The push for a COVID-19 vaccine

The world is in the midst of a COVID-19 pandemic. As WHO and partners work together on the response -- tracking the pandemic, advising on critical interventions, distributing vital medical supplies to those in need--- they are racing to find a vaccine.

Vaccines save millions of lives each year. Vaccines work by training and preparing the body's natural defences --- the immune system--- to recognize and fight off the viruses and bacteria they target. If the body is exposed to those disease-causing germs later, the body is immediately ready to destroy them, preventing illness.

Immunization currently prevents 2-3 million deaths every year from diseases like diphtheria, tetanus, pertussis, influenza and measles. There are now vaccines to prevent more than 20 life-threatening diseases, and work is ongoing at unprecedented speed to also make COVID-19 a vaccine-preventable disease.

There are currently more than 100 COVID-19 vaccine candidates under development, with a number of these in the human trial phase. WHO is working in collaboration with scientists, business, and global health organizations through the ACT Accelerator to speed up the pandemic response. When a safe and effective vaccine is found, COVAX (led by WHO, GAVI and CEPI) will facilitate the equitable access and distribution of these vaccines to protect people in all countries. People most at risk will be prioritized.

R&D Blueprint and COVID-19

The current COVID-19 pandemic is unprecedented, but the global response draws on the lessons learned from other disease outbreaks over the past several decades.

As part of WHO's response, the R&D Blueprint was activated to accelerate diagnostics, vaccines and therapeutics for this novel coronavirus. The Blueprint aims to improve coordination between scientists and global health professionals, accelerate the research and development process, and develop new norms and standards to learn from and improve upon the global response.

On 30 January 2020, following the recommendations of the Emergency Committee, the WHO Director-General declared that the outbreak constitutes a Public Health Emergency of International Concern (PHEIC).

World scientists on COVID-19 then met at the World Health Organization's Geneva headquarters on 11–12 February 2020 to assess the current level of knowledge about the new virus, agree on critical research questions that need to be answered urgently, and to find ways to work together to accelerate and fund priority research to curtail this outbreak and prepare for those in the future.

The discussion led to an agreement on two main goals. The first was to accelerate innovative research to help contain the spread of the epidemic and facilitate care for those affected. The second was to support research priorities that contribute to global research platforms in hopes of learning from the current pandemic response to better prepare for the next unforeseen epidemic.

Building on the response to recent outbreaks of Ebola virus disease, SARS-CoV and MERS-CoV, the R&D Blueprint has facilitated a coordinated and accelerated response to COVID-19, including an unprecedented program to develop a vaccine, research into potential pharmaceutical treatments and strengthened channels for information sharing between countries.

Draft landscape of COVID-19 candidate vaccines

Overview

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Is there a vaccine for COVID-19?

Not yet. Many potential vaccines for COVID-19 are being studied, and several large clinical trials may report results later this year. If a vaccine is proven safe and effective, it must be approved by national regulators, manufactured to exacting standards, and distributed. WHO is working with partners around the world to help coordinate key steps in this process. Once a safe and effective vaccine is available, WHO will work to facilitate equitable access for the billions of people who will need it.

When will COVID-19 vaccines be ready for distribution?

We don't yet know exactly when a safe and effective COVID-19 vaccine will be ready for distribution, but we estimate that it could be in early to mid-2021. Before COVID-19 vaccines can be delivered, several important challenges must be overcome:

The vaccines must be proven safe and effective in large (phase III) clinical trials. Many potential vaccines for COVID-19 are being studied, and some of the large clinical trials may report results in late 2020 or early 2021.

A series of independent reviews of the efficacy and safety evidence is required, including regulatory review and approval in the country where the vaccine is manufactured, before WHO considers a vaccine product for prequalification. Part of this process also involves the Global Advisory Committee on Vaccine Safety.

An external panel of experts convened by WHO, called SAGE, will analyze the results from clinical trials and along with evidence on the disease, age groups affected, risk factors for disease, and other information, they will recommend whether and how the vaccines should be used. Officials in individual

countries will decide whether to approve the vaccines for national use and develop policies for how to use the vaccines in their country based on the WHO recommendations. The vaccines must be manufactured in large quantities, which will be a major and unprecedented challenge – all the while continuing to produce all the other important life-saving vaccines already in use. As a final step, vaccines will be distributed through a complex logistical process, with rigorous stock management and temperature control.

WHO is working with partners around the world to accelerate every step of this process, while also ensuring the highest safety standards are met.

How likely is it that safe, effective vaccines for COVID-19 will be developed?

WHO is cautiously optimistic that safe and effective vaccines for COVID-19 will be successfully developed. There is a robust pipeline of potential vaccines in development, and some have already advanced to large (phase III) clinical trials based on promising early data.

But for now, we can't be certain if or when a COVID-19 vaccine will be available. That is why we must not rely on a future vaccine to fight this pandemic – we must use all the tools we already have at our disposal, such as testing, contact tracing, physical distancing, and the use of masks.

How quickly could COVID-19 vaccines stop the pandemic?

The impact of COVID-19 vaccines on the pandemic will depend on several factors. These include factors such as the effectiveness of the vaccines; how quickly they are approved, manufactured, and delivered; and how many people get vaccinated.

Most scientists anticipate that, like most other vaccines, COVID-19 vaccines will not be 100% effective. WHO is working to help ensure that any approved vaccines are as effective as possible, so they can have the greatest impact on the pandemic.

What types of COVID-19 vaccines are being developed? How would they work?

Scientists around the world are developing many potential vaccines for COVID-19. These vaccines are all designed to teach the body's immune system to safely recognize and block the virus that causes COVID-19.

Several different types of potential vaccines for COVID-19 are in development, including:

Inactivated or weakened virus vaccines, which use a form of the virus that has been inactivated or weakened so it doesn't cause disease, but still generates an immune response.

Protein-based vaccines, which use harmless fragments of proteins or protein shells that mimic the COVID-19 virus to safely generate an immune response. Viral vector vaccines, which use a virus that has been genetically engineered so that it can't cause disease, but produces coronavirus proteins to safely generate an immune response.

RNA and DNA vaccines, a cutting-edge approach that uses genetically engineered RNA or DNA to generate a protein that itself safely prompts an immune response.

How will we know if COVID-19 vaccines are safe?

There are many strict protections in place to help ensure that COVID-19 vaccines will be safe. Like all vaccines, COVID-19 vaccines should go through a rigorous, multi-stage testing process, including large (phase III) trials that involve tens of thousands of people. These trials, which include people at high risk for COVID-19, are specifically designed to identify any common side effects or other safety concerns.

If a clinical trial shows that a COVID-19 vaccine is safe and effective, a series of independent reviews of the efficacy and safety evidence is required, including regulatory review and approval in the country where the vaccine is manufactured, before WHO considers a vaccine product for prequalification. Part of this process also involves a review of all the safety evidence by the Global Advisory Committee on Vaccine Safety.

An external panel of experts convened by WHO will analyze the results from clinical trials and along with evidence on the disease, age groups affected, risk factors for disease, and other information, will recommend whether and how the vaccines should be used. Officials in individual countries will decide whether to approve the vaccines for national use and develop policies for how to use the vaccines in their country based on the WHO recommendations. After a COVID-19 vaccine is introduced, WHO will support work with vaccine manufacturers, health officials in each country, and other partners to monitor for any safety concerns on an ongoing basis.

Will other vaccines help protect me from COVID-19?

Currently, there is no evidence that any existing vaccines will protect against COVID-19. However, scientists are studying whether some existing vaccines – such as the Bacille Calmette-Guerin (BCG) vaccine, which is used to prevent tuberculosis – are also effective for COVID-19. WHO will evaluate evidence from these studies when available.

Will COVID-19 vaccines provide long-term protection?

It's too early to know if COVID-19 vaccines will provide long-term protection. Additional research is needed to answer this question. However, it's encouraging that available data suggest that most people who recover from COVID-19 develop an immune response that provides at least some protection against reinfection – although we're still learning how strong this protection is, and how long it lasts.

It's also not yet clear how many doses of a COVID-19 vaccine will be needed. Most COVID-19 vaccine being tested now are using two dose regimens.

Source: www.who.int/emergencies/diseases.com