The Cauvery delta with 6.47 lakh hectares of ayacut is the rice bowl of Tamil Nadu.
 - ✓ The state will provide guarantee for the loan obtained by Tamil Nadu Water Resources Conservation and Rivers Restoration Limited, if necessary.
 - ✓ The period of loan may be upto ten years, including a moratorium period of two years
 - ✓ The Water and Power Consultancy Services (WAPCOS) of the Union Jal Shakti ministry has been entrusted to do detailed project report for other components, while the public works department will undertake the exercise for barrages and artificial recharge structures.
- **A Jahir Hussain, a University of Madras professor - has published an Arabic translation of Thiruvalluvar's Thirukkural.**
- ✓ Hussain is the chairperson of the Board of studies in Arabic in the University of Madras
 - ✓ According to the author, the Thirukkural classic text is the first and only Tamil literary work directly translated into Arabic.
 - ✓ The earlier translations include one by an Urdu scholar, who translated it into Arabic from the English version and another version by a scholar from Beirut.
 - ✓ Hussain and team have employed a free verse style of translation, so that Arabic readers would not need an explanation with the 'kural'.
 - ✓ The translated version was released by minister for Tamil development K Pandiarajan through a virtual conference on September 4.
 - ✓ The team had commenced the project in 2011 in coordination with the International Institute of Tamil Studies, with the first translation published in 2015.
 - ✓ The translations were also reviewed by eminent Kuwaiti poet Salem Al Rumaidhi
- **On September 9, Tamil Nadu – reported 5,584 new cases and 78 deaths, taking the case tally to 4,80,524 and death toll to 8,090**
- ✓ The number of active cases in the state fell below the 50,000 mark after 53 days to 49,203.
 - ✓ On July 31, the state had the most active cases with 57,968 people under treatment.
 - ✓ The state has a recovery rate of more than 88%, while the mortality rate remains at 1.7%

TN COVID TRACKER

Records show that over 88% of those infected in TN have recovered



Row Labels	Fresh cases	Deaths today	Active cases	Case tally	Toll total
Chennai Region	1,682	29	16,511	2,19,747	4,109
North	1,069	7	9,356	70,952	901
Central	743	10	5,461	38,171	575
South	805	16	7,271	98,254	1,716
West	1,285	16	10,521	51,171	788
Other	0	0	83	2,229	1
Grand Total	5,584	78	49,203	4,80,524	8,090

- ✓ On September 9, Chennai continued to report the highest number of cases with 993 fresh infections and 14 deaths
- ✓ Its neighbours Chengalpet (237), Kancheepuram (171) and Tiruvallur (281) together reported 689 cases and 15 deaths.
- ✓ Among other districts, Coimbatore reported 445 new cases, while Cuddalore accounted for 344 cases.
- ✓ At the end of the day, the state discharged 6,516 patients, taking the total recovered to 4,23,231
- ✓ A total of 82,573 samples were tested in the last 24 hours, taking the total number of samples tested so far to 55,44,850.

NATIONAL

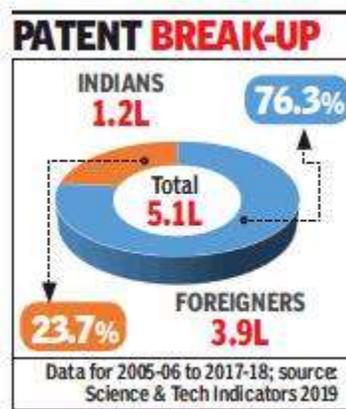
- **On September 10, Prime Minister Narendra Modi - will inaugurate one of the largest semen stations of India in the government sector in Purnea, Bihar**
- ✓ The station will have a production capacity of 50 lakh semen doses per annum.
- ✓ It is set up to cater to the demand of eastern and north-eastern states
- ✓ The station will work on improving cow breeds and ensure decline of stray cattle population in the country
- ✓ The Prime Minister also launched several initiatives for the fisheries and animal husbandry sectors in Bihar.
- ✓ In this regard, the PM talked about three new technological interventions to give a boost to the dairy sector–
 - ✓ setting up of 'semen stations',
 - ✓ use of sex-sorted semen for producing only female calves and
 - ✓ introducing IVF lab at farmers' doorsteps for multiplication of high yielding animals at faster rate.

- ✓ The PM will launch use of sex-sorted semen in artificial insemination by Barauni Milk Union in Begusarai – the parliamentary constituency of Union dairying and fisheries minister Giriraj Singh.
- ✓ Under this initiative, only female calves can be produced
- ✓ He will also inaugurate IVF lab at Animal Sciences University, Patna under Rashtriya Gokul Mission.
- ✓ A mobile app, called e-Gopala, will also be launched by the Prime Minister.
 - ✓ The app will assist farmers in managing their livestock including buying/selling of disease free germ-plasm and getting veterinary first aid, vaccination and information on animal nutrition.
 - ✓ The app will also provide alerts on due date for vaccination, pregnancy diagnosis, calving etc. and inform farmers about various government schemes and campaigns.
- ✓ **During the occasion, the Prime Minister will also launch the ‘Pradhan Mantri Matsya Sampada Yojana’ (PMMSY) in Bihar**
- ✓ The PMMSY is a flagship scheme for focused development of fisheries sector in the country with an estimated investment of ₹20,050 crore during a period of five years in all states/UTs
- ✓ This is the highest ever investment by the government in the fisheries sector
- ✓ The scheme was announced as a part of the centre's AatmaNirbhar Bharat Package.
- ✓ It is to be implemented between 2020-21 and 2024-25.
- ✓ The scheme aims to enhance fish production to 70 lakh tonnes and increase fisheries export earnings to Rs.1,00,000 crore by 2024-25
- ✓ It will generate 55 lakhs of direct and indirect employment in the fisheries sector
- ✓ The scheme will be implemented in Bihar at an estimated cost of Rs 1390 crore out of which the central share would be Rs 535 crore.
- **On September 9, India’s central drug regulator - issued a notice to Pune-based Serum Institute of India, asking why permission granted for Phase 2 and 3 clinical trials of the Oxford Covid vaccine candidate should not be suspended, until safety has been established**
- ✓ According to the Drugs Controller General of India (DCGI) V G Somani, the Serum Institute hadn’t informed it about the reported “serious adverse events” of the vaccine candidate
- ✓ At present, the testing and trials of the vaccine continues at 17 sites within the country
- ✓ The trials were being carried out by the Indian Council of Medical Research and the National Institute for Research in Tuberculosis
- ✓ It would involve two Chennai-based medical institutions — the Rajiv Gandhi Government General Hospital and Sri Ramachandra Institute of Higher Education and Research — and 300 volunteers.

- ✓ A UK-based volunteer had shown an unexplained neurological side-effect of the drug.
 - ✓ Following the unexpected effect of the vaccine, Serum Institute's UK partner AstraZeneca has "temporarily paused" the global clinical trials of the Oxford Covid vaccine candidate
 - ✓ Meanwhile, Serum Institute CEO Adar Poonawalla said the vaccine is completely safe with respect to Indian trials and hence, trials would continue.
 - ✓ A total of 100 volunteers in India have already received the trial dose of the Covishield vaccine
 - ✓ The vaccine, if certified safe, will be manufactured by Serum Institute in India.
 - ✓ Nationwide, the vaccine trial involves 1,600 volunteers across the selected sites
 - ✓ Of the 100 volunteers vaccinated, 68 are from Pune
 - ✓ According to ICMR, the vaccine will enter its Phase 3 trial if a weeklong study of the 100 vaccinated volunteers finds it safe
 - ✓ Further, ICMR will submit the study data to the Data Safety Monitoring Board before the vaccine's Phase 3 trial
- **The Indian Council of Medical Research (ICMR) – has said that the Convalescent plasma (CP) therapy failed to benefit Covid-19 patients**
- ✓ The regulator has announced the results of the largest trial conducted across 39 hospitals in India, spearheaded by the agency.
 - ✓ Of these, 29 were government hospitals and 10 were private hospitals spread across 14 States and Union Territories, and representing 25 cities.
 - ✓ The trial was conducted during April-July by enrolling 464 hospitalised patients with "moderate" Covid-19
 - ✓ Some of these patients were administered convalescent plasma, which contains the antibodies from the plasma filtered from the blood of those who have recovered from Covid-19.
 - ✓ The idea was that such antibodies would neutralise replicating viruses and check the growth of the infection.
 - ✓ Totally, 235 patients received the plasma along with the "best standard of care" (called the intervention arm) alongwith another 229 patients that received only the "standard of care" (called the control arm)
 - ✓ As per the results, there was not a significant difference in the proportion of those who did not progress to severe illness over 28 days, nor did the trial save a significant fraction of patients from death.
 - ✓ "Thirty-four patients (13.6%) died in the intervention arm and 31 (14.6%) in the control arm," the report noted
 - ✓ The PLACID trial, as it is called, was an open-label (patients know the nature of treatment they are getting), parallel-arm, Phase 2, multi-centre, randomized and controlled trial.

- **World Wide Fund for Nature – has released the latest bi-annual ‘Living Planet Report’ on September 9**
- ✓ According to the report, the planet lost 68% of its biodiversity population in the past five decades.
- ✓ The major impact was undergone by freshwater species, whose population dropped by a staggering 84%.
- ✓ And even with increased conservation efforts, an improvement seems unlikely before 2050, as per the report
- ✓ In India, over 12% wild mammals and 3% bird species face the threat of extinction, while 19% amphibians are threatened or critically endangered
- ✓ The Living Planet Index mapped 21,000 populations of mammals, birds, fish, reptiles and amphibians.
- ✓ The patterns show wide regional variance among various continental zones
- ✓ The Asia Pacific saw a 45% drop in biodiversity, the second biggest after Latin America and the Carribean, which lost 94%.
- ✓ Among the various threatened species, freshwater species are the most affected, facing extinction at the rate of almost one in three species
- ✓ By 2030, water demand will be twice the availability, with 14 of 20 river basins already stressed.
- ✓ One-third of India’s wetlands have already been lost in the past four decades.
- ✓ Moreover, there will be a cascading effect on human activity due to various climatic changes
 - ✓ A cyclone in one continent can lead to a locust swarm in another, as witnessed in 2018-19.
 - ✓ In 2018, climate change led to two cyclones with unusually heavy rainfall in the southern Arabian Peninsula.
 - ✓ It created a breeding ground for locusts, which then invaded parts of South Asia (including India) and East Africa in 2019.
 - ✓ In the same year, an exceptionally hot and long heatwave led to extreme droughts in India and Pakistan, as per the report
- ✓ According to the report, the mankind currently demands 1.56 times more resources than the amount that the earth can regenerate
- ✓ India’s footprint is among the lowest — less than 1.6 global hectares per person, smaller than that of many large countries.
- ✓ However, considering the high population levels, there will be a widening ecological deficit even if current per-capita levels of resource consumption remain the same.
- **In India, around 5.1 lakh patent applications - were filed in the last decade between 2005-06 and 2017-18**
- ✓ This was based on a data released by the Department of Science and Technology (DST) as part of the latest Science & Technology Indicators (STI 2019-20) released last month

- ✓ As per the data, nearly eight out of every 10 patent applications filed in India in more than a decade have been by foreigners residing abroad.
- ✓ Meanwhile, the number of Indian applicants is also slowly increasing



- ✓ As per the data, 76% of these applications were filed by 'foreigners resident abroad' (as the government classifies them) and the rest by Indians.
 - ✓ Among the patents filed by foreigners, most are individuals or companies from the US, Japan and Germany, accounting for more than 45% of the patents in the said period.
 - ✓ The UK, France, Switzerland, Russia, the Netherlands and Italy had hundreds of applications filed.
 - ✓ Globally, with nearly 1.4 lakh patent applications, the US accounted for 27% of the applications filed in the said period.
- **Seven different species of butterflies – have been shortlisted to choose India's 'national butterfly' in a first-of-its-kind poll**

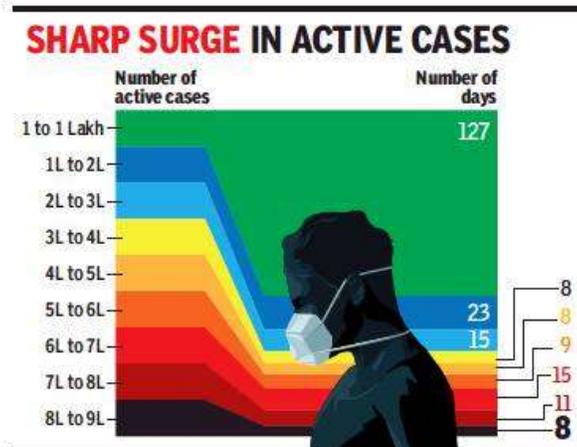


- ✓ The seven butterfly species includes common jezebel, five-bar swordtail, Krishna peacock, yellow gorgon, common nawab, northern jungle queen and orange oakleaf.
- ✓ A group of 50 butterfly enthusiasts, researchers, writers and experts from across India have got together to elect a national butterfly, similar to the national bird and national animal.
- ✓ The poll process started in September, the 'butterfly month'.

- ✓ The selection panel has well-known experts like Dr Krushnamegh Kunte and Issac Kehimkar.
 - ✓ The winged beauties were judged on nine criteria — they needed to have charisma, should not be a pest and too rare or too common, significant to culture and ecology and attractive to the younger generation.
 - ✓ An important aspect was that the species should not already be a 'state butterfly' as seven states in India has their own state butterflies.
 - ✓ On September 10, the poll will be open to the citizens of the country to vote for a national butterfly.
 - ✓ The result will be communicated to the environment ministry.
 - ✓ By the end of this year or beginning of 2021, a national butterfly will be announced by the Ministry
- **The Border Roads Organisation (BRO) - has reconstructed a Bailey bridge in the Jimighat area that was damaged on July 18 due to a landslide.**
- ✓ The bridge is strategically important as it connects Munsyari with Milam, the last village on the India-China border.



- ✓ The bridge was opened for movement of light vehicles on September 8.
 - ✓ According to BRO, the bridge was constructed “in a record time of just a week.”
 - ✓ After the bridge collapsed, more than 20 villages had been cut off from Munsyari and the movement of security personnel had been impacted as well.
- **On September 9, India - registered its highest Covid-19 cases in a single day at 97,399 – crossing the 97,000-mark for the first time since the pandemic began.**



- ✓ Maharashtra continued to lead the surge in fresh cases, recording its highest single-day peak with 23,816 infections.
- ✓ India's cumulative caseload stands at 44,59,174 and of these 9,21,650 are active cases.
- ✓ A total of 34,62,571 patients have recovered from the virus.
- ✓ On the day, two mega metros - Delhi (4039 infections) and Mumbai (2227) saw the highest single-day surge in fresh cases.
- ✓ With 1050 deaths reported on the day, India's cumulative toll stands close to the 75,000-mark at 74,953 casualties.

INTERNATIONAL

- **On September 9, Pharmaceutical firm AstraZeneca - halted global trials of its coronavirus vaccine, developed along with Oxford University, because of a serious and unexpected adverse reaction in a participant in one of the trials, probably in U.K.**
- ✓ The pausing of the trials will allow the British-Swedish company, AstraZeneca to conduct a safety review.

Top shot

A look at the AstraZeneca vaccine candidate

- Names: **AZD1222, Oxford AD/ChadOx1**
- Phase-3 trials being conducted in the **U.K., South Africa and Brazil**
- It is set to be tested on **30,000** people in the U.S.
- AstraZeneca says it plans to recruit **50,000 volunteers globally**
- Side effects witnessed after the Phase-1/2 trials: **fever, headache, muscle pain and injection site reactions.** They were deemed mild or moderate



- ✓ Incidentally, on the same day, AstraZeneca and eight other drugmakers made a joint pledge that they would not move forward with such products before thoroughly vetting them for safety and efficacy.

- ✓ The other eight firms who signed the pledge along with AstraZeneca include Moderna, Pfizer, BioNTech, Johnson & Johnson, GlaxoSmithKline, Merk, Moderna, Sanofi and Novavax
- ✓ In large trials, AstraZeneca said, participants do sometimes become sick by chance, but such illnesses “must be independently reviewed to check this carefully.”
- ✓ The firm said it was “working to expedite the review of the single event to minimise any potential impact on the trial timeline”.
- ✓ According to a news report, a woman in the UK started showing symptoms of a rare and devastating neurological condition called transverse myelitis
- ✓ This marks the second time someone in one of its vaccine trials developed a central nervous system problem.
- ✓ AstraZeneca’s vaccine is in Phase 2/3 trials in England and India, and in Phase 3 trials in Brazil, South Africa and the US.
- ✓ According to the World Health Organisation, nearly 180 vaccine candidates are being tested around the world but none have yet completed clinical trials.
- ✓ This excludes Russia's Covid-19 vaccine- Sputnik V, which was officially registered by the Russian Ministry of Health on August 11, becoming the world's first registered vaccine against Covid-19.

CONFERENCES & SUMMITS

- **On September 9, Foreign secretary Harsh Vardhan Shringla - attended the first India-France-Australia trilateral dialogue with his counterparts Francois Delattre from France and Frances Adamson from Australia.**



- ✓ The trilateral dialogue is significant because it is the first grouping that brings the European power into the Indo-Pacific region.
- ✓ The meeting was held with the objective of building on the strong bilateral relations that the three countries share with each other and synergising their respective strengths to ensure a peaceful, secure, prosperous and rules-based Indo-Pacific Region

PERSONALITIES

- **A far-right Norwegian lawmaker, Christian Tybring-Gjedde– said that he has nominated U.S. President Donald Trump for the Nobel Peace Prize for his efforts in the Middle East.**



- ✓ Christian Tybring-Gjedde is a member of the Norwegian Parliament for the far-right Progress Party
- ✓ According to Christian, he nominated the US President because of his work “for a peace agreement between the United Arab Emirates and Israel which opens up for possible peace in the Middle East.”
- ✓ Last month, Israel and the UAE agreed to a historic deal restoring diplomatic relations and are scheduled to sign it at a White House ceremony on September 15.
- ✓ The nominations for Nobel prize must be sent to the Norwegian Nobel Committee by February 1, indicating the deadline to nominate people for this year’s peace prize has passed.
- ✓ Tybring-Gjedde was one of two Norwegian lawmakers who nominated Trump for the Nobel Peace Prize in 2018 for his efforts to bring reconciliation between North and South Korea.
- ✓ Any lawmaker serving in a national legislature can nominate someone for the Nobel Peace Prize.
- ✓ Former U.S. President Barack Obama was awarded the prize in 2009 only months into his first term
- ✓ The Norwegian committee said it honoured Obama for his commitment to “seek the peace and security of a world without nuclear weapons.”
- ✓ The Norwegian Nobel Committee doesn’t publicly comment on nominees. Under its rules, the information is required to be kept secret for 50 years.
- ✓ For the Nobel Peace Prize for 2020, there were 318 candidates, out of which 211 were individuals and 107 were organizations.

ECONOMY

- **On September 9, Union finance and corporate affairs minister Nirmala Sitharaman - launched the doorstep banking service of state-run banks**
- ✓ The move is expected to benefit a large number of customers of the public sector banks, including senior citizens and persons with disabilities.



- ✓ Doorstep banking services is aimed at providing convenience of banking services to the customers through the universal touch points of a call centre, web portal or mobile app.
 - ✓ Customers can also track their service request through these channels.
 - ✓ The services shall be rendered by the doorstep banking agents deployed by selected service providers at 100 centres across the country
 - ✓ At present only non-financial services such as picking up of cheques, demand draft, pay order are available to customers.
 - ✓ Financial services shall be made available from October.
 - ✓ The services can be availed by customers of public-sector banks at nominal charges.
- **Private equity firm Silver Lake - will invest ₹7,500 crore (just over \$1 billion) to acquire a 1.75% stake in the retail business of billionaire Mukesh Ambani**
 - ✓ The investment makes the Silicon Valley firm the first external investor in the consumer-focused unit.
 - ✓ This is Silver Lake's third investment in India this year after education technology startup Byju's and digital services company Jio Platforms
 - ✓ The American fund's investment transaction values Reliance Industries' retail unit at ₹4.2 lakh crore (\$57 billion).
 - ✓ This valuation, when compared with listed companies, ranks the retail unit at the fifth spot in India after HUL, HDFC Bank, TCS and RIL itself.

- ✓ Reliance Retail Ventures (RRVL) is a subsidiary of RIL and the holding company of its retail business



- ✓ Besides Silver Lake, 10 other US and Middle Eastern asset management firms — including consumer-focused fund L Catterton, Abu Dhabi sovereign wealth fund Mubadala and New York-based KKR — have invested in Jio Platforms, which also runs India's largest wireless network.
- ✓ Between May and June, Silver Lake invested ₹10,203 crore (for a stake of over 2% in Jio Platforms), while KKR invested ₹11,367 crore (2.3%) and L Catterton put in ₹1,895 crore (0.4%) in the digital services company of RIL.
- ✓ The Silver Lake investment will be used by RRVL to finance the ₹24,713-crore acquisition of Future Retail.
- ✓ On August 29, Reliance Retail Ventures Limited (RRVL) had announced that it is acquiring the retail and wholesale business and the logistics and warehouse business of Kishore Biyani's Future Group for Rs 24,713 crore.
- ✓ RIL's retail unit reported a profit of ₹5,448 crore (\$726 million) on a turnover of ₹1.62 lakh crore (about \$22 billion) in fiscal 2020.

INTERNATIONAL DAY

- **World Suicide Prevention Day – September 10**



- ✓ The objective of this day is to raise awareness about the mental health and prevent suicides among people.
- ✓ This day is observed since 2003 by International Association for Suicide Prevention (IASP) and World Health Organisation
- ✓ The IASP, based in Vienna, was established in 1960 by Professor Erwin Ringel and Dr. Norman Faberlow.
- ✓ Theme 2020 - “Working Together to Prevent Suicide”
- ✓ Globally, more than 1 million people die by suicide every year, with India contributing 17.8% to the global suicides
- ✓ According to a 2018 research by Public Health Foundation of India, India now accounts for over one third of the world’s annual female suicides and around one fourth of male suicides.
- ✓ Suicide is 10th leading cause of death worldwide

SPORTS

- **Football wizard, Cristiano Ronaldo – scored more than 100 international goals for Portugal on September 8**
- ✓ Ronaldo, capped 165 times by Portugal, is second only to Iran’s Ali Daei, on 109, in the list of top men’s international goal scorers.
- ✓ The 35-year old Juventus attacker, Ronaldo achieved the record by scoring both the goals in a 2-0 victory over 10-man Sweden in the Nations League



- ✓ After making his first senior international appearance as an 18-year-old in 2003, Ronaldo scored his first goal for Portugal in a 2-1 defeat by eventual winners Greece at Euro 2004.

COVID VACCINES - A REPORT

HOW LONG BEFORE YOU CAN GET A COVID VACCINE?

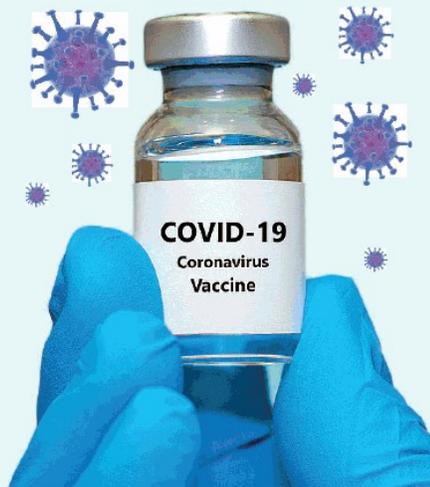
By the end of this month, the worldwide toll of Covid deaths could cross 1 million. A vaccine is urgently needed to save lives and livelihoods but thorough tests are needed to ensure that they are both safe and effective. The bulk of the vaccine candidates in the pipeline are yet to reach human trials, but the leading projects are in advanced phases and some have been released for limited use. Here's a look at the latest on the vaccine front

VACCINES IN THE RACE



Phase 3, released for use

SPUTNIK V: Russia released its Covid vaccine after a preliminary trial involving just 76 individuals. While it was shown to prod the immune system into producing antibodies, international experts are wary as more studies are needed to measure the complete immune response. Russian authorities now say it is a conditional certification that will be reviewed after Phase 3 trials. They have approached India to host larger human trials and manufacture the vaccine.



India To Be A Major Vaccine Manufacturer

Indian vaccine makers supply 60% of the developing world's vaccines and are now involved in the development of Covid vaccines with a timeline to make these available some time next year.

SERUM INSTITUTE OF INDIA: The world's largest vaccine manufacturer by volume has partnered with the University of Oxford-AstraZeneca collaboration, US-based Novavax and Codagenix to develop and manufacture novel coronavirus vaccines. The Oxford vaccine is in Phase 3 trials in several countries, and in Phase 2 trials at 17 sites in India. The trials are expected to be over by early-2021. SII says it will distribute vaccines in India and 57 low- and middle-income countries at \$3, or ₹225, per dose. It can make 60 million to 70 million doses a month.

Phase 3, limited use

CANSINO BIOLOGICS: The vaccine developed by a Chinese company and a military institute was approved for limited use after Phase 1 human trials ended in May. Phase 2 trials in July showed a strong immune response. In August, Saudi Arabia and Pakistan said they would host its Phase 3 trials.

SINOVAC: Another Chinese vaccine, it was approved by Beijing for limited use in July although its Phase 3 trials are still on in Brazil and Indonesia.

Phase 2, Phase 3

ASTRAZENECA, OXFORD UNIVERSITY: A front-runner from the start, it is undergoing multiple phases of trials simultaneously. Phase 1/2 trials showed it didn't cause severe side-effects. Phase 2/3 trials were on in England, India, Brazil, South Africa and the US when they were halted in the US because a participant in the UK developed an "unexplained illness". While the UK trial is reviewed, the Indian leg of the trial is continuing, Serum Institute, which is hosting it, said.

BIONTECH, PFIZER, FOSUN PHARMA: Made by Germany's BioNTech, China's Fosun Pharma and US' Pfizer, it uses RNA (genetic material) from the virus to build immunity. Although no RNA vaccine has been approved for human use so far, the US has ordered 100 million doses by December, and Japan another 120 million.

ZYDUS CADILA: Its ZyCov-D vaccine is in Phase 2 trials now with 1,000 participants and if the results are satisfactory, the company says it's prepared to manufacture 100 million doses.

BHARAT BIOTECH: Covaxin, the vaccine it has made in collaboration with Indian Council of Medical Research, University of Wisconsin-Madison and US-based FluGen, is set to go into Phase 2 trials this month. The company says it can produce 300 million doses.

BIOLOGICAL E: The firm has signed a deal with Baylor College of Medicine in the US to manufacture and test a vaccine in India. Trials are expected to begin this month and the firm says it can produce a billion doses.

GENNOVA BIOPHARMACEUTICALS: Its vaccine begins human trials in October, in India, the US, Brazil and South Africa. The firm can produce about 200 million doses annually but can scale up to a billion doses.

INDIAN IMMUNOLOGICALS: The company has struck a deal with Griffith University in Brisbane, Australia, to test and manufacture its vaccine but trials aren't expected to begin until next year.

Phase 3

MODERNA, NATIONAL INSTITUTES OF HEALTH: Another RNA vaccine, it was the first to start trials, in March, but suffered a setback when Moderna lost a patent battle in July. However, it has got \$1 billion in US government funding, and the promise of a \$1.5-billion order for 100 million doses if the vaccine is safe and effective.

SINOPHARM: Chinese government-owned Sinopharm is testing two vaccines. One is undergoing Phase 3 trials in the UAE, Peru and Morocco and the other is in Phase 3 trials in the UAE. Sinopharm claims one of its vaccines has been approved for limited use, but it is not clear which.

Compiled by Kenneth Mohanty & Anjishnu Das; Source: NYT, covid-19vaccinetracker.org, Lancet, Nature, Stat News, media reports