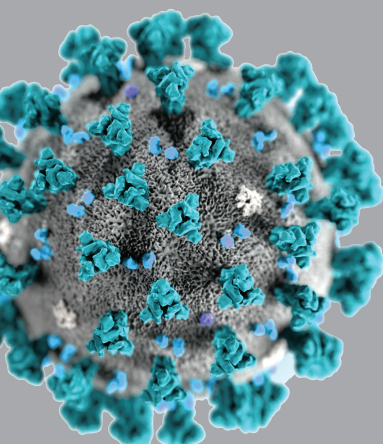




# **Gaucher Disease and COVID-19**

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# Gaucher Disease - Overview



Gaucher disease is a genetic disorder caused by mutations in the gene GBA1. The result of this mutation is the deficiency of an important enzyme, glucocerebrosidase, that breaks down a complex fat known as glucocerebroside, as well as several other compounds. The enzyme works in the part of the cell called the lysosome, which is responsible for breaking down substances that the cell no longer needs. One type of cell, the macrophage, picks up these unwanted substances, and when its lysosomes don't function correctly, waste accumulates causing engorged macrophages, also known as Gaucher cells. These can displace normal cells in tissues and result in damage to many organs. Patients with Gaucher disease can develop anemia, low platelet counts, enlarged livers and spleens, and bone disease. Some patients may have additional complications, including inflammatory and immune abnormalities, malignancies, lung disease, and Parkinson disease. Treatment is by enzyme replacement therapies (ERT), where the missing glucocerebrosidase enzyme is given to the patient as an intravenous infusion. ERT results in an improvement of anemia, low platelet count, and liver and spleen size. More recently, oral therapy with eliglustat (Cerdelga) has been shown to be effective in long-term treatment of Gaucher disease and is currently in use by many patients.

Three types of Gaucher disease exist: type 1 (without brain involvement), type 2 (with severe, acute neurologic disease and death by early childhood), and type 3 (with other symptoms indicating neurologic disease). In the US, type 1 Gaucher disease is the most common form, accounting for ~94% of cases of Gaucher disease; types 2 and 3 are relatively rare and account for the remaining cases. The disease presentation and progression of type 1 Gaucher disease vary from patient to patient. Gaucher disease occurs in all ethnic groups and has an incidence of 1 in 40,000 – 75,000 live births. Type 1 Gaucher disease occurs at an increased incidence in Ashkenazi Jews, in 1 in 600 – 900 live births.

# Coronavirus Disease 2019 (COVID-19) Overview

(from UCSF information and other sources)



## **What is COVID-19?**

Coronavirus disease 2019, or COVID-19, is an infection caused by the virus SARS-CoV-2. The virus first appeared in late 2019 in the city of Wuhan, China. It has spread quickly since then, and there are now hundreds of thousands of cases around the world. People with COVID-19 can have fever, cough, and trouble breathing. Problems with breathing happen when the infection affects the lungs and causes pneumonia. Most people who get COVID-19 will not get severely ill, but many do. In order to avoid spread of the disease, people are being advised to stay home and avoid contact with others.

## **How is COVID-19 spread?**

The virus that causes COVID-19 causes a respiratory illness that mainly spreads from person to person. This usually happens when a sick person coughs, sneezes, or talks near other people. Doctors also think it is possible to get sick if you touch a surface that has the virus on it and then touch your mouth, nose, or eyes. This is similar to how the flu spreads, but the virus that causes COVID-19 is more contagious. We now know that the virus spreads both when people are showing symptoms and even when they are asymptomatic.

## **What are the symptoms of COVID-19?**

Symptoms usually start 4 or 5 days after a person is infected with the virus, but in some people, it can take up to 2 weeks for symptoms to appear. Symptoms can sometimes resemble other acute respiratory illnesses and include fever, dry cough, exhaustion, muscle aches, and difficulty breathing. Although less common, some people have other symptoms, such as headache, sore throat, runny nose, or loss of their sense of smell or taste. Some have digestive problems like nausea or diarrhea. For most people, symptoms will get better within a few weeks, and some people even show no symptoms at all. However, in some people, COVID-19 can lead to serious problems like pneumonia, not getting enough oxygen, heart problems, or even death. This is more common in people who are 65 years or older or have other health problems like heart disease, diabetes, lung disease, or cancer. While children can get COVID-19, they appear less likely to have severe symptoms.

However, very recently, in a small number of children, COVID-19 infection has been reported as possibly resulting in a childhood inflammatory disease. This inflammatory condition may occur days to weeks after acute COVID-19 illness. Some children develop severe heart and multiple organ complications, requiring intensive care. Early recognition by pediatricians and community physicians, and prompt referral to in-patient critical care and other specialists, is essential.

# COVID-19 Precautionary Measures and Guidelines for All Persons

(from the CDC web site <https://www.cdc.gov> and other sources)



## ***Avoidance of potential exposure to the virus is the best precaution.***

COVID-19 spreads by close contact with other people through respiratory droplets that can be transmitted by sneezing, coughing, or speaking. It can even be spread in this way by people without symptoms who carry the infection.

Measures to help keep yourself and others healthy include:

- Avoid touching your eyes, nose and mouth with your hands.
- Wash your hands often with soap and water for at least 20 seconds, or use hand sanitizer (>60% alcohol) especially after blowing your nose, coughing, sneezing, going to the bathroom, and before eating or preparing food. For children, singing happy birthday twice is suggested while washing hands.
- Cover your cough or sneeze with a tissue and put it into the trash after you use it.
- Disinfect frequently touched areas in the home including light switches, doorknobs, countertops, handles, phones, keyboards, desks, tables, sinks, faucets, and toilets.
- Stay home when you feel ill.
- Stay away from large crowds or gatherings.
- Avoid contact with individuals who have symptoms.
- Observe social distancing of 6 feet from other individuals.
- Wear cloth face covers to cover your mouth and nose when you are around others. Wearing a face cover helps reduce the risk of spreading the virus to others. Face covering should be performed when performing essential tasks such as picking up necessities or going to the grocery store. Maintain social distance when wearing a cloth face cover.
- Seek immediate medical advice if you develop symptoms and have been in close contact with someone known to have COVID-19 or if you have been in an area with ongoing spread of COVID19. You should consult your physician about isolating yourself for 14 days while monitoring your temperature and any development of new symptoms.

If you have any symptoms of COVID-19, call your primary care physician immediately to discuss your symptoms and available options for evaluation, testing, and further treatment.

Individuals who are older than 65, have other medical problems, or are immunocompromised are at a higher risk for serious complications due to COVID-19. While we currently do not know whether having Gaucher disease indicates this higher risk, it is recommended that you stay in close contact with your Gaucher specialist if you develop a COVID-19 infection and follow the specific recommendations listed below.

As information regarding COVID-19 is updated daily, please refer to the CDC website <https://www.cdc.gov> for the most up-to-date recommendations.

# Additional COVID-19 Precautions for Patients with Gaucher Disease



Currently, it is not known how patients with Gaucher disease will respond to infection with COVID-19. Given the highly contagious nature of COVID-19, we suggest that patients remain home during this time to minimize exposure to infection. In addition, all members of the patient's household should remain home or practice careful social distancing and adhere to recommendations issued by the Centers for Disease Control.

Although there are many unknown and unanswerable questions at this time, we recommend the following:

1. Patients should maintain close communication with a specialist familiar with Gaucher disease as assessment of disease status will be critical when making decisions with regards to continuation or implementation of Gaucher therapies. These will differ depending on geographical location, accessibility to infusions, and other treatment related needs. This is particularly important for patients who test positive for or are suspected of having COVID-19.
2. Continue treatment/therapy, if possible, during this period. If treatment interruption is unavoidable, this should be discussed with the specialist managing Gaucher disease who can make management suggestions.
3. For patients on eliglustat (Cerdelga) therapy, it is important to know that drug interactions with agents currently used experimentally to treat COVID-19 can interact with eliglustat. This should be discussed with your Gaucher disease specialist as drug-drug interactions may be serious and/or fatal.
4. Patients with Gaucher disease infected with COVID-19 should receive aggressive COVID-19 management, if needed, as most patients with Gaucher disease --- especially type 1 Gaucher disease --- have a normal life expectancy. Close attention must be paid to drug-drug interactions during treatment. Close communication with the patient's Gaucher specialist is strongly recommended due to special circumstances that may be present in a patient with Gaucher disease, such as a history of splenectomy, liver function test abnormalities, pulmonary dysfunction, altered immunity and certain hematological abnormalities or malignancies. These conditions may need special consideration when treating COVID-19 and its complications. Some patients with Gaucher disease always have abnormal blood counts, liver function tests, ferritin levels and enlarged organs, so these results should not be used to make COVID-19 management decisions.
5. Patients participating in clinical trials should maintain close communication with their study designated contact for further recommendations with regard to study drug changes or interactions with experimental COVID-19 treatment options.
6. There may be further considerations in patients with type 2 or type 3 Gaucher disease where interruptions to therapy should be avoided and other complications may occur. These patients should be in close contact with their managing physicians.



# Additional Considerations:



A Gaucher Center physician, together with the patient, can best answer questions about whether a pause in treatment is clinically acceptable, and how long that hiatus should be. If a port is in place, this should also be taken into consideration with respect to port maintenance. The duration of missed ERT treatments should be discussed with a Gaucher specialist, weighing potential benefits vs. adverse effects. Such hiatus must be balanced against the risk of potential exposure to COVID-19 in the settings of a medical facility or through contact with a medical care provider at home.

If a pause in ERT is not acceptable on clinical grounds, then the patient's own physician and the patient's Gaucher Center physician should work with an infusion center, a free-standing clinic, a physician's office, or the home health nursing service to assure that appropriate infectious disease guidelines are strictly followed. In all circumstances, it is most important that such decisions and processes not become the burden of the patient alone.

If currently taking eliglustat (Cerdelga), a patient should be aware that there are additional precautions recommended if there is COVID-19 exposure or symptoms suggesting COVID-19 infection. An effect of Cerdelga might include an alteration in cardiac conduction [including QT interval prolongation] on EKG. A medication named hydroxychloroquine is being used off-label to treat COVID-19 infection. This medication can cause additional dangerous cardiac effects (sudden death, myocarditis), and should not be used at the same time as Cerdelga. Therefore, if COVID-19 exposure or infection is suspected, consideration should be given to stopping Cerdelga.

For more general considerations, your physician can help you create a care plan to designate which tests are essential vs. non-essential so that blood draws are deferred to a later date. Health providers can discuss with you a plan during telehealth visits in order to reduce the risk of exposure to COVID-19. Additional precautions might include switching to home delivery services for medications instead of picking up medications in a local pharmacy.

Your symptoms from Gaucher disease may be mistakenly interpreted as a worsening of your COVID-19 illness that could mislead your general physicians and alter your care. Your Gaucher disease specialty medical providers should be available to explain and discuss, with your general physicians, the signs and symptoms of Gaucher disease so as to distinguish these during COVID-19 illness.

Symptoms of Gaucher disease which may be mistakenly interpreted as a worsening of your COVID19 illness include:

- Misinterpretation of liver and/or spleen abnormalities due to Gaucher disease, such as increased liver function values and ferritin, as well as hepatosplenomegaly, that are also signs of severe COVID-19 infection forecasting a worse outcome of COVID-19 infection.
- Gaucher patients having a monoclonal gammopathy of undetermined significance (MGUS) or immunosuppressive therapy for multiple myeloma may be at increased risk for COVID-19 complications.
- Patients with splenectomy are more susceptible to bacterial infections that can result in serious and life-threatening sepsis. If infected by the COVID-19 virus, patients may also develop secondary bacterial infections.
- Patients with Gaucher disease who also have Parkinson disease can have a decreased ability to cough and may be at risk for COVID-19 complications.
- Neurologic symptoms can occur in patients with Gaucher disease who have COVID-19 infections and can include worsening of seizures, anosmia, myalgia, encephalitis, and autoimmune neuropathy.
- Patients participating in clinical trials should maintain close communication with their study designated contact for further recommendations with regard to study drug changes or interactions with experimental COVID-19 treatment options.

# Notes for the Emergency Department



If you need to be evaluated at the Emergency Department due to symptoms related to possible COVID-19 infection, please bring a copy of this brochure and provide the following additional information:

1. Current medications including dosages (please include any supplements/herbal/over-the-counter medications)
  
2. Other medical diagnoses (such as hypertension, diabetes, pulmonary diagnosis, malignancies, Parkinson disease, stroke, seizures, etc.)
  
3. Surgical interventions and approximate year of such intervention (such as splenectomy, cardiac intervention, etc.)
  
4. Gaucher Disease specialist contact information:
  - a. Dr. \_\_\_\_\_
  - b. Office phone:
  - c. Fax number:
  - d. Email address:

# Members of the US Working Group on Gaucher Disease and COVID-19



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