

THE INTRODUCTION, SIGNS, SYMPTOMS AND PREVENTION, TREATMENT OF nCov (COVID-19) ALONG WITH STUDY OF HIV AND COVID-19 TRANSMISSIONS. S. Sakpal*, S. B. Gondkar¹ and Dr. R. S. Bachaav²^{*1}Department of Pharmaceutics, R. G. Sapkal College of Pharmacy. Anjaneri, Nashik – 422213, Maharashtra, India.²Department of Pharmaceutical Organic Chemistry, R. G. Sapkal College of Pharmacy. Anjaneri, Nashik -422213, Maharashtra, India.***Corresponding Author: S. S. Sakpal**

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Article Received on 27/03/2020

Article Revised on 16/04/2020

Article Accepted on 06/05/2020

ABSTRACT

A new (COVID -19) corona virus disease is an infectious disease caused by a newly discovered coronavirus. In this case most people who fall sick with COVID -19 will experience mild to moderate symptoms and recover without special treatment. How it spreads, The virus that cause COVID -19 is mainly transmitted through droplets generated when an infected person coughs, sneezes, or exhales. These droplets are too heavy to hold within the air, and quickly fall on floors or surfaces. A person can be infected be breathing in the virus if person has close proximity of someone who has COVID -19, or by touching a contaminated surface and then touching own eyes, nose or mouth.

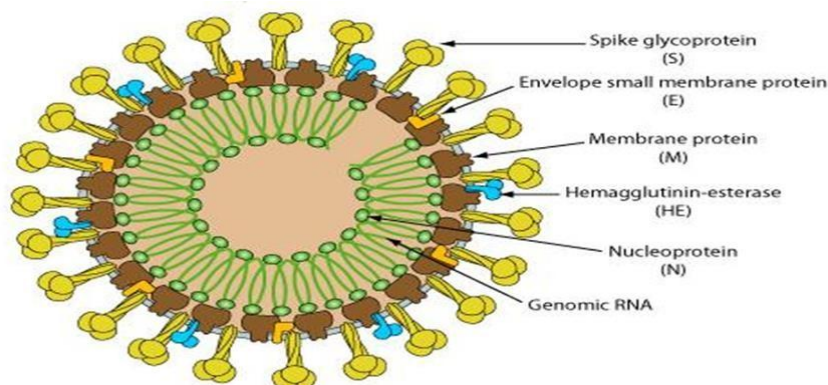
KEYWORDS: Coronavirus, nCOV, COVID -19, Novel coronavirus pneumonia.**INTRODUCTION**

Coronavirus disease 2019 (COVID -19) means severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The disease was first found in December 2019 in Wuhan, the capital of china's Hubei province, and has since spread globally, leading to the continued 2019-20 coronavirus pandemic. Common symptoms include fever, cough, fatigue, shortness of breath. While majority of case result in mild symptoms, some progress to viral pneumonia, multi-organ failure, or cytokine storm. The time from exposure to onset of symptoms is usually around five days but may range from two to 14 days.

The virus is primarily spread between people during close contact, often via small droplets produce by coughing, sneezing or talking. The droplets usually fall

to the ground or onto surfaces rather than remaining in the air over long distance. People may also become infected by touching their face. It is most contagious during the first three days after the onset of symptoms, although spread may be possible before symptoms appear and later in stages of the disease. The standard method of diagnosis is by real – tie reverse transcription polymerase chain reaction from cotton nasopharyngeal swab. Chest CT imaging can also be helpful for diagnosis in individuals where there's a high suspicion of infection supported symptoms and risk factors.

Recommended to stop infection include frequent hand washing, maintaining physical distance from others, covering cough, keeping unwashed hands faraway from the face.

**Figure: Structure of COVID-19.**

What are coronavirus and how do they invade cells?

Coronaviruses are single – stranded RNA viruses, about 120 nanometers in diameter. They are susceptible to mutation and recombination and therefore highly diverse. There are about 40 different varieties and they mainly infect human and non- human mammals and birds.

They reside in bats and wild birds, and can spread to other animals and hence to humans. The virus that causes COVID -19 is thought to have originated in bats and then spreads to snakes and pangolins and hence to humans, perhaps by contamination pf meat from wild animals, as sold in China’s meat market.

The corona like appearance of coronaviruses caused by so-called spike glycoproteins, or pepiomers, which are necessary for the viruses to enter host cells. The spike has two subunits; one subunit, S1, binds to a receptor on the surface to enter host cells; the other subunit S2; fuses

with the cell membrane. The cell membrane receptor for both SARS-CoV-1 and SARS-CoV- 2 is a form of angiotensin converting enzyme, ACE-2, different from the enzyme that is inhibited by conventional ACE-1 inhibitors, such as enalapril and ramipril.

Briefly, the S1 subunit of the spike binds to the ACE-2 enzyme on the cell membrane surface. A host transmembrane serine protease, TMPRSS2, then activates the spike and cleaves ACE.

2. TMPRSS 2 also acts on the S2 submit, facilitating fusion of the virus to the cell membrane. The virus then enters the cell. Inside the cell the virus is released from endosomes by acidification or the action of an intracellular cysteine protease, cathepsin.

A model and a more detailed description of these events is shown in figure.

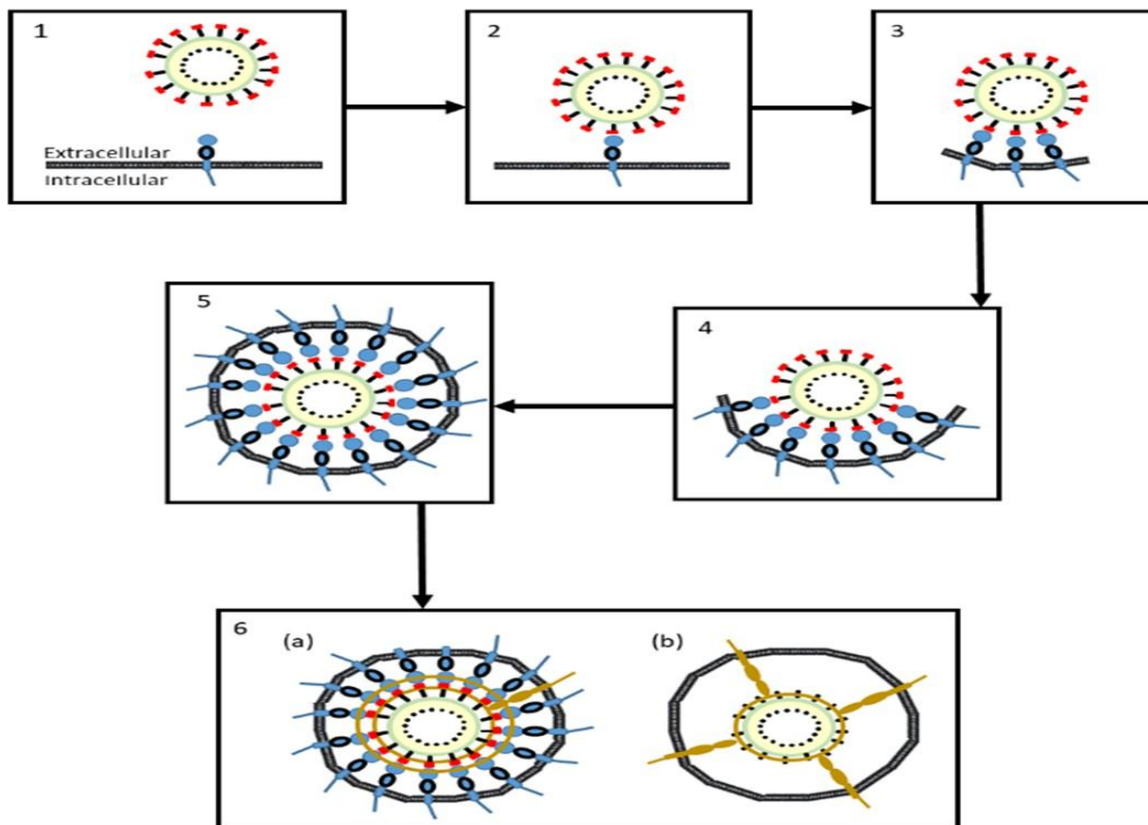


Figure: A proposed model of the mechanisms whereby coronavirus SRA-CoV-2 enters cells 1.The coronavirus approaches the cell membrane.

2. An S2 subunit(red) at the distal end of a glycoprotein spike of the virus binds to a membrane-bound molecule of ACE-2(blue)
3. As more S1 subunit of the glycoprotein spikes bind to membrane-bound molecule of ACE- 2, the membrane starts to form an envelope around the virus (an endosome)
4. The process continues.
5. until the endosome is complete 6.The virus can enter the cell in two ways.

(a) A cell membrane-bound serine protease (brown), TMPRSS2, cleaves the virus’s S1 subunits (red) from its S2 subunits (black) and also cleaves the ACE-2 enzymes; the endosome enters the cell where the virus is released by acidification of the action of another protease, cathepsin

(b) The some serine protease, TMPRSS2, causes irreversible conformational changes in the virus’s S2 subunits, activating them, after which the virus fuses to the cell membrane and can be internalized by the cell

A serine protease inhibitor, camostat mesylate, used in Japan to treat chronic pancreatitis, inhibits the TMPRSS2 and partially blocks the entry of SARS-CoV-2 into bronchial epithelial cells in vitro.

SIGN AND SYMPTOMS OF COVID-19

Common Symptoms

Researchers in China found that the most common symptoms among people who had COVID-19 include:

- Fever: 99%
- Fatigue: 70%
- A dry cough: 59%
- Loss of appetite: 40%
- Body aches: 35%
- Shortness of breath: 31%
- Mucus or phlegm: 27%

Symptoms usually begin 2 to 14 days after you come into contact with the virus.

Other symptoms may include

- Chills, sometimes with shaking
- Loss of smell or taste
- Stuffy nose
- Nausea or vomiting
- Diarrhea
- Headache
- Sore throat

If you have any of these symptoms, isolate yourself. This means staying away from other people as much as possible, even members of your family. Stay in a specific "sick room," and use a separate bathroom if you can. If you have symptoms and are at high risk of complications because of your age or other health conditions, call your doctor in addition to isolating yourself.

Serious Symptoms

Call a doctor or hospital right away if you have one or more of these COVID-19 symptoms:

- Trouble breathing
- Constant pain or pressure in your chest
- Bluish lips or face
- Sudden confusion

You need medical care as soon as possible. Call your doctor's office or hospital where you go in. This will help them prepare to treat you and protect medical staff and other patients.

Strokes have also been reported in some people who have COVID-19. Remember FAST.

- Face. Is one side of the person's face numb or drooping? Is their smile lopsided?
- Arms. Is one arm weak or numb? If they try to raise both arms, does one arm sag?
- Speech. Can they speak clearly? Ask them to repeat a sentence.
- Time. Every minute counts when someone shows signs of a stroke. Call 911 right away.

Lab tests can tell if COVID-19 is what's causing your symptoms. But the tests can be hard to find, and there's no treatment if you do have the disease. So you don't need to get tested if you have no symptoms or only mild ones. Call your doctor or your local health department if you have questions.

Causes of the New Coronavirus

Researchers aren't sure what caused it. There's more than one coronavirus. They're common in people and in animals including bats, camels, cats, and cattle. SARS-CoV-2, the virus that causes COVID-19, is similar to MERS and SARS. They all came from bats. Many people who got the disease early on were linked to a large live seafood and animal market in China.

- you might hear it called a "wet market." The first cases may have come from animals sold in the market, then spread from person to person.

Coronavirus Risk Factors

Anyone can get COVID-19, and most infections are usually mild, especially in children and young adults. But if you aren't in an area where COVID-19 is spreading, haven't traveled from an area where it's spreading, and haven't been in contact with someone who has it, your risk of infection is low.

People over 65 are most likely to get a serious illness, as are those who live in nursing homes or long-term care facilities, who have weakened immune systems, or who have medical conditions including:

- High blood pressure
- Heart disease
- Lung disease
- Kidney disease that needs dialysis
- Severe obesity
- Diabetes
- Cancer

Coronavirus Transmission

How does the coronavirus spread?

SARS-CoV-2, the virus, mainly spreads from person to person.

Most of the time, it spreads when a sick person coughs or sneezes. They can spray droplets as far as 6 feet away. If you breathe them in or swallow them, the virus can get into your body. Some people who have the virus don't have symptoms, but they can still spread the virus.

You can also get the virus from touching a surface or object the virus is on, then touching your mouth, nose, or possibly your eyes. Most viruses stay large time in surfaces that they land on. A study shows that SARS-CoV-2 can last for several hours on various types of surfaces.

- Copper: 4 hours
- Cardboard: up to 24 hours
- Plastic or stainless steel: 2 to 3 days

That's why it's important to disinfect surfaces to get rid of the virus.

Coronavirus Diagnosis

Call your doctor or local health department if you think you've been exposed and have symptoms like.

- Fever of 100 F or higher
- Cough
- Trouble breathing

In most states, decisions about who gets tested for COVID-19 are made at the state or local level.

A swab test looks for signs of the virus in your upper respiratory tract. The person giving the test puts a swab up your nose to get a sample from the back of your nose and throat. That sample goes to a lab that looks for viral material. If it's there, the test is positive. A negative test could mean there is no virus or there wasn't enough to measure. That can happen early in an infection. It usually takes 24 hours to get results, but the tests must be collected, stored, shipped to a lab, and processed.

The FDA is working with laboratories nationwide to develop more tests.

The agency is also granting emergency use authorizations to let doctors use tests it has yet to approve. These include tests that check your blood for things called antibodies. Your immune system makes antibodies in response to an infection.

A swab test can only tell whether you have the virus in your body at that moment. But an antibody test can show whether you've ever been exposed to the virus, even if you didn't have symptoms. This is important in officials' efforts to learn how widespread COVID-19 is. In time, it might also help them figure out who's immune to the virus.

There's no home testing kit for COVID-19. The FDA is cracking down on these bogus products.

Coronavirus Prevention

Take these steps

- Wash your hands with soap and water or clean them with an alcohol-based sanitizer. This kills viruses on your hands.
- **Practice social distancing.** Because you can have and spread the virus without knowing it, you should stay home as much as possible. If you do have to go out, stay at least 6 feet away from others.
- **Cover your nose and mouth in public.** If you have COVID-19, you can spread it even if you don't feel sick. Wear a cloth face covering to protect others. This isn't a replacement for social distancing. You still need to keep a 6-foot distance between yourself and those around you. Don't use a face mask meant for health care workers. And don't put a face covering on anyone who is.
- Under 2 years old

- Having trouble breathing
- Unconscious or can't remove the mask on their own for other reasons
- **Don't touch your face.** Coronaviruses can live on surfaces you touch for several hours. If they get on your hands and you touch your eyes, nose, or mouth, they can get into your body.
- **Clean and disinfect.** You can clean first with soap and water, but disinfect surfaces you touch often, like tables, doorknobs, light switches, toilets, faucets, and sinks. Use a mix of household bleach and water (1/3 cup bleach per gallon of water, or 4 teaspoons bleach per quart of water) or a household cleaner that's approved to treat SARS-CoV-2. You can check the Environmental protection agencies (EPA) website to see if yours made the list. Wear gloves when you clean and throw them away when you're done.

There's no proof that herbal therapies and this can prevent infection.

COVID-19 preparation tips

In addition to practicing the prevention tips listed above, it can:

- Meet as a household or larger family to talk about there needs what.
- If you have people at high risk, ask their doctor what to do.
- Talk to neighbors about emergency planning. Join your neighborhood chat group or website to remain in-tuned.
- Find community aid organizations that can help with health care, food delivery, and other supplies.
- Make an emergency contact list. Include family, friends, neighbors, carpool drivers, doctors, teachers, employers, and therefore the local health department.
- Choose a room (or rooms) where you can keep someone who's sick or who's been exposed separate from the rest of you.
- Talk with child's school about keeping up with assignments.
- Set yourself up to work from home if your office is closed.
- Reach out friends or family if you live alone. Make plans for them to check on you by phone or email.

Can a face mask protect you from infection?

The CDC recommends that wear a cloth face mask if we go out in public. This is another layer of protection for everybody, on top of social distancing efforts. virus can spreads when we talk or cough, even we don't know that you have it or if you aren't showing signs of infection.

Surgical masks and N95 masks should be reserved for health care workers and first responders, the CDC says.

Is it safe to travel during a pandemic?

Crowded places can raise chances of getting COVID-19. The CDC recommends against international or cruise

liner travel during the pandemic.

A few questions may help to decide whether it's safe to travel.

- Is the coronavirus spreading where we going?
- Will we have close contact with other people during the trip?
- at higher risk of severe illness if you catch the virus?
- We live with someone who has a serious medical condition?
- Would be able to stay home for 2 weeks if you came into contact with the virus on your trip?

If we choose to travel, stay away from sick people. Wash your hands often, and check out to not touch your face.

How can stop the spread of the corona?

the virus can spread from person to person, it's important to limit in contact with other people as much as possible. Some people add "essential businesses" that are vital to lifestyle, like health care, enforcement, and public utilities. Everyone else should stay home the maximum amount as possible. but might hear officials use these terms when they talk about staying home:

- Social distancing or physical distancing, keeping space between self and other people when they have to go out
- Quarantine, keeping someone home and separated from other people if they might have been exposed to the virus
- Isolation, keeping sick people away from healthy people, including using a separate "sick" bedroom and bathroom when possible

Coronavirus Vaccine

There's no vaccine, but intense research has been underway round the world since scientists shared the virus' genetic makeup in January 2020. Vaccine testing in humans started with record speed in March 2020. More than 100 vaccine projects are in various phases of development.

One vaccine called mRNA-1273 (which was developed by using messenger RNA) would tell your cells to pump out a protein which will kick-start your system to fight the virus. It's worked well in animals and is ready to test in humans.

Coronavirus Treatment

There's no specific treatment for COVID -19. People who get a light case need care to ease their symptoms, like rest, fluids, and fever control. Take over-the-counter drug for a pharyngitis, body aches, and fever. But don't give aspirin to children or teens younger than 19. You might have heard that you simply shouldn't take ibuprofen to treat COVID-19 symptoms -- the planet Health Organization made that statement in March 2020. But they reversed it soon after and said there's no proof that taking its causes any harm.

Antibiotics won't help because they treat bacteria, not viruses. If you hear about people with COVID-19 getting antibiotics, it's for an infection that came along side the disease.

People with severe symptoms got to be cared for within the hospital.

Many clinical trials are under thanks to explore treatments used for other conditions that would fight COVID-19 and to develop new ones.

Several studies are focused on an antiviral medication called remdesivir, which was created to fight Ebola.

An emergency FDA ruling lets doctors use hydroxychloroquine and chloroquine for people hospitalized with COVID-19 and in clinical trials to review them further. The medications are approved to treat malaria and autoimmune conditions like atrophic arthritis and lupus.

Clinical trials also are under way for tocilizumab, another medication wont to treat autoimmune conditions. And the FDA is additionally allowing clinical trials and hospital use of plasma from people who've had COVID-19 and recovered to assist others build immunity. we will know this called convalescent plasma.

Is there a cure for the new coronavirus?

There's no cure yet, but researchers are working to find one.

HIV AND CORONA TRANSMISSION

Can the New Coronavirus Be Spread Through Anal Sex? Researchers recently discovered that the novel coronavirus COVID-19 can be shed through a person's fecal matter. This has led some to wonder whether that might mean that the virus could be transmitted via anal sex or other sex practices, like rimming or fisting.

We can't say for certain yet exactly how this coronavirus is transmitted. We do know that if the virus is shed through fecal matter, there is the potential for it to be transmitted during anal sex. But we can't quantify the risk at this point.

So just be careful. If you've been in a situation with someone who has recently been traveling, if they're sick with COVID-19 and you're worried, the best practice would be to avoid anal sex practices—whether that be toys, rimming, or anal sex itself—until we know more information.

HIV and Coronavirus Prevention

How Can You Prevent Coronavirus Infection as a Person Living With HIV? In short:

- Wash your hands.
- Avoid travel and public gatherings.

- Rest and avoid stress.
- Take your HIV meds.
- Don't obsess over face masks.

If you're looking for your best weapon against the virus, the first one is the tried-and-true method of washing hands. When washing your hands, use soap and water for 15 to 20 seconds—or, if soap isn't available, a hand sanitizer that is at least 60% alcohol.

Other strategies include avoiding crowds, public places, and nonessential travel.

Also important: giving your body the rest it deserves. The main thing is to keep your immune system healthy. Getting enough sleep, resting, keeping stressful people and situations out of your life, getting your mental health checked up on.

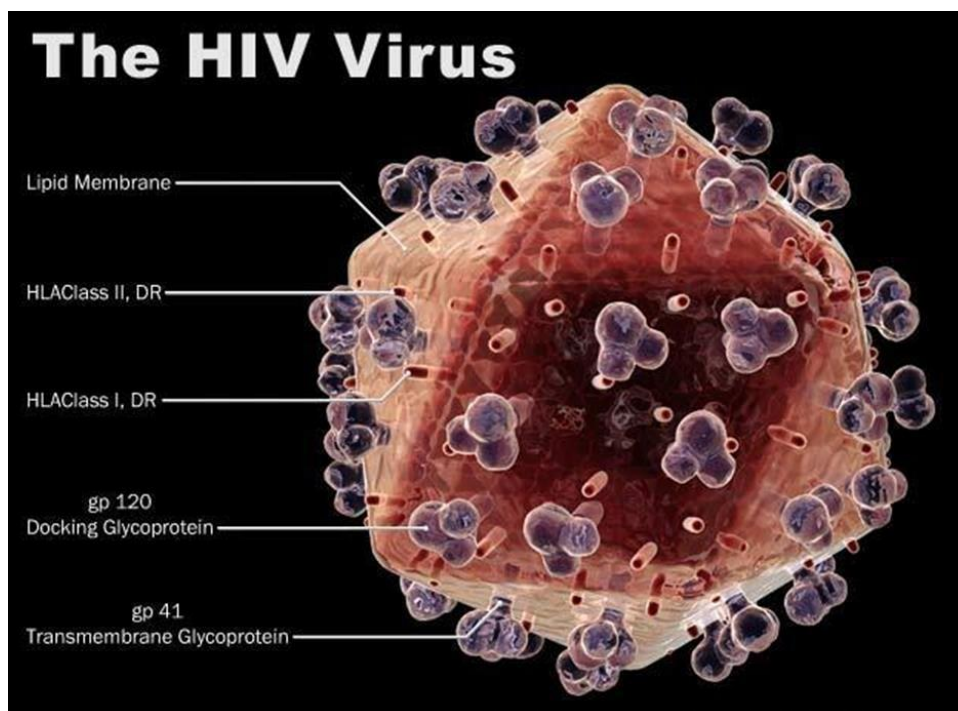
Take your HIV medications and stay virally suppressed. The higher your T-cell count (a.k.a. CD4 count) is, the

more your HIV is suppressed, the stronger your immune system will be. That will help you avoid exposure not only to something like the new coronavirus, but to all other viruses—like the flu—and other kinds of parasites and fungal infections.

If you are living with HIV and not currently on medication, now might be a good time to seek treatment.

What about face masks? Unfortunately, we don't really know if they prevent you from contracting the coronavirus. Especially those flimsy masks that they're selling in various places on the internet or in pharmacies nowadays.

But if someone is sick with a fever and coughing and short of breath, using a mask will help prevent them from passing it to someone else.



HIV and Coronavirus Testing

How Can You Get Tested for the New Coronavirus?

If you want to know about where you can get a test, your best bet is to ask your personal health care provider. You can also check the Centers for Disease Control and Prevention's designated coronavirus website. Current tests detect for the virus itself, rather than whether you've just been exposed. They are relatively accurate, but reports indicate they may have as much as a 10% false-negative rate.

We know that some people in the U.S. might not trust their governmental institutions at this juncture. But if you are looking for information, the Centers for Disease

Control and Prevention (CDC) is actually giving the most accurate, up-to-date information that we have.

HIV Care and Staying Healthy in the Coronavirus Era

How Can Work With HIV Care Provider to Prepare for Social Isolation?

Anybody with a chronic health condition—not just HIV—should talk to their doctor and other health care providers about how they can best take care of their health during this period. That means talking with providers about.

- Refilling at least a 30-day supply of all medications, including HIV meds (ask if 90 days is possible).
- Staying up-to-date on vaccinations.
- Planning for how to receive clinical care during isolation, including telehealth or other at-home options.
- Whether it's safe to delay upcoming check-ins, lab tests, or regimen switches.

What Do if people Living With HIV and Feeling Sick?

If you are feeling sick, but have not yet been tested for COVID-19, first call your primary care provider or a health care facility to get tested. There are also several steps you can take to stop the spread of the novel coronavirus, whether you're waiting for test results or have tested positive:

- Call ahead before seeing the doctor.
- Avoid all risk of contact with others.
- Consider a face mask.
- Don't share.

If you are going into any medical facility, either to get tested or just to see a doctor, it's a good practice to **call ahead of your appointment** to let them know you are showing potential symptoms. This gives the doctor's office a heads up to protect themselves and patients.

Make sure to **stay home—and leave only for medical care**. Avoid public transportation, including ride share cars and taxis. While at home, stay away from friends and family. Stay in a specific "sick room" if you can and use a separate bathroom if possible. If possible, stay away from pets and animals, and ask a loved one to care for pets.

Though face masks are not super beneficial as a preventative tool, they do have benefits if you are already sick, so **look into wearing one to stop the spread of respiratory droplets**. If a face mask is not available, make sure to cover your coughs and sneezes with your elbow, as described above. And, of course, wash your hands.

Other ways to minimize spread include **not sharing personal household items** and **cleaning all "high touch" surfaces** frequently. That means having your own:

- dishes
- drinking glasses
- cups
- eating utensils
- bedding

Also make sure to wash these items as often as possible.

Clean any surface—especially those in your kitchen, bathroom and "sick room"—every day.

Please stay in contact with your doctor about when you can stop home isolation. The CDC recommends **leaving home only after all three of these criteria are met**.

- You have not had a fever for 72 hours.
- Your other symptoms have improved.
- More than 7 days have passed since your first symptoms.

Can People Living With HIV Safely Travel During the Coronavirus Pandemic?

Well, let's just put it this way: **Nobody should be traveling**, whether they have a chronic illness or not. So, best keep your all your activities hyperlocal—like, inside your own home—for now.

Takeaway Advice on HIV and the New Coronavirus

We've seen many different types of questions about coronavirus risk, both from people who are living with HIV and people who are not. For all of them, we can go back to the basics for answers: Wash your hands, wash your hands, wash your hands.

When you cough, put the crease of your elbow against your mouth—and if you see someone coughing in a public space, ask them to do it, too. Don't cough over your hands, because your hands end up touching things. That's general practice—that's not just for avoiding COVID-19.

In addition, keeping a cool head is the best option. Don't panic. Don't freak out on all the things that are being portrayed in the media right now.

Manage your HIV: Stay on your meds, keep your immune system healthy, keep working out.

Keep exercising. If your gym is still open, or you're exercising somewhere other people have recently exercised, bring hand sanitizer, wash your hands vigorously, and wipe down equipment before and after using it.

And, one last time: Wash your hands.

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