



## Fight Against Covid-19

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### Why in News

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According to an article in the New England Journal of Medicine (NEJM), **over 40 vaccines against the Novel Coronavirus (SARS-CoV2) are in various stages of development** across the world.

- **One** of these vaccines is **being developed by the Serum Institute of India (Pune, Maharashtra)**.
- Out of 40, only **two vaccines are currently in clinical trials**.
- However, a vaccine against coronavirus **can be available only in the next 12-18 months** at the earliest.

### Development of COVID-19 Vaccines

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- **Clinical trials** are a type of research that studies new tests and treatments and evaluates their effects on human health outcomes.
- According to the NEJM article, written by researchers affiliated to the **Coalition for Epidemic Preparedness Innovations (CEPI)**, there is a **need to speed up the vaccine development**.
  - **CEPI** is an international non-governmental organisation funded by the Wellcome Trust, the Bill and Melinda Gates Foundation, the European Commission, and eight countries (Australia, Belgium, Canada, Ethiopia, Germany, Japan, Norway, and the UK).
  - Launched in 2017, its **mission** is to stimulate and accelerate the development of vaccines against emerging infectious diseases and enable access to these vaccines for people during outbreaks.

- The speed is of essence for millions of people around the world. However, there is also a **business side** to it.
  - **Severe Acute Respiratory Syndrome (SARS)** and **Zika** epidemics ended before vaccine development was complete.
  - As a result, federal funding agencies reallocated funds that had been committed to vaccine development, leaving **manufacturers with financial losses** and setting back other vaccine-development programmes.

## Alcohol Sanitizers and Coronaviruses

- The novel coronavirus has a **lipid envelope**. Soap being a detergent destroys this envelope. The same is **true for alcohol also**.
- **Structure of Lipid Envelope:**
  - SARS-CoV-2 particles, like other coronaviruses, are spherical and **have proteins called spikes** protruding from their surface.
  - These spikes **latch onto human cells**, then undergo a structural change that allows the viral membrane to **fuse with the cell membrane**. The viral genes can then enter the host cell to be copied, producing more viruses.
  - Recent work shows that, like the virus that caused the 2002 SARS outbreak, SARS-CoV-2 spikes bind to receptors on the **human cell surface called angiotensin-converting enzyme 2 (ACE2)**.
  - All of this is **held together by a fatty layer, called an envelope**.
- **Functioning of Alcohol in Sanitizers:**
  - The Envelope layer is **disrupted when it comes into contact with soap or a hand sanitiser with more than 60% alcohol**.
  - Disruption of the envelope leads to the **killing of the virus**.
  - Handwashing for 20 seconds at least kills the virus.
- **Indian Government's Move:** The Government has notified **hand sanitizers as an essential commodity under the Essential Commodities Act, 1955**.

## Indian Government's Latest Moves

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- **Combination of Hydroxychloroquine and Azithromycin against COVID-19 instead of HIV drugs**
  - According to the new clinical management guidelines issued on 31<sup>st</sup> March, 2020, a **combination of hydroxychloroquine (HCQ)** - used for treatment of auto-immune disorders, and **azithromycin** - the antibiotic has been recommended for use in severe patients.
  - The earlier guidelines, dated 17<sup>th</sup> March, 2020, which included use of Anti HIV drugs - **Ritonavir and Lopinavir in high risk patients, now stand repealed.**
  - **Reasons:**
    - No specific antivirals have been proven to be effective as per currently available data.
    - The **azithromycin-hydroxychloroquine combination** is part of an upcoming **multi-country trial anchored by the World Health Organization** to examine the efficacy of various drug combinations against COVID-19.
    - **India has announced its decision to be part of the WHO global trials,** which are also looking at these two drugs.
- **Portal for Stranded Foreigners in India**
  - The **Ministry of Tourism** has come up with a portal titled '**Stranded in India**' to disseminate information regarding the services that can be availed by foreign tourists who are stuck far away from their home land.
  - The Portal has information on the Ministry of External Affairs control centres and state-based/regional tourism support infrastructure. It also lists the COVID-19 helpline numbers for tourists.
  - On 19<sup>th</sup> March, 2020, the Directorate General of Civil Aviation (DCGA) had issued an advisory stating that no international commercial passenger flights will operate here from March 23 to March 29. The advisory was later extended and all international flight operations remain suspended till April 14.
    - The government has announced **visa extensions** for stranded foreigners till flight operations resume.

## **IITs Support to the Indian Government**

- The Indian Institutes of Technology (IITs) has offered **a range of inexpensive solutions** developed by their faculty to assist the government in the fight against the COVID-19 outbreak.
- From low-cost ventilators and testing kits to personal protective equipment for health workers, the directors of IIT-Delhi, IIT-Guwahati, IIT-Bombay and IIT-Kanpur shared their institute's work on containing the spread of the virus with the Government.
- The institutions have also sought the government's assistance in facilitating tie-up with Public Sector Units (PSUs) to scale up production of prototypes and to mitigate difficulties faced in procuring raw material because of the lockdown.

- **Example:** IIT-Guwahati has offered to pitch in with its 3D-printed full-face shield and headgear for health workers, robotic cart to deliver food to isolation wards and high-grade sanitiser. It needs the government's help to tie up with a PSU for large-scale manufacturing.
- Indian Institutes of Technology are apex institutions for engineering education and research. At present, there are **twenty three Indian** Institutes of Technology (IITs). All are governed by the **Institutes of Technology Act, 1961** which has declared them as "**Institutions of national importance**", and lays down their powers, duties, framework for governance etc.