

Adenovirus Infection and Outbreaks: What You Need to Know

Adenovirus is a type of virus that most commonly causes upper and lower respiratory infections. It can also cause a variety of other illnesses, including gastrointestinal infection, neurological infection, and eye infection. Recent cases of hepatitis outbreaks, including severe liver failure in children in Europe and the United States, have also been associated with adenovirus infection. In most of these cases, adenovirus infection causes mild disease, but in some cases, infection is severe enough to cause death. Investigations are ongoing given it is thought that adenovirus infection does not fully explain the more severe cases.

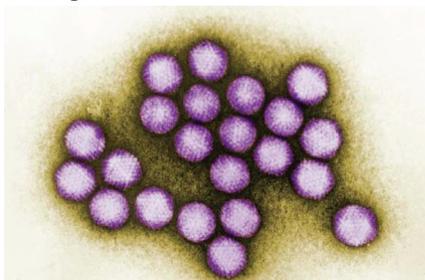


Outbreaks of adenovirus have become more common. Prior cases have included clusters of infections at college campuses, healthcare rehabilitation centers, and substance abuse treatment facilities. Outbreaks occur across the world and can affect hundreds of people such as those reported from high school and military facilities in Asia. Adenovirus infections can also occur in the general community.

What is adenovirus?

Adenovirus refers to a group of viruses that are a common cause of viral infections in all age groups. There are more than 50 types of adenoviruses that can cause disease in humans.

Once you are exposed to adenovirus, usually the period before symptoms appear (incubation period) varies from 2 days to 2 weeks. Most people will have symptoms in 5-6 days after exposure. A person can also become ill from the virus already being in the body (latent infection) and becoming active again (re-activating).



An electron micrograph shows adenovirus particles. Photo courtesy US Centers for Disease Control and Prevention.

How is adenovirus passed from person to person?

You can get infected with an adenovirus in different ways including:

- Close exposure to another person who has the virus
- Contact with a person's hands that have touched infected eyes (conjunctiva) or nose or cough mucus

- Touching a surface or object that is contaminated with the virus. This virus can survive up to 30 days on surfaces
- Breathing in virus from the air of a person who coughs or sneezes
- Contact with stool from a person with diarrhea
- Swimming in non-chlorinated water that contains the virus.

When do adenovirus infections occur and who is most at risk for infection?

Adenovirus infections can occur in any season but they tend to peak in the winter and early spring. Most adenovirus infections occur among young children (under 5 years of age). Adults who are in closed or crowded environments, such as in dormitories, military quarters, nursing homes, or hospitals are also at higher risk.

What are the symptoms of adenovirus infection?

Common problems and symptoms vary and may include any of the following:

- Respiratory (cough, fever, fast breathing, wheezing, sore throat)
- Common cold "upper respiratory infection"
- Bronchitis
- Pneumonia
- Gastrointestinal (GI)
- Diarrhea
- Hepatitis (liver)

Rare problems:

- Conjunctivitis (pink eye)
- Encephalitis (brain) – rare
- Myocarditis (heart) – rare

Most adenoviral infections are mild and go away without treatment. People with weakened immune systems are at higher risk of developing severe symptoms. Rarely, a person can have a severe illness that can result in respiratory and liver failure and death.

How are adenovirus infections diagnosed?

Adenovirus can be isolated by growing it in cell cultures in a laboratory, which takes several days. There are also rapid laboratory tests to detect adenoviral infection using nasal or throat swabs or sputum samples.

These tests use molecular based PCR and antigen detection to identify small amounts of viral DNA or protein. In severe cases, the virus can be detected in the blood.

How is adenovirus infection treated?

Many people with adenovirus infection do not require treatment due to the mild nature of symptoms. Symptom support care includes control of nasal secretions with saline washes and suctioning and breathing treatments if needed.

However, in some people, adenovirus can lead to severe disease and even death. People who have respiratory failure or severe GI symptoms, or hepatitis, or myocarditis or encephalitis or people who have low immune function (immunocompromised) may need hospitalization and treatment with an antiviral medication called cidofovir.

Are there vaccines against adenovirus?

The US FDA has approved a vaccine against certain types of the virus but it is only available for military use and is not currently available to the public.

How can adenovirus infection be prevented?

The first line of prevention is good hand hygiene (frequent hand washing or use of hand sanitizing gels). Avoid touching your eyes, nose and mouth with unwashed hands. You should try to avoid close contact with those who are sick. Anyone who is ill with the virus should stay home and avoid spreading the infection further. Virus shedding (released from the body) can continue for days to weeks even after the person recovers from the acute illness, therefore those who were infected can still spread to others even when they appear well.

Disinfection of fomites [fo-mites] (clothes, utensils and furniture) is difficult as the virus is resistant to many disinfectants. Clean surfaces with heat or bleach-containing products.

Should cases of adenovirus infection be reported?

There are currently two tracking (surveillance) systems in the United States that monitor adenoviral infections. Clinical labs that provide adenovirus testing report to these systems. No reporting is required by healthcare providers or patients.

Action Steps:

- ✓ If you suspect you have an adenovirus infection, stay home and avoid contact with others.
- ✓ Seek medical care if you have breathing problems or other severe symptoms.
- ✓ Use good handwashing or hand sanitizer to avoid infection.
- ✓ Clean all surfaces with bleaching-containing products that have been in contact with infected droplets or touched by a person who is ill.

Healthcare Provider's Contact Number:

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Resources:

American Thoracic Society

- www.thoracic.org/patients

Centers for Disease Control

- <https://www.cdc.gov/adenovirus/about/index.html>

American Academy of Pediatrics

- <https://www.healthychildren.org/English/health-issues/conditions/infections/Pages/Adenovirus-Infections.aspx>

Selected References

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CDC Alerts Providers to Hepatitis Cases of Unknown Origin/CDC Online Newsroom/CDC

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