Public Health Guidance for Community-Level Preparedness and Response to Severe Acute Respiratory Syndrome (SARS) Version 2

Core Document

This is an updated version of the draft guidance document issued by the Centers for Disease Control and Prevention (CDC) on November 3, 2003. CDC revised the draft based on comments received from public health partners, healthcare providers, professional organizations, and others. CDC will continue to update the document as necessary to incorporate additional comments and to reflect increased understanding of SARS-CoV transmission dynamics and the availability of improved prevention tools. Please submit comments to: sars-plan@cdc.gov

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Executive Summary

On March 12, 2003, the World Health Organization (WHO) issued a historic global alert for severe acute respiratory syndrome (SARS), a deadly new infectious disease with the potential for rapid spread from person to person and via international air travel. WHO and its partners, including the Centers for Disease Control and Prevention (CDC), promptly initiated a rapid, intense, and coordinated investigative and control effort that led within 2 weeks to the identification of the etiologic agent, SARS-associated coronavirus (SARS-CoV), and to a series of decisive and effective containment efforts. By the time SARS-CoV transmission was brought to an end in July 2003, more than 8,000 cases and 780 deaths had been reported to WHO.

The emergence of SARS-CoV provided a dramatic illustration of the potential for a new disease to suddenly appear and spread, leading to widespread health, social, and economic consequences. Fortunately, the world also witnessed the power of traditional public health measures—including surveillance, infection control, isolation, and quarantine—to contain and control an outbreak. Although the United States had a limited SARS outbreak, it is clear that we are susceptible to the more widespread outbreaks experienced in other countries. It is not possible to predict whether SARS-CoV will reappear, but it could from its original animal reservoir, persistent infection in humans, or the laboratory. To achieve the type of swift and decisive response that is required to control a SARS outbreak, we must be prepared.

Public Health Guidance for Community-Level Preparedness and Response to Severe Acute Respiratory Syndrome (SARS) outlines a framework and approach to assist public health and healthcare officials in preparing for and responding rapidly and decisively to the appearance of SARS-CoV in a healthcare facility or a community. The document has its basis in the *United States Government Interagency SARS Concept of Operations Plan (CONPLAN)*, which outlines the Federal government's strategy for a coordinated national response to an outbreak of SARS. The CONPLAN provides planning guidance for a timely, coordinated response by federal agencies to a SARS emergency and serves as a foundation for the development of operational plans and procedures at the national, state, and local levels.

Whereas the focus of the CONPLAN is interagency and intergovernmental coordination, CDC's *Public Health Guidance for Community-Level Preparedness and Response to Severe Acute Respiratory Syndrome (SARS)* provides planning guidance, strategies, and tools for the local public health and healthcare officials who provide the first line of readiness and action in detecting and containing a SARS outbreak. The guidance has been prepared in close collaboration with domestic and international partners and incorporates many of the concepts and approaches that were successfully used to contain the spread of SARS-CoV in the United States and in other counties with more widespread outbreaks. In addition, it integrates and builds on preparedness and response plans for other public health emergencies, such as pandemic influenza and bioterrorism.

The document includes suggested activities to be conducted both in the absence of SARS-CoV transmission in the world and in the context of a recurrence of person-to-person transmission. A companion document, *In the Absence of SARS-CoV Transmission Worldwide: Guidance for Surveillance, Clinical and Laboratory Evaluation, and Reporting* (www.cdc.gov/ncidod/sars/absenceofsars.htm), consolidates the recommended activities for the setting of no person-to-person transmission. If SARS-CoV transmission is documented anywhere in the world, CDC will promptly review all available information and provide additional guidance as indicated via the Health Alert Network (HAN), Epi-X, and partner organizations. Current information will also be posted on CDC's SARS website: www.cdc.gov/sars.

The basic strategy that controlled SARS outbreaks worldwide was rapid and decisive surveillance and containment. The keys to successful implementation of such a strategy are up-to-date information on

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local, national, and global SARS activity; rapid and effective institution of control measures; and the resources, organizational and decision-making structure, and trained staff vital to swift and decisive implementation. This guidance document accounts for two important features of SARS outbreaks: 1) they are neither regional nor national but rather confined to limited geographic – and even institutional – settings, and 2) they are dynamic, meaning that the characteristics of an outbreak can change quickly.

The document is divided into four levels of increasingly detailed information: the executive summary, the core plan, stand-alone supplements that address the key measures for SARS preparedness and response, and appendices to each supplement that provide guidance and tools for local-level preparedness and response activities. The document provides guidance on each of the following key components of SARS preparedness and response:

- Command and Control
- Surveillance and Information Technology
- Preparedness and Response in Healthcare Facilities
- Community Containment Measures, Including Non-Hospital Isolation and Quarantine
- Management of International Travel-Related Transmission Risk
- Laboratory Diagnostics
- Communication and Education
- SARS Investigations and Epidemiologic Research
- Infection Control

Using this guidance document, localities can develop operational SARS preparedness and response plans that reflect consistent approaches among and within jurisdictions to outbreaks of similar characteristics, while taking into account available healthcare and public health resources and other factors that are unique to each community. The document will be updated as necessary to reflect increased understanding of SARS-CoV transmission dynamics and availability of improved prevention tools.

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Public Health Guidance For Community-Level Preparedness And Response To Severe Acute Respiratory Syndrome (Sars) Core Document

I. Introduction

Severe acute respiratory syndrome (SARS) is a newly recognized, severe febrile respiratory illness caused by a previously unknown coronavirus, SARS-associated coronavirus (SARS-CoV). SARS emerged in the southern Chinese province of Guangdong in November 2002, but the worldwide epidemic was triggered in late February 2003 when an ill physician from Guangdong infected several other guests at a hotel in Hong Kong (CDC 2003a; Tsang 2003). These persons subsequently became the index patients for large outbreaks of SARS in Hong Kong, Vietnam, Singapore, and Canada (CDC 2003a; CDC 2003b; WHO 2003a).

Recognition of this new microbial threat prompted the World Health Organization (WHO) to issue a historic global alert for SARS on March 12, 2003 (WHO 2003a). WHO coordinated a rapid and intense worldwide response, which led to the identification of the etiologic agent, SARS-CoV, in less than 2 weeks (Drosten 2003; Ksiazek 2003; Peiris 2003) and implementation of control measures that contained the worldwide outbreak within 4 months. On July 5, WHO announced that SARS had been controlled and ended the global public health emergency response (WHO 2003b). During the epidemic, more than 8,000 probable SARS cases and nearly 800 deaths were reported to WHO from 29 countries (WHO 2003c).

The official end of the global public health emergency affirmed the rapid and monumental response effort but also signaled the need for continued vigilance. The rapidity of the spread of disease and the high levels of morbidity and mortality associated with SARS call for careful monitoring for the reappearance of SARS-CoV and preparations for the rapid implementation of appropriate control measures. SARS-CoV may still exist in human or animal reservoirs and thus have the potential to establish itself as a seasonal respiratory illness with ongoing epidemics (Breiman 2003; CDC 2003c; Guan 2003). Although the United States had only eight laboratory-confirmed cases of SARS-CoV disease and no significant local spread, it is clear that we are susceptible to the types of outbreaks experienced in Hong Kong, Singapore, Taiwan, and Toronto.

In the absence of a vaccine, effective drugs, or natural immunity to SARS-CoV, the only currently available public health strategies to limit the impact of SARS are rapid identification of infected persons and activation of the control measures that have proven effective in preventing transmission in other locales. These measures include global and community surveillance, detection and isolation of cases, identification and monitoring of contacts, adherence to infection control precautions, and, in some instances, measures (e.g., quarantine) to restrict the movement of potentially infected persons. These are the traditional public health tools used to prevent the spread of any infectious disease, and they constitute the fundamental strategy for controlling SARS-CoV.

The SARS outbreak during the spring of 2003 convincingly showed that delays in clinical recognition and isolation of SARS patients can trigger rapid transmission of SARS-CoV and generate substantial health, social, and economic consequences (CDC 2003b; CDC 2003d; Lee 2003; Tomlinson 2003; Varia 2003). Rapid detection of SARS cases and contacts and prompt implementation of control measures can, however, interrupt and contain transmission (CDC 2003b; Chan-Yeung 2003; Chowell 2003; Dye 2003; Lipsitch 2003; Riley 2003; Seto 2003; Tomlinson 2003; Varia 2003). Given the possibility that person-to-person transmission of SARS-CoV might recur, the healthcare and public health systems need to be prepared to quickly detect and control disease transmission and minimize the impact of SARS outbreaks. This document is designed to address this need.

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II. Overview of the Guidance Document

A. Purpose and Scope

This document presents a strategic framework for communities and healthcare facilities to plan and prepare for the recurrence of SARS-CoV transmission and respond to a SARS outbreak. Directed to state and local health departments, healthcare facilities, and healthcare personnel, the document addresses both the rationale and the strategies for SARS preparedness and response and provides a foundation for the development of more detailed operational plans and procedures for responding to SARS at the local level. Suggested activities include those needed to prepare for an introduction of SARS-CoV, to quickly detect possible SARS cases and clusters, and to prevent and contain SARS-CoV transmission.

This document includes suggested activities to be conducted both in the absence of SARS-CoV transmission in the world and in the context of a recurrence of person-to-person transmission. A companion document, *In the Absence of SARS-CoV Transmission Worldwide: Guidance for Surveillance, Clinical and Laboratory Evaluation, and Reporting* (www.cdc.gov/ncidod/sars/absenceofsars.htm), consolidates the recommended activities for the setting of no person-to-person transmission. If SARS-CoV transmission is documented anywhere in the world, CDC will promptly review all available information and provide additional guidance as indicated via the Health Alert Network (HAN), Epi-X, and partner organizations. Current information will also be posted on CDC's SARS website: www.cdc.gov/sars.

Public Health Guidance for Community-Level Preparedness and Response to Severe Acute Respiratory Syndrome (SARS) has its basis in the *United States Government Interagency SARS Concept of Operations Plan (CONPLAN)*, which outlines the Federal government's strategy for a coordinated national response to an outbreak of SARS. The CONPLAN provides planning guidance for a timely, coordinated response by federal agencies to a SARS emergency and serves as a foundation for the development of operational plans and procedures at the national, state, and local levels. Whereas the focus of the CONPLAN is interagency and intergovernmental coordination, CDC's *Public Health Guidance for Community-Level Preparedness and Response to Severe Acute Respiratory Syndrome (SARS)* provides planning guidance, strategies, and tools for the local public health and healthcare officials who provide the first line of readiness and action in detecting and containing a SARS outbreak.

Many of the approaches and activities for preparedness and response to SARS are similar or identical to those involved in combating other infectious diseases, such as pandemic influenza and intentionally spread smallpox or plague. Therefore, topics covered in this document may be relevant to or already addressed in other local emergency preparedness plans.

B. Development Process

The document was prepared by CDC's SARS Preparedness Committee, which was assembled to prepare for the possibility of future SARS outbreaks. The Committee includes eight working groups, each of which addressed a component of SARS preparedness and response: Surveillance, Clinical Management, Preparedness in Healthcare Facilities, Community Response, Laboratory Diagnostics, Information Technology, Communication and Education, and Special Studies. The working groups derived the guidance document from lessons learned during the 2003 epidemic, other CDC preparedness and response plans, and the advice, suggestions, and comments of state and local health officials and representatives of professional organizations, convened by means of teleconferences and meetings. Meetings were held on August 12-13, 2003 (public health preparedness and response), September 12, 2003 (preparedness in healthcare facilities), and September 18, 2003 (laboratory diagnostics).

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C. Objectives

The strategies, guidelines, and tools included in this document are designed to enable states and communities to achieve the following objectives:

- Rapidly and efficiently identify cases of SARS-CoV disease and their exposed contacts
- Ensure rapid information exchange among clinicians, public health officials, and administrators of healthcare facilities about potential SARS cases
- Rapidly and effectively implement measures to prevent the transmission of SARS-CoV
- Continuously monitor the course and characteristics of a SARS outbreak and promptly revise control strategies as needed
- Implement effective communication and education strategies for the public, the media, community officials, healthcare communities, and public health communities to ensure an appropriate response to SARS
- Coordinate and integrate SARS preparedness and response planning efforts with other preparedness plans and systems

III. Approach to SARS Preparedness and Response

The proposed approach to SARS preparedness and response reflects what has been learned to date about SARS-CoV transmission and the interventions that were used to contain the 2003 global outbreaks.

A. Lessons Learned

- SARS-CoV disease is a serious, often fatal, infectious disease with the potential for rapid spread.
- The vast majority of febrile respiratory illnesses will not be SARS-CoV disease.
- Laboratory tests, although sensitive and specific, do not reliably detect SARS-CoV early in the course of disease.
- Clinical features of SARS-CoV disease are nonspecific, but diagnosis can be guided by a history of exposure risk.
- In the absence of effective drugs or a vaccine, SARS-CoV disease can be controlled by the rapid and efficient use of the basic public health control strategies of surveillance and containment.
- SARS-CoV transmission is neither regional nor national but rather confined to limited geographic – and even institutional – settings; response strategies must therefore reflect local characteristics and resources.
- SARS response activities can overwhelm public health and healthcare resources.
- The potentially substantial health, social, and economic impact of SARS-CoV requires a swift and bold response that is appropriate to the situation yet minimizes unnecessary disruptions and respects human dignity.

B. Basic and Enhanced Response Elements

The foundation of the proposed approach is a set of fundamental elements on which communities might base their preparedness and response activities. Examples of these basic response elements are:

- Surveillance for cases of SARS-CoV disease or suspicious clusters of pneumonia, with appropriate diagnostic testing
- Rapid isolation and appropriate management of potential cases of SARS-CoV disease
- Rapid and efficient identification, evaluation, and monitoring of contacts
- Issuance of travel alerts/advisories, screening of ill travelers at airports, and implementation of other border control measures to prevent international spread

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- Timely dissemination of communication messages to the public health and healthcare communities and the public

Communities may supplement these basic elements with enhanced control measures that might be needed to address an escalating outbreak, changing transmission patterns or characteristics, variations in compliance, uncertainties about the effectiveness of basic control measures, feasibility and acceptability of specific interventions, or political pressures. Possible enhanced activities might include:

- Establishment of designated sites for evaluation of possible SARS patients
- Screening of incoming and/or departing passengers at airports, ports, and land border crossings
- Quarantine of close contacts of cases or of persons potentially exposed to SARS-CoV by their presence at a particular function, setting, or institution
- Closing schools, canceling large gatherings, or implementing other "snow day"-type measures for increasing social distance as temporary measures to slow transmission in an affected community

C. Information for Action

As the level of SARS-CoV transmission during an outbreak is dynamic, response activities, by necessity, must also be dynamic. The key to understanding transmission dynamics and knowing when to escalate the response at the local level is a surveillance system that provides ready access to timely information on the number of new cases, the likely source of exposure for cases, the number of cases not previously identified as contacts, and the number of contacts (prospective cases) with high-risk exposures to known cases.

D. Coordination and Consistency

Although jurisdictions will need to adjust the types and level of response measures to local conditions and resources, they will also need to coordinate with adjacent jurisdictions to ensure consistency among responses and minimize confusion or mistrust that may derive from inexplicable differences in outbreak control strategies.

IV. Key Measures for SARS Preparedness and Response

A. Command and Control

Rapid and decisive action in response to a recurrence of SARS-CoV transmission requires local, state, and federal public health authorities to work efficiently and in concert toward the common goal of containing the spread of infection. State and local officials provide the first line of response with respect to preparing and planning for an outbreak at the jurisdictional level; identifying, managing, and reporting cases; and exercising the necessary authority to impose individual and community containment measures. Given the complexity of responding to an outbreak of a serious respiratory illness and the sustained, coordinated efforts required to control transmission, states and localities must determine and clarify operational and legal authorities in advance and make the necessary preparations for a multi-agency, multi-jurisdictional response. Another essential preparedness step for command, control, and coordination of resources during a SARS outbreak response will be the development/adaptation of an incident management structure supported by adequate information systems.

Goals

- Determine and establish operational authority for the response to a SARS outbreak.
- Establish an incident management structure for the response to a SARS outbreak, supported by adequate information systems.

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- Determine and establish legal authority for a response to a SARS outbreak.

Priority Activities

- Conduct local preparedness planning for a re-emergence of SARS-CoV, with participation by persons representing a range of disciplines and expertise. Draft and formally adopt a SARS response plan, or add SARS preparedness and response to an existing preparedness plan.
- Confirm the controlling authorities for actions such as declaring a public health emergency, activating the SARS response plan, and curtailing modes of transportation.
- Develop/reinforce relationships with health authorities of adjoining jurisdictions and with federal agencies to ensure effective communication and collaboration.
- Learn about the legal authorities and statutes for enforcing individual and community containment measures at the local, state, and federal levels.
- Develop/adapt a predetermined incident command system to coordinate and manage SARS response activities.
- Ensure the availability of information system(s) that can document, support, and coordinate the activities generated within an incident command system (e.g., integrate personnel and facilities, expedite real-time communication and flow of information, aid in logistics planning, resource allocation

B. Surveillance

The SARS surveillance strategy is founded on complete and rapid identification of cases -- the key to which is maintaining an appropriate index of suspicion for SARS-CoV disease based on risk of exposure. With no known source of transmission, the most likely sites of SARS-CoV recurrence are locations where SARS-CoV transmission previously occurred, the original site of introduction of SARS-CoV from animals to humans, laboratories in which a break in technique leads to laboratory-acquired infections, and also large international travel hubs that serve as interconnecting nodes to high-risk locations.

The predilection for SARS-CoV transmission to occur among international travelers and in healthcare settings and to cause unusual clusters of pneumonia (Booth 2003; CDC 2003a; Hsu 2003; Lee 2003; Varia 2003) provides a focus for surveillance in the absence of SARS-CoV transmission (i.e., patients requiring hospitalization for pneumonia, pneumonia in healthcare workers, unusual clusters of pneumonia among travelers). If SARS-CoV reappears, then patients or known sites of SARS-CoV transmission become the most likely source of exposure. Contact tracing -- the identification and evaluation of persons who had close contact with a potential SARS case or were exposed to locations with known SARS-CoV transmission -- is important for the identification of persons at risk for SARS-CoV disease and the initiation of appropriate measures to reduce the possible spread of infection.

Goals

- Maximize early detection of cases and clusters of respiratory infections that might signal the global re-emergence of SARS-CoV disease while minimizing unnecessary laboratory testing, concerns about SARS-CoV, implementation of control measures, and social disruption.
- If SARS-CoV transmission recurs, maintain prompt and complete identification and reporting of potential cases to facilitate outbreak control and management.
- Identify and monitor contacts of cases of SARS-CoV disease to enable early detection of illness in persons at greatest risk.

Priority Activities

- Educate clinicians and public health workers on features that can assist in early recognition of SARS and on guidelines for reporting SARS-CoV cases.

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- Develop tools to identify, evaluate, and monitor contacts of SARS-CoV patients.
- Establish an efficient data management system that links clinical, epidemiologic, and laboratory data on cases of SARS-CoV disease and allows rapid sharing of information.
- Identify surge capacity for investigation of cases and identification, evaluation, and monitoring of contacts in the event of a large SARS outbreak.

C. Preparedness and Response in Healthcare Facilities

In most settings with large SARS outbreaks in 2003, healthcare facilities accounted for a large proportion (often >50%) of cases (Booth 2003; CDC 2003b; CDC 2003d; CDC 2003e). In addition to healthcare workers who cared for patients, other hospital patients and visitors were often affected and in many instances propagated the outbreaks in the hospital and into the community. Therefore, rapid isolation of possible cases of SARS-CoV disease and strict adherence to infection control precautions are critical; prompt and decisive use of these measures has consistently been a key and effective part of SARS control strategies. Each hospital in a community should be prepared to identify, triage, and manage SARS patients. Hospital-specific infection control policies related to SARS should guided by the level of SARS activity in the community and the hospital. Identifying adequate resources and staff for an effective response and surge capacity, if needed, are priorities.

Goals

- Rapidly identify and isolate all potential SARS patients.
- Implement infection control practices and contact tracing to interrupt SARS-CoV transmission.
- Ensure rapid communication within healthcare facilities and between healthcare facilities and health departments.

Priority Activities

- Organize a planning committee to develop an institutional preparedness and response plan and a clear decision-making structure.
- Develop surveillance, screening, and evaluation strategies for various levels of SARS-CoV transmission.
- Develop plans to rapidly implement effective infection control measures and contact-tracing procedures.
- Determine the current availability of infrastructure and resources to care for SARS patients and strategies for meeting increasing demands.
- Develop strategies to meet staffing needs for SARS patient care and management.
- Develop strategies to communice with staff, patients, the health department, and the public.
- Develop strategies to educate staff and patients about SARS and SARS control measures.

D. Community Containment Measures, Including Non-Hospital Isolation and Quarantine

Community containment strategies, including isolation, contact tracing and monitoring, and quarantine, are basic infectious disease control measures that proved to be critically important for control of the most severe SARS outbreaks in 2003. Isolation of SARS patients separates them from healthy persons and restricts their movement to prevent transmission to others, preventing healthy persons from becoming ill. It also allows for the focused delivery of specialized health care to ill persons. Quarantine of persons who have been exposed to SARS-CoV but are not ill is intended to prevent further transmission in the event that they develop SARS-CoV disease by reducing the interval between the onset of symptoms and the institution of appropriate precautions.

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Given that most SARS patients have a clearly identified exposure to other SARS patients or to a setting with SARS-CoV transmission and that transmission occurs after onset of illness, rapid identification of exposed persons (contacts) and prompt isolation of contacts if they become ill is a highly effective control strategy. Quarantine of contacts is often a critical part of contact management and should be performed selectively, carefully, and with respect for human dignity. Isolation and quarantine are optimally performed on a voluntary basis, but many levels of government (local, state, federal) have the basic legal authority to compel mandatory isolation and quarantine of persons and communities when necessary to protect the public's health. Broader community containment through "snow day" measures, such as cancellation of public gatherings and closure of school and businesses, can also be used to reduce transmission by limiting social interactions at the population level. The rationale for such measures, as well as mechanisms to ensure due process and prevent stigmatization of affected persons, need to be clearly articulated.

Goal

- Prevent transmission of SARS-CoV through use of a range of community containment strategies chosen to provide maximum efficacy based on the characteristics of the outbreak while minimizing the adverse impact on civil liberties.

Priority Activities

- Identify, evaluate, and monitor contacts of SARS patients, and consider quarantine of contacts if needed.
- Continually monitor the course and extent of the outbreak, and evaluate the need for community containment measures.
- Establish the infrastructure to deliver essential goods and services to persons in quarantine and isolation.
- Develop tools and mechanisms to prevent stigmatization and provide mental health resources for those in isolation and quarantine.
- Work with community partners to ensure that implementation and communication plans address the cultural and linguistic needs of affected persons.

E. Prevention of International Travel-Related Transmission Risk

In the absence of control measures, SARS-CoV can spread rapidly on a global scale through international travel. Screening and evaluating passengers for SARS-like symptoms, educating them about SARS, and reporting illnesses in travelers can decrease the risk of travel-associated infections.

Goals

- Prevent the introduction of SARS-CoV (and spread from an introduction) into the United States from SARS-affected areas.
- Prevent exportation of SARS-CoV from the United States if domestic transmission presents an increased risk of exportation.
- Reduce the risk of SARS-CoV disease among outbound travelers to SARS-affected areas.
- Prevent the transmission of SARS-CoV to passengers on a conveyance with a SARS patient, and evaluate and monitor other passengers to detect SARS-like illness and prevent further spread.

Priority Activities

- Screen incoming travelers from SARS-affected areas for SARS, and provide guidance about monitoring their health and reporting illness.
- Provide guidance to outbound travelers about active SARS-affected areas and measures to reduce risk of acquiring SARS-CoV disease during travel.

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- If SARS-CoV transmission in the United States presents an increased risk of exporting SARS-CoV to other countries, then screen outbound travelers to prevent such exportation.
- Ensure the appropriate evaluation and management of SARS cases and potentially exposed passengers and crew members on conveyances.

F. Laboratory Diagnostics

Laboratory diagnostics are essential for detecting and documenting a resurgence of SARS, responding to and managing SARS outbreaks, and managing concerns about SARS-CoV disease in patients with other respiratory illnesses. The identification of the etiologic agent, SARS-CoV, led to rapid development of enzyme immunoassays (EIA) and immunofluorescence assays (IFA) for SARS antibody (Ksiazek 2003) and reverse-transcriptase PCR (RT-PCR) assays for SARS-CoV RNA (Emery 2003). These assays can be very sensitive and specific for detecting antibody and RNA, respectively, but are less sensitive for detecting infection, especially early in illness. Diagnostic assays for other respiratory pathogens may be helpful in differentiating SARS-CoV disease from other illnesses, but SARS patients may be simultaneously infected with SARS-CoV and another respiratory pathogen. CDC's laboratory diagnostics plan is based on the following goals and activities:

Goals

- Provide the public health community with ready access to high-quality SARS-CoV diagnostics
- Ensure that SARS-CoV laboratory diagnostics are used safely and appropriately and that results are interpreted appropriately

Priority Activities

- Improve the ability to detect SARS-CoV infection by optimizing the selection and timing of specimen collection and processing.
- Provide SARS-CoV assays for RT-PCR testing through Laboratory Response Network (LRN) laboratories and for serologic testing to state public health laboratories.
- Distribute proficiency panels and questionnaires to participating laboratories to determine the ability of laboratories to provide valid SARS-CoV diagnostics.
- Provide guidance on laboratory safety for SARS-CoV and other respiratory diagnostic testing and for potentially SARS-CoV-containing specimens submitted for other tests.
- Provide guidance for interpreting test results, taking into account the potential for false-positive and false-negative results and the availability of applicable clinical and epidemiologic information.
- Identify surge capacity for laboratory testing in the event of a large SARS outbreak.

G. Communication and Education

Rapid and frequent communication of crucial information about SARS -- such as the level of the outbreak worldwide and recommended control measures -- are vital components of efforts to contain the spread of SARS-CoV. Specific communication needs and key messages will vary substantially by level of SARS activity. In the absence of SARS-CoV transmission globally, the preparation and dissemination of messages and materials are designed to maintain vigilance in the healthcare community and general awareness among all parties about the possibility of a SARS outbreak and the steps that would be indicated in such an event. The recurrence of SARS-CoV transmission anywhere in the world will generate immediate and intense media attention and require an enormous effort to respond to the demand from the public, the media, policymakers, and healthcare workers for information and guidance. A domestic outbreak of SARS will result in even greater demands to manage media requests, disseminate up-to-date outbreak information and messages, assist local hospitals and healthcare providers in responding to the public, and respond to inquiries from special interest groups.

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Goals

- Instill and maintain public confidence in the nation's public health system and its ability to respond to and manage the reappearance of SARS-CoV.
- Contribute to the maintenance of order, minimization of public panic and fear, and facilitation of public protection through the provision of accurate, rapid, and complete information before, during, and after a SARS outbreak.
- Provide accurate, consistent, and comprehensive information about SARS-CoV disease.
- Address rumors, inaccuracies, and misperceptions as quickly as possible, and prevent stigmatization of specific groups.

Priority Activities

- Identify key messages about SARS-CoV disease for specific audiences and the most effective methods to deliver these messages.
- Issue local public health announcements and updated information on the outbreak and response.
- Provide a location for state, local, and federal communication and emergency response personnel to meet and work side-by-side in developing key messages and handling media inquiries.
- Respond to frequently occurring media questions by preparing fact sheets, talking points (key messages), and question-and-answer documents.
- Coordinate requests for spokespersons and subject matter experts.

H. Plans for SARS Investigations and Epidemiologic Research

[This section is currently under development.]

I. Infection Control in Healthcare, Home, and Community Settings

Transmission of SARS-CoV in healthcare settings was a major factor in the propagation of the 2003 global SARS epidemic. In each of the major outbreak areas, SARS-CoV caused unprecedented levels of morbidity and mortality among healthcare personnel and disrupted healthcare delivery systems. Rapid implementation and adherence to infection control measures proved essential for controlling transmission in healthcare facilities and containing the outbreaks. Ensuring readiness for a reappearance for SARS-CoV therefore means maintaining emphasis on the importance of infection control in healthcare facilities and correcting any deficiencies in infection control training and practice.

If person-to-person SARS-CoV transmission recurs, many patients may be isolated in residential settings. In the United States, hospitalization of patients with SARS-CoV disease is recommended only when medically indicated. Given the risk of exposure to household members, strict infection control measures are also needed to prevent SARS-CoV transmission from patients isolated in residential settings. In addition, if a large outbreak overwhelms the capacity of the healthcare system, patients may be isolated in community facilities. As in the case of healthcare and residential settings, appropriate infection control measures will be required to prevent transmission of infection in these facilities.

Goals

- Ensure early recognition of patients at risk for SARS-CoV disease.
- Prevent transmission of SARS-CoV by implementing appropriate infection control precautions.

Priority Activities

- Reinforce basic infection control practices among healthcare workers.
- Take steps to reduce transmission of respiratory viruses from symptomatic persons at the time of initial encounter with the healthcare setting.

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- Develop triage strategies that ensure early recognition of patients at risk for SARS-CoV disease.
- Develop plans for appropriate SARS infection control precautions in inpatient and outpatient healthcare facilities, homes, and community isolation facilities.
- Ensure appropriate management and follow-up monitoring of healthcare workers who have had exposures to and other contacts with SARS patients.

J. Information Technology

During the 2003 epidemic, the internet played an important part in global efforts to identify the etiologic agent of SARS and control its spread. Unfortunately, in many outbreak settings, the lack of useful information management systems made outbreak control less efficient in many areas and in some instances may have actually delayed the containment and control of SARS. Although a web-based system to manage all aspects of a SARS outbreak would be ideal, issues of confidentiality, data security, data ownership, and availability of technical expertise to support new information systems make the ideal system a long-term goal. In the short term, a web-based case reporting system -- plus efficient means to link clinical, epidemiologic, and laboratory data -- will provide an efficient process for quickly recording and reporting the status of SARS activity in the United States for federal, state, and local response needs.

Rapid identification, tracking, evaluation, and monitoring of contacts of SARS cases will be key to early detection of symptoms in persons at greatest risk of SARS, and development of a data management system to facilitate this process is vital. Contact tracing can be particularly challenging and resource intensive in large-scale outbreaks or among highly mobile populations such as international travelers. Ideally, such a system should be integrated with the case reporting system to allow rapid exchange of information. Finally, the tracking of contacts of SARS cases on conveyances (e.g., airplanes) will require rapid availability of electronic passenger manifests that provide information on the proximity of the contact to the case. This information needs to be rapidly assimilated and disseminated to a large number of state and local health departments for notification and monitoring of contacts.

Goal

- Deploy an integrated data management system that efficiently and effectively supports SARS outbreak response needs at the federal, state, and local levels.

Priority Activities

- Develop and deploy a case-reporting system for SARS surveillance that supports federal, state, and local health department needs and makes data readily available to the submitting health department. The system can be based on either web-based data entry or data downloads.
- Implement an outbreak-management system that can track and link clinical, laboratory, and epidemiologic data and can be used to monitor all aspects of an outbreak response at the local level. The system should allow state and local health departments to track the monitoring and follow-up of contacts for clinical illness and compliance with isolation and quarantine measures, as applicable.
- Collaborate with the Department of Transportation to rapidly obtain passenger manifests for conveyances with ill travelers.
- Use electronic communication mechanisms (e.g., Epi-X, Health Alert Network) to disseminate contact information to state and local health departments.

V. Organization of the Guidance Document

The document is organized into four levels of progressively more detailed information: 1) executive summary; 2) core document; 3) stand-alone supplements that address the key measures for SARS

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preparedness and response; and 4) attachments to each supplement that provide guidance and tools for local-level preparedness and response activities.

The Supplements included in this document are:

Supplement A:	Command and Control
Supplement B:	SARS Surveillance
Supplement C:	Preparedness and Response in Healthcare Facilities
Supplement D:	Community Containment Measures, Including Non-Hospital Isolation and Quarantine
Supplement E:	Managing International Travel-Related Transmission Risk
Supplement F:	Laboratory Diagnosis
Supplement G:	Communication and Education
Supplement H:	Plans for SARS Investigations and Epidemiologic Research UNDER DEVELOPMENT
Supplement I:	Infection Control in Healthcare, Home, and Community Settings NEW!

Each Supplement outlines, and in some cases describes in some detail, many of the interrelated and multifaceted activities that need to or could be undertaken at the local level to prepare for and respond to the reemergence of SARS. Also included are guidelines and resource materials to assist public health officials and healthcare facilities in planning and implementing a response. To address the dynamic nature of a SARS outbreak and each jurisdiction's unique situation, each Supplement considers, as applicable:

- Recommendations for preparedness and contingency planning that should occur prior to the reappearance of SARS
- Strategies for a basic level of response in U.S. communities to the reappearance of SARS in other parts of the world
- Options for enhancing the intensity and scope of local strategies to address changing dynamics of the outbreak or response
- Options for modifying the response in reaction to new information on transmission dynamics, improved diagnostic testing, or introduction of new therapeutic or prophylactic interventions
- Criteria and approaches for de-escalating the response as SARS-CoV transmission is controlled and eliminated

Using this guidance document, localities can develop operational SARS preparedness and response plans that reflect consistent approaches among and within jurisdictions to outbreaks of similar characteristics, while taking into account available healthcare and public health resources, public perceptions, and other factors that are unique to each community. The document will be updated as necessary to reflect increased understanding of SARS-CoV transmission dynamics and availability of improved prevention tools.

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Appendix 1
Clinical, Epidemiologic, and Virologic Features of SARS-CoV

Emergence of SARS-CoV

SARS first came to global attention on February 11, 2003, when Chinese officials informed WHO of the occurrence of 305 cases of atypical pneumonia and 5 deaths in Guangdong Province since November 2002 (WHO 2003). On February 21, a Chinese physician with SARS traveled from Guangdong to Hong Kong and spent the night in a hotel there. During the next two days, he developed increasingly severe respiratory symptoms and was hospitalized in a Hong Kong hospital, where he died from his illness. His one-night stay in a Hong Kong hotel led to infection by yet unexplained mechanisms in several other guests, who subsequently traveled to and seeded SARS outbreaks in Vietnam, Singapore, Hong Kong, and Canada (CDC 2003a; Hsu 2003; WHO 2003). In these areas, local spread was initiated and maintained in hospitals, where healthcare personnel, patients, and visitors – unaware of the emergence of a new disease – acquired SARS-CoV from persons with unrecognized infection (Booth 2003; CDC 2003b; CDC 2003c; Lee 2003; Varia 2003). During March-May, the spread of the virus from Guangdong to other parts of China established additional foci of infection, such as Beijing and Taiwan (CDC 2003d).

Once SARS was recognized in these locations and widespread community transmission was noted in several outbreak sites, the spread of SARS-CoV was controlled by aggressive community infection control measures including active case finding, contact tracing and monitoring, travel restrictions, and quarantine and other containment strategies. These measures were implemented in many geopolitical jurisdictions and involved intense, sustained collaboration among institutions and persons beyond the traditional public health infrastructure. Areas with high transmission rates experienced severe economic consequences and social disruption rivaling that seen in other global epidemics (e.g., plague) of centuries past.

On March 14, 2003, CDC launched an emergency public health response and established national surveillance for SARS to identify case-patients in the United States and discover if domestic transmission was occurring. Through July 2003, a total of 159 suspect and 33 probable cases had been reported in the United States. Of the 33 probable cases, only 8 had laboratory evidence of SARS-CoV infection (CDC 2003e; CDC 2003f; CDC 2003g; CDC 2003h). All of the eight cases with documented SARS-CoV infection occurred in persons who had traveled to SARS-affected areas. One of these case-patients might have acquired infection either abroad or from her spouse, who was one of the other seven SARS-CoV-positive cases. Except for this one person with possible transmission from a household contact, no evidence of SARS-CoV infection was detected by serologic testing of household contacts of SARS cases or of healthcare workers who cared for SARS patients.

During the global epidemic, transmission of SARS-CoV in hospitals was a major factor in the amplification of outbreaks and the initiation of spread into the community (Booth 2003; CDC 2003b; CDC 2003c; CDC 2003d; Lee 2003). In areas characterized by extensive outbreaks, early SARS-CoV transmission occurred predominantly among healthcare workers, patients, and visitors; these groups accounted for 18% to 58% of all SARS cases in the five countries with the largest outbreaks. The concentration of illness in previously healthy hospital staff placed an enormous strain on hospital facilities and staff. The apparent ease of nosocomial transmission – added to the far-reaching public health ramifications of SARS-CoV transmission in single hospitals – posed great challenges for healthcare institutions in maintaining high levels of vigilance and infection control.

Clinical Features

The median incubation period for SARS appears to be approximately 4 to 6 days; most patients become ill within 2 to 10 days after exposure (Booth 2003; CDC 2003b; Donnelly 2003; Varia 2003). The clinical presentation of SARS-CoV infection has some but not enough distinctive features to enable diagnosis by clinical signs and symptoms alone (Hsu 2003). Respiratory symptoms typically do not begin until 2 to 7

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days after onset of systemic symptoms such as fever, headache, myalgias. Respiratory complaints usually include a non-productive cough and dyspnea but not upper respiratory symptoms such as rhinnorhea and sore throat (Booth 2003; Donnelly 2003; Drosten 2003a; Lee 2003; Peiris 2003a; Poutanen 2003; Rainer 2003; Tsang 2003). Almost all patients with laboratory evidence of SARS-CoV infection evaluated thus far developed radiographic evidence of pneumonia (Poutanen 2003; Rainer 2003), and most (70% -90%) developed lymphopenia (Booth 2003; Lee 2003; Peiris 2003a; Poutanen 2003; Tsang 2003; Wong 2003). The overall case-fatality rate of approximately 10% can increase to >50% in persons older than age 60 (Peiris 2003a).

Transmission

Epidemiologic features of SARS provide keys to its diagnosis and control. The pattern of spread suggests that SARS-CoV is transmitted primarily through droplets and close personal contact (Seto 2003; Varia 2003). Studies documenting stability of the virus for days in the environment suggest the possibility of fomite transmission. There is also suggestive evidence that, in a few instances, SARS-CoV may have been transmitted by small-particle aerosols. Epidemiologic data suggest that infected persons do not transmit SARS-CoV before the onset of symptoms and that most transmission occurs late in the course of illness when patients are likely to be hospitalized (Peiris 2003a). The lack of transmission before symptom onset and during early illness explains the infrequency of community transmission and the preponderance of hospital-associated transmission. Although evidence indicates that most patients do not transmit SARS-CoV efficiently (Lipsitch 2003), documentation of “super-spreaders” and “super-spreading events” shows that, in certain situations, viral transmission can be highly efficient (CDC 2003b).

Control Strategies

The rapidity with which SARS spread globally and the severity of the disease require a rapid and integrated global response to SARS. SARS anywhere in the world can potentially affect all other global regions. In response to the 2003 SARS epidemic, WHO orchestrated a rapid and intense effort to control transmission, which ultimately was effective in stopping all global spread by early July 2003. The classic public health control measures of isolation, contact tracing and monitoring, infection control, and quarantine were an important part of the global control of SARS and will be the key to controlling SARS if it returns.

The Virus and Its Re-emergence

SARS is caused by the newly identified SARS-associated coronavirus (SARS-CoV) (Drosten 2003b; Ksiazek 2003). As SARS-CoV is distantly related to all previously described coronaviruses, it is likely that the virus or its parent virus has been circulating in some location for a long period. Antibodies to SARS-CoV were not found in human serum samples banked before the SARS outbreak, suggesting that the virus is new to the human population. Evidence suggests that it is a previously unknown coronavirus, probably from an animal host, that crossed the species barrier and somehow acquired the ability to infected humans. No one knows if SARS-CoV will reappear, but the most likely potential sources for its reintroduction are: 1) the original animal or a new animal reservoir; 2) undetected transmission in humans; 3) persistent infection in humans; or 4) the laboratory (as occurred recently in Singapore). Since most other respiratory viruses are seasonal, with outbreaks in fall, winter, or spring that spontaneously resolve, it is possible that SARS may also be seasonal and spread more efficiently during the respiratory virus season. Recurrence of or concern about SARS during respiratory virus season will likely challenge the healthcare and public health communities with large numbers of SARS-like illnesses.

Laboratory Diagnostics

Laboratory diagnostics are essential for detecting and documenting a resurgence of SARS, responding to and managing outbreaks of SARS, and addressing concerns about SARS in patients with other respiratory illnesses. Two assays are most often used to diagnose SARS CoV infection: PCR assays for viral RNA and

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serologic testing for virus-specific antibodies (Drosten 2003b; Ksiazek 2003; Peiris 2003b). Both assays can be very specific and sensitive in detecting RNA and antibodies, respectively. However, because of the low titer of virus in clinical specimens from most patients and the time it takes persons to mount an antibody response to infection, neither assay can reliably detect SARS-CoV infection early in illness (Ksiazek 2003; Peiris 2003). Interpretation of these assays needs to account for the possibility of false-negative results, which are frequent occurrences early in infection, and false-positive results, which are especially important concerns for PCR assays.

Prophylaxis and Treatment

No vaccines have yet been developed for SARS and no anti-viral treatment has been shown to be effective. CDC, the National Institutes of Health (NIH), the Food and Drug Administration (FDA) and academicians are developing protocols to assess antiviral drugs that show activity in vitro against SARS-CoV. It is not yet clear whether persons who recover from SARS-CoV infection develop long-lasting protective immunity or whether they are susceptible to re-infection and disease, as is the case with other human coronaviruses.

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Appendix 2
Glossary

Air changes: Ratio of the volume of air flowing through a space in a certain period of time (air flow rate) to the volume of that space (room volume)**;** usually expressed as the number of room air changes per hour (ACH).

Airborne infection isolation room (AIIR): Single-occupancy patient-care room in which environmental factors are controlled to minimize transmission of infectious agents spread from person to person by droplet nuclei associated with coughing or aerosolization of contaminated fluids**;** AIIRs typically have specific requirements for controlled ventilation, air pressure, and air filtration.

Airborne infection isolation precautions: Measures to reduce the risk of airborne transmission of infectious agents; an AIIR with negative pressure relative to the surrounding area is required for full implementation.

Airborne transmission: Occurs by dissemination of either airborne droplet nuclei (small-particle residue [5 µm or smaller] of evaporated droplets containing microorganisms that remain suspended in the air for long periods of time) or dust particles containing the infectious agent. Microorganisms carried in this manner can be dispersed widely by air currents and may become inhaled by a susceptible host in the same room or over a longer distance from the source patient, depending on environmental factors.

Bronchoscopy: Procedure for visually examining the respiratory tract and/or obtaining specimens for diagnostic purposes; requires inserting an instrument (bronchoscope) through a patient's mouth or nose into the trachea.

Close contact: A person who has cared for or lived with a person with SARS or had a high likelihood of direct contact with respiratory secretions and/or body fluids of a person with SARS either during the period the person was clinically ill or within 10 days of resolution of symptoms. Examples of close contact include kissing or embracing, sharing eating or drinking utensils, talking within 3 feet, physical examination, and any other direct physical contact between persons. Close contact does not include activities such as walking by a person or briefly sitting across a waiting room or office.

Community containment: Measures to separate infected or exposed persons by use of isolation, quarantine, or other restrictions on movement and activities**;** isolation and quarantine are common practices in public health, and both aim to control exposure to infected or potentially infected persons; both may be used voluntarily or compelled by public health authorities.

Community transmission: In the context of SARS, transmission of SARS-CoV outside of well-defined settings (i.e., hospitals; households of SARS patients).

Contact: A person who has been exposed to someone with a communicable disease during the infectious period. (See "close contact.")

Contact precautions: Work practices to reduce the risk of transmitting infectious agents by direct or indirect contact with an infectious person.

Contact tracing: Identification and location of persons who may have been exposed to a person with SARS-CoV infection**;** may result in regular monitoring for evidence of illness and strict or modified quarantine.

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Coronavirus: One of 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.

Droplet precautions: Measures to reduce the risk of droplet transmission of infectious agents.

Droplet transmission: Occurs when droplets containing infectious agents are propelled a short distance through the air (e.g., by coughing, sneezing, or talking) and deposited in the eyes, nose or mouth of a susceptible person.

Exposure: Condition of being subjected to something (e.g., an infectious agent) that could have a harmful effect.

Fit test: he use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual to assess the adequacy of fit of that respirator brand/model on that individual.

Hand hygiene: A general term that applies to any one of the following: 1) handwashing with plan (non-antimicrobial) soap and water, 2) antiseptic handwash (soap containing antiseptic agents and water), 3) antiseptic hand rub (waterless antiseptic product, most often alcohol-based, rubbed on surfaces of hands), or 4) surgical hand antisepsis.

Healthcare worker: Any employee in a healthcare facility who has close contact with patients, patient-care areas, or patient-care items; also referred to as "healthcare personnel."

High-efficiency particulate air (HEPA) filter: Type of air filter that removes >99.97% of particles 0.3 um or larger at a specified flow rate of air.

Incident command system: Predetermined organizational structure for potential mass casualty events that address planning, operations, logistics, finance, and administration.

Incubation period: Time interval between infection (i.e., introduction of the infectious agent into the susceptible host) and the onset of the first symptom of illness known to be caused by the infectious agent.

Infection control: Measures practiced by healthcare personnel in healthcare facilities to decrease transmission and acquisition of infectious agents (e.g., proper hand hygiene, scrupulous work practices, use of personal protective equipment (PPE) [masks or respirators, gloves, gowns, and eye protection]; infection control measures are based on how an infectious agent is transmitted and include standard, contact, droplet, and airborne precautions.

Isolation: Separation of an ill person who has a communicable disease (e.g., SARS patient) from those who are healthy. Isolation prevents transmission of infection to others and also allows for the focused delivery of specialized health care to ill persons.

Monitoring: Watching, keeping track of, or checking for a specific purpose. In the context of SARS, monitoring refers to assessment (by phone or in person) of a person who has a known or possible exposure to SARS-CoV to detect the development of symptoms and ensure prompt implementation of precautions if

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necessary. **Passive monitoring** relies on self-assessment by the affected person, who is asked to contact health authorities if symptoms develop. **Active monitoring** involves direct assessment of each affected person at least once a day by healthcare or public health staff or designee.

N-95 respirator: Respirator whose filtering efficiency has been determined to be at least 95% for the most penetrating sized particle (~0.3 um); an N-95 respirator may either be a disposable filtering facepiece respirator (the entire face piece serves as the filter) or an elastomeric facepiece respirator equipped with an appropriate particulate filter cartridge.

Negative pressure: Pressure less than that of the ambient atmosphere.

Nosocomial: Acquired in a healthcare setting or as a result of medical care.

PCR (polymerase chain reaction): Laboratory method for detecting the genetic material of an infectious disease agent in specimens.

Personal protective equipment (PPE): Specialized clothing and equipment designed to create a barrier against health and safety hazards; examples include goggles, face shields, gloves, and respirators.

Powered air-purifying respirator (PAPR): Respirator equipped with a face piece, hood, or helmet, breathing tube, air-purifying filter, cartridge and/or canister, and fan; air is pulled through the air-purifying element and pushed through the breathing tube and into the face piece, hood, or helmet.

Quarantine: Separation or restriction of activities of well persons who are not ill but who are believed to have been exposed to a communicable disease and are therefore at high risk of becoming infected. In the context of SARS, quarantine refers to a combined approach to managing contacts, which consists of active monitoring plus activity restrictions.

Respirator: A personal protective device that is worn over the nose and mouth to reduce the risk of inhaling hazardous airborne particles, gases, or vapors.

Respiratory hygiene/cough etiquette: A group of infection control measures used to contain infection at its source by covering the mouth and nose during coughing and sneezing, using tissues to contain respiratory secretions with prompt disposal in a no-touch receptacle, and maintaining spatial separation when coughing. These measures are targeted to patients and the persons accompanying them beginning at the point of initial encounter with a healthcare setting.

Respiratory symptoms: When screening patients for potential SARS-CoV disease, "respiratory symptoms" generally refers to symptoms of infection of the lower respiratory tract (e.g., cough, shortness of breath, difficulty breathing). However, when screening patients who have a high risk of exposure to SARS-CoV (e.g., persons previously identified through contact tracing or self-identified as close contacts of a laboratory-confirmed case of SARS-CoV disease; persons who are epidemiologically linked to a laboratory-confirmed case of SARS-CoV disease), respiratory symptoms used to screen patients should be expanded to include upper respiratory symptoms such as sore throat and rhinorrhea (in addition to other early non-respiratory symptoms of SARS-CoV disease such as subjective fever, chills, rigors, myalgia, headache, and diarrhea).

SARS: Severe acute respiratory syndrome; a clinical syndrome characterized by fever, lower respiratory symptoms, and radiographic evidence of pneumonia.

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SARS-CoV: SARS-associated coronavirus; a newly described coronavirus that is genetically and antigenically distinct from other human coronaviruses.

SARS isolation precautions: The combined use of Standard, Contact, and Droplet Precautions plus Airborne Infection Isolation for the care of SARS patients. This combination of isolation precautions is recommended until the dynamics of SARS-CoV transmission are more fully defined.

Seroconversion: Four-fold or greater increase in antibody titer between acute- and convalescent-phase serum specimens tested in parallel, or negative antibody test on acute-phase serum with positive test on convalescent-phase serum tested in parallel.

Serologic assay: A laboratory method for detecting the presence and/or level of antibodies to an infectious agent in serum from a person. Antibodies are substances made by the body's immune system to fight a specific infection.

Snow-day measure: One type of community containment measure designed to prevent transmission of a communicable disease by limiting social interactions and preventing inadvertent exposures. Community members are asked to stay home as they would during a major snowstorm. Schools are closed, work sites are closed or restricted, large public gatherings are cancelled, and public transportation is halted or scaled back.

Standard Precautions: Work practices required for the basic level of infection control; they center on proper hand hygiene and also include use of protective barriers and appropriate handling of clinical waste.

Surge capacity: Ability to obtain additional resources when needed during an emergency.

Transmission: Any mechanism through which an infectious agent, such as a virus, is spread from a reservoir or source to a human.

Travel advisory: One type of notification of an outbreak of disease occurring in a geographic area. A travel advisory provides information about the disease outbreak and informs travelers how to reduce their risk of acquiring the infection. An advisory recommends against nonessential travel to the area.

Travel alert: One type of notification of an outbreak of disease occurring in a geographic area. A travel alert provides information about the disease outbreak and informs travelers how to reduce their risk of acquiring the infection. An alert does not include a recommendation against nonessential travel to the area.

Triage: The process for sorting or “ranking” ill or injured people into groups based on their need for or benefit from immediate medical treatment

For more information, visit 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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