

Frequently Asked Questions: COVID-19 and Blood Clots

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Many questions surround the challenges associated with the novel coronavirus or COVID-19. One aspect of COVID-19 of greatest interest to the National Blood Clot Alliance, its Medical & Scientific Advisory Board, and the individuals the organization serves in the clotting disorders community involves the recognition of coagulopathies – or different types of blood clotting – being reported among people affected by COVID-19, particularly those who become severely ill after infection with the virus.

Research is ongoing to help better understand this novel virus, the serious complications such as clotting that it can cause, the role of different treatment options effective against the disease, and the recent availability and use of vaccines to help prevent COVID-19.

Ongoing research in the United States and around the globe continues to generate important new information about COVID-19, and the medical community's understanding about the public health impact of the novel coronavirus continues to evolve. This document reflects some of the most commonly asked questions that presently surround the subject of COVID-19 and potential blood clotting, and it includes the most current information available at this time.

The information provided below is not intended to serve as a substitute for professional medical advice. Please talk to your physician or medical team about any questions you have concerning your health or COVID-19 and clotting.

Q1: Is a person at increased risk for getting infected with the coronavirus if they previously had a blood clot?

No, a prior history of blood clots does not increase the chances of getting infected with the novel coronavirus. The virus that causes COVID-19 spreads from person to person, in close contact (within about six feet), and mainly through respiratory droplets produced when an infected person coughs, sneezes, or talks. These droplets can land in the mouths or noses of people who are nearby and possibly be inhaled into the lungs. Also, a recent study by the Centers for Disease Control and Prevention shows that that transmission from people without symptoms accounts for a large portion of all COVID-19 transmission.

Q2: Why are people getting clots or experiencing clotting with COVID-19?

Respiratory issues continue to be the most commonly seen symptoms of COVID-19, but an increased tendency for blood clotting also is observed among people affected by the disease. Research continues into the many questions that surround the serious clotting that can be seen with COVID-19. As with other viral infections, people will have an immune reaction, which helps the body fight the virus. Any immune reaction like this also can cause inflammation. Inflammation is the immune system's response to a harmful infection. However, in patients with COVID-19, researchers are reporting a major inflammatory response among people critically ill with COVID-19 that is resulting in a high incidence of clotting. The highest rate of clotting is seen among people affected by COVID-19 who are hospitalized with moderate and severe COVID-19 illness, particularly those who require supportive oxygen or ventilation or who are in the intensive care unit.

Q3: Why is the clotting seen with COVID-19 more severe than with other viral infections like the flu?

Researchers suggest that the clotting seen with COVID-19 is not central or basic to the virus itself. Rather, one theory holds that the clotting seen with COVID-19 can be very pronounced because there is no prior exposure to this new virus. For example, many people who get sick with the traditional flu or influenza have had some exposure in the past or some acquired immunity, whereas with the novel coronavirus there has been no prior exposure in anyone. This is one theory for why some people may experience such a severe reaction or severe illness with COVID-19. Other theories or potential factors also may be involved and are being investigated.

Q4: Who is at increased risk for clotting when infected with the coronavirus?

Most people, or about eight in 10 people infected with the new coronavirus will experience mild or moderate illness and recover. Currently, researchers and clinicians are tracking infections through data derived from confirmed cases among people who have been tested and received a positive test result. At this time, these data indicate that the overall COVID-19 recovery rate in the United States ranges from 97% to 99%.

Much remains to be learned about the novel coronavirus, particularly because, in some people, it causes very serious complications, including serious blood clotting. Researchers and medical experts have reported that people affected by COVID-19 – particularly if they are hospitalized, require oxygen, a ventilator, or have severe pneumonia – have a higher risk for developing dangerous blood clots than people with less severe disease.

One review of several individual studies suggests that the overall incidence of blood clotting among people with COVID-19 is estimated to be about 14 percent. This same review showed that the rate of clotting is even more significant, or about 22 percent, among people with COVID-19 being treated in the intensive care unit. There also is evidence that people with mild disease or even those who have no symptoms or who are unaware that they are infected with the coronavirus are also at risk for developing blood clots but it appears to be at a much lesser degree. More research is required to fully understand the increased risk for clotting among people affected by COVID-19.

Q5: I have a clotting disorder and personal history with clotting, does this place me at greater risk of serious complications, like clotting, if I get infected with the coronavirus?

Many questions about the new coronavirus exist, and this is a crucial question for people affected by genetic or acquired clotting disorders. We anticipate that ongoing research will provide the answers we are all seeking, but at this time there is no evidence that people with a clotting disorder are at increased risk for serious illness if infected with COVID-19.

Medical experts do indicate that the following factors may increase a person's risk for severe illness with COVID 19:

- Older adults: The greatest risk for severe illness with COVID-19 is among people aged 85 or older, but the risk for serious illness increases with age so you are at greater risk if you are in your sixties, for example, than if you are in your fifties.
- Underlying health conditions:
 - Adults of any age are at increased risk for severe illness with COVID-19 if they also have certain underlying medical conditions, including: Cancer, chronic kidney disease, chronic obstructive pulmonary disease, down syndrome, heart conditions (e.g., heart failure, coronary artery

disease, cardiomyopathies), weakened immune system or immunocompromised state due to organ transplantation, obesity or body mass index of 30 or higher, pregnancy, sickle cell disease, smoking, type 2 diabetes.

- Adults of any age with certain underlying conditions might be at increased risk for severe illness with COVID-19, including: Asthma, cerebrovascular conditions that affect blood vessels and blood supply to the brain, cystic fibrosis, high blood pressure, immunocompromised state from blood or bone marrow transplant, immune deficiencies, HIV, use of corticosteroids or any medication that weakens the immune system, neurologic conditions such as dementia, liver disease, overweight or body mass index of 25 or higher, damaged or scarred lung tissues, thalassemia (a blood disorder), type 1 diabetes.

Researchers and medical experts in this field have reported that people affected by more severe COVID-19 disease – particularly if they are hospitalized, require oxygen, a ventilator, or have severe pneumonia – have a higher incidence of clotting than those with less severe disease.

If you have been diagnosed previously with a clotting disorder, speak with your healthcare provider about your concerns related to COVID-19 and continue to follow their directions related to any anticoagulant therapy you may already be prescribed.

Q6: Can a person with COVID-19 experience a blood clot after they've been discharged from the hospital or if they are not hospitalized or seriously ill?

People with mild COVID-19 disease or even those who have no symptoms or are unaware that they are infected with the coronavirus may also be at risk for developing blood clots but it appears to be at a much lesser degree. Also, there is evidence that COVID-19 patients discharged from the hospital without anticoagulation may experience clotting. More research is needed to better understand the risk for blood clots in people with mild to moderate and asymptomatic COVID-19 disease and also to evaluate the use of anticoagulation therapy following hospitalization for COVID-19.

Q7: I had several thrombectomies and then an inferior vena cava (IVC) filter put in place. The filter was later removed and I am worried about getting COVID-19 and being at higher risk of getting blood clots. Am I at higher risk?

Many questions about the new coronavirus exist. We anticipate that ongoing research will provide the answers we are all seeking, including additional information about a person's previous personal history with clotting. At this time, there is no evidence that people who have previously experienced a clot, undergone a thrombectomy, or had a previous IVC filter are at higher risk for clotting with COVID-19.

Q8: There have been reports that some people affected by COVID-19 and clotting also show the presence of antiphospholipid antibodies in lab evaluations of their blood samples. What does this mean to someone already diagnosed with antiphospholipid syndrome?

It is not uncommon that antiphospholipid antibodies may be seen with acute infection, inflammation, or blood clots or clotting. Currently, there is extremely little data about antiphospholipid antibodies seen among people affected by COVID-19. However, experts stress that the presence of these antiphospholipid antibodies does not mean that these individuals have antiphospholipid syndrome (APS), an immune disorder that causes an increased risk for blood clots. More research is required to answer questions about COVID-19 and antiphospholipid antibodies, including what considerations, if any, need to be given to the treatment of people with APS who become infected with COVID-19. If you

have been diagnosed previously with APS, speak to your healthcare provider about your concerns related to COVID-19 and continue to follow their directions related to any anticoagulant therapy you may already be prescribed.

Q9: What should I do to prevent clotting if I get infected with the coronavirus?

It's important to talk with your healthcare provider about any concerns you might have about clotting if you are affected by COVID-19, and review all of your potential risk factors for clotting. Experts suggest that people who are hospitalized with COVID-19 be evaluated for clotting risks and administered anticoagulation therapies accordingly.

If you have mild or moderate symptoms and do not require hospitalization, talk to your healthcare provider about your concerns and the best way to protect your health as you are treated and recover. Simple steps that can help to prevent blood clots include: Get up and move around every two hours, drink plenty of fluids to stay hydrated. Contact your healthcare provider if you experience any of the symptoms of a blood clot in your limbs or lungs, which include: Swelling, pain or tenderness not caused by injury, skin that is warm to the touch, redness or discoloration of the skin. Alert your healthcare provider if you experience any of these signs or symptoms. If you experience the symptoms of a blood clot in your lung, including difficulty breathing (at rest or with exertion), chest pain that worsens with a deep breath, coughing or coughing up blood, and a faster than normal or irregular heartbeat, seek immediate medical attention or call 911.

Q10: If I am hospitalized for COVID-19, what should I do to make sure that I don't experience a blood clot or how will the hospital deal with the risk of clotting I might have?

If you are hospitalized, it is always important to discuss with your medical team all of your clotting risks and a prevention plan for blood clotting. There is an increased risk for blood clotting among patients who are hospitalized with COVID-19, and this risk is highest in patients with severe illness, particularly among people with COVID-19 in the intensive care unit. If you are admitted to the hospital with COVID-19, talk to your healthcare provider about the best prevention plan for you given your specific blood clot risk factors and health history.

Depending on your risk factors and health history, your blood clot prevention plan might include:

- Increased mobility, periodically getting up from your hospital bed to move or walk around
- Pneumatic compression boots, placed on your lower legs to support healthy blood flow
- Anticoagulation therapy, either by injection or in a pill form

Experts are recommending that most people who are hospitalized with COVID-19 be provided with anticoagulation treatment in preventive doses (unless there is a contraindication). Numerous clinical studies are underway to help healthcare providers understand the optimal way to prevent and treat the blood clotting being seen among individuals affected by COVID-19.

Q11: Is there anything special I should do after I am discharged from the hospital after receiving care for COVID-19 disease?

After you leave the hospital, it is always important to follow all of your medical team's discharge instructions:

- Take all medications as prescribed
- Stay mobile
- Remain vigilant for the signs and symptoms of blood clots:

- The signs and symptoms of a blood clot in your leg or arm can include: Swelling, pain or tenderness not caused by injury, skin that is warm to the touch, redness or discoloration of the skin. Alert your healthcare provider if you experience any of these signs or symptoms.
- The signs symptoms of a blood clot in your lung can include: Difficulty breathing (at rest or with exertion), chest pain that worsens with a deep breath, coughing or coughing up blood, and a faster than normal or irregular heartbeat. Seek immediate medical attention or call 911 if you experience any of these signs of symptoms.

Q12: I take a blood thinner routinely, will this prevent me from experiencing the dangerous clotting being seen in people with COVID-19?

It is not known whether the routine use of previously prescribed anticoagulants will prevent or protect anyone from developing serious illness if they become infected with COVID-19. Longer-term research will likely reveal important information about this question. All people who currently are prescribed an anticoagulation therapy should continue their medication as prescribed by their healthcare provider. Speak with your healthcare provider about any questions you have about your anticoagulant therapy.

Q13: I had a blood clot previously and was prescribed a blood thinner for a few months or a short period of time. I am no longer taking it. Should I start taking a blood thinner again so I don't experience another clot if I happen to get infected with COVID-19?

You should talk to your healthcare provider about any questions you might have about your healthcare and your medications. Anticoagulation therapies save lives, but as with all prescription medications they do also pose risks, including the risk for serious bleeding. Never start or stop taking any prescription medication without consulting with your physician.

Q14: Should all people be taking blood thinners now to make sure that they don't experience the dangerous clotting that is being seen in people with COVID-19?

No. Blood thinners or anticoagulation therapies can be life-saving, but like all prescription medications, they do pose risks, including the risk for serious bleeding. Anticoagulation therapies are prescribed to prevent and treat blood clots among people who have risk factors for clotting or who have experienced a blood clot. Experts stress that the risks associated with these therapies, such as serious or life-threatening bleeding, outweigh the benefits of prescribing them for people who do not have any risk factors for blood clots or who have never experienced a blood clot. Never start or stop taking any prescription medication without consulting with your physician.

Q15: I have an autoimmune disease. I am not on a blood thinner, but concerned about getting COVID-19. I have read that autopsies performed among people who died due to COVID-19 show that many of these individuals had blood clots throughout their body or most of their organs. Should I be taking a blood thinner now in the event that I get COVID-19?

Many questions remain about COVID-19 and research in this field is ongoing, but medical experts do indicate that, among others, people with a weakened immune system or immunocompromised individuals may be at higher risk for severe illness with COVID 19. Blood thinners or anticoagulation therapies can be life-saving, but like all prescription medications, they do pose risks, including the risk for serious bleeding. People should speak with their healthcare providers about any questions they have about their specific health history, any underlying medical conditions they have, and their potential risk for severe complications if they become ill with COVID-19.

Q16: Can I still get a clot if I get infected with coronavirus but am taking a blood thinner now due to my clotting history?

There is no research available that demonstrates if someone who routinely takes an anticoagulant will or will not experience clotting should they become infected with the coronavirus. Experts are recommending that most people who are hospitalized with COVID-19 be provided with anticoagulation treatment in preventive doses (unless there is a contraindication) to help address potential clotting, since people who get seriously ill with COVID-19 are at increased risk for clotting. Anticoagulation therapy is commonly used to prevent and treat blood clots. These treatments are very effective and are considered life-saving medications. However, people who take these medications can experience a recurrent clot, so the risk for recurrence, although very low, does remain.

Speak with your healthcare provider about any questions you have about your anticoagulant therapy.

Q17: I don't want to go to the doctor's office or lab to get my INR tested during the pandemic. Do I have to get my INR tested?

People prescribed the blood thinner or anticoagulant warfarin routinely have their blood checked to ensure its effectiveness, and these tests are important for the successful management of the medication to reduce both blood clotting and bleeding risks. Experts in anticoagulation management have suggested several options for people who are reluctant to leave their homes or go out to be tested during the COVID-19 pandemic. These options include:

- Getting INR checked at a time when fewer people might be scheduled or in the clinic or office
- Scheduling INR tests to minimize the number of times you need to visit the doctor's office or lab
- Exploring the option for at-home INR testing
- Exploring treatment options with your physician that do not require INR testing

Your healthcare provider is your best resource and you should discuss these options with them to determine what is best for you.

Q18: How can I get an INR home testing device so I don't have to leave my home for routine testing and increase my risk for being infected with COVID-19 during this pandemic?

Given the current COVID-19 pandemic, many people who take the blood thinner or anticoagulant warfarin may be looking for options to test their INR without having to leave their home, particularly if they have underlying conditions that may place them at greater risk for severe illness with COVID-19. If you would like to determine if INR self-testing is right for you, it's important to work together with your healthcare provider to come up with the best plan to monitor your INR and adjust your warfarin dose, as needed. You will also need to obtain a prescription for the home testing device itself, learn how to use the machine, and learn how to report your results to your healthcare provider.

It can take some time to get set up with a system for at-home monitoring. You can read more about the process here: www.stopthecлот.org/about-clots/blood-clot-treatment/warfarin/inr-self-testing.

Q19: What can I do to make sure that I don't get infected with the coronavirus...I just can't because of my clotting disorder and other underlying health conditions.

Public health experts stress the importance of prevention, and recommend that everyone take the following steps to help minimize the spread of COVID-19:

The Centers for Disease Control and Prevention (CDC) have updated their guidance related to the prevention of COVID-19. First and foremost, vaccination is the most important step people can take to

prevent infection with the virus that causes COVID-19. CDC says that people who are fully vaccinated can resume activities they did before the pandemic. CDC also says that people who are unvaccinated should take the following prevention measures: Wear a mask, stay six feet apart, and wash hands. Visit CDC's website to read more about CDC's recommendations for COVID-19 prevention among people who have and who have not been vaccinated against COVID-19: www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/participate-in-activities.html. Speak with your healthcare provider about any questions you might have about vaccination or the prevention of COVID-19.

Q20. I take birth control pills and understand that this can increase my risk for blood clots, in general, but does this now mean that I might also be at increased risk for clotting if I get infected with the coronavirus? Should I stop taking my birth control pill?

Experts confirm that birth control pills are safe and effective for most women to use, but they can increase a woman's risk for dangerous blood clots, particularly if she has other risk factors for clotting, such as an underlying clotting disorder. Some experts have suggested that hormonal birth control (including the pill, patch, or ring), as well as hormone therapies used to treat the symptoms of menopause, could increase clotting risk among women affected by COVID-19. However, much more research is needed to provide the answers needed in this regard.

There are several options you can consider for birth control. You should discuss these options, as well as all of your risk factors for blood clots, with your OB/GYN or healthcare provider. You can learn more about birth control and blood clot risks, and also download a risk assessment tool to review with your healthcare provider at www.womenandbloodclots.org/birth-control.

Q21: Is it true that your blood type may put you at increased risk for severe illness with COVID-19.

When COVID-19 first emerged, researchers and scientists around the world set out to determine why some people experience very mild symptoms with COVID-19, while others develop much more serious disease. This caused a number of different and, at times, conflicting reports to be shared.

Early on in the pandemic, some studies suggested a potential correlation between blood type and the likelihood that a person might progress to serious illness with COVID-19. More recent studies have dispelled this idea, showing that there is no significant association between a person's blood type and the incidence of severe COVID-19.

Q22: Is it true that taking supplements like Vitamin D can lessen how sick you get with COVID-19?

Vitamin D helps the body absorb calcium and strengthen bones, and the results of recent research to evaluate if vitamin D might help to prevent or make COVID-19 disease less severe are mixed. There are several studies planned to explore this question further. Talk to your healthcare provider about any questions you might have about vitamin D.

Q23: Isn't this a problem, like the flu, that only causes very serious health problems among a small number of people? Why all the fuss?

The coronavirus or COVID-19 is a novel virus that has never been seen before in humans. COVID-19 is not the flu. No one has any immunity to COVID-19, because it has never circulated in any population anywhere in the world before. As we are seeing in the United States and countries around the globe, this virus is very infectious, and spreads rapidly and at very high rates of infection when no mitigation efforts are taken in our communities.

COVID-19 also poses clinical challenges unlike any the medical community has had to address before. COVID-19 affects people in a very broad spectrum of ways: Some people only experience mild or moderate illness, some people get seriously ill and require hospitalization, and others go on to become critically ill and die. While new vaccines are now approved and being administered, the distribution and vaccination process is rolling out very slowly, while at the same time the risk for infection is growing as different versions or variant mutations of the virus continue to spread through our communities. Also, there are only a few treatment options for COVID-19 and they do not work successfully in all cases of the disease.

There also is evidence that a growing number of people are experiencing prolonged COVID-19 symptoms. Some experts estimate that about 10 percent of people who have been affected by COVID-19, including people who only experienced mild to moderate symptoms, are experiencing long-lasting symptoms such as fatigue, shortness of breath, joint pain, chest pain, gastrointestinal issues, and “brain fog.” While research is ongoing into the long-term impact of COVID-19, the medical community presently has no clear understanding of the long-range health consequences that may occur among the millions of people worldwide who have been infected with the virus that causes COVID-19.

For these and other reasons, it remains crucial for people to be vigilant about preventing infection with the virus that causes COVID-19. The Centers for Disease Control and Prevention (CDC) have updated their guidance related to the prevention of COVID-19. First and foremost, vaccination is the most important step people can take to prevent infection with the virus that causes COVID-19. CDC says that people who are fully vaccinated can resume activities they did before the pandemic. CDC also says that people who are unvaccinated should take the following prevention measures: Wear a mask, stay six-feet apart, and wash hands. Visit CDC’s website to read more about CDC’s recommendations for COVID-19 prevention among people who have and who have not been vaccinated against COVID-19: www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/participate-in-activities.html. Speak with your healthcare provider about any questions you might have about vaccination or the prevention of COVID-19.

Q24: I’m already taking a blood thinner and I’m not supposed to take things like aspirin or ibuprofen when I get sick or have a fever. What should I do if I get sick with COVID-19 or have symptoms?

If you are taking a blood thinner or anticoagulant, get sick with COVID-19, and have questions about the appropriate treatment of your symptoms, such as fever, you should contact your healthcare provider and get their guidance about the best remedies you can use. Your healthcare provider is always your best resource when it comes to questions like these, and should you become infected with COVID-19 you should remain in close contact with them to ensure you are getting the care you need.

Q25: What should I do if I think I might have a blood clot? I don’t want to go to the doctor or the hospital during the pandemic and risk exposure to COVID-19?

Hospitals, clinics, and medical offices routinely take precautions to prevent the spread of infectious disease, and during this pandemic infection prevention measures have increased substantially and are being rigorously reinforced by healthcare professionals nationwide. Experts stress that it is crucial that people continue to seek the medical care they need, particularly if it might involve something dangerous or life-threatening like a blood clot. You can talk to your doctor or call the hospital directly in advance of your visit to address your concerns, but it is important, now more than ever, to maintain your good health.

Q26: I had a clot earlier this year, and I *think* it was COVID-related but really don't know for sure. What should I do?

Speak to your physician, continue to take any medication as directed or prescribed by your healthcare provider, and address all of your questions/concerns with them. If you have no other known risk factors for clotting, and you and your doctor think it might have been the result of COVID-19, but you're not sure if you were infected, you can ask your doctor to arrange an antibody test for you. This test, which involves a simple blood sample, will tell you if you have antibodies to COVID-19. If you do, then you were infected with the coronavirus.

Q27: I tested positive for COVID-19 and suffered a blood clot. My doctor says my clot was caused by the virus. What should I do?

It is important for you to continue to work closely with your medical team as you recover from COVID-19 and your blood clot. Take all medications as prescribed, keep your follow-up medical appointments, and contact your doctor if you experience any symptoms of additional clotting, which include:

- The signs and symptoms of a blood clot in your leg or arm can include: Swelling, pain or tenderness not caused by injury, skin that is warm to the touch, redness or discoloration of the skin. Alert your healthcare provider if you experience any of these signs or symptoms.
- The signs symptoms of a blood clot in your lung can include: Difficulty breathing (at rest or with exertion), chest pain that worsens with a deep breath, coughing or coughing up blood, and a faster than normal or irregular heartbeat. Seek immediate medical attention or call 911 if you experience any of these signs of symptoms.

Q28: I had COVID-19 and a blood clot. The doctor said I had to take a blood thinner for 3 months. I am scared when I stop I will get another blood clot. What should I do?

It is important for you to continue to work closely with your medical team as you recover from COVID-19 and your blood clot. Share all of your questions with them, including any concerns about your treatment. Take all medications as prescribed, keep all of your follow-up medical appointments, and contact your doctor if you experience any symptoms of additional clotting, which include:

- The signs and symptoms of a blood clot in your leg or arm can include: Swelling, pain or tenderness not caused by injury, skin that is warm to the touch, redness or discoloration of the skin. Alert your healthcare provider if you experience any of these signs or symptoms.
- The signs symptoms of a blood clot in your lung can include: Difficulty breathing (at rest or with exertion), chest pain that worsens with a deep breath, coughing or coughing up blood, and a faster than normal or irregular heartbeat. Seek immediate medical attention or call 911 if you experience any of these signs of symptoms.

Q29: I had/have COVID-19 and am afraid I will get a clot. What should I do?

Clotting is most commonly seen in the elderly and/or people critically ill with COVID-19, and the risk for clotting with COVID-19 seems to mirror the risk for the progression of serious illness with this novel virus. Specifically, medical experts indicate that people with the following underlying conditions may be at higher risk for severe illness with COVID 19:

- Older adults: The greatest risk for severe illness with COVID-19 is among people aged 85 or older, but the risk for serious illness increases with age so you are at greater risk if you are in your sixties, for example, than if you are in your fifties.

- Underlying health conditions: Cancer, chronic kidney disease, chronic obstructive pulmonary disease, weakened immune system or immunocompromised individuals, obesity or body mass index of 30 or higher, serious heart conditions such as heart failure, coronary artery disease, or cardiomyopathies, sickle cell disease, Type 2 diabetes.

Speak to your healthcare provider about your concerns and determine if there are any other steps that might be important in your case.

Q30: Why are people affected by COVID-19 experiencing persistent symptoms or long-term health effects of the disease?

Research indicates that some people are experiencing prolonged symptoms or long-term health effects due to COVID-19. Some experts estimate that about 10 percent of people who have been affected by COVID-19, including people who only experienced mild to moderate symptoms, are experiencing long-lasting symptoms such as fatigue, shortness of breath, joint pain, chest pain, gastrointestinal issues, and “brain fog.” While research is ongoing into the long-term impact of COVID-19, the medical community presently has no clear understanding of the long-range health consequences that may occur among the millions of people worldwide who have been infected with the virus that causes COVID-19.

Q31: Now that COVID-19 vaccines are available, should I get one?

Medical experts are recommending that all people get a vaccine to help prevent infection with the virus that causes COVID-19 and to combat this global pandemic. Studies of the new vaccines demonstrate that they are safe and effective for use. The first vaccines for the prevention of COVID-19 were granted Emergency Use Authorization (EUA) by the United States Food & Drug Administration in December 2020 and the administration of these first vaccines in the U.S. began several days later. Subsequently, a third vaccine — the Johnson & Johnson vaccine — was granted EUA by the FDA in February 2021, and the administration of this third vaccine began shortly thereafter.

Additional vaccines are being studied for potential EUA in the U.S. in the future.

To learn more about the vaccines that are presently authorized for use in the United States, as well as those that are still being studied in clinical trials, visit the Centers for Disease Control and Prevention (CDC) website here: www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines.html

Q32: Is it safe for people with an underlying clotting disorder to be administered the new vaccine?

Studies of the new vaccines show that they are safe and effective for use and medical experts advise that people with an underlying clotting disorder can receive the COVID-19 vaccine, including people who are prescribed:

- Older anticoagulation therapies, such as warfarin (Coumadin®), as long as INR testing is up to date and INR is below 4 or below the upper threshold of a person’s therapeutic range.
- Newer anticoagulants, or direct oral anticoagulants (DOACs), such as apixaban (Eliquis®), betrixaban (BevyxXa®), dabigatran (Pradaxa®), edoxaban (Savaysa®), and rivaroxaban (Xarelto®).
- Anticoagulation therapies injected under the skin, such as enoxaparin (Lovenox®) and fondaparinux (Arixtra®).

Q33: How can I obtain a vaccine to protect me from being infected with the virus that causes COVID-19?

People should speak with their healthcare providers to determine when the COVID-19 vaccine will be available to them in their local communities. State and county health departments are playing a large role in distributing vaccine at the local level to health systems, pharmacies, physicians, and community based vaccine programs. Contact your local health department for more information about the availability of the COVID-19 vaccines in your local community.

- Search state health departments here:
www.cdc.gov/publichealthgateway/healthdirectories/healthdepartments.html
- Search city and county health departments here:
www.naccho.org/membership/lhd-directory

Q34: Since the new vaccines are intramuscular, will this cause bleeding problems?

While skin lacerations can pose bleeding concerns for patients prescribed anticoagulation treatments – and some risk for bleeding with needle injection for vaccination may exist – medical experts confirm that this type of vaccine injection does not pose any serious bleeding risk for people prescribed anticoagulation therapy. Also, there may be some bruising at the vaccine injection site. Medical experts suggest that people apply pressure to the injection site for about five minutes to help reduce bleeding and bruising.

Q35: Can I take the new vaccine if I'm also taking an anticoagulant therapy?

Medical experts recommend that people with an underlying clotting disorder can receive the COVID-19 vaccine, including people who are prescribed:

- Older anticoagulation therapies, such as warfarin (Coumadin®), as long as INR testing is up to date and INR is below 4 or below the upper threshold of a person's therapeutic range.
- Newer anticoagulants, or direct oral anticoagulants (DOACs), such as apixaban (Eliquis®), betrixaban (BevyxXa®), dabigatran (Pradaxa®), edoxaban (Savaysa®), and rivaroxaban (Xarelto®).
- Anticoagulation therapies injected under the skin, such as enoxaparin (Lovenox®) and fondaparinux (Arixtra®).

Q36: Should people who have a genetic clotting disorder, who previously experienced a blood clot, or who have complications following a previous blood clot be prioritized for COVID-19 vaccination?

The Centers for Disease Control and Prevention has provided guidance for the prioritization of vaccine administration, including the prioritized vaccination of people at increased risk for severe illness with COVID-19 due to certain underlying medical conditions. You can review CDC's list of medical conditions that may increase a person's risk for severe illness here:

- www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-with-medical-conditions.html

This guidance does not identify thrombosis or a history of clotting as an underlying medical condition that may increase a person's risk for severe illness with COVID-19.

The implementation of CDC's guidance is determined at the state level by local public health officials.

You can read the overall guidance from the CDC about the public health implementation of vaccinations nationwide here:

- www.cdc.gov/coronavirus/2019-ncov/vaccines/recommendations.html

You can search for and review the response to COVID-19 by individual state health departments here:

- www.cdc.gov/publichealthgateway/healthdirectories/healthdepartments.html

Contact your local health department, or speak to your healthcare provider, about any questions you have about obtaining the COVID-19 vaccine in your local community.

Q37: Is one COVID-19 vaccine better than the other, or which one is the best?

The vaccines currently authorized for use in the United States are all demonstrated to be safe and effective. Most importantly, all of these vaccines have been shown to significantly reduce severe illness and death due to COVID-19. It is important that people are vaccinated as soon as possible to offset the risk posed by COVID-19 for serious illness, particularly among people who may be at increased risk for severe disease, and to turn back the public health impact of this global pandemic.

While there are some differences between the different vaccines that are presently available, as well as those that may be authorized for use in upcoming weeks and months, what's important is that the vaccines that have been authorized for use are all safe and effective and will help people minimize the risk for serious illness and death associated with COVID-19.

You should address all of your questions about the COVID-19 vaccines with your healthcare provider. You can learn more about the available vaccines and those that remain under study here:

www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines.html

Q38: How will the variants of the virus affect me or the effectiveness of the new vaccines?

Vaccination against COVID-19 is now made all the more important due to the emergence of multiple new variants of the virus that causes COVID-19. All viruses constantly change through mutation, and new variants of a virus will occur over time. Sometimes new variants emerge and disappear. Other times, new variants emerge and persist. Multiple variants of the virus that causes COVID-19 have been documented globally and in the United States during this pandemic.

Public health experts suggest that these variants seem to spread more easily, which may lead to more cases of COVID-19. An increase in the number of cases will put more strain on our healthcare system, lead to more hospitalizations, and more deaths.

According to the Centers for Disease Control and Prevention, studies presently suggest that the antibodies generated through vaccination with currently authorized vaccines in the U.S. recognize these variants.

More research is needed to monitor the spread of new variants and how these variants may affect the course of COVID-19 disease in people who get infected with the new variants, and also how these variants might impact the effectiveness of existing diagnostic devices, therapies, and vaccines.

In the meantime, experts are encouraging people to get vaccinated as soon as possible, which will help decrease COVID-19 infection in our communities and, therefore, help to turn back the public health threat posed by the emergence of additional variants of the virus that causes COVID-19.

To learn more about the vaccines that are presently authorized for use in the United States, as well as those that are still being studied in clinical trials, visit the Centers for Disease Control and Prevention website here: www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines.html.

Also, visit CDC's website to review the most frequently asked questions about the new vaccines here: www.cdc.gov/coronavirus/2019-ncov/vaccines/faq.html.

Q39: I've heard that the vaccines can cause blood clots. Is this true?

On April 13, 2021, the Centers for Disease Control and Prevention and the United States Food & Drug Administration recommended a pause in the use of the Johnson & Johnson COVID-19 vaccine out of an abundance of caution after six people in the U.S. developed a rare blood-clotting disorder (of nearly 7 million doses administered at that time). During this pause, the CDC convened a meeting of the Advisory Committee on Immunization Practices to evaluate these cases, and the FDA reviewed this analysis.

In these cases, a type of blood clot called cerebral venous sinus thrombosis (CVST) was seen in combination with low levels of blood platelets (thrombocytopenia). These cases occurred in women ages 18 to 48, with symptoms developing six to 13 days after they received the vaccination.

Following a thorough safety review, including two meetings of the CDC's Advisory Committee on Immunization Practices, the U.S. Food and Drug Administration and the U.S. Centers for Disease Control and Prevention determined that the recommended pause regarding the use of the Johnson & Johnson (Janssen) COVID-19 Vaccine in the U.S. should be lifted and use of the vaccine should resume.

You can read more from CDC on this matter here: www.cdc.gov/media/releases/2021/fda-cdc-lift-vaccine-use.html.

While blood clotting events in connection with the Johnson & Johnson vaccine appear to be extremely rare, people who receive the vaccine should discuss any concerns they have with their healthcare provider. If they develop new, severe, and constant headache, abdominal pain, leg pain, or shortness of breath within three weeks after vaccination, they should contact their health care provider right away, or go to the nearest hospital or emergency room.

The Medical & Scientific Advisory Board of the National Blood Clot Alliance stresses the importance of vaccination among members of the clotting and clotting disorders community. The reported combination of the vaccine and blood clots incidents seen are exceedingly rare, and the benefits of the COVID-19 vaccine far outweigh the risk of blood clotting. Having a prior blood clot is not a known risk factor for developing this rare post-COVID-19 vaccine clotting problem. Notably, this complication has not been observed with the other two vaccines for COVID-19 that have received Emergency Use Authorization in the US (Pfizer and Moderna).

People should speak with their healthcare providers about any questions they have.

Q40: Should people still get vaccinated since some of the vaccines might cause blood clots in some people?

On April 13, 2021, the Centers for Disease Control and Prevention and the United States Food & Drug Administration recommended a pause in the use of the Johnson & Johnson COVID-19 vaccine out of an abundance of caution after six people in the U.S. developed a rare blood-clotting disorder (of nearly 7 million doses administered at that time). During this pause, the CDC convened a meeting of the

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You can read more about the three COVID-19 vaccines authorized for use in the U.S. here: www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines.html.

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People should speak with their healthcare providers about any questions they have.

Q41: What do I need to know or do if someone in my family is going to get vaccinated with the Johnson & Johnson vaccine?

Following a thorough safety review, including two meetings of the CDC's Advisory Committee on Immunization Practices, the U.S. Food and Drug Administration and the U.S. Centers for Disease Control and Prevention have determined that the recommended pause regarding the use of the Johnson & Johnson (Janssen) COVID-19 Vaccine in the U.S. should be lifted and use of the vaccine should resume.

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People should speak with their healthcare providers about any questions they have.

Q42: What is NBCA doing to address the impact of COVID-19 and clotting?

NBCA, a nonprofit patient advocacy organization, has been sharing information on its website since the medical community in the United States first began reporting on this issue in mid-March 2020. In addition, the Medical & Scientific Advisory Board of NBCA is collecting data from some of the leading medical institutions nationwide to help create a registry of information specific to the coagulopathies – or different types of clotting – being seen among hospitalized patients affected by COVID-19. This NBCA research, funded as a sub award of a cooperative agreement between the Association of University Centers on Disabilities and the Centers for Disease Control and Prevention, will illuminate some key information to help researchers and clinicians better understand the connections between COVID-19 and clotting. NBCA and its Medical & Scientific Advisory Board will continue to share information, including updates stemming from this important research work.

Q43: Where can I get more information?

The National Blood Clot Alliance will continue to expand resources on its website (www.stopthecлот.org) and across its social media channels (@stopthecлот). Also, the Anticoagulation Forum (www.acforum.org) has resources specific to the management of anticoagulation therapy in light of COVID-19, ranging from at-home INR testing to anticoagulation management of patients hospitalized with COVID-19. The American Society of Hematology (www.hematology.org) offers important insights and guidance for hematologists and other experts in this field. The Centers for Disease Control and Prevention (cdc.gov) also is a key resource, providing a broad spectrum of resources related to COVID-19.

Your healthcare provider is your best resource for information that impacts your health. Contact them with questions you have about COVID-19, clotting, or any other health issues that interest or concern you.

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