



A Guide to COVID-19 Vaccines in Thailand

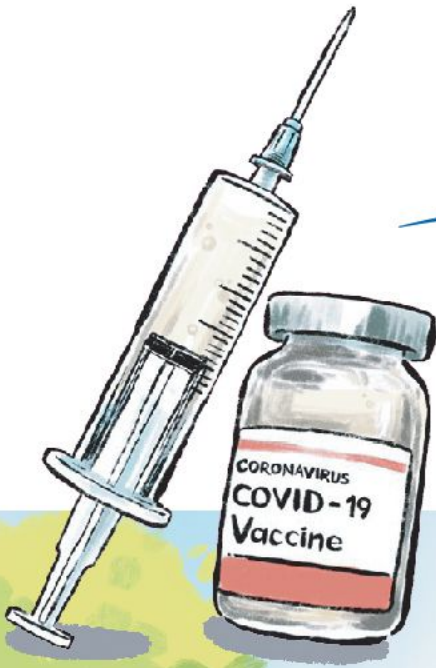
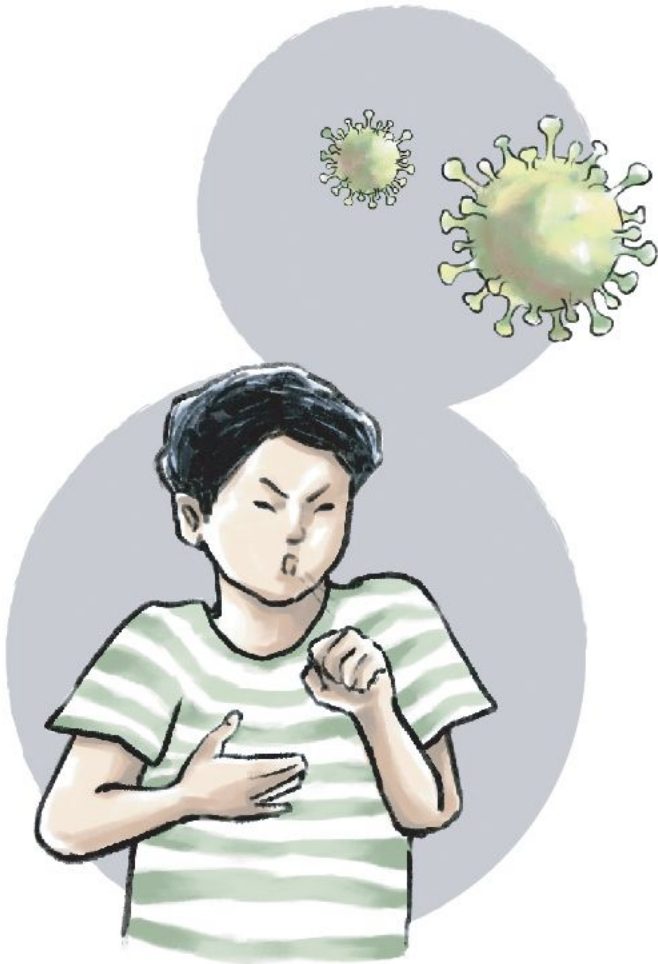




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COVID-19 and Your Risks



Coronavirus Disease 2019 or Covid-19

is a virus that causes respiratory illness. Transmission can occur directly or indirectly – through contact with a patient’s secretions e.g. nasal mucus, tears or saliva or through respiratory droplets generated when an infected person coughs, sneezes or talks. The virus can enter our body through mucous membranes in the eyes, nose and mouth.

People infected with COVID-19 can be found across all genders and ages. Disease severity ranges from asymptomatic, mild, moderate, to severe and death. The most common symptoms can include fever, dry cough, loss sense of smell, loss sense of taste, skin rash, diarrhea and eye infection.



Infection VS Illness

When you are exposed to the virus, you may be infected or not infected, depending on a variety of factors, e.g. the variant, viral load, and the body's immune system. Once infection occurs, you may be asymptomatic, develop mild symptoms, or have severe disease and die.

COVID-19 risk groups include:



1. Those at-risk of infection

This includes any population group with a high likelihood of being exposed to the virus, for instance, those traveling to or living in risk areas (areas with outbreaks), health care workers, front line disease control officers, occupations involving contact with many people, and those living in crowded settings.

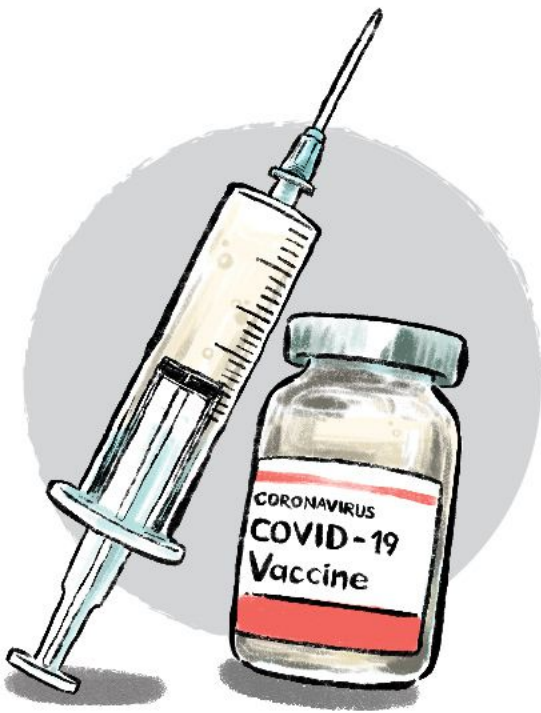


2. Those at-risk of severe disease and death

This includes the elderly and people with underlying conditions, e.g. diabetes, high blood pressure, cardiovascular disease, obesity, cancer, chronic lung disease and immunodeficient patients, who are all more likely to develop severe disease and die if they get infected, when compared to other people.

Getting to Know COVID-19 Vaccines

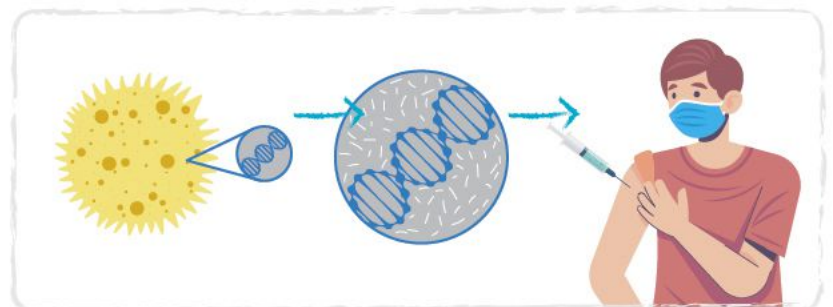
Vaccines are key tools to save Thailand from the COVID-19 crisis. Vaccines are biological products that can stimulate the body's immune response and act like a 'sparring partner' – so the body's immune system can be 'trained' to recognize the COVID-19 causing virus and activate an immune response to fight infection.



Vaccines can be manufactured from:

1. Inactivated or killed virus
2. Parts of the virus or synthesized proteins resembling parts of the virus
3. Genetic materials and proteins from the virus
4. Genetically modified virus inserted into other types of virus

These vaccines cannot cause COVID-19.



Besides biologicals used to elicit immune response, vaccines contain other ingredients to increase stability or efficacy.



Vaccine Types

There are many types of COVID-19 vaccines. As of 28 May 2021, there are 15 vaccines that have completed Phase III Clinical Trials or are still undergoing Phase III Clinical Trials, and have been authorized for emergency use in some countries. These are as follows:

1. **Vaccines manufactured using new technology**, e.g. from AstraZeneca, Pfizer-BioNTech, Moderna, Johnson & Johnson, Gamaleya Institute, CanSinoBio and Shenzhen Kangtai Biological Products.
2. **Vaccines manufactured using traditional technology**, e.g. from Sinovac, Sinopharm-Beijing, Sinopharm-Wuhan, Bharat Biotech, Vector Institute, Anhui Zhifei Longcom, Chumakov Center, and the Research Institute for Biological Safety Problems.

All COVID-19 vaccines have been approved for efficacy in preventing “severe disease and death” and can also prevent non-severe disease. To date, evidence from studies suggests that people who received vaccines can still become infected, as seen from the news in Singapore or in Thailand, but findings from analyses indicated that those vaccinated did not develop severe disease. All were either asymptomatic or had mild symptoms. Globally, after vaccines have been rolled out in billions of population, many countries such as Israel, UK and the U.S. have been able to control transmission, and the number of confirmed cases are leveling off (or reduced); therefore, many countries have been able to resume social and economic activities. In Thailand, Phuket is a model showing that vaccines have benefits to control disease. It is hoped that vaccines can reduce “the likelihood of infection and transmission” and end this crisis.

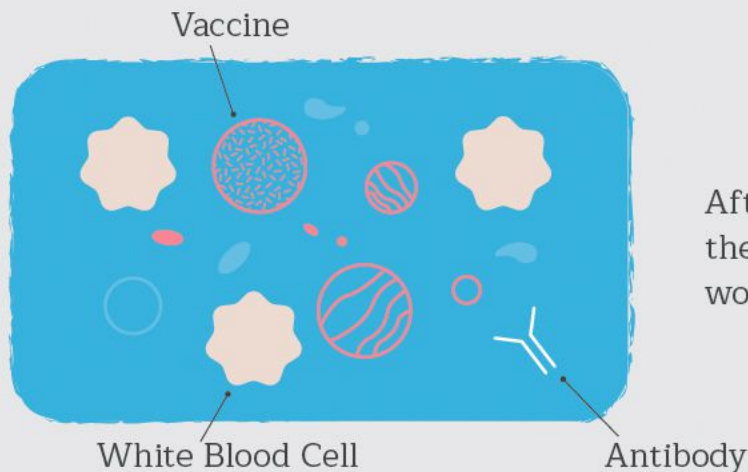
Besides different characteristics, administration of vaccines also varies, for instance, storage temperature, number of doses required (most require 2 doses), and interval between two doses. Based on current available data, doses 1 and 2 must be of the same vaccine type. However, studies are being conducted to see the result of mixing and matching vaccines (Pfizer-BioNTech and AstraZeneca). Preliminary data is becoming available periodically.

How do vaccines work?

When exposed to a pathogen, the body naturally reacts by creating an immune response, which can memorize the pathogen; therefore, if the body is exposed to the same pathogen again, the memory cells 'remember' the pathogen and quickly fight back. COVID-19 vaccines were developed to simulate the body's response to a virus by using inactivated COVID-19 virus, parts of the virus or synthesized proteins, which cannot cause illness in people who receive the vaccine. However, the vaccine's ability to stimulate immune response is similar to the process in natural infection.

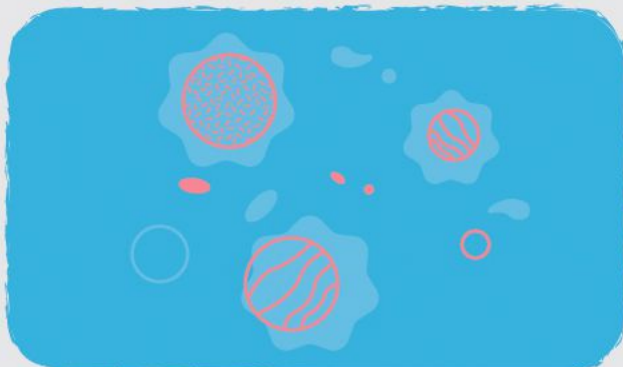
How COVID-19 Vaccines Work

1.



After receiving the vaccine, the immune system starts working.

2.



White blood cells catch the virus and remember it.

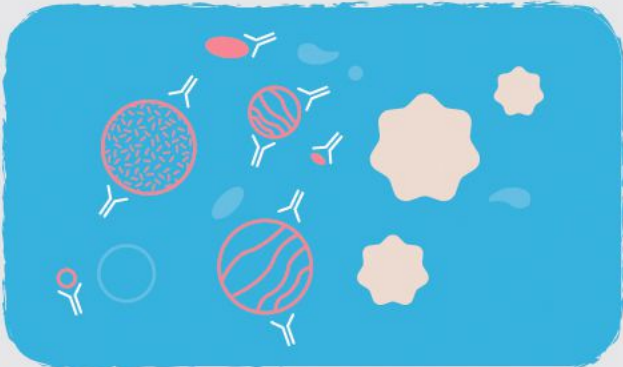
3.



White blood cells produce antibodies to attack the virus.

Antibody

4.



If you are exposed to the virus again, the immune system has already remembered the virus, and will act quickly to fight the virus before you get ill.

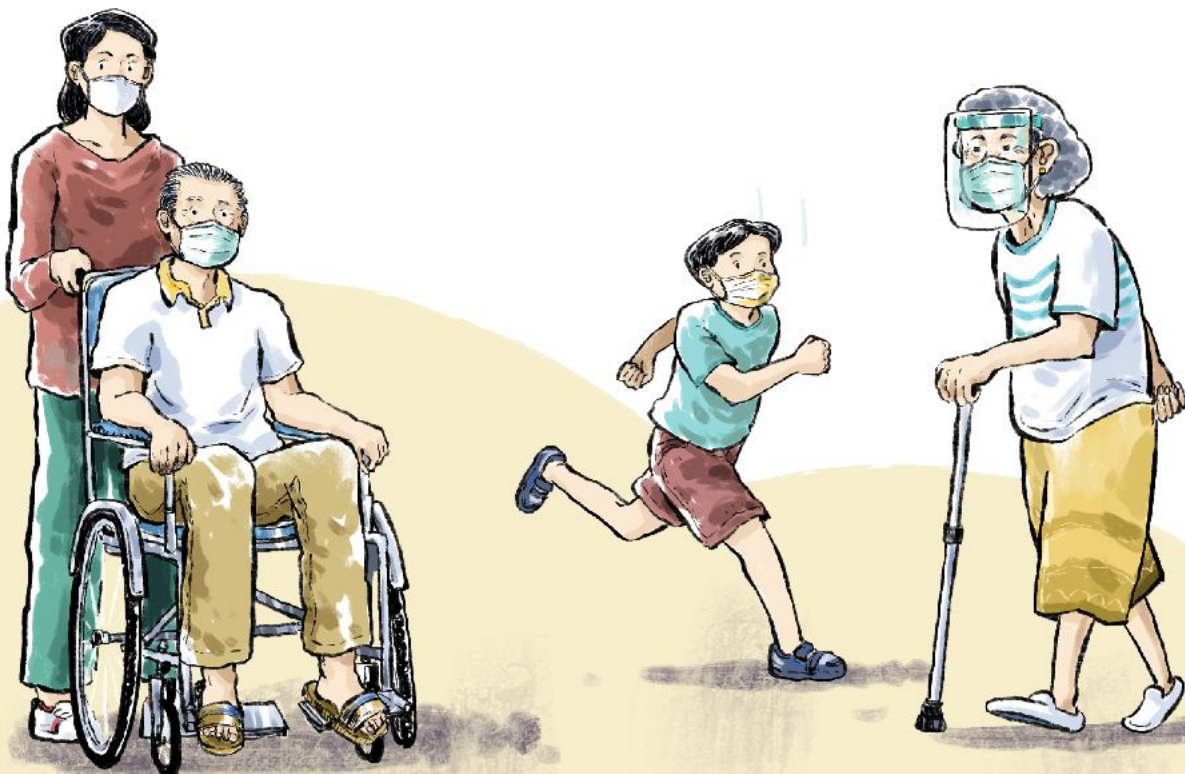
Most COVID-19 vaccines need to be administered in 2 doses to boost enough immune and ensure it lasts. Interval between two doses varies, but usually ranges from 2 weeks to 3 months. This is why you need two shots and appropriate interval time to be sure that the body has enough immunity to protect you.

Although vaccines are administered to individuals, there are benefits in protecting close contacts who may be at risk of severe disease. COVID-19 vaccines are crucial tools to respond to the pandemic, reduce loss from severe disease and death, mitigate economic impact. Based on evidence on rolling out mass vaccination programmes in many countries, it is becoming clearer that vaccines are our best hope to revitalize the country's economy and society.

Do vaccines have different efficacy and safety?

At present, the Food and Drug Administration Thailand has approved 5 types of vaccines (data as of 28 May 2021), including AstraZeneca, Sinovac, Johnson & Johnson, Moderna and Sinopharm. These five vaccines meet the requirements of the World Health Organization's Target Product Profile and Emergency Use Listing (EUL) and have up to 80 - 100% efficacy in preventing severe disease. However, efficacy reported from studies will be higher than actual situations because clinical trials were conducted in controlled contexts, which are different from vaccination in 'real' settings. Therefore, efficacy in preventing disease will depend on many factors, such as vaccine storage, administration technique, as well as varying levels of individual immune response.

Each vaccine has varying efficacy reported from studies. The difference is due to vaccine type and research protocol designed by each manufacturer, for example, evaluating vaccine efficacy in preventing varying levels of disease severity, setting different sample groups (age groups) or conducting studies in areas where prevalence of the disease varies or where Variants of Concern were detected. Therefore, interpreting results to consider which vaccines to use cannot be based on percentage of efficacy alone, and various factors (including research protocol) must be taken into consideration.





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To date, more than 1.8 billion doses of vaccines have been rolled out globally

(data as of 28 May 2021),

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Besides efficacy, safety is a crucial factor to be considering for vaccine rollout. While COVID-19 vaccines have been developed quickly (as opposed to other vaccines that take an average of 10 years), robust safety monitoring processes were in place. In addition, more than 1.8 billion doses of vaccines have been rolled out globally (as of 28 May 2021) and severe Adverse Events Following Immunization (AEFI) such as thrombosis and anaphylactic shock are very rare.

Both types of vaccines administered in Thailand from February until present have a good safety profile. AEFI have been case-specific and will go away naturally. All symptoms were temporary. To date, the ratio of severe AEFI reported is not high, when compared to other vaccines.

Developing COVID-19 vaccines at an accelerated speed while adhering to human ethics principles suggests that most developers may not have conducted studies in some population groups that are considered vulnerable population, e.g. children, the elderly, pregnant women and breastfeeding mothers. However, when safety data became available after the rollout in millions of population, studies were expanded to cover other population groups, such as children. Recently, Pfizer-BioNTech and Moderna vaccines have been recommended for use in children over 12 years old, and studies are being conducted in children from 6 months old - 11 years old. It is expected that findings from these studies will be available around September 2021. In addition, safety studies are being conducted in tens of thousands pregnant women, where findings indicated that the vaccine is safe. There are recommendations to vaccinate pregnant women at risk of being infected, which include breastfeeding mothers, as well.

After vaccination, infection and transmission are still possible

For the purposes of disease control, the best vaccine is the one that can prevent public health losses, including, reduce likelihood of infection, prevent illness, prevent death, and reduce likelihood of transmission from people who received the vaccine to others. At present, data from efficacy studies in phase III clinical trials have shown that vaccines can “preventing illness and death”.

However, more and more studies on vaccine efficacy in preventing infection and transmission are being published, especially studies on ‘real world experience’ e.g. in the UK, the U.S and Israel. It is revealed that vaccines can significantly reduce the number of confirmed cases and control transmission (when used in conjunction with other measures). In addition, there are other studies on how vaccines can reduce viral load, consequently leading to reducing transmission. In Thailand, preliminary data from a study in Phuket revealed that using Sinovac vaccine had promising outcomes in reducing transmission in high-risk contacts. Complete data from this study will be published and disseminated in due course.

Overall, it can be concluded that vaccine efficacy studies in the real world suggest that vaccines can be essential tools in reducing morbidity and controlling disease when used in conjunction with other measures. Vaccines can prevent infection and transmission to a certain extent when vaccine coverage in populations is high enough.



COVID-19 Vaccines and Variants

Virus mutations are natural processes that occur in the replication of viruses. Changes may or may not affect humans, unless the mutation occurs in the location of genetic materials that can impact transmissibility, disease severity, or performance of therapeutic medicines efficacy of vaccines. Globally and in Thailand, there are surveillance systems to track variants. To date, many variants have been detected, but there are four Variants of Concern (VOC), including B.1.1.7 (the Alpha variant, first detected in UK); P.1 (the Gamma variant, first detected in Brazil); B.1.351 (the Beta variant, first detected in South Africa) and B.1.617.2 (the Delta variant, first detected in India). In Thailand, all four VOCs have been detected and a robust surveillance system is in place to track these variants. The B.1.1.7 is spreading in many areas, while other variants are detected in some specific areas, which will continue to be closely monitored (data as of 28 May 2021).

All 4 Variants of Concern tend to have higher transmissibility when compared to the original strain. Evidence suggests that B.1.1.7 (the Alpha variant, first detected in UK); P.1 (the Gamma variant, first detected in Brazil); and B.1.351 (the Beta variant, first detected in South Africa) can increase disease severity. Studies are being conducted to understand more about B.1.617.2 (the Delta variant, first detected in India).

As for the effects of virus variants on COVID-19 vaccines, evidence suggests that most vaccines remain efficacious against B.1.1.7 (the Alpha variant, first detected in UK) which is circulating in Thailand. Preliminary studies revealed that the Pfizer-BioNTech and Moderna vaccines have reduced efficacy in preventing P.1 (the Gamma variant, first detected in Brazil), but can still prevent severe disease. Meanwhile, B.1.351 (the Beta variant, first detected in South Africa), which is recently detected in the Deep South of Thailand, has an impact on the effectiveness of various vaccines, but most vaccines remain efficacious (e.g. Pfizer-BioNTech, Moderna, Novavax, Johnson & Johnson). However, the AstraZeneca vaccine has significant reduction in efficacy against this variant, while there is not enough evidence to date on the efficacy of Sinovac vaccine against variants. The Thai government, therefore, has clear policies to procure additional vaccines from a variety of platforms to be distributed to different population groups. This includes vaccines that have proven efficacy against Variants of Concern. The general public is advised to receive the vaccines they are eligible for, as soon as possible. The World Health Organization (WHO) experts have recommended that vaccination can prevent severe disease and receiving any vaccine still has many benefits, despite Variants of Concern being detected.

Approval of Efficacy, Quality and Safety

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COVID-19 vaccines must undergo systematic testing processes, from testing in laboratories, in animal models and in three phases of clinical trials in humans.

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All COVID-19 vaccines approved for use must meet WHO's Target Product Profile requirements, and vaccines authorized for use in Thailand have been approved by the Food and Drug Administration. The vaccines must undergo systematic testing processes, from testing in laboratories, in animal models and in three phases of clinical trials in humans.

In order to create public confidence in immunogenicity, vaccine administration schedule, efficacy in preventing disease and safety, the Food and Drug Administration has thoroughly reviewed dossiers and followed international guidelines strictly.

This includes a review of manufacturing standards, quality assessment and Lot release conducted by a panel of independent experts specialized in a variety of disciplines related to vaccines prior to authorization for emergency use in Thailand. Once authorized, the Ministry of Public Health will continue to monitor logistics in distributing and storing the vaccines, vaccination service, and safety and AEFI surveillance. Even though the vaccines are authorized for emergency use, the government is carefully procuring and managing COVID-19 vaccines. This is a race against time, but everyone's safety and benefits have been taken into consideration.

Besides routine surveillance, the Ministry of Public Health and the Ministry of Higher Education, Science and Innovation have supported research studies on developing vaccination programmes in Thailand. Preliminary findings have suggested that both vaccines used in Thailand can elicit immune response significantly and are considered safe.



If you experience severe symptoms, seek medical help immediately.

Who should get vaccinated?

The government aims to allocate vaccines to everyone on Thai soil based on human rights, ethics and equity, on a voluntary basis and free of charge.

However, in the initial phase when vaccines are still limited, Thailand has applied guidelines which align with international standards, including these two objectives:



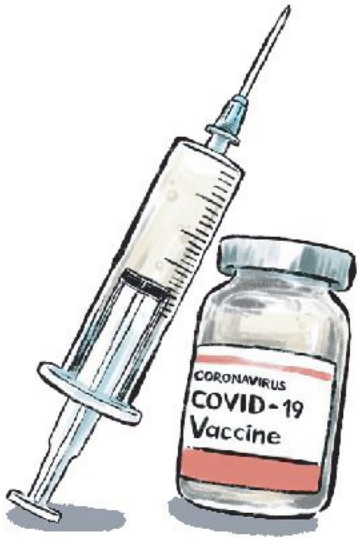
1. **To protect the health system,**
by providing vaccines to health care workers and front line disease control officers



2. **To reduce disease severity and death,**
by providing vaccines to population at-risk of developing severe disease and dying, e.g. the elderly, people with seven underlying conditions, including diabetes, cardiovascular disease, obesity (body weight > 100 kg. or BMI > 35), cerebrovascular disease, chronic respiratory disease, chronic obstructive pulmonary disease and chronic kidney disease.

Due to the changing situation of the outbreak which is very dynamic, the government has planned to allocate the vaccines to areas of active outbreak or economic zones, as well as scale up vaccination service to cover more population groups such as those involved in public service e.g. teachers, business sector and production sector. The target groups will be expanded to cover all populations in the country.

Who should not get vaccinated?



At present, the Food and Drug Administration Thailand has approved 5 types of vaccines (data as of 28 May 2021), including AstraZeneca, Sinovac, Johnson & Johnson, Moderna and Sinopharm. These five vaccines have contraindication for use in individuals allergic to COVID-19 vaccines.

Anyone developing high fever on the day of vaccination should postpone the appointment. However, if there is only a mild fever or minor illness, vaccination should not be postponed.

Those with underlying conditions (diabetes, heart disease, cardiovascular disease, obesity, cerebrovascular disease, chronic respiratory disease, chronic kidney disease, cancer, immunodeficiency, HIV, allergies) are at high risk of developing severe COVID-19 and should be a prioritized group in receiving the vaccine. These underlying conditions are not considered contraindication to COVID-19 vaccination, except in patients having unstable conditions. This group should consult their attending physician and if possible should receive the vaccine at a hospital where they have medical records, and should also inform health care workers of their health records.

Taking anticoagulant as prescription drugs is also not contraindication to COVID-19 vaccination, except patients taking Warpharin, who should consult their attending physician (and have appropriate INR value). Patients should also inform health care workers at the point of service, so smaller needles can be prepared to prevent bleeding after vaccination, and appropriate procedures can be applied to stop bleeding.



Adverse Event Following Immunization (AEFI)

Adverse Event Following Immunization is common and not something unexpected. Most AEFI are mild and will go away within a short period of time, e.g. fever, headache, body pain, fatigue, and redness/swelling at injection site. These symptoms may cause some discomfort, and are mostly reported among the younger population, but on the other hand, these are signs that the body is being stimulated to build an immune response to prevent illness or death.

Most people misunderstand “Adverse Event Following Immunization” and refer to it as “allergic reactions to vaccines”. In medical definition, allergic reactions to vaccines occur when the body’s immune response to the vaccine is unusual, and allergic reactions are considered a part of Adverse Event Following Immunization.

Different types of vaccines can cause different Adverse Event Following Immunization. However, vaccines approved for use have been proven that the benefits far outweigh the risks and do not cause severe symptoms, or if severe symptoms are reported, the ratio is very low. Adverse Event Following Immunization may be “directly connected to vaccination” or “not directly connected to vaccination”

Adverse Event Following Immunization not directly connected to vaccination include psychological issues among vaccine recipients who are stressed, scared or worried, or could be some coincidental illness e.g. death reported in the elderly after vaccination. If the public is not well-informed, it can cause widespread anxiety of AEFI.



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Severe symptoms from allergic reactions to vaccines may occur, but are very rare. Only 1 -10 cases of severe allergic reactions or anaphylactic shock have been reported per 1 million incidence”
(depending on vaccine type and studies in each country).

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The most common allergic reactions to vaccines include rashes,itchiness, swollen face/lips/throat, difficulty breathing, low blood pressure, nausea and stomach pain. These are usually detected within 30 minutes after vaccination. Therefore, observing if any symptoms exhibit for at least 30 minutes after vaccination is necessary. However, besides having history of vaccine allergy, it is difficult to predict who may develop severe allergic reactions. Consequently, to comply with medical standards, medical supplies have to be prepared to treat any allergic reactions immediately.



Besides allergic reactions, vaccination may be connected to blood clots, which is a severe event but very rare. Only 2.5 – 10 cases have been detected per 1 million incidence (depending on age and may be related to some genetic factors reported in Western countries). The Thai government has an AEFI surveillance system and a support system in place, should any AEFI occur. This is to create public confidence in vaccine safety.

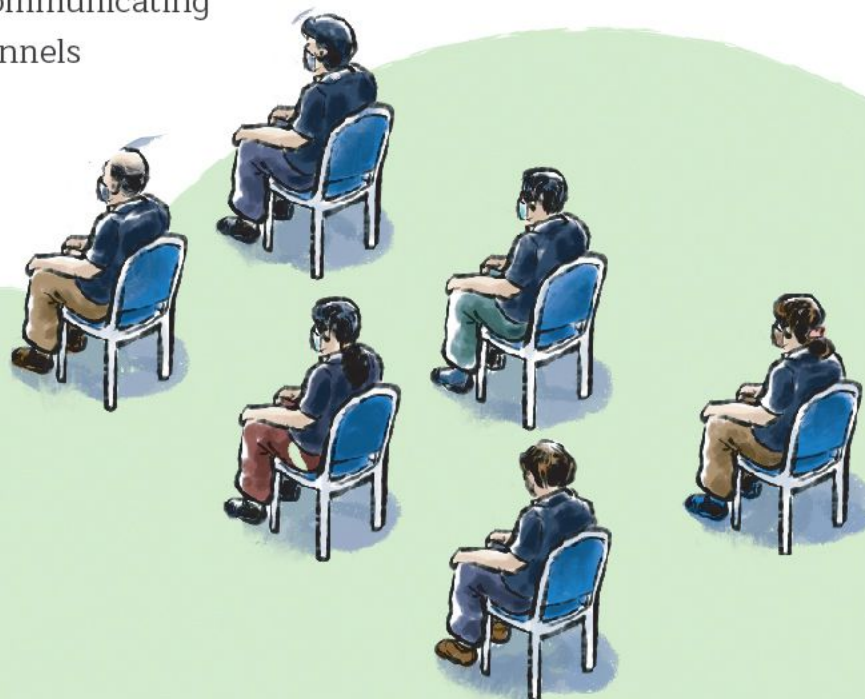
Vaccination Service

Everyone on Thai is entitled to receive COVID-19 vaccine on a voluntary basis, free of charge. The government and the private sector have collaborated to provide service in many settings such as hospitals and other venues (malls and stadiums), as well as private hospitals procuring 'alternative vaccines'.

- Type of vaccines: Currently two vaccines are available: AstraZeneca and Sinovac. Negotiations are underway to procure more vaccines to ensure enough coverage.
- Future plans: Target groups will include children, and next generation of vaccines (effective against variants) will be procured. There will be many channels of service, e.g. registration through health volunteers, online/phone registration through hospitals, applications, and through the support of private sectors (convenience stores and cellular phone service providers).

8 steps in vaccination service

1. Registration
2. Checking body weight and blood pressure
3. Screening and patient history
4. Waiting for vaccination (Advice on vaccination available)
5. Receiving the vaccine (intramuscular injection)
6. Waiting and observing symptoms for 30 minutes. A first-aid room, health care workers, and resuscitation equipment will be available.
7. Getting ready to go home, receiving advice and/or information leaflet.
8. Following-up and communicating through various channels



What to do before-during-after vaccination

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Everyone should continue to wear a mask, keep a physical distance and wash their hands before and after vaccination

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If possible, individuals should study about the vaccine and steps of vaccination prior to the appointment. If there are questions or concerns, consult health personnel or call 1422. On the day of the appointment, try to arrive earlier than the time slot, prepare identification document/health record, register on through various channels and allow at least 30 minutes after vaccination to observe any AEFI.

After receiving the vaccine, individuals should monitor their symptoms. If a fever or headache develops, take a pain killer, and if there are other symptoms such as rashes, high fever, fainting, weakness in the limbs or chest pain, consult health personnel or call 1422 and seek medical attention immediately or call 1669.

After receiving the first dose, individuals should prepare for the second dose appointment.

Everyone should continue to wear a mask, keep a physical distance and wash their hands before and after vaccination.

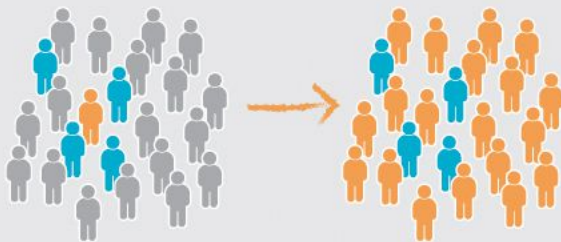


Answering questions about vaccines

How much of the population should be vaccinated to control the disease?

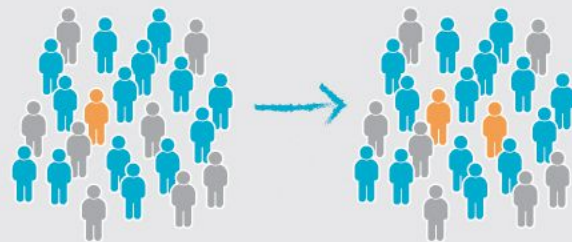
Vaccination coverage should reach herd immunity, in other words, if there is enough population with immunity, transmission will not occur if an infected person enters the community. COVID-19 is an emerging infectious disease and we may not be able to specify how much of the population needs to be vaccinated to reach herd immunity, but working collaboratively to receive the vaccine is one way to reduce local transmission and mitigate social & economic impacts.

If few people in the community receive the vaccine



When there is an infected person in the community, transmission will occur quickly because immunity is still limited.

If enough people in the community receive the vaccine



When there is an infected person in the community, transmission will not occur easily because most of the people already have immunity. This will also benefit the very few who did not receive vaccination.



Vaccinated



Not vaccinated



Infected person

Is it true that vaccines authorized for use in Thailand have not completed phase III clinical trials?

COVID-19 vaccines authorized for use in Thailand have undergone all stages of studies, including all phases of clinical trials in humans. However, manufacturers and the government will continue to collect efficacy and safety data, which is the process applicable to other vaccine and health products, as well. At least one year of preliminary data will be required until the product can be registered, and monitoring of safety will be ongoing when the product is launched into the market.

Do imported vaccines have the same quality as locally manufactured ones?

Yes. Local vaccines are manufactured by SiamBioscience through technology transfer from AstraZeneca, so that Thailand can become the manufacturing hub for Southeast Asia. AstraZeneca has thoroughly assessed laboratory capacity, personnel, equipment, as well as manufacturing process. All of these comply with international standards and are equivalent to manufacturing overseas.

Is the COVID-19 vaccine Halal?

Manufacturers such as AstraZeneca, Pfizer-BioNTech and Moderna confirmed that vaccines do not contain any ingredients from animals and any gelatin products from swine. In the meantime, Indonesia's highest religious institution has approved Sinovac vaccine as a Halal product, as well as the British Islamic Medical Association that has approved COVID-19 vaccines.



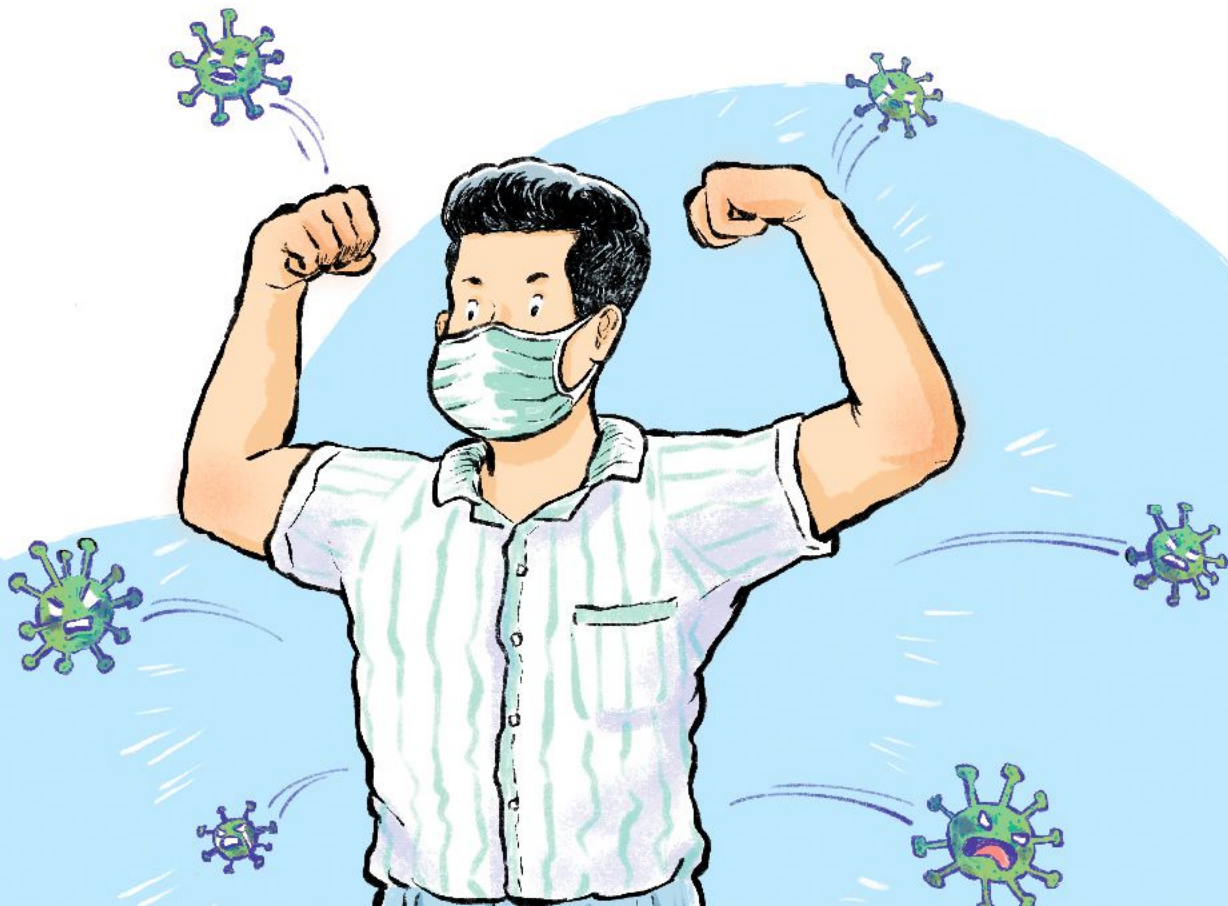
How long can vaccines prevent COVID-19 and when is a booster shot required?

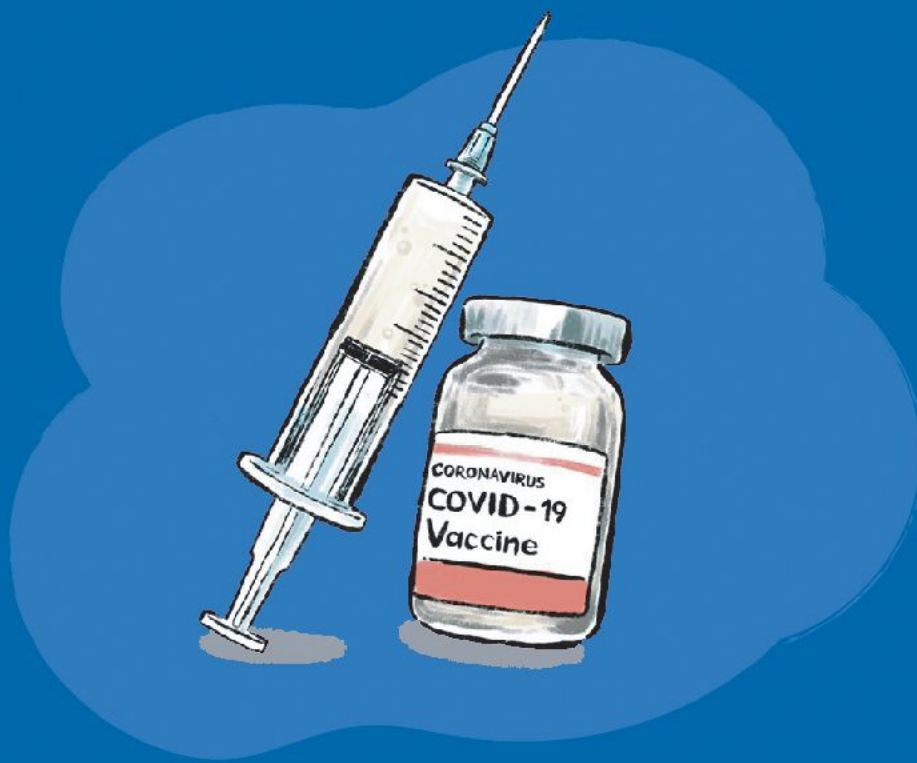
Since this is a new vaccine, there is still limited knowledge on how long the immune response triggered by vaccines can last in the body. Therefore, a definite answer cannot be given to indicate when a booster is required.

However, manufacturers continue to study immunogenicity of COVID-19 vaccines and more data may become available in near future.

Should individuals receive the vaccine if they were previously infected?

Those previously infected with COVID-19 should still get vaccinated because usually immunity from natural infection lasts from 3 - 6 months. Experts recommend that individuals who had COVID-19 within the past 3 – 6 months (from the day SARS-CoV-2 was first detected) should receive 1 dose, while those who were previously infected more than 6 months should receive 2 doses (or as indicated by the vaccine type)





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