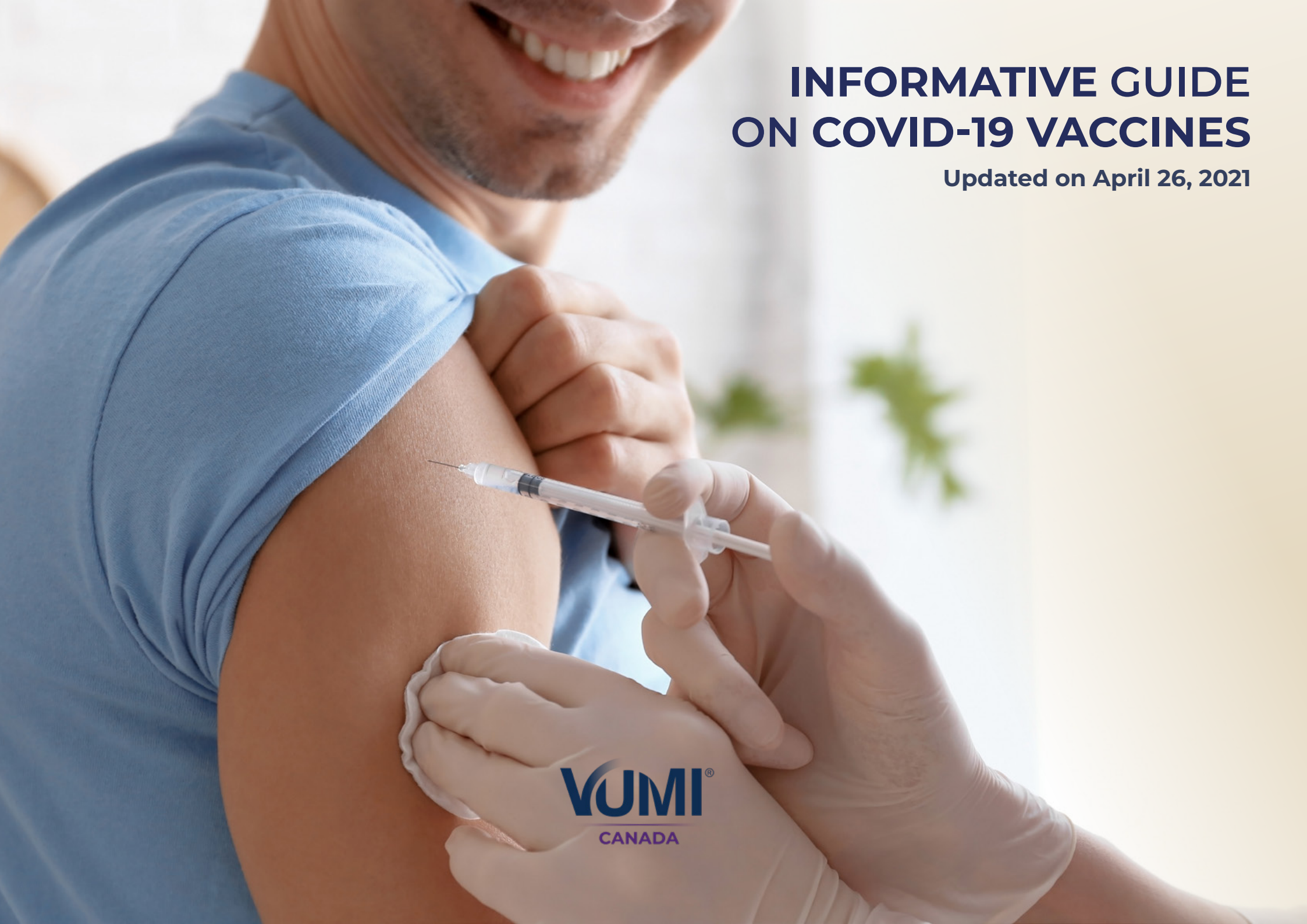

INFORMATIVE GUIDE ON COVID-19 VACCINES

Updated on April 26, 2021

VUMI® CANADA

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All information on this topic can vary at any time. You must obtain the most up-to-date information from the official sources cited before making a decision that affects your health or that of your family members.

The US Centers for Disease Control and Prevention, and similar entities in other countries, provide us with the information compiled here; some come from third-party sources.

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NEW VARIANTS OF VIRUS THAT CAUSES COVID-19

Viruses constantly change through mutation, and new variants of a virus are expected to occur over time. Sometimes new variants emerge and disappear. Other times, new variants emerge and persist.

Multiple variants of the virus that cause COVID-19 are circulating globally:

- The United Kingdom (UK) identified a variant called B.1.1.7 with a large number of mutations in the fall of 2020. This variant spreads more easily and quickly than other variants. In January 2021, experts in the UK reported that this variant may be associated with an increased risk of death compared to other variant viruses, but more studies are needed to confirm this finding. It has since been detected in many countries around the world.
- In South Africa, another variant called B.1.351 emerged independently of B.1.1.7. Originally detected in early October 2020, B.1.351 shares some mutations with B.1.1.7. Cases caused by this variant have been reported in the US at the end of January 2021.
- In Brazil in early January, a variant called P.1 emerged that was first identified in travelers from Brazil, who were tested during routine screening at an airport in Japan. This variant contains a set of additional mutations that may affect its ability to be recognized by antibodies.

These variants seem to spread more easily and quickly than other variants, which may lead to more cases of COVID-19. An increase in the number of cases will put more strain on health care resources, lead to more hospitalizations, and potentially more deaths.

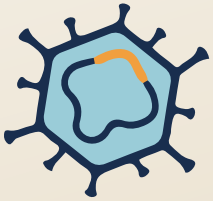
So far, studies suggest that antibodies generated through vaccination with currently authorized vaccines recognize these variants. This is being closely investigated by multiple health authorities and agencies.

TYPES OF VACCINES

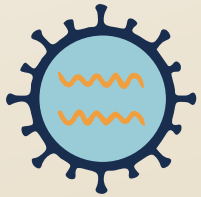
All vaccines have the same objective, to train the immune system to fight the coronavirus. However, there are four types of vaccines.

1. Viral Vector

This process injects a less harmful virus which contains the genes for the virus's spike protein. This generates an immune response.



Vaccines of this type include: Johnson & Johnson, AstraZeneca and Gamaleya.



2. mRNA

This process injects part of the virus's genetic code into the body. The body then produces the coronavirus's spike protein, and thus generates an immune response.

Vaccines of this type: Pfizer-BioNTech and Moderna.

3. Virus Disabled

A deactivated or weakened part of the virus enters the body. This is the basis of traditional vaccines.

Vaccines of this type: Sinovac / Butantan (Coronavac), Sinopharm, Bharat Biotech (Covaxin).

4. Protein-based

This process injects only the components of a virus to enhance the immune response.

Vaccines of this type: Novavax and Sanofi.

PHASES OF VACCINES

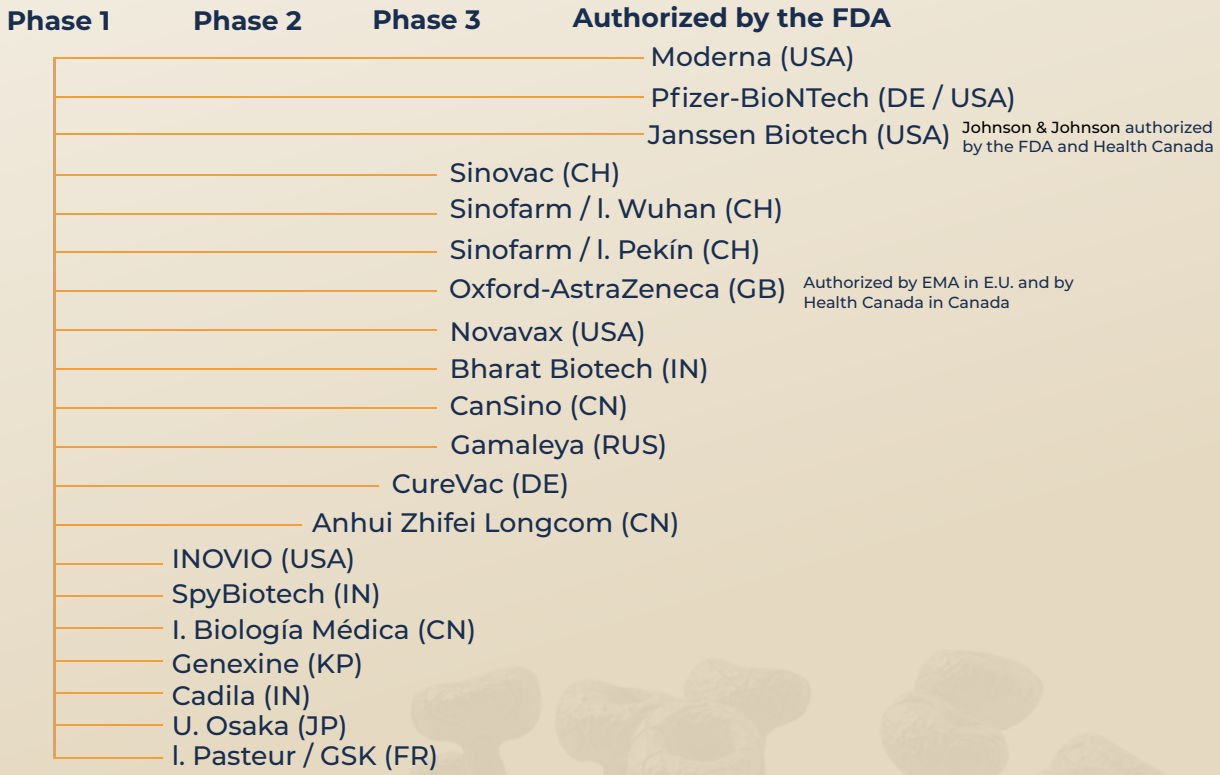
For a vaccine to be approved, it must go through three final phases before it is rolled out to the general population.

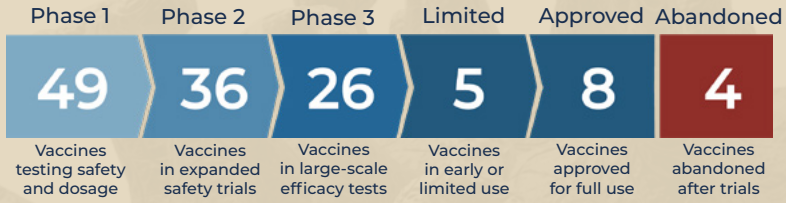
Phase 1: Experimentation begins with humans, usually a sample of about 100 people (adults).

Phase 2: In the second phase, the sample is expanded from 200 to 500 people who are not necessarily healthy.

Phase 3: In the third phase, thousands of volunteers receive the vaccine to detect side effects.

After that, the company requests authorization from the health authorities.





WHAT IS AN EMERGENCY USE AUTHORIZATION (EUA)?

An Emergency Use Authorization (EUA) is a mechanism to facilitate the availability and use of medical countermeasures, including vaccines, during public health emergencies, such as the current COVID-19 pandemic. Under an EUA, the FDA (Health Canada in Canada) may allow the use of unapproved medical products, or unapproved use of approved medical products during an emergency to diagnose, treat, or prevent serious or life-threatening diseases or conditions when certain statutory criteria have been met, given that there are no adequate, approved, and available alternatives. Taking into consideration input from the FDA, manufacturers decide whether and when to submit an EUA request to the FDA.

Once submitted, the FDA will evaluate an EUA request and determine whether the relevant statutory criteria are met, taking into account the totality of the scientific evidence about the vaccine that is available to the FDA.

Learn about the path for a COVID-19 vaccine, from research to Emergency Use Authorization

Click here

Source: FDA (2021) FDA takes action to address Coronavirus Disease 2019

COMPARISON AMONG LEADING VACCINES

Name of the vaccine	Manufacturing Country	Technology	Doses Needed	Efficacy	Status
Pfizer-BioNTech-Fosun Pharma		mRNA/DNA	2 doses; 3 weeks apart	95%	• Approved in Bahrain, Saudi Arabia and Switzerland. • Emergency use in U.S., E.U., Canada and other countries.
Moderna		mRNA/DNA	2 doses; 4 weeks apart	94.1%	• Emergency use in U.S., U.K., E.U., Canada and other countries.
Sputnik-V / Gamaleya-COVID-Vac		Viral vector	2 doses; 3 weeks apart	91.6%	• Early use in Russia. Emergency use in U.A.E., South Africa, Algeria, Bolivia, Paraguay, Argentina and Venezuela.
AstraZeneca-University of Oxford		Viral vector	2 doses; 4 weeks apart	62.1%	• Emergency use in E.U., Canada, U.K., India, Morocco, Mexico, D.R. and El Salvador. • Approved for use in Brazil.
CanSino		Viral vector	Single dose	65.28%	• Approved for use in China. • Emergency use in Mexico and Pakistan (trials being conducted in Pakista, Russia, Mexico and Chile).
Janssen Biotech (Johnson & Johnson)		Viral vector	Single dose	72%	• Emergency use in U.S., Canada, Bahrain, Colombia, Brazil, South Africa, South Korea, E. U. Zambia, Thailand. • Pause in use in the US.
Vector Institute		Protein-based	2 doses; 3 weeks apart	Unknown	• Early use in Russia.
Sinopharm		Virus Disabled	2 doses; 3 weeks apart	Unknown	• Approved in China, U.A.E., and Bahrain. • Emergency use in Argentina, Cambodia, Egypt, Peru, and others
Sinovac		Virus Disabled	2 doses; 3 weeks apart	50.38%	• Approved for use in China • Emergency use in Brazil, Chile, • Colombia, Ecuador, Hong Kong, Mexico, and other countries.
Bharat Biotech		Virus Disabled	2 doses; 4 weeks apart	Unknown	• Emergency use in India.

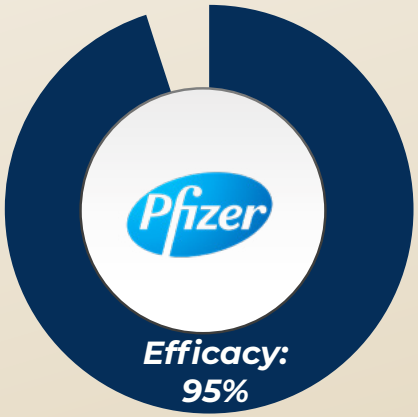
APPROVED VACCINES IN CANADA

The approved vaccines are recommended in Canada to protect against COVID-19. They have met the essential safety and efficacy criteria established by the World Health Organization (WHO).

The Pfizer-BioNTech, Moderna, Johnson & Johnson and both versions of the AstraZeneca COVID-19 vaccines have been authorized for emergency use by Health Canada under an Emergency Use Authorization (EUA) to prevent Coronavirus Disease 2019 (COVID-19). The COVID-19 vaccine manufactured by AstraZeneca, and developed in partnership with Oxford University, and the Serum Institute of India's version of the AstraZeneca vaccine.

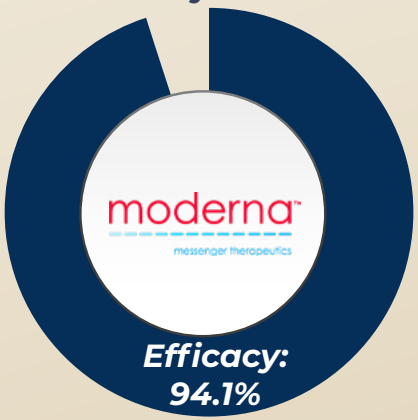
These vaccines are approved for people who are over the age of:

16 years



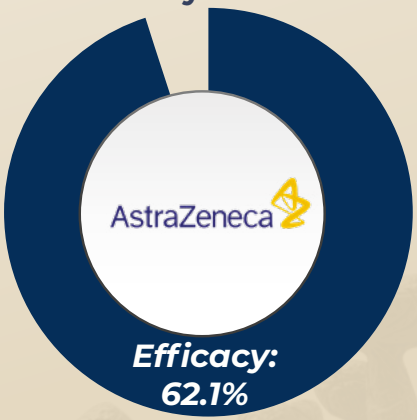
Doses:
Up to 76 million

18 years



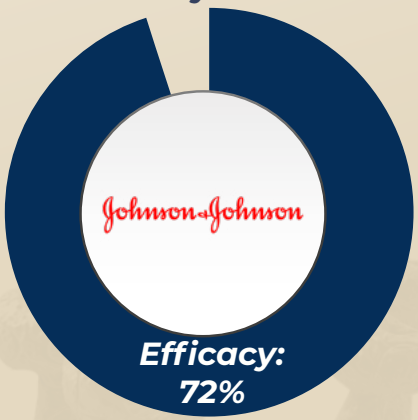
Doses:
Up to 44 million

18 years



Doses:
Up to 22 million

18 years



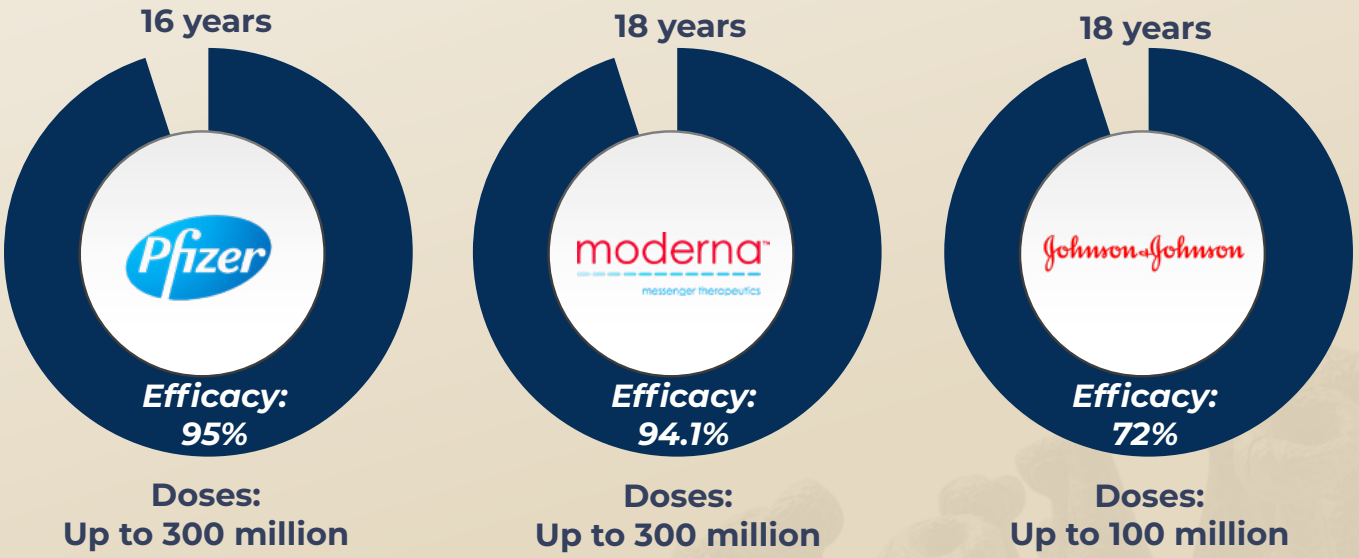
Doses:
Up to 38 million

APPROVED VACCINES IN USA

As yet, there are three approved vaccines in the United States to protect against COVID-19. Pfizer-BioNTech, Moderna and Johnson & Johnson. These three vaccines have met the essential safety and efficacy criteria established by the World Health Organization (WHO).

In the US, the emergency use of this product is only authorized for the duration of the declaration that circumstances exist justifying the authorization of emergency use of the medical product under Section 564(b)(1) of the FD&C Act, unless the declaration is terminated or authorization revoked sooner.

Approved for people who are over the age of:



THE DIFFERENCES AMONG APPROVED VACCINES

Pfizer and Moderna

Unlike conventional vaccines, the Pfizer and Moderna vaccines are the mRNA (Ribonucleic Acid) type, created with the virus's genetic code or pathogen. They are from natural substances, such as proteins. That is, they do **not contain any live virus.**

How do they work?

The mRNA sends a message to cells through a non-particulate lipid envelope. They instruct cells to generate the protein found on the virus's surface that initiates infection and stimulates both the immune response and antibodies' generation.

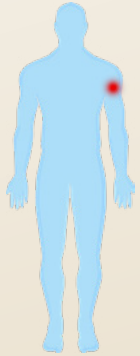
AstraZeneca and Johson & Johnson

Unlike the mRNA vaccines of Pfizer and Moderna, both AstraZeneca vaccines and the J&J vaccine are viral vector-based vaccines. Viral vectors are common viruses that have been genetically altered so they do not cause illness, but can still cause the immune system to build up its defenses.

POSSIBLE SIDE EFFECTS OF THE VACCINES

These vaccines may cause side effects. Contact your primary care provider if you have any post-injection symptoms.

Possible side effects at the injection site:



- Pain
- Swelling
- Redness

Possible side effects on the rest of the body:

- Chills
- Fatigue
- Headache

PLEASE NOTE

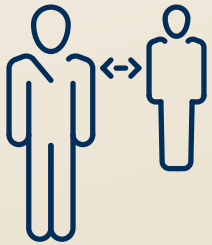
Side effects may appear 1 to 2 days after receiving the vaccine.

For the Moderna vaccine, symptoms are more likely to occur after receiving the second dose.

HOW TO STOP THE SPREAD?

To stop the spread of the pandemic, you must:

Wear a mask



Practice social distancing

Get vaccinated

IMPORTANT

According to the WHO, vaccination against COVID-19 is the safest way to help stop the pandemic and provide protection, especially for those at significant risk of becoming seriously ill. When you get vaccinated, you are protecting yourself while also protecting the people around you.

ADMINISTRATION PROTOCOLS*

The WHO included the vaccine in its emergency use list, which encourages countries to accelerate their regulatory processes to import and administer the vaccine. UNICEF and the Pan American Health Organization have also been working to acquire and distribute the vaccine in developing countries.

In addition to the global, regional and national regulatory procedures, each country carries out a process to decide how and when to administer the vaccine and to whom.

Many countries, including the US and Canada, are using the Pfizer, Moderna and J&J vaccines (AstraZeneca just in Canada), while other countries have licensed different vaccines. Countries around the globe are working on vaccine administration protocols.

***As of April 26, 2021**

CANADIAN PROTOCOLS*

The government is rolling out a three-phase distribution plan to ensure the administration is prepared to receive, store and administer COVID-19 vaccines as soon as they are available. It focuses first on vulnerable populations, those at greatest risk of COVID-19 and severe illness, and those who care for them. The chart below outlines the plan from Ontario.

Phase 1

- **High-risk population vaccination (early doses)**

Early doses will be available for:

- Residents, staff, essential caregivers (including family caregivers) and other employees in congregate living settings for seniors
- Health care workers, including hospital employees, staff who work or study in hospitals and health care personnel
- Adults in First Nations, Métis and Inuit populations
- Adult recipients of chronic home health care

Phase 2

- **Mass deliveries of vaccines for high-risk population**

Approximately 8.5 million people from the following groups will receive vaccines:

- Older adults, beginning with those 80 and older and decreasing in five-year increments over the course of the vaccine rollout
- People who live and work in high-risk congregate settings (for example, shelters, community living)
- Frontline essential workers, including first responders, teachers and other education staff and the food processing industry
- Individuals with high-risk chronic conditions and their caregivers
- Other populations and communities facing barriers related to the determinants of health across Ontario who are at greater COVID-19 risk

Phase 3

- **General population immunization**

- People aged 79 to 60, decreasing the age limit by five-years:

  - 79 to 75 years
  - 74 to 70 years
  - 69 to 65 years
  - 64 to 60 years
  - People aged 60 to 16 years who are clinically extremely vulnerable would go first and then the general population from 59 to 18 years

For more information

Click here

Health Canada COVID-19 Vaccine Guide

Click here to download

***As of April 26, 2021**
Sources: Health Canada

U.S. PROTOCOLS*

The Centers for Disease Control and Prevention has issued recommendations for who should get the vaccines first, but states established their own criteria

CDC Proposed Phases

Phase 1

Phase 1a "Jumpstart Phase"

- High-risk health workers
- First responders

Phase 1b

- People of all ages with comorbid and underlying conditions that put them at significantly higher risk
- Older adults living in congregate or overcrowded settings

Phase 1c

- Persons in identified age groups at risk for COVID-19 associated morbidity and mortality not included in Phase 1b

Phase 2

K-12 teachers and school staff and child care workers

- Critical workers in high-risk settings, workers who are in industries essential to the functioning of society and substantially higher risk of exposure
- People of all ages with comorbid and underlying conditions that put them at moderately higher risk
- People in homeless shelters or group homes for individuals with disabilities, including serious mental illness, development and intellectual disabilities, and physical disabilities, or in recovery, and staff who work in such settings
- People in prisons, jails, detention centers, and similar facilities, and staff who work in such settings
- All older adults not included in Phase 1

Phase 3

Young adults
- Children
- Workers in industries and occupations important to the functioning of society and at increased risk of exposure not included in Phase 1 or 2

For more information

Click here

*As of April 26, 2021

FREQUENTLY ASKED QUESTIONS

Are COVID-19 vaccines safe?

All vaccines approved by the FDA have gone through rigorous safety studies and have proved to be highly effective. Additionally, the CDC has implemented systems that monitor any problems that may arise.

Can the mRNA vaccine give you the virus?

No. Since the mRNA vaccine does not use live viruses, the vaccine does not allow the SARS-CoV-2 virus to replicate and can't cause any known disease.

Are there any side effects?

Like many other vaccines, possible side effects are pain at the injection site, fatigue, headache, chills, joint and muscle pain. These symptoms disappear in a short time.

Can it produce an allergic reaction?

There have been some allergic reactions in clinical trials. It is advised to get vaccinated in a place recommended by your physician or that has been approved by the local health authorities in your country of residence.

Could the vaccine cause infertility?

According to clinical studies conducted by experts from the American Association for Reproductive Medicine, the COVID-19 vaccine does not cause infertility.

Sources: CDC, FDA and WHO

FREQUENTLY ASKED QUESTIONS

If I already had COVID-19, should I get vaccinated anyway?

Yes. COVID-19 reinfection is possible. If you were treated for COVID-19 symptoms with monoclonal antibodies or convalescent plasma, you must wait 90 days to get the COVID-19 vaccine. Talk to your doctor if you are not sure what treatments you received, or if you have additional questions about getting the vaccine.

Can I get vaccinated against COVID-19 while receiving another vaccine?

If you have received the COVID-19 vaccine, wait at least 14 days before getting any other vaccines, including the flu or shingles vaccine. And, if you've had another vaccine before, wait at least 14 days to get the COVID-19 vaccine.

Should I wear a mask and continue with social distancing measures after receiving the vaccine?

Yes, there is no current information available indicating that you should stop using a mask or following the safety protocols to stop the spread.

Does the mRNA vaccine change your DNA?

According to the ABC source, mRNA is a transient carrier of information that does not integrate into human DNA, that is, the vaccine will not change your DNA.

Can pregnant or breastfeeding women get the COVID-19 vaccine?

There is no research on the safety of COVID-19 vaccines in pregnant or breastfeeding women. However, if you are pregnant or breastfeeding and part of a group recommended to get a COVID-19 vaccine, you may choose to get the vaccine. Talk to your healthcare provider about the risks and benefits.

Sources: CDC, FDA and WHO

FREQUENTLY ASKED QUESTIONS

Is there anyone who should not get a COVID-19 vaccine?

There is no COVID-19 vaccine yet for children under age 16. Several companies have begun enrolling children as young as age 12 in COVID-19 vaccine clinical trials. Studies including younger children will begin soon.

Also, COVID-19 vaccination might not be recommended for people who have certain health conditions. Talk to your doctor if you have questions about whether or not you should get the vaccine.

Sources: CDC, FDA and WHO

ADDITIONAL RESOURCES

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