



# SEVERE ACUTE RESPIRATORY SYNDROME

## Frequently Asked Questions: Severe Acute Respiratory Syndrome (SARS)

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### GENERAL INFORMATION

#### The Illness

##### What is SARS?

Severe acute respiratory syndrome (SARS) is a respiratory illness that has recently been reported in Asia, North America, and Europe. For additional information, check the World Health Organization's (WHO) SARS Web site or visit other pages on CDC's SARS Web site at [www.cdc.gov/ncidod/sars](http://www.cdc.gov/ncidod/sars).

##### What are the symptoms and signs of SARS?

The illness usually begins with a fever (measured temperature greater than 100.4°F [ $>38.0^{\circ}\text{C}$ ]). The fever is sometimes associated with chills or other symptoms, including headache, general feeling of discomfort and body aches. Some people also experience mild respiratory symptoms at the outset.

After 2 to 7 days, SARS patients may develop a dry, nonproductive cough that might be accompanied by or progress to the point where insufficient oxygen is getting to the blood. In 10 percent to 20 percent of cases, patients will require mechanical ventilation. For more information, see the MMWR dispatch at [www.cdc.gov/mmwr/preview/mmwrhtml/mm5212a5.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5212a5.htm).

##### If I were exposed to SARS, how long would it take for me to become sick?

The incubation period for SARS is typically 2 to 7 days; however, isolated reports have suggested an incubation period as long as 10 days. The illness usually begins with a fever ( $>100.4^{\circ}\text{F}$  [ $>38.0^{\circ}\text{C}$ ]) (see signs and symptoms, above).

##### What medical treatment is recommended for patients with SARS?

CDC currently recommends that patients with SARS receive the same treatment that would be used for any patient with serious community-acquired atypical pneumonia of unknown cause.

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### **Health-Care Settings**

#### **What has CDC recommended to prevent transmission of SARS in the health-care setting?**

Transmission of SARS to health-care workers appears to have occurred after close contact with symptomatic individuals before recommended appropriate infection control precautions were implemented. CDC has developed interim infection control recommendations for the management of exposures to SARS in the health-care and other institutional settings. Visit [www.cdc.gov/ncidod/sars/exposureguidance.htm](http://www.cdc.gov/ncidod/sars/exposureguidance.htm) to read these recommendations.

Health-care facilities should be vigilant in conducting active surveillance for fever or respiratory symptoms among care givers with unprotected exposure to SARS patients. Health-care workers who develop fever or respiratory symptoms during the 10 days following an unprotected exposure to a SARS patient should not report for duty. Such workers should stay home and report symptoms to the appropriate facility point of contact (e.g., infection control or occupational health) immediately. Exclusion from duty should be continued for 10 days after the resolution of fever and respiratory symptoms. During this period, infected workers should avoid contact with people both in the facility and in the community.

Exclusion from duty is not recommended for an exposed health-care worker if they do not have fever or respiratory symptoms; however, the worker should report any unprotected exposure to SARS patients to the appropriate facility point of contact immediately.

#### **What precautions should health-care facilities follow regarding visits by close contacts of SARS patients?**

Close contacts (e.g., family members or other members of the household) of SARS patients are at risk for infection. Health-care facilities should implement a system to screen for fever or respiratory symptoms among such contacts who visit the facility. Close contacts with fever or respiratory symptoms should not be allowed to enter the health-care facility as visitors and should be educated about this policy. Health-care facilities should educate all visitors about use of infection control precautions ([www.cdc.gov/ncidod/sars/infectioncontrol.htm](http://www.cdc.gov/ncidod/sars/infectioncontrol.htm)) when visiting SARS patients and should emphasize the importance of following these precautions.

### **Travel and Quarantine**

#### **Are there any travel restrictions related to SARS?**

At this time there are no travel restrictions in place that are directly related to SARS. However, a CDC travel advisory recommends that individuals who are planning nonessential or elective travel to the People's Republic of China (i.e., mainland China and Hong Kong); Hanoi, Vietnam; or Singapore may wish to postpone their trip until further notice. CDC also has issued a travel alert for Toronto, Canada, to recommend that U.S. travelers to Toronto observe precautions to safeguard their health. For additional information about travel advisories, check CDC's Travelers' Health site at [www.cdc.gov/travel/other/acute\\_resp\\_syn\\_multi.htm](http://www.cdc.gov/travel/other/acute_resp_syn_multi.htm), which will be updated as necessary.

#### **What if I must travel to a country where there is community spread of SARS? What precautions can I take?[e1]**

As with all infectious illnesses, the first line of defense is careful hand hygiene. As a general rule, it is good practice to wash hands frequently with soap and water; if hands are not visibly soiled, alcohol-based hand rubs may be used as an alternative.

To minimize the possibility of infection, you may wish to avoid close contact with large numbers of people as much as possible. CDC does not recommend the routine use of masks while in public areas.

For more information, visit CDC's website at <http://www.cdc.gov/ncidod/sars/travel.htm> and specifically

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CDC will work with appropriate State and local officials to ensure that the passenger does not infect others.

### **Other**

#### **Is there any reason to think SARS is or is not related to terrorism?**

Information currently available about SARS indicates that people who appear to be most at risk are either health-care workers taking care of sick people or family members or household contacts of those who are infected with SARS. That pattern of transmission is what would typically be expected in a contagious respiratory or flu-like illness.

### **CDC RECOMMENDATIONS**

#### **Personal and Household**

##### **What should I do if I think I have SARS?**

If you are ill with a fever greater than 100.4°F (>38.0°C) that is accompanied by a cough or difficulty breathing or that progresses to a cough and/or difficulty breathing, you should consult a health-care provider. To help your health-care provider make a diagnosis, tell him or her about any recent travel to regions where cases of SARS have been reported and whether you were in contact with someone who had these symptoms.

##### **What has CDC recommended to prevent transmission of SARS in households?**

CDC has developed interim infection control recommendations available at [www.cdc.gov/ncidod/sars/ic-closecontacts.htm](http://www.cdc.gov/ncidod/sars/ic-closecontacts.htm) for patients with suspected SARS in the household. The basic precautions outlined in this document include the following:

- Infection control precautions should be continued for SARS patients for 10 days after respiratory symptoms and fever are gone. SARS patients should limit interactions outside the home and should not go to work, school, out-of-home day care, or other public areas during the 10-day period.
- During this 10-day period, all members of the household with a SARS patient should carefully follow recommendations for hand hygiene, such as frequent hand washing or the use of alcohol-based hand rubs.
- Each patient with SARS should cover his or her mouth and nose with a tissue before sneezing or coughing. If possible, a person recovering from SARS should wear a surgical mask during close contact with uninfected persons. If the patient is unable to wear a surgical mask, other people in the home should wear one when in close contact with the patient.
- Disposable gloves should be considered for any contact with body fluids from a SARS patient. However, immediately after activities involving contact with body fluids, gloves should be removed and discarded, and hands should be washed. Gloves should not be washed or reused, and are not intended to replace proper hand hygiene.
- SARS patients should avoid sharing eating utensils, towels, and bedding with other members of the household, although these items can be used by others after routine cleaning, such as washing or laundering with soap and hot water.
- Common household cleaners are sufficient for disinfecting toilets, sinks, and other surfaces touched by patients with SARS, but the cleaners must be used frequently.
- Other members of the household need not restrict their outside activities unless they develop symptoms of SARS, such as a fever or respiratory illness.

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### **What does a quarantine inspector do?**

Quarantine inspectors serve as important guardians of health at borders and ports of entry into the United States. They routinely respond to illness in arriving passengers and ensure that the appropriate medical action is taken.

### **What is considered routine health inspections of airplanes or ships versus what is happening now?**

Routine health inspections consist of working with airline, cargo ship, and cruise ship companies to protect passengers and crew from certain infectious diseases. Quarantine inspectors meet arriving aircraft and ships reporting ill passengers and/or crew (as defined in the foreign quarantine regulations [[pdf](http://www.cdc.gov/ncidod/dq/pdf/42cfr71.pdf)] [www.cdc.gov/ncidod/dq/pdf/42cfr71.pdf](http://www.cdc.gov/ncidod/dq/pdf/42cfr71.pdf)) and assist them in getting appropriate medical treatment.

### **What is the risk to individuals who may have shared a plane or boat trip with a suspected SARS patient?**

Cases of SARS continue to be reported primarily among people who have had direct close contact with an infected person, such as those sharing a household with a SARS patient and health-care workers who did not use infection control procedures while attending to a SARS patient. SARS also has occurred among air travelers, primarily travelers to and from Hong Kong, Hanoi, Singapore, and mainland China.

CDC is requesting locating information from travelers who are on flights with people suspected of having SARS. CDC, with the help of state and local health authorities, is attempting to follow-up with these travelers for 14 days to make sure no one develops symptoms consistent with SARS.

### **Who actually notifies quarantine officials of potential SARS cases? Is it the crew of the airplane or ship? The passengers?**

Under foreign quarantine regulations, the master of a ship or captain of an airplane coming into the United States from a foreign port is required by law to report certain illnesses among passengers. The illness must be reported to the nearest quarantine official. If possible, the crew of the airplane or ship will try to relocate the ill passenger or crew member away from others. If the passenger is only passing through a port of entry on his/her way to another destination, port health authorities may refer the passenger to a local health authority for assessment and care.

### **If I'm on board an airplane or ship with someone suspected of having SARS, will I be allowed to continue to my destination?**

CDC does not currently recommend that the onward travel of healthy passengers be restricted in the event that a passenger or crew member suspected of having SARS is removed from the ship or airplane by port health authorities. All passengers and crew members may be advised by port health authorities to seek medical attention if they develop SARS symptoms.

### **What does a quarantine official do if a passenger is identified as meeting the case definition for suspected SARS?**

Quarantine officials arrange for appropriate medical assistance to be available when the airplane lands or the ship docks, including medical isolation. Isolation is important not only for the sick passenger's comfort and care but also for the protection of members of the public. Isolation is recommended for travelers with suspected cases of SARS until appropriate medical treatment can be provided or until they are no longer infectious.

### **What does a quarantine official do if a passenger identified as meeting the case definition for suspected SARS refuses to be isolated?**

Many levels of government (Federal, State, and local) have basic authority to compel isolation of sick persons to protect the public. In the event that it is necessary to compel isolation of a sick passenger,

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### **The Outbreak**

#### **How many cases of SARS have been reported so far?**

Visit WHO's SARS page at [www.who.int/csr/sars/en/](http://www.who.int/csr/sars/en/) for daily updates on case reports in the United States and other countries. To date, most of the cases have been reported from China.

#### **How many people have died from SARS?**

Visit WHO's SARS page at [www.who.int/csr/sars/en/](http://www.who.int/csr/sars/en/) for a daily update of SARS cases and deaths.

#### **What is CDC doing to combat this health threat?**

CDC is working closely with WHO and other partners as part of a global collaboration to address the SARS outbreak. For its part in this international effort, CDC has taken the following actions:

- Activated its Emergency Operations Center to provide round-the-clock coordination and response.
- Committed more than 300 infectious disease experts and support staff to work on the SARS response.
- Deployed medical officers, epidemiologists, and other specialists to assist with on-site investigations around the world.
- Provided ongoing assistance to state and local health departments in investigating possible cases of SARS in the United States.
- Issued multiple notices providing guidance on ways to minimize the risk for SARS in health-care facilities, in the household, when traveling, and in other settings.
- Conducted extensive laboratory testing of clinical specimens from SARS patients to identify the cause of the disease.
- Initiated a system for distributing health alert notices to travelers who may have been exposed to cases of SARS.

As always, CDC is committed to communicating regularly and effectively with public health professionals, elected leaders, clinicians, and the general public.

### **Travel and Quarantine**

#### **What are CDC's quarantine officials doing to prevent and control the spread of SARS?**

CDC's quarantine inspectors or their designees are distributing health alert cards ([www.cdc.gov/ncidod/sars/travel\\_alert.htm](http://www.cdc.gov/ncidod/sars/travel_alert.htm)) to air passengers returning in airplanes either directly or indirectly to the United States from China, Singapore, and Vietnam. The notices inform travelers about SARS and its symptoms and asks them to monitor their health for 10 days and to see a doctor if they get a fever with a cough or have difficulty breathing. CDC distributes approximately 18,000 health alert notices each day to air travelers returning from the affected regions at 23 ports of entry. Inspectors also are boarding airplanes if a traveler has been reported with symptoms matching the case definition of SARS.

WHO has recommended procedures ([www.who.int/csr/sars/travel/en/](http://www.who.int/csr/sars/travel/en/)) for pre-departure screening of airline passengers from some countries for respiratory illnesses or other symptoms of SARS.

#### **What information about SARS is being provided to people traveling on ships?**

SARS information contained on CDC's health alert cards is being provided by the major shipping associations and the International Council of Cruise Lines to people traveling on cargo ships and cruise ships at U.S. ports. Inspectors also are boarding ships if a passenger or crew member has been reported with symptoms matching the case definition of SARS.

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of the new coronavirus survived as long as 24 hours in the environment. Additional studies are under way to examine this important question.

### **Can coronaviruses be found in feces?**

It is not uncommon for respiratory viruses to be found in feces for a period of time. Some laboratories in the WHO network have reported finding the new coronavirus in stool specimens. Research is under way in the United States and other countries to learn more about the presence and concentration of the virus in different body fluids, including feces. Researchers also are evaluating if the virus can spread to others through different body fluids.

### **What evidence is there to suggest that coronaviruses may be linked with SARS?**

CDC scientists isolated a virus from the tissues of two SARS patients and then used several laboratory methods to characterize it. Examination by electron microscopy revealed that the virus has the distinctive shape and appearance of coronaviruses, and genetic analysis suggests that this new virus does belong to the family of coronaviruses but differs from previously identified family members. Tests of serum specimens from people with SARS showed that they appeared to have been recently infected with this virus. Other tests demonstrated that this previously unrecognized coronavirus was present in a variety of clinical specimens (including specimens obtained by nose and throat swab) from other SARS patients with direct or indirect links to the outbreak. These results and other findings reported from laboratories participating in the World Health Organization (WHO) network provide growing evidence in support of the hypothesis that this new coronavirus is the cause of SARS. Additional studies of the link between this coronavirus and SARS are under way.

### **If coronaviruses usually cause mild illness in humans, how could this new coronavirus be responsible for a potentially life-threatening disease such as SARS?**

There is not enough information about the new virus to determine the full range of illness that it might cause. Coronaviruses have occasionally been linked to pneumonia in humans, especially people with weakened immune systems. The viruses also can cause severe disease in animals, including cats, dogs, pigs, mice, and birds.

### **Has new information about coronavirus changed the recommendations for medical treatment for patients with SARS?**

The possibility that coronavirus is the cause of SARS has not changed treatment recommendations. The new coronavirus is being tested against various antiviral drugs to see if an effective treatment can be found.

### **Is there a test for SARS?**

No "test" is available yet for SARS. However, CDC, in collaboration with WHO and other laboratories, has developed 2 research tests that appear to be very promising in detecting antibodies to the new coronavirus. CDC is working to refine and share this testing capability as soon as possible with laboratories across the United States and internationally.

### **What about reports from other laboratories suggesting that the cause of SARS may be a paramyxovirus?**

Researchers from several laboratories participating in the WHO network have reported the identification of a paramyxovirus in clinical specimens from SARS patients. These laboratories are still investigating the possibility that a paramyxovirus is a cause of SARS.

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### **Is the use of ribavirin (or other antiviral drugs) effective in the treatment of patients with SARS?**

At present, the most efficacious treatment regimen, if any, is unknown. In several locations, therapy has included antivirals such as oseltamivir or ribavirin. Steroids also have been given orally or intravenously to patients in combination with ribavirin and other antimicrobials. In the absence of controlled clinical trials, however, the efficacy of these regimens remains unknown. Early information from laboratory experiments suggests that ribavirin does not inhibit virus growth or cell-to-cell spread of one isolate of the new coronavirus that was tested. Additional laboratory testing of ribavirin and other antiviral drugs is being done to see if an effective treatment can be found.

### **Spread of SARS**

#### **How is SARS spread?**

The primary way that SARS appears to spread is by close person-to-person contact. Most cases of SARS have involved people who cared for or lived with someone with SARS, or had direct contact with infectious material (for example, respiratory secretions) from a person who has SARS. Potential ways in which SARS can be spread include touching the skin of other people or objects that are contaminated with infectious droplets and then touching your eye(s), nose, or mouth. This can happen when someone who is sick with SARS coughs or sneezes droplets onto themselves, other people, or nearby surfaces. It also is possible that SARS can be spread more broadly through the air or by other ways that are currently not known.

#### **How long is a person with SARS infectious to others?**

Information to date suggests that people are most likely to be infectious when they have symptoms, such as fever or cough. However, it is not known how long before or after their symptoms begin that patients with SARS might be able to transmit the disease to others.

#### **Who is most at risk of contracting SARS?**

In the United States, cases of SARS continue to be reported primarily among people who have had direct close contact with an infected person, such as those sharing a household with a SARS patient and health-care workers who did not use infection control procedures while caring for a SARS patient. CDC continues to monitor this situation very closely.

### **Cause of SARS**

#### **What is the cause of SARS?**

Scientists at CDC and other laboratories have detected a previously unrecognized coronavirus in patients with SARS. This new coronavirus is the leading hypothesis for the cause of SARS, however, other viruses are still under investigation as potential causes.

#### **What are coronaviruses?**

Coronaviruses are a group of viruses that have a halo or crown-like (corona) appearance when viewed under a microscope. These viruses are a common cause of mild to moderate upper-respiratory illness in humans and are associated with respiratory, gastrointestinal, liver and neurologic disease in animals.

#### **How long do coronaviruses survive in the environment?**

In general, enveloped viruses such as coronaviruses do not last a long time in the environment. In earlier studies, a different coronavirus was shown to survive for up to 3 hours on surfaces. At this time, it is uncertain how long the newly discovered coronavirus associated with SARS can survive in the environment. In one preliminary study, researchers in Hong Kong found that both dried and liquid samples

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read the [Interim Guidelines about Severe Acute Respiratory Syndrome \(SARS\) for Persons Traveling to SARS-Affected Areas](#).

### **What should I do if I have recently traveled to a country where cases of SARS have been reported?**

You should monitor your own health for 10 days following your return. If you become ill with a fever of more than 100.4°F [ $>38.0^{\circ}\text{C}$ ] that is accompanied by a cough or difficulty breathing or that progresses to a cough and/or difficulty breathing, you should consult a health-care provider. To help your health-care provider make a diagnosis, tell him or her about any recent travel to regions where cases of SARS have been reported and whether you were in contact with someone who had these symptoms.

### **CDC has recommended guidelines for medical aircraft that transport SARS patients. Should commercial airlines also follow these guidelines?**

No. This guidance (available at [www.cdc.gov/ncidod/sars/airtransport-sarspatients.htm](http://www.cdc.gov/ncidod/sars/airtransport-sarspatients.htm)) is intended specifically for air medical transport (AMT) service providers that use specialized aircraft to transport SARS patients. It should not be generalized to commercial passenger aircraft. These interim recommendations for AMT are based on standard infection control practices, AMT standards, and epidemiologic information from ongoing investigations of SARS, including experience from transport of 2 patients during this outbreak. Specific guidelines for airline crew and flight personnel of commercial aircrafts are available at [www.cdc.gov/ncidod/sars/flight\\_crew\\_guidelines.htm](http://www.cdc.gov/ncidod/sars/flight_crew_guidelines.htm). CDC also has developed interim guidance for cleaning of commercial passenger aircraft after a flight with a suspected SARS passenger (see [www.cdc.gov/ncidod/sars/aircraftcleanup.htm](http://www.cdc.gov/ncidod/sars/aircraftcleanup.htm)).

For more information, visit [www.cdc.gov/ncidod/sars](http://www.cdc.gov/ncidod/sars) or call the CDC public response hotline at (888) 246-2675 (English), (888) 246-2857 (Español), or (866) 874-2646 (TTY)

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