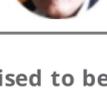




India's Role in the Race to Deliver COVID-19 Vaccines

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As one of the world's largest vaccine manufacturers, India is poised to be a key player in distributing these products.

The extensive international efforts to develop vaccines to prevent COVID-19, and the speed with which these efforts are progressing, is truly unprecedented. [There are now more than 130 candidates in development](#), according to the World Health Organization (WHO). Remarkably, 10 of these candidates are already in clinical trials, while the others are in various stages of preclinical development.

Three vaccine candidates, one each from the US, UK, and China, have already completed Phase I trials. While the efficacy of these vaccines in preventing COVID-19 still needs to be evaluated, the good news is that there have been few or no adverse reactions in humans, and this paves the way for larger trials. Every vaccine platform available to scientists, novel or well-established, is being explored. Some of these platforms, such as DNA and RNA, have not yet been used in licensed vaccines, which underscores the innovative approaches being applied to developing vaccines against this deadly virus.

Given India's enormous progress in producing and delivering vaccines, the country is prepared to play a major role in the development and manufacturing of a COVID-19 vaccine. There are now almost 30 groups in India – [from large vaccine manufacturers](#) to individual academic research groups – working to develop and manufacture vaccines against this novel coronavirus.

Indian [vaccine developers are currently exploring several vaccine platforms](#) including a novel DNA vaccine, inactivated rabies virus vector platforms, and protein-based vaccine candidates, as well as [repurposing existing vaccines such as the recombinant BCG vaccine](#). Government funding has played a pivotal role in these efforts, alongside the investment by major vaccine manufacturing companies. Simultaneously, efforts are underway to accelerate regulatory and manufacturing processes to ensure that when a vaccine is available, it reaches the population as quickly as possible.

Experience in Vaccine Development and Delivery

India is currently one of the largest manufacturers of vaccines in the world in terms of volume. In 2016, under the Universal Immunization Program, it became the first country in the region to introduce an indigenously developed and produced vaccine against rotavirus, one of the leading causes of death in children younger than five. In 2018, this vaccine, and another rotavirus vaccine made in India, received WHO prequalification. By 2019, rotavirus immunizations were scaled up across the country, protecting thousands of children against this potentially fatal disease. That same year another vaccine made in India for pneumococcal pneumonia was also prequalified by WHO.

Many of these indigenous vaccines are considerably less expensive than those already on the market. In fact, one of the indigenous rotavirus vaccines costs less than a dollar a dose, making it more affordable for low- and middle-income countries to access this product.

India's vaccine delivery infrastructure has also improved considerably over the last decade. This is in part due to polio-elimination efforts, which succeeded in 2014 in a monumental public health victory. Nationwide surveillance networks and mass vaccination campaigns established in an effort to eliminate polio have resulted in improved cold-chain systems and intensive on-site and door-to-door outreach programs that connect hard-to-reach areas and/or migrant populations to immunizations programs. This helped strengthen India's National Immunization Program, which now [delivers life-saving vaccines to the majority of the nation's more than 25 million children born every year](#), resulting in significantly reduced child mortality.

Lessons from these efforts – especially how to deliver vaccines widely despite infrastructural and socio-cultural challenges – can be vital today in our bid to deliver COVID-19 vaccines to millions of people across the globe.

The Way Forward

Of course, there is still a long way to go in the development of safe and efficacious vaccines against this coronavirus. We still do not know the exact nature of the immune responses required to afford protection. And although the timelines for vaccine development have been greatly accelerated due to the pandemic, extensive trials in populations with ongoing outbreaks in multiple locations are still necessary. This will require a coordinated effort and international collaboration.

If there is one thing that this pandemic has taught us, it is that no one is protected unless everyone is protected. Whenever and wherever COVID-19 vaccines are developed, India will have a key role in distributing these products. As one of the world's largest vaccine manufacturers, India is uniquely positioned to be able to supply vaccines to low- and middle-income countries.

Now, more than ever before, it is critical that countries like India actively participate and play a lead role in international collaborations, working together with governments and multilateral agencies to amplify and support efforts to ensure that vaccines reach those who need them the most. The future of our world depends on the success of these collaborations.

Global COVID Lab Meeting



(Photo: University Health Network)

Join us for the next Global COVID Lab Meeting with [Dr. Eleanor Fish](#), Professor at the Department of Immunology at the University of Toronto. She will discuss the role interferons play in viral infections and how their broad-spectrum antiviral properties can be applied to COVID-19.

Type I interferons can directly inhibit viral replication and also support immune responses that help clear a viral infection. Interferon (IFN)-α was used previously in the treatment of SARS. In May, Dr. Fish and colleagues [published results in *Frontiers in Immunology*](#) from a study involving 77 hospitalized COVID-19 patients from Wuhan, China. The study showed that treatment with IFN-α2b reduced levels of detectable SARS-CoV-2 in the upper respiratory tract and also appeared to reduce some of the inflammatory responses that are a hallmark of the more serious cases of COVID-19 disease. The authors conclude that IFN-α2b should be further evaluated in a randomized, controlled clinical trial as a therapeutic option.

“Rather than developing a virus-specific antiviral for each new virus outbreak, I would argue that we should consider interferons as the ‘first responders’ in terms of treatment. Interferons have been approved for clinical use for many years, so the strategy would be to ‘repurpose’ them for severe acute virus infections,” says Dr. Fish.

Find out more about her research on June 18th at 10 AM EDT. [Register here for the next Global COVID Lab Meeting.](#)

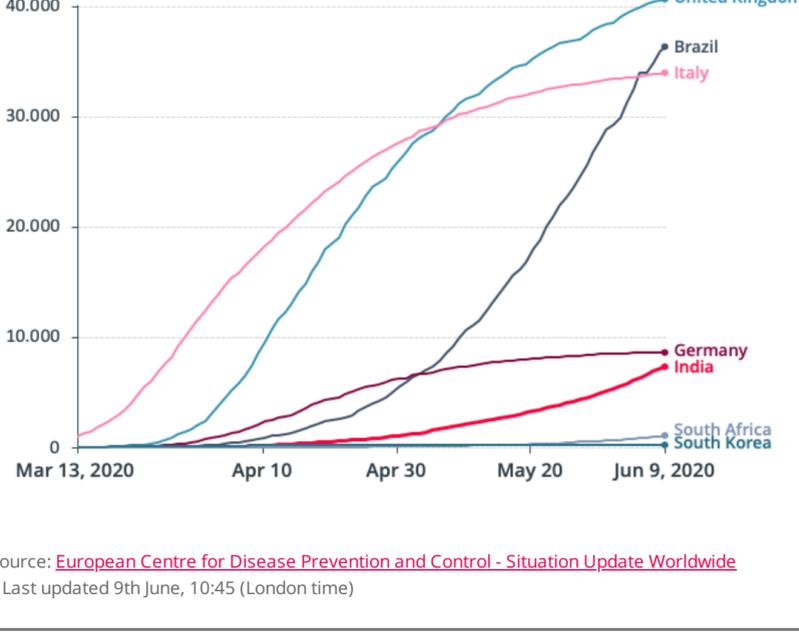
Must Read

A series of preprint publications related to how antibody responses are measured and to what degree they appear following SARS-CoV-2 infection were recently made available, including a review article that summarizes the immunogenicity of the leading COVID-19 vaccine candidates in development. Other articles focus on the importance of testing and deploying vaccines in diverse settings and populations.

- In this [preprint publication](#), scientists from Rockefeller University report on the neutralizing antibody titers detected in convalescent sera.
- Researchers report on antibody responses to SARS-CoV-2 in patients from the New York City metropolitan area in this [preprint publication](#).
- In a related [preprint publication](#), authors suggest that sera from mild COVID-19 cases should be included in validation panels to obtain more accurate seroprevalence rates of antibodies to SARS-CoV-2 at the population level.
- This [preprint review article](#) analyzes the immunogenicity data of leading vaccine candidates and the antibody responses triggered by SARS-CoV-2 infection.
- In [this paper from *The Journal of Infectious Diseases*](#), Singh et al. present the case for testing COVID-19 vaccine candidates in Africa.
- Authors Kao, Orenstein, and Anderson discuss the importance of testing SARS-CoV-2 vaccine candidates in children in [this article, published in *Clinical Infectious Diseases*](#).

COVID-19 in Numbers

Total Confirmed COVID-19 Deaths



Source: [European Centre for Disease Prevention and Control - Situation Update Worldwide](#)
– Last updated 9th June, 10:45 (London time)

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