CONDITION

Severe acute respiratory syndrome

Severe acute respiratory syndrome is a serious lung infection caused by the SARS-CoV-1 coronavirus.

WHAT IT IS
Acute viral breathing condition caused by SARS-CoV-1

BODY SYSTEM
Lungs and airways

MAIN SYMPTOMS
Fever, dry cough, muscle aches, shortness of breath

WHAT CAUSES IT
Infection with the SARS-CoV-1 coronavirus

HOW IT IS DIAGNOSED
Respiratory PCR and paired blood antibody tests

MAIN TREATMENT
Supportive care, including oxygen and intensive care

CAN IT BE CURED?
No - no proven virus-specific cure

IS IT AN EMERGENCY?
Sometimes - breathing difficulty or low oxygen

LONG-TERM OUTLOOK
Most recover; severe cases can be fatal or leave symptoms

Overview

Severe acute respiratory syndrome, usually called SARS, is a contagious respiratory condition caused by the coronavirus SARS-CoV-1. It mainly affects the lungs and can cause pneumonia, meaning inflammation and infection in the lungs.

SARS was first recognized during an international outbreak that began in 2002. Public health measures brought that outbreak under control. A small number of later cases were linked to laboratories or animal exposure. No sustained person-to-person transmission has been reported since 2004.

SARS is not the same as COVID-19. They are caused by related but different coronaviruses: SARS-CoV-1 causes SARS, while SARS-CoV-2 causes COVID-19.

SARS matters because some people become seriously unwell and need oxygen or intensive care. It can also spread in households and healthcare settings if infection-control measures are not in place. Because SARS is now exceptionally uncommon, symptoms such as fever and cough are much more likely to have another cause. A possible diagnosis would require both compatible symptoms and a relevant exposure history.

Symptoms

Symptoms usually begin within several days of infection, although the timing can be longer. The illness often starts with a high fever and a general feeling of being unwell.

Early symptoms may include:

A dry cough may develop after the first symptoms. Some people then become short of breath as pneumonia develops. A chest X-ray or CT scan may show areas of lung inflammation.

Symptoms can worsen during the second week. Falling oxygen levels may cause rapid breathing, difficulty speaking in full sentences, confusion, or a blue or grey colour around the lips. These signs require urgent medical attention.

Not everyone follows the same pattern. Mild infections have occurred, but SARS was more often recognized because it caused a significant fever and breathing illness.

- Fever or chills
- Headache and muscle aches
- Unusual tiredness
- Reduced appetite
- Diarrhea in some people

Causes and risk factors

SARS is caused by SARS-CoV-1. The virus is thought to have originated in animals before spreading to humans, although its complete pathway into people has not been established with certainty.

The virus mainly spreads through respiratory droplets and close contact. Droplets are small amounts of fluid released when an infected person coughs, sneezes, talks, or breathes. Infection may also spread through contaminated hands or surfaces if the virus is then transferred to the eyes, nose, or mouth.

Smaller airborne particles can be important in poorly ventilated spaces and during healthcare procedures that generate aerosols, such as inserting a breathing tube. During the original outbreak, transmission occurred most often after symptoms began and was especially important in households and healthcare facilities.

Risk is linked to exposure rather than ordinary day-to-day activities when there is no outbreak. Higher-risk situations include:

Among people who develop SARS, older adults and those with conditions such as diabetes or heart problems have a greater risk of severe illness. Children generally had milder illness during the original outbreak, though serious infection was still possible.

- Close contact with a person who has confirmed SARS
- Caring for an infected person without suitable protective equipment
- Working with SARS-CoV-1 in a laboratory
- Exposure to an outbreak identified by public health authorities

Diagnosis

SARS cannot be diagnosed from symptoms alone. Fever, cough, and pneumonia have many other possible causes, including influenza, COVID-19, and other viral or bacterial infections.

A healthcare team would first ask about recent travel, contact with a confirmed case, laboratory work, or another exposure identified by public health authorities. Without a relevant exposure, SARS is unlikely when there is no known outbreak.

Tests used to confirm infection include:

Confirmatory testing would normally be coordinated through specialist public health laboratories. More than one sample or testing method may be required because a sample taken early in the illness can be negative.

Chest X-rays, CT scans, oxygen measurements, and blood tests help assess the lungs and severity of illness. They do not confirm SARS by themselves.

- PCR testing: Detects genetic material from SARS-CoV-1 in respiratory samples, blood, or stool
- Antibody testing: Looks for an immune response in blood, usually by comparing samples taken at different times
- Virus isolation: Attempts to grow the virus in a specialist laboratory

Treatment and management

There is no proven antiviral treatment that specifically cures SARS-CoV-1 infection. Care focuses on supporting the body while the immune system clears the infection.

People with suspected or confirmed SARS are managed using strict infection-control precautions. This protects family members, other patients, and healthcare workers. Depending on illness severity, treatment may include:

Mechanical ventilation uses a machine to support breathing, usually through a tube placed in the windpipe. In the most severe cases, specialist intensive care may be needed.

Antibiotics like amoxicillin or doxycycline do not treat SARS-CoV-1 because antibiotics work against bacteria, not viruses. They may be used if a separate bacterial infection is suspected.

Several antiviral and immune-suppressing treatments, including ribavirin and corticosteroids like prednisone or hydrocortisone , were used during the original outbreak. Research did not establish a consistently effective drug treatment, and some therapies caused harm. Historical treatment reports should not be treated as instructions for current care.

Public health teams would also identify and monitor close contacts. Isolation and contact tracing are parts of outbreak control, not signs that someone has done anything wrong.

- Fluids and support with eating
- Medicines for fever, pain, or nausea
- Oxygen for low blood oxygen levels
- Close monitoring of breathing and organ function
- Mechanical ventilation if the lungs cannot provide enough oxygen

Complications

The main complication is severe pneumonia with low oxygen levels. Some people develop acute respiratory distress syndrome, or ARDS. This is intense inflammation and fluid leakage in the lungs that makes oxygen transfer difficult.

Other possible complications include:

Some survivors have reported reduced exercise capacity, breathlessness, tiredness, sleep problems, anxiety, depression, or symptoms related to traumatic experiences. Recovery can also be affected by complications of intensive care or treatments used during the original outbreak.

Not everyone develops complications. The risk is greater in people with severe lung involvement, older adults, and those with certain long-term health conditions.

- Respiratory failure requiring mechanical ventilation
- Secondary bacterial or fungal infections
- Heart, kidney, or liver injury during severe illness
- Blood-clotting problems
- Weakness and loss of fitness after a long hospital stay

Prevention

SARS cannot always be prevented after a close, unprotected exposure. There is no routinely available vaccine against SARS-CoV-1.

When there is no active outbreak, special SARS precautions are not generally needed in everyday life. If public health authorities identify a case or outbreak, prevention focuses on interrupting transmission.

Measures may include:

Because SARS is rare, public health instructions would be tailored to the specific exposure. Someone asked to isolate or monitor symptoms should follow the instructions provided, even if they initially feel well.

- Rapid isolation of suspected or confirmed cases
- Appropriate masks and protective equipment in healthcare settings
- Good ventilation and careful hand hygiene
- Cleaning contaminated surfaces and medical equipment
- Monitoring or temporarily limiting contact for exposed people
- Safe handling of laboratory samples

Living with it and what to expect

SARS is an acute condition rather than a lifelong infection. Symptoms develop over days, and people who become seriously unwell may spend weeks in hospital. Recovery after discharge may take additional weeks or months.

Many survivors regain good lung function and return to usual activities. Others have continuing

fatigue, breathlessness, reduced exercise tolerance, muscle weakness, or emotional distress. These effects may improve gradually, but the course is not identical for everyone.

Follow-up may include checking oxygen levels, lung function, mobility, and mental wellbeing. Rehabilitation can help rebuild strength and confidence after intensive care. Support may also be needed for anxiety, low mood, sleep disturbance, or fear related to infection and isolation.

There is no evidence that people who recover remain continuously infectious. During an outbreak, decisions about ending isolation would be based on public health criteria and test results rather than symptoms alone.

Routine follow-up is appropriate if breathlessness, fatigue, weakness, or distress continues after recovery. A sudden worsening in breathing or new chest pain needs more urgent assessment.

When to get medical help

In the absence of a recognized outbreak or relevant exposure, fever and cough are unlikely to be SARS. They can still need medical advice, particularly if symptoms are persistent or worsening.

Seek prompt medical advice if you develop fever or breathing symptoms after:

Contact the service before arriving at a clinic or hospital. Explain the possible exposure so staff can arrange appropriate infection-control measures. Do not use public transport if public health officials have told you to isolate.

Call emergency services for:

Tell the emergency service about any possible SARS exposure. This helps responders protect you and others.

- Close contact with someone confirmed to have SARS
- Working with SARS-CoV-1 in a laboratory
- Being in an area where public health authorities have reported transmission
- Receiving instructions to monitor for SARS symptoms
- Severe difficulty breathing
- Blue, grey, or unusually pale lips or skin
- New confusion, collapse, or extreme drowsiness
- Severe or persistent chest pain

- Signs of very low oxygen, if you are monitoring it under medical advice

Common questions

Is SARS still around?

SARS-CoV-1 remains known to science, but no sustained person-to-person transmission has been reported since 2004. Laboratories and public health agencies continue surveillance because future accidental or animal-related exposures are possible.

Is SARS the same as COVID-19?

No. SARS is caused by SARS-CoV-1, while COVID-19 is caused by SARS-CoV-2. Both viruses are coronaviruses and can cause serious lung illness, but their patterns of spread and global impact have been different.

Can you survive SARS?

Yes. Most recognized patients in the original outbreak survived, although some became critically ill and some died. Age, underlying health, and the severity of lung involvement affected the outcome.

Is there a vaccine for SARS?

There is no routinely available vaccine specifically for SARS-CoV-1. COVID-19 vaccines are designed for SARS-CoV-2 and should not be assumed to prevent SARS.

How do you know if a cough is SARS?

A cough cannot identify SARS. Diagnosis requires compatible symptoms, a credible exposure, and specialist laboratory testing. When there is no known transmission, common respiratory infections are far more likely.

Can SARS come back?

Another case or outbreak is possible because coronaviruses can exist in animals and SARS-CoV-1 is handled in specialist laboratories. Public health surveillance, laboratory safety, isolation, and contact tracing are intended to identify and contain any future cases quickly.

Sources

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