

COVID-19 vaccines while pregnant or breastfeeding

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Abstract

The health of both mothers and their children depends on vaccinations, so (ACIP) formulates guidelines for the use of vaccines in the USA. Age at which the vaccine should be administered, dose, time between dose, precautions, and contraindications are all included in the ACIP Vaccine Recommendations and Guidelines, so Getting vaccinated against COVID-19 is highly recommended for anyone over the age of six months, Women who are pregnant, breastfeeding, trying to conceive, or who have the potential for pregnancy are included in this category, Infants aged 6 months and older who were born to mothers who were vaccinated against COVID-19 or who had a COVID-19 infection before or during pregnancy are also included, so It is strongly recommended that pregnant women get vaccinated, because pregnant women is classified as a 'clinical risk' group within programme, emphasizing the importance of them receiving their COVID-19 vaccination and booster doses as soon as possible, this is because pregnant and breastfeeding women are already routinely and safely offered vaccines. A significant number of these vaccines also protect their children from infection. It is generally accepted that these vaccines, in addition to the COVID-19 vaccines, are safe to use during pregnancy because they are not "live" vaccines.

Keywords: COVID-19; Vaccination; Breastfeeding; Pregnant

1. Introduction

The absence of disease is not the only component of health. A person's physical, mental, and social well-being all contribute to their overall health. There are a number of factors such as their biology, the choices and behaviors they engage in, and their surroundings, so Genes that are passed down from parents . A person's age, their medical history, or even their biology can put them at risk for certain diseases. People can take steps toward improving their health by making decisions that are beneficial to themselves and picking behaviors that are beneficial to their health whenever they have the opportunity. Positive choices can include engaging in regular physical activity, maintaining a healthy diet and relationship with oneself, as well as maintaining positive relationships with others. The people who are closest to an individual, such as their family and friends, frequently have the greatest impact on their decisions and behaviors. (Prystowsky,2012) A pandemic is a contagious disease that spreads rapidly across a wide area and kills many people within short time, typically less than a year. The origin of pandemics can be traced back to smaller, regional epidemics, like those that occur within a single country. Particularly with influenza pandemics, there is often a period of low disease activity following the initial outbreak, followed by a subsequent outbreak. (Akin,2020)

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So, we can define the infectious disease as it is one in which the disease-causing agent can survive and even thrive within the body of the infected person. Infectious diseases can spread from person to person, Diseases that can quickly. The measles is a good illustration of this because it is a highly contagious disease. Asthma and cancer, on the other hand, are not contagious like the common cold or the flu. (McNab,2015)

Bacteria, viruses, parasites, and fungi are all infectious agents that can replicate within a host and cause illness. Common examples of infectious diseases include the flu and salmonellosis which also known as food poisoning. (McNab,2015)

SARS-CoV-2, is the infectious agent that formed coronavirus. The pandemic known as COVID- 19 is an outbreak of the coronavirus that has occurred in every region of the world. China was the location in which the novel coronavirus, also referred to as nCoV, was discovered for the very first time in December of 2019. Since then, the virus has been spreading to other countries all over the world at an alarmingly rapid rate. Because of this (WHO) declared that the outbreak was a pandemic. (Hamid,2020) over 2 million people in the European Region have lost their lives as a result of the disease, and at this point, the unprecedented measures that had been put into place to contain the virus had succeeded in bringing about a calm in the situation in Wuhan. China was reporting thousands of new cases of the disease each and every day when the outbreak first started; however, this number had dropped to dozens by the month of March. On the other hand, the number of reported cases was alarmingly rising in Europe; for example, Italy reported an unheard-of number of 250 fatalities in just one day. As a direct consequence of this, on March 13th, the WHO announced that United States made a declaration of a state of emergency. (Drouin,2020)

The study of the virology of coronaviruses has shown that these viruses have an envelope and that they contain RNA with a positive strand. In a different clade than SARS. This was determined by comparing the sequences of the two viruses' genomes. (SARS) virus is the causative agent in human cases of severe and acute respiratory syndromes, this designation would indicate that the virus causes severe acute respiratory syndrome. It would appear that (MERS) virus, which is also a beta coronavirus, is only a distantly related strain. MERS stands for the Middle East respiratory syndrome. There is a significant amount of evidence suggesting that bats are the primary reservoir of the COVID-19 virus. On the other hand, it is not known whether the virus is passed on from bats in a direct manner or through some other mechanism (such as through an intermediate host). The RNA sequence of this virus is most similar to that of two bat coronaviruses. (Atri,2020)

1.1. Problem

Publication rates for coronaviruses have increased in response to the recent global threat posed by COVID-19. It's not that the scientific and public communities don't know anything; rather, the problem with the research is the answer to the primary question. Many questions arise from the topic of how the coronavirus vaccine affects pregnant and breastfeeding women.

- What is the meaning of the term "coronavirus?"
- The second question is, "How did this epidemic get started?"
- Who are the most susceptible people to this pandemic?
- How can the coronavirus vaccine benefit breastfeeding mothers and pregnant women?

2. Importance

The economic downturn and the resulting increase in poverty are just two of the many ways in which the current COVID-19 pandemic threatens the health and well-being of the world's population. Given the scope of the crisis, it can be hard to see how even a single person can make a difference in containing the disease. Social isolation and frequent hand washing are just two examples of non-communicable disease prevention interventions (NPIs). During the pandemic, it is common for essential workers to take low-paying positions in public transportation, this is because these industries provide essential goods and services. Another study discovered that providing expert information about the infectiousness of coronaviruses decreased fatalistic beliefs. This finding is particularly important for protecting essential workers who are at a higher risk of infection because fatalistic beliefs increase vulnerability. Even though NPIs were not measured, the results still provided support for the hypothesis that education can assist individuals in overcoming the irrational thought patterns that hold them back in life.

Aims

In most countries, COVID-19 has been causing widespread disruption in daily life for the better part of three years due to the rise in cases of SARS-CoV-2. In some respects, the virus has been contained here in 2021 since the first cases were

discovered in January of that year. The research aims to acknowledge the following, but COVID-19 is still a risk because no one knows when a new strain will emerge and many questions remain:

- To begin, what exactly is a coronavirus?
- Second, describe the signs of coronavirus infection.
- The third question is how to protect yourself from getting infected with a coronavirus.
- Infecting the virus: what precautions should be taken?
- Five, why is it so critical that I get the vaccine?
- Finally, when it comes to pregnant women, what function does the coronavirus vaccine play?

2.1. Coronaviruses origin

In spite of extensive research, the origins of SARS-CoV-2 remain a mystery. Bats were the original hosts for both (SARS) and (MERS).

In November of 2019, researchers found the first few isolated cases of the virus, and by December of that same year, a significant cluster of infections had emerged in Wuhan, China. An outdoor "wet market" in Wuhan, China was initially suspected of being the transmission point for SARS-CoV-2 to humans because of international, it has infected people who have never had any contact with animals. Later speculation raised the possibility that it was created as a biological weapon in a Chinese laboratory. This is because COVID-19 has infected people who have never had any contact with animals. That gave the impression that the virus could be passed from one individual to another. It appears that the coronavirus is being unknowingly passed from person to person as the disease continues to spread across the globe and (WHO) issued an official declaration of a pandemic, due to the global spread of the disease, then Exposure to an infected animal or laboratory creation are the two main theories put forth to explain its emergence. We can't trust either side's claims because they're not backed by enough evidence. (Khan,2020)

Diseases caused by coronaviruses can affect both animals and humans. The viruses, which get their name from the crown-shaped spikes on their surface, the viruses can cause mild respiratory infections like the common cold or serious illnesses like pneumonia. In the middle of the 1960s, human coronaviruses were first identified. Members of the public health community are constantly monitoring their behavior. (Van.2004)

In most cases, those infected with the SARS-CoV-2 virus that causes coronavirus disease (COVID-19) will experience only a mild to moderate respiratory illness and will recover without any special treatment. However, some will develop life-threatening illnesses and require emergency care. Those over the age of 65, and those who already have a serious health condition at a greater risk of becoming seriously ill.

2.2. Coronaviruses causes

Zoonotic single-stranded RNA viruses with an envelope are coronaviruses. In addition to more serious respiratory, enteric, hepatic, and neurological symptoms, coronaviruses can also produce cold-like symptoms, The sixth coronavirus to be identified in humans is MERS-CoV. SARS and MERS, two significant pandemics that occurred in the past twenty years, were caused by coronaviruses. (Adhikari,2020)

On January 1, all of samples were traced back to wild animals. Researchers then performed tests on samples taken from 15 patients, including fluid from their lungs, blood, and swabs from their throats. Virus-specific nucleic acid sequences in the sample were compared to those of known human coronavirus species, and they were found to be distinct. Moreover, SARS-CoV-2, according to laboratory research, shares similarities with certain genera of beta () coronaviruses found in bats and thus belongs to the group of SARS/SARS-like CoV. (WHO,2020)

The purpose of this study was to use next-generation sequencing on bronchoalveolar lavage fluid and cultured isolates from nine inpatients in Wuhan who had been diagnosed with viral pneumonia but had tested negative for common respiratory pathogens. This meant that both sets of samples could be subjected to next-generation sequencing. SARS-CoV-2 showed greater genetic divergence from SARS-CoV (approximately 79%) and MERS-CoV (approximately 50%) than it did from bat-derived SARS-like coronaviruses known as bat-SL-CoVZC45 (approximately 87.9% sequence identity) and bat-SL-CoVZXC21 (approximately 87.2% sequence identity). While the COVID-19 S-protein is not sequence-identical to that of SARS-CoV, it has been shown to interact strongly with human ACE2 molecules. (Shan,2020).

2.3. Coronaviruses treatment

COVID-19 has no clinically-validated treatment options. Treatment focuses primarily on alleviating symptoms and providing comfort, including monitoring and treating complications like secondary infections and organ failure and numerous clinical trials of potential treatments are being conducted because of the fatality risk associated with COVID-19. (Beigel,2020)

Gilead Sciences, Inc. is in the process of developing a new nucleotide analogue prodrug called remdesivir. It's being tested as a possible remedy for respiratory illnesses like Ebola and SARS.

Case report of the first confirmed case of virus; patient's condition improved after receiving remdesivir for compassionate use on day 11 after illness onset; viral loads in nasopharyngeal and oropharyngeal samples decreased. 9 Additional randomized controlled trials are necessary to determine the drug's efficacy and safety in the treatment of patients with 2019-nCoV infection. . (Beigel,2020)

Therapeutics for patients in remission (plasma from cured cases of COVID-19): Assisting passive immunization with this method was previously done. Positive therapeutic agents identified by MERS research however, currently no randomized controlled clinical trials for this management and no prior experience with COVID-19. (Felsenstein,2020)

Lopinavir/ritonavir and ribavirin, two antiviral drugs, had been tried successfully in the treatment of SARS disease and at 48 hours, lopinavir (4 g/mL) and ribavirin (50 g/mL) showed antiviral activity against SARS-associated coronavirus in vitro. A recent study found that the 2019-nCoV spike protein shares striking similarities with HIV-1 gp120 and Gag, despite containing several novel insertions of its own. 21 What effect will anti-HIV medications have on the effectiveness of treating nCoV in 2019? Vaccine: There is currently no vaccine available to prevent infection with 2019-nCoV. More randomized controlled trials in patients with COVID-19 are required. Further research is needed to determine the impact on humans, but the spike protein shows promise as a vaccine candidate. (Cunningham,2020)

Currently, antibodies isolated from the blood of cured patients are being studied as a potential therapeutic option. It is estimated that at least three SARS-CoV-2 survivors' antibodies would need to be harvested in order to provide the necessary dose for treating a patient with the virus. Due to the relative newness of plasma and hyper immune immunoglobulins as potential treatments for SARS-CoV-2 infections, there is a lack of information regarding their safety and effectiveness. So much research, mostly involving small numbers of patients, have been conducted on the use of plasma in the treatment of patients with SARS-CoV-2 infections, with the first study being conducted on 5 COVID-19 patients. The primary findings from the existing studies indicate that clinical and survival outcomes improve for all patients once the additional intervention with plasma and hyper immune immunoglobulins is no longer being administered. Randomized controlled trials (RCTs) are needed to confirm these results. (Stasi,2020)

So in short, we can say when advanced respiratory distress syndrome (ARDS) results in respiratory failure, extracorporeal membrane oxygenation is a great option for the patient. High-flow nasal oxygen and endotracheal intubation are two other treatment modalities. Hypoxemic patients who do not respond to oxygen therapy should be placed in the prone position and given neuromuscular blockade, inhaled nitric oxide (5-20 ppm), and optimal end-expiratory pressure via esophageal balloon. (Hassan,2020)

Dialysis is required to achieve negative fluid balance in the presence of shock with acute renal failure. Both pre- and post-exposure prophylaxis with antibiotics are commonplace. Because of this, you won't get sick from SARS-CoV-2, and you won't have to worry about getting reinjected. Preventing or treating pulmonary edema requires careful management of fluid intake and output. When dealing with viral pneumonia or ARDS, you should stay away from glucocorticoids due to the potential for serious side effects. 76 There is some evidence that treating sepsis and ARDS with intravenous vitamin C could reduce vascular injury and systemic inflammation. (Zhao,2020)

2.4. Coronaviruses prevention

COVID-19 may be avoidable in the future. Epidemiological data from all over the world shows a direct correlation, However, comparing the efficacy of different measures is challenging because most countries have implemented several. It's becoming more urgent to find an answer to this question because we'll need to keep intervening until we have access to vaccines or treatments that actually work. In general, these measures can be broken down into four categories: individual behavior change (such as limiting exposure, practicing good hygiene, and wearing protective gear); governmental action (such as limiting gathering sizes or business capacity; issuing stay-at-home orders; closing or restricting schools, workplaces, and public transportation to prevent the spread of an illness) ,One of the most pressing issues is finding the optimal set of interventions to contain the infection with as little social and economic

fallout as possible. Resource constraints, geographical, and political factors may cause optimal measures to vary from country to country, cultural and linguistic diversity. (Khalili,2020)

Infection control in healthcare facilities — In regions with high rates of community transmission, widespread exposure prevention measures in healthcare facilities are necessary. If a patient has a suspected or confirmed case of COVID-19. Infection prevention in hospitals is elaborated upon elsewhere, following are some broad recommendations for preventing SARS-CoV-2 infections in a community setting: (Hendaus,2021)

- Maintenance of good respiratory by using hand sanitizer for washing them. One study found that while SARS-CoV-2 could survive on the skin for up to nine hours, it was rendered completely inactive by exposure to 80% alcohol in just 15 seconds.
- Vaccination. Those with compromised immune systems may also benefit from other forms of pre-exposure prophylaxis.
- Making sure indoor spaces have sufficient air flow. You can do things like running the HVAC fan constantly.
- Stay at home, away from others, and get tested for SARS-CoV-2 if you develop symptoms of COVID-19.
- Separating yourself socially from people who have or might have COVID-19. Avoiding large groups of people and prolonged, close contact with others outside the home may also be helpful in reducing the likelihood of exposure if the rate of transmission in the community is high.
- Safe practices to follow an exposure are discussed in more detail elsewhere.
- Putting on masks, taking into account the rate of local transmission and one's own susceptibility to severe infection.

2.5. Coronaviruses symptoms

Following treatment for Coronavirus Infection, Year 2019, there have been reports of patients experiencing a return of their symptoms, which has prompted concerns (COVID-19). No evidence has been found in any of the studies that post-COVID-19 symptoms develop any more slowly than those that have already been investigated (14-21 days after diagnosis and approximately 60 days after symptom onset). On top of that, there hasn't been a lot of research done on the late-onset symptoms that are connected to COVID-19. In most cases, these signs and symptoms only become noticeable after the patient has made a complete recovery from the illness. As with severe acute respiratory syndrome coronavirus 2, androgenetic alopecia was present in the majority of hospitalised patients with COVID-19. Severe acute respiratory syndrome is linked to both of these conditions. While cases of androgenetic alopecia have been reported, late-onset alopecia has not. The purpose of this research was to ascertain how long patients who had been treated for COVID-19 at the National Center for Global Health and Medicine (NCGM) and had been discharged from the facility experienced persistent symptoms and late-onset symptoms like alopecia. (Yin,2020) for a significantly longer period of time than was originally anticipated. "continued illness regardless of whether or not the patient was tested for the virus, is another definition. Long COVID is defined as "signs and symptoms developed during or following a disease consistent with COVID-19 and which continue for more than four weeks but are not explained by alternative diagnoses.", The first question that will be discussed is whether or not it is necessary for a positive SARS-CoV-2 test or the presence of positive antibodies to be present in order to make a diagnosis. Raveendran has previously talked about this subject, during which time he proposed the following three extended COVID categories: (Fernández,2021)

- Confirmed (a SARS-CoV-2 diagnosis was made using real-time RT/PCR, and/or SARS-CoV-2 antibodies were found to be present in the patient's blood).
- Contact with COVID-19 case within the previous 2 weeks.
- Suspicious (COPI-like symptoms, negative RT-PCR and/or antibody test; positive radiological findings); Possible (symptoms similar to those of COPI, negative results on RT-PCR and/or antibody test, with or without radiological signs, and NO recent contact with a confirmed or suspected case of COVID-19) Possibly (symptoms similar to those of COPI, negative results on RT-PCR and/or antibody test, with or without radiological signs, and NO recent contact with a confirmed or suspected case of COVID)

2.6. Most people affected by coronavirus

People of a more advanced age may have an increased likelihood of developing potentially harmful symptoms associated with COVID-19. Individuals of any age who suffer from multiple chronic diseases or health conditions, , obesity, or diabetes, may also have an increased risk of developing the condition. This increased risk may be due to the fact that the condition poses a greater threat to people who already have those health problems. It's possible that this risk will get worse. These symptoms are comparable to those that are seen in other respiratory diseases, such as the common cold and the flu (influenza).

Each of these factors can make it more likely that someone will experience severe COVID-19 symptoms. However, those people who are struggling with more than one of these additional health problems at the same time are at an even greater risk. (Singhal,2020)

- Older age: The COVID-19 virus can infect people of any age. However, those in their middle years and later years of life are the ones who are most likely to be affected by it. Those who are 85 years old or older have the highest risk of developing serious symptoms, as the probability of developing dangerous symptoms increases with increasing age. Those who are younger than 85 years old have a lower risk of developing serious symptoms. People aged 65 and older have accounted for approximately 81% of all deaths caused by the disease in the United States. When older people already have one or more health conditions, the risk is significantly increased. (Krastev,2020)
- Adults in their later years have the greatest potential to become severely ill as a result of COVID-19. Over eighty-one percent of deaths attributed to COVID-19 occur in people aged 65 and older. The number of deaths that occur in people over the age of 65 is 97 times higher than the number of deaths that occur in people between the ages of 18 and 29.
- The presence of multiple preexisting medical conditions in a person raises the likelihood that they will suffer a severe illness as a result of COVID-19. (Mallapaty,2020)
- Because of where they live or work, or because they lack access to medical care, certain individuals have a significantly increased risk of becoming gravely ill or passing away as a result of COVID-19. This includes a significant number of people who are a part of racial or ethnic minority groups, as well as people who have disabilities. (Michelen,2021)
- According to recent studies, members of racial and ethnic minority groups are also dying at younger ages as a result of COVID-19 infection. It is common for members of racial and ethnic minority groups to be younger in age when they are diagnosed with a chronic medical condition, and they may also be more likely to suffer from more than one health issue.
- Disabled people are more likely to live in shared group settings (also called "congregate" settings), to have multiple chronic health conditions, and to experience more difficulty gaining access to health care than the general population. Several studies have found that the risk of contracting COVID-19 is higher and the prognosis is worse for people with certain types of disabilities. (Wimalawansa,2020)

2.7. Vaccines and COVID-19

WHO is dedicated to maintaining momentum for increasing access to COVID-19 vaccines and will continue to aid countries in speeding up vaccine delivery to save lives and lessen the likelihood of serious illness. Countries should keep working toward the goal to vaccinate at least 70% of their populations, with 100% of health care providers and 100% of the most at-risk populations receiving the vaccine. receiving top priority. Examples of those who fall into these categories include people over the age of 60, as well as those who are immunocompromised or have underlying health conditions (Andreadakis,2020)

However, the immune response can sometimes cause disease, most commonly while it is attempting to clear an infection, which raises concerns about the development of a vaccine for SARS-CoV-2. Having a firm grasp on vaccine-induced immunopathology is of utmost importance for all emerging infectious diseases. Accurately predicting vaccine safety at an early stage of development is crucial because vaccines for emerging infections will need a shorter turn-around time from discovery to deployment. There are two main types of vaccine-induced immunopathology: those that occur immediately after vaccination and those that worsen an existing viral infection. (Mathieu,2021)

Vaccines are given to people to keep them healthy and safe. The body can learn to recognize and fight off the COVID-19 virus after receiving a vaccination.

Getting vaccinated against COVID-19 won't protect you from getting the virus. COVID-19. Vaccination against COVID-19 disease is effective, when vaccinated against COVID-19, a person is less likely to become severely ill or require hospitalization if they contract the disease.

Vaccination is recommended for everyone 6 months and older, and the COVID-19 vaccine was tested extensively in a wide range of people before being given emergency use approval. Tens of thousands of people of color, including Blacks, Latinxs, Native Americans, and Asians, participated in vaccine studies at Pfizer, Moderna, and Johnson & Johnson. We recognize that marginalized communities, such as the disabled and the LGBTQ+ population, are often denied access to healthcare and are subjected to racism, trauma from medical care, and abuse. The severity of COVID-19 in these areas

is amplified by the aforementioned factors, highlighting the urgency of checking that the vaccine is effective and safe for everyone. (Park,2021)

When making the COVID-19 vaccines, no corners were cut in terms of quality control. The FDA needed proof of the vaccines' safety before they would approve them. In addition, researchers in the medical field are keeping an eye on the vaccines to make sure they're completely safe. (Haynes,2020)

3. Types of vaccines

To prevent the recipient from experiencing the full-blown illness or, ideally, any symptoms at all, the first human vaccines against viruses relied on using weaker or attenuated viruses to generate immunity. Cowpox, a poxvirus similar enough to smallpox to protect against it, but which typically does not cause serious illness, was used in smallpox vaccinations. The rabies virus was the first pathogen to be attenuated in a laboratory to produce a human vaccine. (Bärnighausen,2011)

There are many different methods that can be utilised when producing vaccines. It is possible for a vaccine to contain attenuated (modified) live viruses, inactivated (killed) organisms or viruses, inactivated toxins (for bacterial diseases in which the toxins generated by the bacteria, rather than the bacteria themselves, cause illness), or even just segments of the pathogen. The components of a vaccine can take on a wide variety of forms. For example, inactivated toxins can be used to treat diseases in which the toxins generated by the bacteria, rather than (this includes both subunit and conjugate vaccines). Live, attenuated vaccines have been recommended by the U.S. Childhood Immunization Schedule for the prevention of measles, mumps, and rubella (via the combined MMR vaccine), varicella (chickenpox), and influenza (in the nasal spray version of the seasonal flu vaccine). In addition to inactivated vaccines, the vaccination schedule also includes live attenuated vaccines, which are rapidly gaining popularity and are used by more and more people every year. (Lingnau,2007)

And major COVID-19 vaccines on the market or in development in the United States include:

- Vaccine developed through the use of messenger RNA (mRNA). This vaccine employs RNA that has been modified in order to provide instructions to your cells in order for them to produce the S protein that is present on the surface of the COVID-19 virus. Shortly after vaccination, muscle cells initiate the production of S protein fragments and begin displaying them on the surfaces of their cells. Your immune system will respond to the infection by producing antibodies. Antibodies that have been developed against COVID- 19 can be utilised in the fight against the virus in the event that infection takes place at a later time. (Pardi,2018)
- The mRNA is quickly degraded after it has carried out its instructive function. You can rest assured that it is unable to access your DNA because it is kept safe from entry to the nucleus. Two companies, Pfizer-BioNTech and Moderna, have developed COVID-19 vaccines using messenger RNA (mRNA). (Dolgin,2021)
- Anti-vector vaccine. This vaccine works by inserting the COVID-19 virus' genetic material into a modified form of another virus (viral vector). The S protein is replicated in the host cell when the viral vector enters the cell and delivers COVID-19 virus genetic material. Antibodies and protective white blood cells are produced by your immune system in response to cells displaying S proteins on their surfaces. The antibodies will work against the COVID-19 virus if you ever contract it in the future. (Jackson,2020)
- No one has ever contracted COVID-19 or the viral vector virus from receiving a viral vector vaccine. Not only that, but the transferred DNA doesn't stick around. The COVID- 19 vaccine developed by Janssen and Johnson & Johnson is a vector vaccine. It should be noted that AstraZeneca and the University of Oxford also have a vector COVID-19 vaccine in development. (McCann,2022)
- Vaccine composed of protein subunits. Subunit vaccines only include the viral components shown to have the greatest effect on the immune system.
- Protein subunit vaccines like Nova ax's COVID-19 product are relatively new.
- (FDA) , in people aged 12 and older. Children from the ages of 6 months to 11 years old can get the vaccine thanks to an EMA-approved emergency use exemption. In addition, the Moderna vaccine, renamed Spikevax, has been given FDA approval for use in adults 18 and older to protect against the COVID-19 virus. For children aged 6 months to 17 years, the FDA has approved the use of Moderna's COVID-19 vaccine for emergency use. The COVID-19 vaccine developed by Janssen and Johnson & Johnson has been granted emergency use authorization by the FDA for use in adults. Adjuvanted vaccine for people 12 and up, Novavax COVID-19, has also been given emergency use authorization by the FDA. (Jackson,2020)
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3.1. Suggested vaccine recipients

Those aged 18 and up, regardless of the presence or absence of preexisting conditions such as auto-immune disorders, can safely receive a COVID-19 vaccine with a WHO EUL (Azzi,2022)

For the sake of your current or future family, getting vaccinated recommended for all women who are pregnant, plan to become pregnant, or are breastfeeding. vaccine without any reported adverse effects. In fact, vaccination during pregnancy helps to protect the unborn child, and it may also help if you get vaccinated while breastfeeding. If you have your period on the day of your vaccination appointment, you should still get the shot. (Cebon,2021)

You may need a booster dose of the COVID-19 vaccine 1–3 months after the initial shot if you have a compromised immune system. One or two doses of COVID-19 may not be enough for people with compromised immune systems, so a third dose may be necessary to provide adequate protection. Also, if your doctor suggests a booster shot, you should go ahead and take it.

There is mounting proof that the COVID-19 vaccine is safe for use in children. If you want to know whether there is any age-specific advice for a given vaccine, you can look it up on the FAQ page for the COVID-19 vaccines or on the information pages for each vaccine. (Woldemeskel,2022) People over the age of 60 who receive the Sinovac or Sinopharm vaccine should be offered a third dose 3 to 6 months later. Two doses of these vaccines provide less protection in people over the age of 60 than they do in those under the age of 60. Improving immunity often requires multiple doses. When it's your turn, you too should receive a booster shot. (Azzi,2022)

3.2. vaccine side effects

Vaccine efficacy, or the degree to which a given vaccine protects its recipients from disease, varies from vaccine to vaccine and from person to person, and no vaccine can guarantee a person's complete safety. The elderly, for instance, are not afforded the same level of protection from the flu vaccine as younger people. However, a number of studies have shown that elderly people who have been vaccinated against the flu have a reduced risk of severe illness, hospitalization, and death. In South Carolina, people are still falling ill with and sometimes dying from communicable diseases like the flu, whooping cough, meningitis, and hepatitis B, all of which are preventable. Diseases like measles, which are uncommon in the United States anymore but still cause outbreaks in areas where vaccination rates are low, keep making their way here on the backs of tourists. Redness and pain at the injection site, fever, and allergic reactions are the most common negative reactions to vaccines. Seizures and Guillian-Barre syndrome, both neurological disorders, are also reported, but they are much less common than the complications and deaths caused by vaccine-preventable diseases. (Sprent,2021)

Some people experience unpleasant after-effects after getting a flu shot, as is true with any vaccination. The good news is that side effects from all three COVID-19 vaccines tend to be mild and short-lived, lasting only a few days, so sore arm, tiredness, headache, body aches, and fever are the most common adverse reactions. Extreme reactions are uncommon and easily managed, in general, reactions to the COVID-19 vaccine are mild, short-lived, and similar to those seen after other vaccinations. It's possible for there to be wide age-related differences. .(Cebon,2021)

Booster shot reactions are comparable to those following the initial two-dose or single-dose primary vaccination. The majority of adverse reactions were low-impact, and at most cases, unpleasant reactions disappear after a day or two. If you are exposed to the COVID-19 virus, your body will begin to develop immunity even if you don't show any symptoms. Even though adverse events (serious health problems) are uncommon, they can have lasting effects, so, typically, these reactions occur within the first six weeks after receiving a vaccination, so among the most common adverse reactions, people experienced: (McCann,2022)

- Fatigue (tiredness) (tiredness)
- Adverse effects from the injection site
- Injection site reactions such as pain, redness, and swelling.
- Fever, but only a mild one.
- Headache.
- Nausea.
- Vomiting.

3.3. Critical Role of COVID-19 Vaccination

Vaccines have been the single most important medical advance in Canada over the past half century. Many Canadians lost their lives or developed serious complications from diseases that are now preventable with vaccines, there are still cases of diseases that can be prevented with vaccines. Vaccine programmers have greatly reduced the prevalence of many preventable diseases in Canada. While cases of diseases like measles and mumps have decreased in recent years, the viruses and bacteria. If vaccination rates drop, these diseases can quickly spread and kill many people. This trend is observed in other countries as well, and all those in the vicinity of a person getting vaccinated are also shielded from the disease. (Van, 2022)

When more people in an area are immunized, it becomes more challenging for a disease to spread. In order to prevent the spread of an infectious disease, an infected person should only interact with vaccinated individuals. Community immunity refers to the type of protection achieved through widespread vaccination (or herd immunity). This means that a large number of us are looking out for one another, especially the weaker members of our society, such as (Haidere,2021)

- Infants too young to receive a full vaccination series.
- The medically ineligible, such as a child undergoing cancer treatment, are not able to receive certain vaccines.
- Populations that may not respond well to immunization, such as the elderly with compromised immune systems.
- Epidemics are more likely to occur when vaccination rates are low.
- Rather than risk getting COVID-19 themselves, healthy people should get vaccinated against the virus. Vaccination against COVID-19 is the most effective way to prevent the disease because it induces an immune response that protects against the potentially severe illness and post-COVID conditions caused by COVID-19 infection. Vaccines are critically important, and this page explains how they work, what they contain, and the most frequent side effects. (McCann,2022)
- The vaccine protects against infection by reducing the likelihood of it happening.
- In response to the initial vaccination, the body produces antibodies that can neutralize the coronavirus. If exposed to the virus, your immune system will be given a helping hand by these antibodies, decreasing the likelihood that you will develop symptoms. Four vaccines are available for use in the United States, and they are all highly effective at preventing infection. Learn more about how to maximize your impact.
- Your unborn or newborn child may benefit from the vaccine.
- Antibodies, which are then transmitted to their babies through the placenta. Milk from a nursing mother has also been shown to help pass antibodies to infants. Because young children cannot receive the vaccine, this indicates that the newborns likely have some immunity to the virus. Women who are pregnant or nursing should learn more about the safety of vaccines. (Wherry,2022)
- The vaccine is safe and effective in preventing deadly diseases.
- Four vaccines developed by Johnson & Johnson, Moderna, Novavax, and Pfizer were tested for their ability to prevent severe COVID-19 illness. Therefore, if you are immune and still contract the disease, you will probably only suffer mild symptoms.

3.4. Antenatal vaccinations

It is advised that all adults, including pregnant women and those who have previously contracted COVID-19 illness, receive all necessary COVID-19 vaccinations and boosters. The vaccine can be given at any point in pregnancy without risk to the mother or baby, as the health of both you and your unborn child can be safeguarded by getting certain vaccines, Unlike live vaccines, which contain a weakened form of the virus they are meant to counteract, inactivated vaccines contain no such thing, the tetanus vaccine, for example, can be given to a pregnant woman without risk. vaccine is recommended for women who are pregnant or trying to conceive. Researchers have found that the COVID-19 vaccine is safe for both pregnant women and their unborn children. Pregnancy after the first dose of a two-dose COVID-19 vaccine is not an indication that you should delay getting the second dose. Women who are pregnant should get a COVID-19 booster shot when it is recommended. People who share your living space with you should get the COVID-19 vaccine as well. (Azzi,2022)

Vaccines made from viruses that have been killed (inactivated) are generally safe to administer during pregnancy. Pregnancy is not a time to get vaccinated, especially not with a live virus vaccine so there are some examples of prenatal vaccines include:

- An injection to prevent influenza. Women who are pregnant during flu season should get vaccinated. Because the virus used to create the vaccine has been rendered harmless, you can get the flu shot even if you're pregnant. Never get the nasal spray vaccine for the flu because it contains a live virus.
- Vaccination against tetanus, diphtheria, and whooping cough (Tdap). Even if you were vaccinated against tetanus and diphtheria (Td) recently, you should get one more dose of the Tdap vaccine during each pregnancy. Protect your unborn child from whooping cough by getting the Tdap vaccine while you're pregnant (pertussis). Immunization between 27 and 36 weeks of pregnancy is recommended.

3.5. Vaccines against COVID-19 given during pregnancy and while breastfeeding

It is strongly suggested that you receive a vaccine if you are currently pregnant or breastfeeding. Getting vaccinated against COVID-19 can protect you from the severe illness that is caused by that virus. Vaccination can also assist pregnant women in the production of antibodies, which may serve to protect their unborn children. Infants who are born to mothers who have received two doses of an mRNA COVID-19 vaccine — such as the Pfizer-BioNTech or Moderna COVID-19 vaccine — may have a reduced risk of being hospitalised due to a COVID-19 infection in the first six months of their lives, according to research conducted on this topic.. (Davanzo,2021) Vaccination against COVID-19 does not put a person at risk of contracting the virus, not even pregnant women or their unborn children. There is no live virus in any of the vaccines because COVID-19 is caused by a dead virus. Also, keep in mind that the mRNA COVID-19 vaccine does not change your DNA or cause any other kind of genetic variation. The results of a large study that included more than 40,000 women demonstrate that receiving a COVID-19 vaccine during pregnancy does not pose any significant risks to either the pregnant women who were vaccinated nor their unborn children. The majority of the study's participants were given an mRNA vaccine, such as the one made by Pfizer-BioNTech or the one made by Moderna called COVID-19. (Martins,2021)

This study adds to the growing body of evidence that receiving a COVID-19 vaccination during pregnancy is not associated with an increased risk of giving birth prematurely. The findings of this study contribute to the growing body of evidence. If you are trying to get pregnant or think you might become pregnant in the future, getting the COVID-19 vaccine is also something that is highly recommended. There is no increased danger of preterm birth or a low birth weight for infants whose mothers were vaccinated against COVID-19 during their pregnancies. In addition to that, it is strongly suggested that you get vaccinated against COVID-19. There is currently no evidence to suggest that any of the COVID-19 vaccines can cause fertility issues; however, further research is needed in this area.

An mRNA vaccine, like the one made by Pfizer-BioNTech or Moderna, is preferred in most situations. Additionally, if you become pregnant after receiving the first dose of a COVID-19 vaccine that requires two doses, it is recommended that you receive your second shot as soon as possible. In addition, it is recommended that pregnant women get a booster shot of the COVID-19 vaccine whenever it is time for them to get one. To protect themselves from COVID-19, you and anyone else who shares your living space should get vaccinated. If you have questions or concerns, you should discuss the potential drawbacks and advantages with your doctor. (Mayo,2021)

4. Breastfeeding and Having a COVID 19

WHO recommends 6 months of exclusive breastfeeding, then continuing breastfeeding with appropriate complementary foods for at least another 2 years. The World Health Organization (WHO) also recommends "early and uninterrupted skin-to-skin contact," "rooming in," and "kangaroo mother care" to significantly improve neonatal survival and reduce morbidity. (Hare,2021)

Women infected with COVID-19 have been suspected of passing the SARS-CoV-2 virus on to their young children through breast milk. Breastfeeding and skin-to-skin contact recommendations should take into account not just the risk of infant COVID-19 infection, but also the risks of morbidity and mortality associated with not breastfeeding, with the improper use of infant formula milks, and with the protective effects of skin-to-skin contact. This scientific summary evaluates the available evidence concerning the potential for a mother to transmit COVID-19 to her infant through breastfeeding, as well as the potential dangers to the infant's health if the mother chooses not to breastfeed. (Mayo,2021)

Due to the presence of protective antibodies against the virus in human breast milk, infants may benefit from passive immunization against Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). This virus causes severe acute respiratory syndrome. Following an infection with SARS-CoV-2, the purpose of this study was to determine the presence of anti-SARS-CoV-2 IgG and IgA in human milk and serum, as well as the concentration of these antibodies.

Breastfeeding After Receiving a Vaccine Against a COV-Infectious Disease According to the Breastfeeding Committee of Canada, the benefits of vaccination outweigh the risks, so they recommend that breastfeeding women be offered a series of COVID-19 mRNA vaccines and a booster, and there are no safety concerns that have been identified with mRNA COVID-19 vaccination during lactation, according to the National Advisory Committee on Immunization (NACI), so breastfeeding women, reassurance that. (Martins,2021)

5. Conclusion

Getting vaccinated against COVID-19 is recommended for anyone older than 6 months who isn't immune. This includes women who are currently pregnant, nursing their infants, attempting to conceive, or who have the potential to conceive in the future, as well as those who have ever been pregnant. When it comes to deciding whether or not to get the COVID-19 vaccine, it seems that the safety of the fetus or child still inside the mother is the most important consideration for women who are trying to get pregnant. Women who are trying to conceive a child and are worried about the effects of the COVID-19 vaccine on their fertility are concerned about the potential harm the vaccine could cause to the unborn child if they receive it either naturally or through artificial insemination. It has been discovered that women who plan to conceive a child through the use of artificial insemination are more likely to experience these negative feelings.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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