



SEVERE ACUTE RESPIRATORY SYNDROME

FACT SHEET

Guidance for Surveillance and Early Detection of SARS

In the spring of 2003, an atypical pneumonia emerged that would later be named Severe Acute Respiratory Syndrome, or SARS. By the time the initial outbreak of SARS was contained, 8437 cases were diagnosed and 813 deaths were attributed to SARS worldwide. The disease first emerged in China, and proved to be highly contagious, spreading to Hong Kong, Taiwan, Singapore, the Philippines, Viet Nam, Canada, the United States and other countries before it was contained. In those countries which experienced the brunt of the outbreak, health care workers were a primary population at risk for contracting SARS.

The United States reported only 8 confirmed cases of SARS, with 184 cases where SARS could not be determined or ruled out definitively. The use of a sensitive case definition in the U.S. promoted early case detection; however, the vast majority of febrile respiratory infections were not SARS. No definitive answers exist to explain why the United States was spared from a major outbreak.

Findings from global SARS surveillance include:

- Global travel facilitated the spread of SARS
- Healthcare facilities played a central role in the epidemiology of SARS as the following were at higher risk for acquiring SARS:
 - Healthcare workers
 - Visitors and inpatients
- The majority of SARS cases were exposed to another patient with SARS
- Transmission was variable and localized:
 - Differed by country
 - Differed by setting: community vs. hospitals

Health experts at WHO, CDC, and elsewhere believe it is simply a matter of time before SARS resurfaces. Because of the extremely contagious nature of the disease, a single undetected case may lead to widespread transmission of SARS.

Surveillance Rationale and Objectives

Surveillance is the foundation of preparing for the potential re-emergence of SARS. Key components of SARS surveillance include identification of cases, identification, evaluation and monitoring of close contacts of cases, and timely reporting and tracking of cases. Containment of SARS depends on early detection of cases because of the highly communicable nature of the disease. Risk of exposure to another person who has the disease is a key factor in making a diagnosis of SARS in a person with respiratory illness.

Objectives of SARS surveillance in the United States include:

- Early detection of SARS-CoV cases in the absence of recognized SARS activity worldwide
- Rapid identification and evaluation of close contacts of cases

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The potential for rapid global spread of the disease requires collaboration between public health workers and healthcare providers throughout the United States and the world. Global cooperation among agencies responsible for public health is critical because SARS activity in any location worldwide may have a global impact. It is most likely to emerge outside of the United States, but failure to diagnose early cases could lead to the unchecked and rapid spread of the disease. This puts the population of the United States as much at risk as the populations of other countries worldwide.

Potential source of re-emergence of SARS include:

- Animal reservoir
- Humans with persistent infection
- Unrecognized transmission in humans
- Laboratories

Preparations during the period when there is no known SARS activity in the world are essential to effective surveillance when the disease re-emerges. The compilation and dissemination of information on global SARS activity is important to guide surveillance planning. Astute clinicians and laboratorians will be in the front line to diagnose and confirm the earliest cases when SARS resurfaces.

In the event that early cases are not detected overseas, the healthcare community in the United States must be vigilant in identifying "sentinel" cases here. Potential "sentinel" cases include persons from high-risk groups who are hospitalized for unexplained pneumonia. These high-risk groups include healthcare workers, travelers to areas previously affected by SARS, and any cluster of persons with pneumonia of unclear etiology.

Detecting "Sentinel" Cases of SARS in the Absence of Activity Worldwide

During the period when there is no known SARS activity in the world, the task of identifying the first "sentinel" cases of SARS will not be simple. Symptoms of SARS are non-specific and resemble many other respiratory illnesses, making it difficult to distinguish from other respiratory infections clinically.

As yet, no rapid diagnostic test exists to allow confirmation or exclusion of SARS within the first few days of infection. In the absence of epidemiological links to other cases, detection of the first "sentinel" cases of SARS will depend on astute clinicians. Certain groups are at increased risk for SARS and may be the first people to present for care for SARS infection. Healthcare providers should ask all people hospitalized with CXR-confirmed pneumonia 3 key screening questions:

1. "Do you have a history of recent travel (within 10 days) to a previously SARS-affected area or close contact with ill persons with a history of travel to such areas?"
2. "Are you employed as a health care worker with direct patient contact?"
3. "Do you have close contacts who have been told they have pneumonia?"

If the answer to any of the 3 screening questions is "yes", healthcare providers will need to:

- Institute droplet precautions
- Notify state or local health department
- Consider SARS testing if no alternative diagnosis is found within 72 hours

Testing for SARS-Coronavirus (CoV) should only be done in consultation with state/local health department. Clinicians should report people hospitalized with pneumonia who answer "yes" to at least one of 3 questions, clusters of unexplained pneumonia in healthcare workers or among close contacts, and any positive SARS-CoV test, to public health authorities.

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SARS-CoV testing should be used judiciously. Current SARS tests can be sensitive and specific. However, in a low-disease prevalence setting, the positive predictive value is quite low. Therefore, indiscriminate use of the test will likely cause false positive results.

State and local health officials have an important role to play in preparing for the re-emergence of SARS and detecting early cases. As guardians of the public health, they are key players in ensuring that healthcare workers understand and implement proper surveillance strategies and tactics. State and local health officials will need to:

- Disseminate guidelines to providers on timely recognition, evaluation and reporting of possible SARS
- Establish surveillance system
- Review individual reports from providers to further assess the likelihood of SARS in persons hospitalized for pneumonia
 - Identify clusters of pneumonia of unknown etiology
 - Identify cases raising further index of suspicion for SARS (i.e., ill travelers who were exposed to persons with pneumonia while traveling; healthcare workers who are part of a pneumonia cluster and who work in the same facility)
- Report to CDC any SARS-CoV positive tests immediately

Detection and Surveillance Should SARS Re-Emerge

Efforts at case-finding should be increased and surveillance should be more sensitive as likelihood of SARS infections in a community rise. The level of surveillance and response activities should be adapted to the situation in a specific community or facility. Accelerated surveillance includes the evaluation of patients with early or mild respiratory symptoms for SARS infection. Triggers for accelerated surveillance include a significant increase in the number of SARS cases in an area and documented or suspected disease transmission without known epidemiologic links.

Health care providers will continue to be the first line of surveillance in the event that SARS is detected in the United States. They will need to ask the three screening questions outlined previously. In addition, they are recommended to screen all patients presenting with fever or respiratory symptoms for the following SARS risk factors:

- Travel within 10 days of illness onset to foreign or domestic location with recent local transmission of SARS-CoV
- Close contact within 10 days of illness onset with a person who has known or suspected SARS infection
- Exposure to a facility or setting with recent or ongoing SARS transmission

If the patient is at risk for SARS, then health care providers will need to begin droplet precautions and follow the clinical diagnostic testing algorithm (link here to the clinician fact sheet containing the algorithm). All potential cases of SARS-CoV should be reported to public health officials.

In the hospital setting, authorities should be alert for clusters of pneumonia among health care providers. Depending on the level of ongoing SARS transmission in the surrounding community and the facility, surveillance in health care facilities can be accelerated to include one or more of the following:

- Daily monitoring of health care workers

Comment: Web team: insert link here to clinical algorithm or another fact sheet which contains the algorithm.

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- Screening visitors prior to entry into hospital
- Monitoring of inpatients

All three groups should be screened for fever, cough, or shortness of breath. People identified with any of these symptoms should be further evaluated clinically and for SARS risk factors.

Public health officials will have increased surveillance responsibilities should SARS re-emerge:

- Disseminate modified surveillance and patient screening guidelines to providers
- Facilitate reporting from hospitals
- Review reports of potential SARS cases from providers and hospital personnel daily
 - Assure adequate testing done to rule out SARS-CoV
 - Identify new pneumonia clusters that might require special attention
 - Monitor disease trends in local area
- Contact tracing

Contact tracing is the identification and evaluation of close contacts of persons ill with SARS.

Rapid identification and evaluation of contacts is critical to preventing disease transmission.

Public health officials should strive to promptly identify and evaluate contacts of ill persons and monitor these people for early symptoms of the disease. Public health officials with experience doing contact tracing for TB, STD's or HIV are well-suited for this task.

Reporting Potential Cases of SARS

Cases under investigation for SARS should be reported to state and local public health authorities in order to ensure that all appropriate testing is performed and to monitor the extent of any outbreak. In future, laboratory testing may be done at the state level.

All confirmed cases of SARS (those who have tested positive for SARS-CoV) and probable cases (persons with pneumonia or acute respiratory disease syndrome (ARDS) who are epidemiologically linked to a lab-confirmed case) should be reported to CDC. "Probable" cases as defined by the World Health Organization will be reported to CDC, as well.

A web-based data entry reporting system is in development. This system will allow for direct data entry by a limited number of users at the level of the state and large municipalities. An ID number will be generated automatically, and the system will capture the following information:

- Demographics
- Clinical information
- Epidemiologic SARS risk factors
- State-determined case classification
- Local laboratory testing results

CDC is working rapidly on development of upload capabilities in order to input data from state-designed databases.