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

Draft – October 2003

The Centers for Disease Control and Prevention (CDC) is making this document available in draft form to assist local and state public health and healthcare officials in their preparations for a possible reemergence of SARS during the approaching respiratory disease season. The proposed framework and strategies for SARS preparedness and response are based on lessons learned from the 2003 global SARS epidemic and the advice and suggestions of domestic and international public health and healthcare partners. The document is currently undergoing external review by partner organizations and other federal agencies and will be updated as necessary to incorporate comments from reviewers and to reflect increased understanding of SARS-CoV transmission dynamics and the availability of improved prevention tools. CDC invites interested public health partners to submit comments on the draft document 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 provided a fresh 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 will reappear, but it could from its original animal reservoir, persistent infection in humans, or the laboratory. To achieve the type of rapid and effective 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 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 SARS outbreaks in the United States and other counties with more widespread outbreaks. In addition, it integrates and builds on preparedness and response plans for other public health emergencies, such pandemic influenza and bioterrorism.

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 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 rapid 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 attachments 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 of Cases and Contacts
- 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
- Information Technology

Using this guidance document, localities can develop operational SARS preparedness and response plans that reflect consistent approaches among and within jurisdictions to SARS 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.

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. These persons subsequently became the index patients for large outbreaks of SARS in Hong Kong, Vietnam, Singapore, and Canada.

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 coordinated a rapid and intense worldwide response, which led to the identification of the etiologic agent, SARS-CoV, in less than 2 weeks 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. During the epidemic, a total of 8,427 probable SARS cases and 813 deaths were reported to WHO from 29 countries.

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. Although the United States had only eight documented cases of SARS-CoV infection 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.

The SARS outbreak during the spring of 2003 convincingly showed that undetected SARS cases can trigger rapid transmission of SARS-CoV and generate substantial health, social, and economic consequences. Rapid detection of SARS cases and contacts and prompt implementation of control measures can, however, interrupt and contain transmission. Given the possibility that SARS might reappear, 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.

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 reappearance of SARS and respond to a SARS outbreak. Directed to state and local health departments, healthcare facilities, and healthcare personnel, the document provides strategies, guidance, and tools for SARS preparedness and response. It 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, to quickly detect possible SARS cases and clusters, and to prevent and contain SARS-CoV transmission.

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 from 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).

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 SARS cases 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 is a serious, often fatal, infectious disease with the potential for rapid spread.
- The vast majority of febrile respiratory illnesses will not be SARS.
- Laboratory tests, although sensitive and specific, do not reliably detect SARS-CoV early in the course of disease.
- Clinical features of SARS are nonspecific, but diagnosis can be guided by a history of exposure risk.
- In the absence of effective drugs or a vaccine, SARS 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 inundate public health and healthcare resources.
- The potentially substantial health, social, and economic impact of SARS 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 SARS cases or suspicious clusters of atypical pneumonia, with appropriate diagnostic testing
- Rapid isolation and appropriate management of potential SARS cases
- Rapid and efficient identification, evaluation, and monitoring of contacts
- Issuance of travel alerts/advisories, screening of ill travelers at airports, and other border control measures to prevent international spread
- 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 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. 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 based on risk of exposure. With no known source of transmission, the most likely sites of SARS-CoV recurrence are: 1) locations where SARS-CoV transmission previously occurred, 2) the original site of introduction of SARS-CoV from animals to humans, 3) large international travel hubs serving as interconnecting nodes to high-risk locations, and 4) laboratories in which a break in technique leads to laboratory-acquired infections.

The predilection for SARS-CoV transmission to occur among international travelers and in healthcare settings and to cause unusual clusters of pneumonia provides a focus for surveillance in the absence of known SARS activity (i.e., patients hospitalized for pneumonia, pneumonia in healthcare workers, unusual clusters of pneumonia among travelers). If SARS 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 and the initiation of appropriate measures to reduce the possible spread of infection.

Goals

- Ensure early detection of cases and clusters of respiratory infections that might signal the global re-emergence of SARS
- If the re-emergence of SARS is confirmed, maintain prompt and complete identification and reporting of potential cases to facilitate control and management of the outbreak
- Identify and monitor contacts of SARS cases to enable early detection of illness in persons at greatest risk for disease

Priority Activities

- Educate clinicians and public health workers on features that can assist in early recognition of SARS and on guidelines for reporting SARS cases
- Develop tools to identify, evaluate, and monitor contacts of SARS patients
- Establish an efficient data management system that links clinical, epidemiologic, and laboratory data on SARS cases and contacts 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

B. Isolation and Infection Control in Healthcare Facilities

In most settings with large SARS outbreaks in 2003, healthcare facilities accounted for a large proportion (often >50%) of cases. 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 SARS cases and strict adherence to infection control precautions are critical; prompt 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 strict infection control practices to prevent transmission
- Strengthen communications in healthcare facilities and between healthcare facilities and health departments

Priority Activities

- Organize a planning committee to develop an institutional preparedness and response plan.
- Develop surveillance, screening, and evaluation strategies for various levels of SARS activity.
- Develop plans to implement effective infection control measures.
- Determine the current availability of infrastructure and resources to care for SARS patients and strategies for meeting increasing demands.
- Determine how the staffing needs for the care of SARS patients will be met.
- Determine strategies to communicate with staff, patients, and the health department and to educate staff and patients.

C. Community Containment

Community containment strategies, including isolation 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 but are not ill is intended to prevent further transmission in the event that they develop SARS by reducing the interval between the onset of symptoms and the institution of appropriate precautions.

Because most SARS patients have a clearly identified exposure to other SARS patients or to a setting with SARS-CoV transmission, quarantine of exposed persons is a highly effective strategy if 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.

Goals

- Reduce the risk of exposure to SARS by separating and restricting the movement of persons suspected to have SARS (isolation)
- Reduce the risk of transmission of SARS-CoV by restricting the movement of persons who have been exposed to infectious SARS patients but who are not yet ill (quarantine)
- Reduce the overall risk of transmission at the population level by limiting social interactions and preventing inadvertent SARS exposures

Priority Activities

- Isolate SARS patients and suspects in homes, hospitals, or designated community-based settings.
- Monitor contacts of SARS cases, and consider quarantine of contacts if needed.
- Implement community-based control measures, such as cancellation of public events and closure of schools, depending on the extent of the outbreak and the availability of resources.
- Establish the infrastructure to deliver essential goods and services to persons in quarantine and isolation.

D. Prevention of International Travel-Related Risk

In the absence of control measures, SARS 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 (and spread from an introduction) into the United States from SARS-affected areas.
- Prevent exportation of SARS from the United States if domestic transmission presents an increased risk of exportation.
- 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, 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 infection during travel.
- If SARS-CoV transmission in the United States presents an increased risk for exportation of SARS, 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.

E. 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 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 and reverse-transcriptase PCR (RT-PCR) assays for SARS-CoV RNA. 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 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 diagnostics
- Ensure that SARS 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 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 diagnostics
- Provide guidance on laboratory safety for SARS and other respiratory diagnostic testing and for potentially SARS-containing specimens submitted for other tests
- Provide guidance for interpreting test results, taking into account the possibility of false-positive and false-negative results and clinical and epidemiologic information
- Identify surge capacity for laboratory testing in the event of a large SARS outbreak

F. Communication

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. Specific communication needs and key messages will vary substantially by level of SARS activity. In the absence of SARS 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 emergence of SARS 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 providers 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.

Goals

- Instill and maintain public confidence in the nation's public health system and its ability to respond to and manage a SARS outbreak
- 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
- Provide accurate, consistent, and comprehensive information about SARS
- Address rumors, inaccuracies, and misperceptions as quickly as possible, and prevent stigmatization of specific groups.

Priority Activities

- Identify key messages about SARS for specific audiences (e.g., public, healthcare providers) and the most effective methods (e.g., websites, hotlines) 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

G. 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.
- Develop 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 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

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.

Appendices to the Core Document

Appendix 1
Clinical, Epidemiologic, and Virologic Features of SARS
Appendix 2
Terminology and Concepts

Appendix 1
Clinical, Epidemiologic, and Virologic Features of SARS

Emergence of SARS

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. 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. 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. 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.

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. All of the 8 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 7 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. 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. The clinical presentation of SARS-CoV infection has some but not enough distinctive features to enable diagnosis by clinical signs and symptoms alone. Respiratory symptoms often do not develop until 2 to 7 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. Almost all patients with laboratory evidence of SARS-CoV infection evaluated thus far developed radiographic evidence of pneumonia, and most (70% -90%) developed lymphopenia. The overall case-fatality rate of approximately 10% can increase to >50% in persons older than age 60.

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. 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. 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, documentation of "super-spreaders" and "super-spreading events" shows that, in certain situations, the virus can be transmitted very efficiently.

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). 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 somehow acquired the ability to infected humans. No one knows if SARS-CoV will re-emerge, 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 if it recurs during the

respiratory virus season. Recurrence of SARS, 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 serologic assays for virus-specific antibodies. 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. 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.

Appendix 2
Terminology and Concepts

Among the public health tools available to respond to infectious respiratory disease outbreaks and interrupt disease transmission are vaccines, prophylactic and therapeutic medications, environmental decontamination, isolation of infectious patients, personal protective measures, and, more rarely, quarantine of persons believed to be exposed to an infectious agent. Because SARS is a newly emerging disease, the understanding of its pathogenesis is limited, and to date no specific pharmaceuticals have been identified as effective treatment or prophylaxis. In addition, there is currently no vaccine that can protect susceptible persons from infection with SARS-CoV. Therefore, the primary tools available to control and prevent disease transmission during a SARS outbreak are case identification and isolation, contact tracing and monitoring, infection control, and community containment measures, including quarantine.

A case of SARS-CoV disease is a person with an illness that is clinically compatible with the features of SARS described previously and with laboratory evidence of SARS-CoV infection.

A contact is a person who has been exposed to a SARS case during the infectious period. A close contact is a person who has cared for or lived with someone with SARS or had direct contact with respiratory secretions of body fluids of a patient with SARS. Examples of close contact include kissing or hugging, sharing eating or drinking utensils, talking to someone within 3 feet, and touching someone directly. Close contact does not include activities such as walking by a person or sitting across a waiting room or office for a brief time.

Contact tracing involves the identification, evaluation, counseling, and monitoring of persons who may have been exposed to a patient with SARS-CoV infection. Contact tracing may result in strict or modified quarantine and regular monitoring for evidence of illness.

Community containment measures refer to the separation of infected or exposed persons from non-infected 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 and can be applied on an individual or population level.

Isolation refers to the separation of persons with a specific contagious illness from contact with susceptible persons and the restriction of their movement to contain the spread of that illness. Isolation usually occurs in a hospital but can be in a home or dedicated isolation facility. Isolation is used routinely in hospital and healthcare settings to reduce the transmission of infections to uninfected patients.

Quarantine refers to the separation and restriction of movement of well persons who may have been exposed to an infectious agent and may be infected but are not yet ill. Quarantine usually occurs in the home but can be in a dedicated facility or hospital. The term "quarantine" can also be applied to restrictions of movement into or out of buildings, other structures, and public conveyances. States generally have authority to invoke and enforce quarantine within their jurisdictions, although

quarantine laws vary among states. CDC is also empowered to detain, medically examine, or conditionally release persons suspected of carrying certain communicable diseases at points of arrival in and departure from the United States or across state lines.

Infection control measures practiced by healthcare personnel in healthcare facilities decrease the risk for transmission and acquisition of infectious agents through proper hand hygiene, scrupulous work practices, and use of personal protective equipment, such as masks, gloves, gowns, and eye protection. The types of infection control measures are based on how an infectious agent is transmitted and include standard, contact, droplet, and airborne precautions (http://www.cdc.gov/ncidod/hip/ISOLAT/Isolat.htm).

Standard precautions are 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.

Contact precautions are work practices designed to reduce the risk of transmitting infectious agents by direct or indirect contact with an infectious person. Direct-contact transmission involves a direct body surface-to body surface contact and physical transfer of infectious agents between an infected person and a susceptible host. Indirect-contact transmission involves contact of a susceptible host with a contaminated intermediate object, such as contaminated instruments or dressings or contaminated hands that are not washed or gloves that are not changed between patients.

Droplet precautions are designed to reduce the risk of droplet transmission of infectious agents. Droplet transmission occurs when droplets containing infectious agents generated by an infectious person are propelled a short distance through the air (e.g., by coughing, sneezing, or talking) and deposited on the conjunctivae or mucous membranes of the mouth or nose of a susceptible person.

Airborne precautions are designed to reduce the risk of airborne transmission of infectious agents. Airborne transmission occurs by dissemination of nuclei of evaporated droplets that may remain suspected in the air for long periods of time. Microorganisms carried in this way can be dispersed by air currents and may be inhaled by a susceptible host in the same room or over a longer distance from the source patient, depending on environmental factors. An airborne infection isolation room (AIIR) that has negative pressure relative to the surrounding area is required for implementation of airborne precautions.

In this document, healthcare worker and healthcare personnel refer to any employees who have close contact (i.e., within 3 feet) of 1) patients, 2) patient-care areas (e.g., patient rooms, procedure areas), or 3) patient-care items (e.g., linens and other waste).

PUBLIC HEALTH GUIDANCE FOR COMMUNITY-LEVEL PREPAREDNESS AND RESPONSE TO SEVERE ACUTE RESPIRATORY SYNDROME (SARS)

SUPPLEMENT A: COMMAND AND CONTROL

I. Operational Authority

The preparation for and response to an outbreak of SARS requires a coordinated response by public health authorities and possibly other emergency response entities at the local, state, and federal levels of government. Although state and local governments have primary responsibility for responding to an outbreak of SARS within their jurisdictions, the federal government has authority to support affected states or jurisdictions as necessary.

A. Federal Authority

The U.S. Government Interagency SARS Concept of Operations Plan (CONPlan) describes plans for the federal response to a future outbreak of SARS. According to this plan, the Department of Health and Human Services (HHS) is the U.S. Government's lead agency for the preparation, planning, and response to a SARS outbreak. As such, HHS will coordinate the U.S. Government's response to the public health and medical requirements of a SARS outbreak. The HHS Secretary's Command Center (SCC) will serve as the national incident command center for all health and medical preparedness, response, and recovery activities. The national response is based on overall geographic risk levels in the United States, as delineated in the CONPlan.

As the component of HHS responsible for disease prevention and control, CDC will have primary responsibility for tracking a SARS outbreak and managing the operational aspects of the public health response. To this end, CDC will augment local and state resources for disease surveillance, epidemiologic response, diagnostic laboratory services and reagents, education and communication, and disease containment and control.

B. State/Local/Jurisdictional Authority

State and local officials provide the first line of response with respect to preparing and planning for a SARS outbreak at their own jurisdictional level, identifying, managing, and reporting SARS cases, exercising necessary authority to isolate ill persons and quarantine contacts, and imposing other community containment measures. The division of responsibilities between state and local levels varies among states, and often within states, according to the size of the population served by local health agencies.

Local planning for a reemergence of SARS encompasses a variety of activities and involves persons representing a range of disciplines and expertise. Suggested action steps for local and state SARS preparedness planning are provided below. These will need to be interpreted in the context of the responsibilities of particular health agencies and the division of responsibilities in the jurisdiction.

- Designate an executive committee to oversee a SARS planning process, in cooperation with local health agencies and other partners. Draft/formally adopt a SARS response plan, or add SARS preparedness and response activities to existing preparedness plan(s).
- Ensure that the jurisdiction has an incident command structure in place to govern roles and responsibilities during a multi-agency, multi-jurisdictional response.
- Establish a legal preparedness plan (see below).
- Identify the authority responsible for declaration of a public health emergency and for officially activating the SARS response plan during an outbreak.
- Identify key stakeholders responsible for development and implementation of specific components of the SARS plan, including enforcement of isolation, quarantine, and closure and decontamination of premises.
- Ensure that the jurisdiction's elected officials, appointed officials, and other agency heads know their respective responsibilities during a SARS outbreak.
- Understand the controlling authority over intrastate and interstate modes of transportation in the event that these need to be curtailed during an outbreak.
- Develop/reinforce relationships with health authorities of adjoining jurisdictions and with federal agencies to ensure effective communication.
- Identify an overall authority in charge of coordinating different medical personnel groups during an outbreak.
- Identify the key individuals from the state and local authorities who will assist in maintaining public order and enforcing control measures during an outbreak.
- Review procedures for enlisting the assistance of the National Guard and other emergency response organizations.

Appendix A1 is a checklist developed by CDC, the Association of State and Territorial Health Officials (ASTHO), and the National Association of County & City Health Officials (NACCHO) that provides a more comprehensive list of preparedness issues and activities for local and state health public health agencies.

II. Legal Authority

Legal preparedness is a key component of SARS preparedness and response. A response to an outbreak of SARS may require coordination of federal, state, and local legal authorities to impose a variety of emergency public health and containment measures, at both the individual and community levels. These measures might include:

- Active surveillance of potential cases and their contacts
- Isolation (separation and restriction of movement of persons with an infectious disease to stop the spread of infection)
- Quarantine (separation and restriction of movement of well persons who have been exposed to an infectious disease and are therefore potentially infectious)

Experience from the 2003 SARS outbreak demonstrates how closely legal issues are intertwined with public health responses. Within days of the appearance of SARS, Canada, Hong Kong, and Singapore instituted maximum health measures, including large-scale quarantine, to prevent the further spread of SARS-CoV infection. In Ontario, Canada, the provincial government made SARS a reportable communicable disease under Ontario's Health Protection and Promotion Act. This empowered

Canadian public health officials to issue orders to enjoin SARS case-patients from engaging in activities that could facilitate transmission. In the United States, the President signed an executive order on April 4, 2003, adding SARS to the list of quarantinable communicable diseases (http://www.cdc.gov/ncidod/sars/executiveorder040403.htm). This executive order provides CDC with the legal authority to implement isolation and quarantine measures for SARS, as part of its transmissible disease-control measures.

U.S. public health officials therefore need to be knowledgeable about the legal authorities and statutes that exist at the local, state, and federal levels for enforcing these measures. In general, the federal government has primary responsibility for preventing the introduction of communicable diseases from foreign countries into the United States, and states and local jurisdictions have primary responsibility for isolation and quarantine within their borders. The authority to compel isolation and quarantine is derived from each state's inherent "police power," the authority of all state governments to enact laws and promote regulations to safeguard the health, safety, and welfare of its citizens. By statute, the HHS Secretary may accept state and local assistance in the enforcement of federal quarantine and other health regulations and may assist state and local officials in the control of communicable diseases. Because isolation and quarantine are "police power" functions, public health officials at the federal, state, and local levels may occasionally seek the assistance of their respective law enforcement counterparts to enforce a public health order.

Three issues related to legal authorities that might be required to contain SARS are essential to ensuring preparedness for a rapid response:

- Prior identification of relevant legal authorities, persons, and organizations empowered to invoke and enforce such authorities
- Public trust and compliance with government directives, which includes due process protections to treat individuals with dignity and fairness
- Protection of personnel required to implement and enforce the measures

Appendices A2 and A3 were developed by CDC in consultation with external partners. Appendix A2 is a checklist of legal considerations related to SARS preparedness and response at the community level. Appendix A3 is a fact sheet that outlines some practical steps for SARS legal preparedness. Additional considerations related to community containment measures, including isolation and quarantine, are addressed in Supplement D.

III. Incident Command and Management System

A SARS outbreak affects and involves a variety of public and private agencies and organizations at the local, state, and federal levels that must coordinate their activities and resources and share information in real time. The sustained, coordinated efforts required to control SARS at the local level lend themselves to the principles and structure of incident command and management systems. These systems use a predetermined organizational structure for potential mass casualty events that address planning, operations, logistics, finance, and administration. They are useful in maximizing the use of limited resources, monitoring the status of an outbreak, and consolidating the control of a large number of individual resources.

The success of efforts to rapidly detect, respond to, and contain an outbreak also depends in large part on the availability of information systems that can support and coordinate the activities generated within an incident command system. Such information systems integrate all facilities (public and private) and personnel involved in the response, expedite real-time communication and flow of information, aid in logistics planning and resource management/allocation, and facilitate decision-making and operational coordination.

During the 2003 SARS outbreaks in Toronto, Canadian health officials noted the constant and high demand for information on the dynamics and public health management of the outbreak. These requests derived not only from local, national, and international public health officials but also from clinicians, healthcare organizations, government officials, the media, and the public. Lack of a reliable, centralized, electronic database of outbreak-associated information posed a challenge to tracking the outbreak, monitoring and assessing the outbreak response, and meeting information needs in a timely and complete manner. A basic need of a SARS information system is to integrate information regarding suspected and confirmed cases, exposed contacts, and related laboratory findings. Additional needs during a SARS outbreak include: collecting and organizing situational information, managing staffing needs and requirements, monitoring/supplying persons in isolation and quarantine, maintaining an inventory of respirators and other PPE equipment, tracking the status of/procuring essential supplies, operating special/temporary facilities, and managing administrative and financial aspects of the response.

An **incident management structure supported by adequate information systems** that can address these needs is an essential tool for command, control, and coordination of resources during a SARS outbreak. A component of CDC's incident management structure is the agency's Emergency Operations System, which includes the Director's Emergency Operations Center (DEOC). The goals are to: 1) support the response of federal, state, local, and international health systems in public health emergencies, 2) support the deployment of health assets in response to or anticipation of a public health emergency, and 3) provide real-time situational information to and from federal, state, local, and international agencies, organizations, and field teams. Elements of the Emergency Operations System are operational, health and technical response teams, specialized laboratories and subject matter experts, and alert, notification, and escalation systems. These would all be available for activation and deployment in the event of a reappearance of SARS.

Appendices to Supplement A

Appendix A1
State and Local Health Official Epidemic SARS Checklist: Are You and Your Jurisdiction Ready for Epidemic Severe Acute Respiratory Syndrome (SARS)?
Appendix A2
Checklist of Legal Considerations for SARS Preparedness in Your Community
Appendix A3
Fact Sheet: Practical Steps for SARS Legal Preparedness

Appendix A1

STATE AND LOCAL HEALTH OFFICIAL EPIDEMIC SARS CHECKLIST

Are You and Your Jurisdiction Ready for Epidemic Severe Acute Respiratory Syndrome (SARS)?

This checklist, developed in collaboration with the Centers for Disease Control and Prevention, has been modeled on a previous Association of State and Territorial Health Officials (ASTHO) checklist for pandemic influenza preparedness (*Preparedness Planning for State Health Officials: Nature's Terrorist Attack - Pandemic Influenza* is available at www.astho.org/pubs/PandemicInfluenza.pdf). Preparations made to respond to other public health emergencies, including bioterror events, will generally be applicable to epidemic SARS planning.

The items on this checklist are intended for use by health officers at all levels – state, regional, district and local. The division of responsibilities between state and local levels varies among states, and often within states, according to the size of the population served by local health agencies. The items on this checklist should be interpreted in the context of the responsibilities of your public health agency and the division of responsibilities within your community, regardless of level of government. For some local public health agencies, for example, the capabilities needed for certain items may be available from a state health department, but are not present locally.

Every locality should plan for the possibility of a local public health crisis such as widespread SARS, in which help from other public health agencies is not available because they are facing similar crises. At the same time, there are advantages to coordinating response plans on a regional and statewide basis, partly so that isolation and quarantine procedures are applied uniformly and equitably.

SARS would be considered to be widespread in the United States if and when cases occur throughout the nation, in multiple locations, in persons without known epidemiologic links to places with community transmission of SARS or to known SARS cases. Local, district, and state public health agencies should be prepared to address all of the following items when the disease is present elsewhere in the world and to implement those preparations when widespread disease occurs in the United States.

LEGAL AND POLICY ISSUES

- ❑ 1. My jurisdiction has a draft or formally adopted epidemic SARS plan.
- ❑ 2. Agreements have been obtained with my state's health care insurers, Medicaid program, and healthcare product and service providers for cooperation with public health recommendations during an epidemic.
- ❑ 3. I have reviewed with legal counsel my jurisdiction's laws and procedures on quarantine, isolation, closing premises and suspending public meetings and know how to implement them to help control an epidemic.
- ❑ 4. I am familiar with my state's medical volunteer licensure, liability, and compensation laws for in-state, out-of-state, returning retired, and non-medical volunteers.
- ❑ 5. I know whether my state allows hospitals and other licensed healthcare institutions to use temporary facilities for provision of medical care in the event of a public health emergency.
- ❑ 6. My jurisdiction's epidemic plan addresses Worker's Compensation and Unemployment Compensation issues related to health care and other workers missing work because of isolation or quarantine.
- ❑ 7. I have identified any deficiencies in my jurisdiction's laws and procedures on quarantine, isolation and related capacities and initiated steps to have those deficiencies corrected.
- ❑ 8. I know what provisions are in place, if any, for compensation of persons with economic or health injury resulting from needed SARS control measures and for limitation of liability of health care providers and agencies.

AUTHORITY

- ❑ 9. My state has an executive SARS epidemic planning committee that oversees the planning process, in cooperation with local health agencies.
- ❑ 10. My state has identified the authority responsible for declaration of a public health emergency and for officially activating our plan during a SARS epidemic.
- ❑ 11. My jurisdiction has identified key stakeholders responsible for development and implementation of specific components of the SARS epidemic plan, including enforcement of isolation, quarantine, and closure and decontamination of premises.
- ❑ 12. My jurisdiction's elected officials, appointed officials, and other agency heads know their respective responsibilities in the event of an epidemic.
- ❑ 13. My jurisdiction has a command system in place (e.g., the Incident Command System) to govern roles and responsibilities during a multi-agency, multi-jurisdictional event.
- ❑ 14. I am familiar with the controlling authority over intrastate and interstate modes of transportation, should these need to be curtailed during an epidemic (e.g., airplanes, trains, ships, highways).
- ❑ 15. My staff has relationships with health authorities of adjoining counties or states and with federal agencies to ensure effective communication during a public health emergency.
- ❑ 16. My jurisdiction has identified an overall authority in charge of coordinating different medical personnel groups during an epidemic.
- ❑ 17. I know personally the key individuals from the state and local authorities who will assist in maintaining public order and enforcing control measures, if needed, during an epidemic.

- ❑ 18. I am familiar with the procedure for enlisting the National Guard's assistance during a public health emergency.

SURGE CAPACITY

- ❑ 19. I know how to access current recommendations on treatment of cases and prevention of transmission in the hospital, long-term care and home care settings.
- ❑ 20. My jurisdiction's emergency response planning has involved health care product and service providers to determine how to best prevent and control disease spread and manage the health care of the population during an epidemic.
- ❑ 21. I am familiar with the required protocol for securing needed emergency healthcare services and supplies during a public health emergency.
- ❑ 22. My jurisdiction has identified ways to augment medical, nursing, and other health care staffing to maintain appropriate standards of care during an epidemic.
- ❑ 23. My jurisdiction has identified ways to augment public health laboratory, epidemiology and disease control staffing to meet emergency needs and in the event public health workers are affected by an epidemic.
- ❑ 24. My jurisdiction has a process to recruit and train medical volunteers for provision of care and vaccine administration during a public health emergency.
- ❑ 25. My jurisdiction has identified alternate facilities where overflow cases from hospitals and well persons needing quarantine away from home can be cared for and has developed processes with Emergency Medical Services to assess, communicate, and direct patients to available beds.
- ❑ 26. My jurisdiction has identified facilities for outpatient and inpatient care of children with SARS and their families.
- ❑ 27. My jurisdiction's epidemic plan addresses the mechanics of how isolation and quarantine will be carried out, such as providing support services for people who are isolated or quarantined to their homes or temporary infirmary facilities and protection for workers providing these services.
- ❑ 28. My jurisdiction has a plan for ensuring that appropriate personal protective equipment, including N-95 or higher level respirators, is made available for persons whose job requires exposure to people with SARS, and that needed training and fit-testing are provided.
- ❑ 29. My jurisdiction has a plan for dealing with mass mortality, including transportation and burial of bodies.
- ❑ 30. My jurisdiction has a plan for providing mental health services to mitigate the impact of a SARS epidemic.

COMMUNICATIONS AND EDUCATION

- ❑ 31. I have conveyed the importance of epidemic preparedness, and its overlap with bioterrorism preparedness, to my jurisdiction's chief executive and to other state and local law and policy makers.
- ❑ 32. I know personally the key individuals from public health agencies, the medical community, and the political community with whom I will need to communicate during an epidemic.
- ❑ 33. My jurisdiction has begun educating the public on epidemic SARS to instill acceptance of the epidemic response (including quarantine and isolation) and to optimize public assistance during an epidemic.
- ❑ 34. My jurisdiction has opened a regular channel of communication and begun educating health care providers (including first responders) and their

organizations and unions on epidemic SARS (including diagnosis, treatment, and management of cases and contacts to prevent transmission).

- ❑ 35. My jurisdiction has opened a regular channel of communication and begun educating chief executive officers of health care organizations on epidemic SARS (including management of patients in health care settings, health care worker protection, physical facility needs, voluntary or forced furloughs of exposed workers, etc.).
- ❑ 36. My jurisdiction has established a multi-component communications network and plan for sharing of timely and accurate information among public health and other officials, medical providers, first responders, the media and the general public.
- ❑ 37. My jurisdiction has begun identifying and planning to produce and provide education and information materials for media, providers, the public, and occupational groups whose duties may expose them to SARS, in appropriate languages and in forms suitable for limited literacy populations.
- ❑ 38. Whoever is selected as the primary public spokesperson for my jurisdiction during an epidemic is ready to clearly and consistently answer the following types of questions:
  - ❑ How is the SARS-associated coronavirus (SARS-CoV) transmitted?
  - ❑ How long are people infectious after they have SARS?
  - ❑ What is isolation? What is quarantine?
  - ❑ What is the justification for isolation of cases and quarantine of contacts?
  - ❑ What is the legal authority for isolation of cases and quarantine of contacts?
  - ❑ What is the difference between a probable and a suspected SARS case?
  - ❑ Who should be tested for the SARS-associated coronavirus?
  - ❑ What can members of the public do to protect themselves?
  - ❑ In the event a vaccine or antiviral treatment become available, what specific priority groups might be vaccinated or treated first?
- ❑ 39. My jurisdiction has identified the most effective media to get messages out to the public during an epidemic (e.g., TV, radio, print media, internet, Web sites, hotlines).
- ❑ 40. My jurisdiction has planned how to coordinate state, local, and federal public messages and ensure they are consistent and timely.

LABORATORY AND SURVEILLANCE

- ❑ 41. In the event of a SARS epidemic, I will have available daily counts of key community health indicators, such as numbers of emergency department visits, hospital admissions, deaths, available hospital beds and staff, facility closings, numbers of contacts being traced and numbers under quarantine.
- ❑ 42. The public health laboratory that serves my jurisdiction can test for the SARS-associated coronavirus by serology and/or PCR.
- ❑ 43. My state has identified those labs that can test for the SARS-associated coronavirus.
- ❑ 44. The public health laboratory that serves my jurisdiction has linked to clinical laboratories and provided training on the use of SARS tests, biosafety, specimen collection, packing and shipping, and rule-out testing.
- ❑ 45. Public health laboratories in my state have computerized record-keeping to help with data transmission, tracking, reporting of results to patients and facilities, and analysis during an epidemic.
- ❑ 46. My jurisdiction has determined how to assess and document the spread and impact of disease throughout the population, including special populations at

risk (such as health care workers and first responders), during a SARS epidemic, including enhancements to routine surveillance.

- ❑ 47. My jurisdiction has computerized record-keeping for cases, suspected cases, contacts, and persons under public health isolation or quarantine orders to help with data transmission, tracking and analysis during an epidemic.
- ❑ 48. My jurisdiction's epidemiology staff, in cooperation with other public health agencies, has the capacity to investigate clusters of SARS cases, to determine how disease is being transmitted, to trace and monitor contacts, to implement and monitor quarantine measures, and to determine whether control measures are working.
- ❑ 49. My jurisdiction has plans for educating health care providers about recognition and reporting of SARS, about the current case definition, and about sources of current information on all aspects of SARS.

PREPAREDNESS IN OTHER AGENCIES

- ❑ 50. The emergency response system is ready to deal with epidemic SARS as called for in an all-hazards or epidemic plan.
- ❑ 51. My jurisdiction has carried out a community-wide epidemic SARS table-top or field exercise, to train on and evaluate its epidemic plan.
- ❑ 52. Community partners such as hospitals, EMS services, law enforcement agencies, health care practitioners, environmental hygiene/remediation services, news media, schools, and colleges know what part they are expected to play during an epidemic and are prepared to do so.
- ❑ 53. The law enforcement and court system in this jurisdiction are prepared to enforce isolation and quarantine orders and to promptly adjudicate appeals to public health orders, as provided by statute.

VACCINATION / ANTIVIRALS

At present (May, 2003), there is neither a vaccine nor effective antiviral chemotherapy available for SARS. The items below will become relevant when one or both of these become available.

- ❑ V1. My jurisdiction has identified the method(s) of epidemic vaccine and antiviral delivery (i.e., public sector, private sector, or a combination of these two) that will be most efficient for the jurisdiction, and developed and tested methods for mass administration.
- ❑ V2. I know whether my state statutes provide for providing or requiring vaccination or treatment during an infectious disease emergency, and know how to implement them in my jurisdiction to help control an epidemic.
- ❑ V3. My jurisdiction has the infrastructure in place to vaccinate or treat at-risk and hard-to-reach populations during a SARS epidemic.
- ❑ V4. My jurisdiction's epidemic plan outlines a process for identifying essential workers (those people whose jobs/skills are critical for maintenance of public safety and an efficient epidemic response) and "highest risk" groups who will need to receive priority vaccination and/or antiviral prophylaxis.
- ❑ V5. My jurisdiction has developed a documentation process for administered epidemic vaccine and antiviral doses, with recall capacity if more than one dose is required to induce immunity.
- ❑ V6. My jurisdiction has determined how adverse vaccine or medication side effects will be documented, in cooperation with local health agencies, during a mass or targeted vaccination or prophylactic treatment campaign.

- ❑ V7. My jurisdiction has compiled a list of health care workers and institutions that will assist in mass vaccination or prophylactic treatment during an epidemic or other public health emergency.
- ❑ V8. My jurisdiction has identified ways to secure and protect a limited supply of essential medicines, supplies, equipment and vaccines.
- ❑ V9. My jurisdiction has developed and tested, through a simulated exercise, a plan for mass or targeted immunization, prophylactic treatment, and clinical care including: accepting delivery of large quantities of vaccine, drugs, supplies or equipment (e.g., as part of the Strategic National Stockpile); storing and handling vaccine, drugs, supplies or equipment; setting up and staffing clinics; administering vaccine or antiviral drugs; and educating the public, media, and medical providers.

Appendix A2
Checklist of Legal Considerations for SARS Preparedness in Your Community

The global emergence of SARS presents challenges to the public health system at all levels of government. If SARS reemerges, the potential exists for implementation of isolation and/or quarantine within a given community. There is great variation among state and local laws regarding compelled isolation and quarantine.

The following checklist is a planning tool for lawyers highlighting the relevant partners, resources, planning considerations, due process considerations, and issues of legal liability and immunity that may arise in the context of any public health emergency whether natural or man-made. This checklist specifically addresses SARS. Next to each consideration are listed the legal partners (e.g., public health, hospitals, public safety, emergency management, judiciary) who may be called upon to address these considerations as part of the affected community's response. The challenge of the public health response is to protect the health of many, while safeguarding the rights of the individual. An integrated and coordinated response by attorneys at all levels in the community is essential to achieving this goal.

The checklist format is not intended to set forth mandatory requirements or establish a national standard for legal preparedness. Rather, each state and local jurisdiction should determine for itself whether it is adequately prepared for disease outbreaks in accordance with its own laws and procedures.

Planning Considerations

- ❑ Public health personnel have a basic understanding of the **intersection among federal, state, and local laws** regarding quarantine and isolation as they relate to international airports and interstate border crossings. [public health/public safety/emergency management]
- ❑ Where applicable, draft legal orders, motions, and templates exist authorizing **medical evaluation of non-compliant individuals** meeting SARS case definition and displaying SARS symptoms. [public health/hospitals]
- ❑ Legal counsel has reviewed the feasibility of requiring individuals to **self-monitor for medical conditions** (e.g., temperature checks, and (where applicable) drafted legal orders or agreements). [public health]
- ❑ Legal counsel has reviewed the feasibility of issuing **"exclusion" orders**, (i.e., excluding case contacts from using public transportation, attending public meetings and, where applicable, drafted templates and legal orders. [public health/public safety/emergency management]
- ❑ Statute, regulation, or other administrative mechanism exists authorizing the isolation/quarantine of individuals for SARS. [public health/public safety/judiciary]
- ❑ Draft legal orders, motions, and templates exist for isolation/quarantine of individuals in **homes, hospitals, or other designated facilities**. [public health/hospitals/emergency management/public safety]
- ❑ Legal counsel has reviewed the feasibility of using **electronic methods to monitor** suspected non-compliant individuals in home isolation and/or quarantine. [public health/public safety]
- ❑ Draft legal orders, motions, and templates exist to **quarantine facilities** and to credential ingress and egress into such facilities. [public health/public safety/emergency management]

- ❑ Legal counsel has reviewed the feasibility of using **faith-based organizations** to render assistance or provide services to persons under isolation/quarantine. [public health]
- ❑ Public health has reviewed the availability of workers' compensation and/or other forms of **financial support** for persons unable to return to work because of isolation/quarantine order. [public health]
- ❑ Legal counsel has considered whether public health department should issue documents designed to assist with **reintegration of persons** subject to isolation/quarantine order (e.g., letter to employer or school explaining that patient is no longer infectious). [public health]
- ❑ Legal counsel has reviewed agreements relating to **overtime and/or flexibility of hours** for staff during public health emergencies. [public health/hospitals/public safety/emergency management]
- ❑ Legal counsel has clear understanding of legal authorities relevant to **environmental remediation** of buildings. [public health/hospitals/emergency management]

Partnerships/Outreach

- ❑ A **legal preparedness task force** has been assembled with individuals representing public health, public safety, hospitals, emergency management, judiciary, and other relevant individuals and/or organizations at various levels of authority: federal, state, local, cross-border, etc. [public health/public safety/hospitals/emergency management/judiciary]
- ❑ Procedures (e.g., use of force guidelines, infection control guidelines, etc.) have been established between public health and public safety for **enforcement of isolation/quarantine orders**. [public health/public safety]
- ❑ Public safety personnel have received **educational materials** relating to SARS and have a clear understanding for how to enforce an isolation/quarantine order. [public health/public safety]
- ❑ Procedures or protocols exist between hospitals and public health to manage a suspect or probable SARS case attempting to **leave the hospital against medical advice**. [public health/hospitals/public safety]
- ❑ Where applicable, memoranda of agreement (MOA) or understanding (MOU) have been drafted to allow for the **loaning of facilities or other services** necessary to implement a quarantine and/or isolation order for individuals unable to home isolate (e.g., travelers, homeless populations). [public health/hospitals/emergency management]
- ❑ Judges and attorneys in the area, through **local bar organizations** or other entities, have received educational materials, training, or information related to SARS and the potential use of isolation/quarantine to interrupt disease transmission. [public health/judiciary]
- ❑ Legal counsel has reviewed and/or drafted **data sharing/data use/confidentiality agreements** related to necessary sharing of confidential patient medical information between public health and other partners. [public health/hospitals/public safety/emergency management]
- ❑ Public health and public safety officials have considered whether to implement a **"Forensic Epidemiology" training course** in their jurisdiction. [public health/public safety]

Due Process Considerations

- ❑ Draft legal orders and templates **use terms** such as "quarantine," "isolation," and "detention" in a **consistent** manner. [public health/judiciary)
- ❑ Legal counsel has reviewed all draft isolation/quarantine orders and forms, as well as applicable administrative hearing procedures, to ensure concurrence with **basic elements of due process** (e.g., adequate notice, opportunity to contest administrative determination, etc.) [public health/judiciary]
- ❑ Procedures or protocols exist to ensure that individuals subject to an isolation/quarantine order have **access to legal counsel**, if desired (e.g., list of attorneys willing to provide services at little or no cost). [public health/judiciary]
- ❑ Legal counsel has analyzed what procedures are necessary to satisfy **due process** in **different isolation/quarantine scenarios (**e.g., "voluntary" home isolation, isolation in a guarded facility, exclusion from certain public activities). [public health/judiciary]
- ❑ Where applicable, public health has worked with local court system to develop 24/7 **"on call" list of judges or hearing officers** to review emergency requests for isolation/quarantine. [public health/judiciary]
- ❑ Public health has worked with local court system to develop a **plan for hearing cases and/or appeals** for individuals subject to isolation/quarantine order (e.g., participation of infected individuals via telephone, video conference) [public health/judiciary]

Legal Resources and Statutes

- ❑ Legal counsel has reviewed and has a clear understanding of the **legal resources and tools** relevant to a community's public health response. [public health/judiciary/emergency management]
  Such resources and tools include:
  - Draft Model State Emergency Health Powers Act http://www.publichealthlaw.net/MSEHPA/MSEHPA2.pdf
  - Emergency Management Assistance Compact (model agreement) http://www.emacweb.org/EMAC/About_EMAC/Model_Legislation.cfm
  - Emergency Management Assistance Compact (as implemented in a state or jurisdiction)
  - Memorandum of Understanding for Establishment of Local Public Health Mutual Aid and Assistance System http://www.publichealthlaw.net/Resources/ResourcesPDFs/MOU.pdf
  - American Bar Association Draft Checklist for State and Local Government Attorneys to Prepare for Possible Disasters http://www.publichealthlaw.net/Resources/ResourcesPDFs/ABA_checklist.pdf
  - Buncombe County Health Center Forensic Epidemiology Quarantine Task Force Report http://www.phppo.cdc.gov/od/phlp/ (to be posted)
  - Communicable Disease Control Measures in Texas: A Guide for Health Authorities in a Public Health Emergency http://www.tdh.state.tx.us/phpep/lha.

  Additional materials and resources may be posted at http://www.phppo.cdc.gov/od/phlp/
- ❑ Draft letters or fact sheets are distributed to hospitals and/or other healthcare providers describing permissible uses and disclosures of health information for public health purposes under the **Privacy Rule of the Health Insurance Portability and Accountability Act (HIPAA)**. [public health/hospitals]

- ❑ Where applicable, legal counsel has clear understanding of procedures to **declare a public health emergency** (at various levels of government) and consequences flowing from such a declaration. [public health/public safety/emergency management]
- ❑ Legal counsel is familiar with the requirements of the **Emergency Medical Treatment and Active Labor Act (EMTALA)** and has reviewed whether such requirements have been incorporated into public health and hospital planning for SARS. [public health/hospitals]
- ❑ Legal counsel has reviewed **hospital screening and admission procedures** for potential SARS patients (e.g., establishment of screening clinics for individuals complaining of SARS-like symptoms) for compliance with **EMTALA** [public health/hospitals]
- ❑ Legal counsel has reviewed potential **EMTALA** implications of a **community-wide EMS protocol** for transport of SARS patients (e.g., protocol requiring transport of SARS patients to a hospital or facility other than the hospital that owns the ambulance). [public health/hospitals/emergency management]

Legal Liability and Immunity

- ❑ Legal counsel has reviewed the potential legal liability of implementing a **"working" quarantine for essential service personnel** (e.g., requesting potentially exposed HCWs to continue working provided that infection control precautions are observed when treating non-exposed patients. [public health/hospitals]
- ❑ Legal counsel has reviewed the potential legal liability of housing suspect/probable SARS patients in **home isolation with non-exposed residents** subject to infection-control precautions (e.g., surgical mask, limited interaction with family members). [public health]
- ❑ Legal counsel has reviewed liability/immunity for **volunteers** providing assistance or services to persons under isolation/quarantine. [public health/emergency management]

Appendix A3
Fact Sheet: Practical Steps for SARS Legal Preparedness

Step 1: Know your legislation
State and local public health officers need to be familiar with the legal requirements in their jurisdictions regarding isolation of infectious persons and quarantine of exposed persons. Although most states have laws to compel the isolation and/or quarantine of an individual, procedures may vary widely from jurisdiction to jurisdiction. Key persons, such as legal counsel, judges, and policymakers, should be identified and made part of your jurisdiction's planning for SARS.

Step 2: Plan "due process"
Procedural due process is implicated when the government seeks to deprive an individual of "liberty" interests within the meaning of the Due Process Clause of the Fifth or Fourteenth Amendment to the U.S. Constitution. Many states, through statute or regulation, have established specific administrative and judicial schemes for affording due process to a person subject to a quarantine and/or isolation order. Schemes in other jurisdictions may not directly address this issue.

Although due process is a flexible concept and calls for procedural protections as the particular situation demands, the basic elements of due process include: adequate notice (typically through written order) of the action the agency seeks to compel; right to be heard (typically through the right to present evidence and witnesses and to contest the government's evidence and witnesses); access to legal counsel; and a final administrative decision that is subject to review in a court of law. These due process protections should not impede the immediate isolation or quarantine of an individual for valid public health reasons in an emergency situation.

Step 3: Draft key documents in advance
State and local public health officers should consider drafting key documents in advance of an emergency. These template documents can be critical time savers in an emergency. Documents that jurisdictions should consider preparing in advance include: draft quarantine and/or isolation orders; supporting declarations and/or affidavits by public health and/or medical personnel; and an explanation of the jurisdiction's due process procedures for persons subject to an isolation/quarantine order. Examples of documents created by other jurisdictions are found at: http://www.phppo.cdc.gov/od/phlp/

Step 4: Contact other jurisdictions
It is possible for federal, state, and local health authorities simultaneously to have separate but concurrent legal quarantine power in a particular situation (e.g., an arriving aircraft at a large city airport). Furthermore, public health officials at the federal, state, and local level may occasionally seek the assistance of their respective counterparts, e.g., law enforcement, to assist in the enforcement of a public health order. State and local public health officers should therefore be familiar with the roles and responsibilities of other jurisdictions: vertically (local, state, federal), horizontally (public health, law enforcement, emergency management, and health care), and in geographical clusters (overlapping state/local neighbors).

Step 5: Engage the courts in advance

Some jurisdictions may rely on older public health statutes that have not been amended in over half a century, while other jurisdictions may have recently revised their legal authorities to respond to bioterrorism or other public health emergencies. Judges who may be called upon to review a public health order may not be familiar with the state or local health authority's broad public health powers. During the SARS outbreak in Toronto, Canada, for example, many judges were surprised by the health officer's broad ex parte authority to compel isolation/quarantine under rarely used laws.

Step 6: Anticipate practical problems

State and local public health officers need to be prepared for the practical problems that may arise in affording adequate due process protections to persons subject to isolation and/or quarantine orders. Such problems, for example, may include how to arrange for the appearance and representation of persons under quarantine (e.g., through video conference or other remote means); how to serve an isolation/quarantine order on an individual (likely through law enforcement) and other procedures to advise such individuals of their legal rights; and isolation arrangements for transients or homeless populations.

Step 7: Communication … communication … communication

Communication planning is vital not only for an effective public health response but also for an effective legal response to a public health emergency. Public health agency counsel should be aware of media training available to other public health officers. During the SARS and monkeypox outbreaks, CDC, through the Public Health Law Program, established telephone conferences for public health legal counsel to share experiences and engage in peer-to-peer consultations. Efforts are now underway to develop materials to assist state and local public health agencies in conducting further outreach on emergency public health issues to the legal community through local bar associations.

PUBLIC HEALTH GUIDANCE FOR COMMUNITY-LEVEL PREPAREDNESS AND RESPONSE TO SEVERE ACUTE RESPIRATORY SYNDROME (SARS)

SUPPLEMENT B: SARS SURVEILLANCE

Goals

- Ensure early detection of cases and clusters of respiratory infections that might signal the global re-emergence of SARS.
- If the re-emergence of SARS is confirmed, maintain prompt and complete identification and reporting of potential cases to facilitate control and management of the outbreak.
- Identify and monitor contacts of SARS cases to enable early detection of illness in persons at greatest risk for disease.

Key concepts

- The early clinical features of SARS are not specific enough to reliably distinguish SARS from other respiratory illnesses.
- Risk of exposure is key to considering the likelihood of a diagnosis of SARS.
- Most SARS patients have a clear history of exposure to another patient or to a specific setting with recognized SARS-CoV transmission.
- SARS-CoV transmission is usually localized and often limited to healthcare settings or households.
- A cluster of atypical pneumonia in healthcare workers may indicate undetected SARS –CoV transmission.
- Up-to-date information on the presence of SARS globally is needed to accurately assess exposure risks.
- Contact tracing is resource intensive yet critical to containment efforts since it allows early recognition of illness in persons at greatest risk.
- Frequent communication among public health officials and healthcare providers, real-time analysis of data, and timely dissemination of information are essential for outbreak management.
- In a setting of extensive SARS-CoV transmission, the possibility of SARS should be considered in all persons with a febrile, respiratory illness, even if an epidemiologic link cannot be readily established.
- Swift action to contain disease should be initiated when a potential case is recognized, even though information sufficient to determine case status may be lacking.

Priority activities

- Educate clinicians and public health workers on features that can assist in early recognition of SARS and on guidelines for reporting SARS cases.
- Develop tools to identify, evaluate, and monitor contacts of SARS patients.
- Establish an efficient data management system that links clinical, epidemiologic, and laboratory data on SARS cases 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.

I. Rationale and Goals

The key to controlling a SARS outbreak is prompt detection of cases and their contacts, followed by rapid implementation of control measures. Identification of SARS cases is the basic step in SARS prevention efforts, whereas contact tracing provides a means to focus case-finding and containment efforts on persons who are at high risk of SARS.

Two features of SARS pose challenges for SARS case surveillance. First, the early signs and symptoms of SARS-CoV infection are not specific enough to reliably distinguish SARS from other common respiratory illnesses. Second, existing laboratory diagnostic tests are not adequately sensitive early in the course of SARS-CoV illness. Therefore, risk of exposure is key to considering the likelihood of a diagnosis of SARS. In the absence of SARS-CoV transmission worldwide, the most likely sites of recurrence are: 1) locations where SARS transmission previously occurred; 2) the original site of introduction of SARS from animals to humans; and 3) laboratories where breaks in technique could lead to laboratory-acquired infections that might be a source of further transmission in humans. The facts that SARS infections often occur in healthcare settings, cause unusual clusters of pneumonia, and usually lead to hospitalization, provide a means to focus surveillance when known SARS-CoV transmission is absent worldwide (i.e., patients hospitalized for pneumonia, pneumonia in healthcare workers, unusual clusters of pneumonia).

If SARS does return, then SARS patients or known sites of SARS-CoV transmission become the most likely source of exposure. Contact tracing, the identification of persons who had close contact with a potential case of SARS or may have been exposed while present in locations (e.g., hospitals) with known SARS-CoV transmission, is essential for the implementation of appropriate measures to reduce further spread of the disease.

The overall goals of SARS surveillance are to:

- Ensure early detection of cases and clusters of respiratory infections that might signal the global re-emergence of SARS.
- If the re-emergence of SARS is confirmed, maintain prompt and complete identification and reporting of potential cases to facilitate control and management of the outbreak.
- Identify and monitor contacts of SARS cases to enable early detection of illness in persons at greatest risk for disease.

II. Lessons Learned

The following lessons from the global experience with SARS surveillance have been considered in developing this document:

- The key to recognizing persons with SARS is identifying an epidemiologic link of exposure to another case of SARS or a setting (e.g., hospital) where SARS-CoV transmission is occurring.
- Screening criteria for epidemiologic linkages need to reflect 1) the status of SARS globally and the risk of exposure from travel, and 2) the status of

SARS activity in the community, at the work site, or in other settings where a patient with SARS-like illness may have been.

- In a setting of extensive SARS-CoV transmission, the possibility of SARS should be considered in all persons with a febrile respiratory illness, even if an epidemiologic link cannot be readily established.
- Healthcare facilities were disproportionately affected by SARS, and healthcare workers were among the first and most severely affected groups in every large outbreak reported.
- Healthcare providers will likely be the key to early detection and reporting of initial SARS illnesses.
- Contact tracing is resource intensive yet critical to containment efforts since it allows early recognition of illness in persons at greatest risk..
- Collection of appropriate and timely clinical specimens for laboratory testing is central to monitoring the status of SARS activity at the local, state, and federal levels.
- Timely reporting of cases, updates on the clinical status and disposition of case-patients, real-time analysis of data, and timely dissemination of information are essential for outbreak-management decisions.
- Frequent communication and data sharing among public health officials and healthcare providers are needed to update the status of potential and diagnosed SARS cases.
- Paper-based reporting systems are too slow and labor intensive to manage a large outbreak of SARS. A rapid and efficient electronic reporting system that facilitates real-time analysis of clinical, epidemiologic, and laboratory information at the local level is essential.

III. SARS Case Definition and Status as a Nationally Notifiable Disease

On June 26, 2003, members of the Council of State and Territorial Epidemiologists (CSTE) agreed to revise the surveillance case definition for SARS in the United States and to add respiratory illness due to SARS-CoV to the list of nationally reportable diseases (Appendix B1). CDC has adopted the case definition detailed in the CSTE position statement, which sets the stage for ongoing SARS surveillance (Appendix B2).

Surveillance case definitions are used primarily for identifying and classifying cases for national reporting purposes. For conditions of public health importance such as SARS-CoV infections, disease-control activities should be initiated as soon as possible after a potential case is recognized, even though information sufficient to determine case status may be lacking.

Therefore, the revised case definition distinguishes 1) cases of SARS-CoV disease that may be classified as confirmed (i.e., clinically compatible illness that is laboratory confirmed) or probable (i.e., severe respiratory illness with epidemiologic linkage to a laboratory-confirmed case), from 2) other SARS reports under investigation, which include patients whose illnesses are less severe or whose exposures to SARS-CoV are not definitive.

Detailed descriptions of revised SARS case criteria and classification are found in Appendix B1. SARS case definitions may be modified as more clinical and epidemiologic information is obtained. Up-to-date versions of SARS case definitions are available on the CDC website: http://www.cdc.gov/ncidod/sars/.

IV. Plan for Surveillance of SARS Cases

Objective 1: In the *absence* of known SARS activity worldwide, establish surveillance aimed at early detection of cases and clusters of respiratory infections that might signal the re-emergence of SARS.

Continued vigilance is critical to ensure rapid recognition and appropriate management of persons with SARS-CoV disease if SARS reappears. As discussed above, SARS is more likely to re-emerge in a setting outside the United States. In the absence of known areas with SARS activity, U.S. surveillance efforts should focus on specific clinical syndromes (i.e., hospitalized cases of pneumonia) in groups likely to be first affected by the re-emergence of SARS if the re-emergence is not detected elsewhere (e.g., travelers to areas affected with SARS, healthcare workers).

Activities for healthcare providers and healthcare facilities

- Screen all patients hospitalized for pneumonia for the three following characteristics that might indicate a higher index of suspicion for SARS-CoV infection:
  - In the 10 days before illness onset, travel to or close contact with other ill persons who recently traveled to a previously affected SARS area, or
  - Employment as a healthcare worker, or
  - Close contact with person(s) recently found to have radiographic evidence of pneumonia without an alternative diagnosis
- In the absence of known SARS activity worldwide, use SARS-CoV testing judiciously and in consultation with local or state public health officials, given that:
  - The positive predictive value of a positive laboratory test in the absence of known SARS activity is extremely low
  - False-positive tests will raise concerns unnecessarily
- Infection control practitioners and other appropriate healthcare personnel should be alert for clusters of unexplained pneumonia among two or more healthcare workers who work in the same facility
- Report to the state or local health department:
  - All cases of hospitalized pneumonia for whom the answer to at least one of the above three screening questions is "yes"
  - Any clusters of unexplained pneumonia
  - Any positive SARS-CoV test result (requires immediate contact of appropriate public health partners by telephone).

Activities for state and local health departments

- Disseminate surveillance guidelines regarding timely recognition, evaluation, and reporting of possible SARS infections to healthcare providers, particularly triage, emergency department, and hospital-based providers.

- Establish a surveillance system to receive reports of:
  - Persons who are hospitalized for pneumonia and found to be at greater risk for SARS infection through the provider-based screening described above,
  - Clusters of persons with unexplained pneumonia, and
  - Positive SARS-CoV test results.
- Review and obtain information needed to further assess reported pneumonia cases and clusters with regard to the likelihood that the illness(es) might be due to SARS-CoV infection. Considerations that increase the likelihood of SARS include:
  - Illness onset dates grouped within a 10-day period
  - Ill healthcare workers who have direct patient care responsibilities
  - Ill travelers who had contact with healthcare settings or persons hospitalized for a respiratory infection while abroad and within 10 days of illness onset
  - Clusters of pneumonia among any group of persons for whom alternative diagnoses have been reliably excluded or clusters in which one case is linked to travel to a previously affected area or to an ill healthcare worker
- Review reports of persons who are hospitalized for pneumonia and are at increased risk for SARS infection to ensure that:
  - Adequate testing is done to rule out other infectious causes of pneumonia, and
  - Testing for SARS-CoV infection is ordered only when appropriate
- Consult CDC as needed regarding cases or clusters of special concern.
- Consider reporting to CDC the following:
  - Clusters of two or more healthcare workers who 1) are hospitalized for CXR-confirmed pneumonia or ARDS for which an alternative diagnosis has been ruled out, 2) had direct patient contact, 3) have worked in the same facility, and 4) had illness onset within same 10-day period
  - CXR-confirmed pneumonia/ARDS illnesses requiring hospitalization, occurring in persons who had 1) no alternate diagnosis that could explain the illness, 2) recently returned from a previously SARS-affected area, and 3) either had close contact with someone hospitalized for a respiratory infection or visited a hospital while in the previously affected area and within 10 days of their illness onset.
- Except for SARS-CoV-positive cases, there is no mandatory reporting of potential SARS cases in the absence of SARS activity worldwide. However, voluntary reporting of single cases or clusters in the above categories to CDC through state health departments is desired; reports will be evaluated for potential trends and epidemiologic links across jurisdictions. Weekly reporting of summary totals is recommended.

Activities for CDC

- Provide guidance to health departments, hospitals, and healthcare providers regarding SARS surveillance guidelines.
- Assist state and local health departments in the development of an electronic reporting system and related forms to facilitate uniform reporting.
- Assist states, as requested, in investigations of cases and clusters representing possible SARS-CoV infection.

- Collect and review reports of pneumonia in travelers or clusters of healthcare workers associated with a high index of suspicion for SARS-CoV infection, as specified in the preceding section.

Objective 2: In the *presence* of global SARS activity, establish surveillance to promptly identify and report all new U.S. SARS cases to facilitate management and control of the outbreak.

If the re-emergence of SARS is documented in the United States or abroad, the likelihood that persons with respiratory infections may be infected with SARS will increase significantly. Surveillance efforts should be modified to incorporate available risk factor information, particularly regarding geographic transmission patterns. The scope of surveillance activities in specific communities may differ substantially depending on the extent of disease both within the specific community and within local healthcare facilities or institutions. Ongoing analysis of surveillance data and other information will be critical to inform decision making regarding the need to implement or discontinue various elements of enhanced surveillance (as discussed in the Core Document).

Surveillance activities should also be enhanced or accelerated as needed by a particular community or institution. Basic surveillance activities should be initiated in areas of no or low-level SARS activity and continued in areas of increased activity. Enhanced surveillance should be considered if a community or facility experiences a significant increase in number of cases, if unlinked transmission is documented or suspected, or if changing transmission patterns are identified. Enhanced surveillance activities should focus both on increasing the sensitivity of case detection through use of less specific clinical criteria when screening cases and on evaluation of suspicious illnesses regardless of identification of an epidemiologic link.

Activities for healthcare providers and healthcare facilities

Community-based surveillance

Basic Activities

- Continue case detection and reporting efforts as detailed above (setting of no known SARS activity worldwide) to identify potential SARS cases with no known epidemiologic link.
- Consider screening all patients presenting to outpatient clinics with a fever or clinical findings of lower respiratory infection (e.g., cough, shortness of breath, difficulty breathing) for SARS risk factors.
- SARS risk factors include:
  - Travel within 10 days of illness onset to a foreign or domestic location with documented or suspected recent local transmission of SARS-CoV infection, or
  - Close contact within 10 days of illness onset with a person with known or suspected SARS infection.
- If a patient with a fever or evidence of lower respiratory infection has a SARS risk factor, begin SARS isolation precautions, notify the local health

department and initiate preliminary clinical assessment (see Supplement C).

Enhanced Activities

- If SARS transmission that is unlinked to other SARS infections (i.e., the source of infection is unclear) has occurred locally, consider SARS in the differential diagnosis and management of all patients with fever or evidence of lower respiratory infection, regardless of whether the patient has SARS risk factors (refer to Supplement C for guidance on triage and infection control).

Hospital-based surveillance

Healthcare facility with no SARS patients:

- Continue to implement case detection and reporting efforts as detailed above (setting of no known SARS activity worldwide) to identify potential SARS case-patients for whom an epidemiologic link is unknown.
- Screen all patients presenting to emergency rooms or hospital clinics with a fever or symptom of lower respiratory infection (e.g., cough, shortness of breath, difficulty breathing) for SARS risk factors.
- Infection control personnel, occupational health officials, and providers should be alert for clusters of severe, febrile respiratory illness among healthcare workers. Any clusters with illness onsets within the same 10-day period should be reported to local or state health officials.
- Report any potential SARS cases to the state or local health department as per their instructions.

Healthcare facility providing care for SARS patients who acquired infection from the community or from other facilities: no evidence of nosocomially acquired SARS-CoV infections:

Basic Activities

- Continue all recommended surveillance plans outlined for the previous category.
- Monitor daily all healthcare workers caring for SARS patients. If the healthcare worker has either fever or respiratory symptoms, begin SARS isolation precautions, notify the local health department and initiate preliminary clinical assessment (see Supplement C).

Enhanced Activities

- If SARS-CoV transmission is occurring in the surrounding community, screen all patients, visitors, and employees upon entry to the facility for fever, cough, or shortness of breath. Screen symptomatic persons for SARS risk factors. If risk factors are present, the patient should be isolated and evaluated for both alternative respiratory illnesses and SARS-CoV infection.

Healthcare facility treating a large number of SARS patients, or facilities with nosocomially acquired SARS cases with clearly identified sources of infection:

- Continue all recommended surveillance plans outlined for the previous category.

- Monitor *all* healthcare workers daily for fever, cough, or shortness of breath. If present, begin SARS isolation precautions, obtain chest X-ray, and initiate preliminary workup (Supplement C).
- Begin inpatient surveillance; monitor daily for new or worsening fever, cough, or shortness of breath. If one or more of these symptoms are found, exposure to known or suspected SARS patients should be investigated; if there is evidence of exposure, the patient should be isolated and tested for alternative respiratory illnesses and SARS-CoV infection.

Healthcare facility in which nosocomially acquired SARS-CoV infection has occurred and at least sometransmission is unlinked to other SARS infections (i.e., source of infection is unclear):

- Continue all recommended surveillance plans outlined for the previous category.
- Expand inpatient surveillance: if new or worsening fever, cough, or shortness of breath is noted, test patient for SARS-CoV regardless of whether an epidemiologic link to another SARS patient is found.
- Consider surveillance for illness and absenteeism among healthcare personnel.

Activities for state and local health departments

- Continue activities outlined above, as appropriate.
- Identify, evaluate, and monitor exposed contacts of SARS cases to identify previously unrecognized or secondary cases, as outlined below in Plan vor Surveillance of Contacts of SARS Cases.
- Disseminate modified surveillance and patient screening guidelines to providers through the state/local Health Alert Network.
- Facilitate reporting from hospitals. If necessary, consider placing surveillance staff in hospitals with multiple SARS admissions.
- Review reports daily of persons reported from hospitals/providers to: 1) evaluate the level of risk for SARS, 2) ensure adequate testing is done to rule out SARS-CoV, 3) identify new clusters that might require special attention, 4) identify contacts and ensure that they are evaluated and monitored (as outlined below), and 5) monitor trends.
- Report cases under investigation and supplementary information on levels of SARS activity in the state to CDC as needed to meet national surveillance objectives, via mechanisms outlined in CSTE-CDC guidance.
- Immediately report to CDC any positive SARS-CoV test results.

CDC activities

- Continue activities outlined in Section 1, as appropriate.
- Ensure that all states have systems to identify and monitor potential SARS cases and contacts.
- Ensure that states and hospitals have adequate guidance to implement effective surveillance and containment measures.
- As SARS activity evolves, work with CSTE to determine what surveillance information is necessary for CDC, along with related reporting mechanisms, to meet national surveillance objectives.
- Monitor the level of activity of SARS nationwide to:

  - Monitor the effectiveness of U.S. efforts to diagnose and contain SARS-CoV infections
  - Provide timely feedback to states in the form of data and other information
  - Mobilize additional resources and arrange surge capacity as needed
  - Report activity to WHO to assist with global surveillance and control
- Oversee surveillance at ports of entry to aid in the identification of possible imported SARS-related illnesses, as outlined in Supplement E.
- Facilitate coordinated surveillance and related activities in settings that may not be under state/local jurisdiction (e.g., military bases).
- Provide guidance regarding possible laboratory-acquired SARS-CoV infections, as outlined in Supplement F.

IV. Plan for Surveillance of Contacts of SARS Cases

Surveillance of contacts of SARS cases is essential to SARS control efforts. Through rapid identification, evaluation, and monitoring of exposed contacts of possible or known SARS cases, further transmission of disease may be prevented. Contacts who are found to be clinically ill can be quickly isolated to avoid further SARS-CoV transmission.

Objective 1*:* Prepare to conduct surveillance of contacts by ensuring the availability of personnel and other resources.

Activities for state and local health departments

- Designate one person to coordinate activities related to the tracing, interviewing, evaluation, and monitoring of contacts.
- Identify additional personnel to manage contact tracing and monitoring in different regions of the state. Personnel can be provided from state or other resources as needed. Ideally, select personnel with field experience involving contact tracing (e.g., from STD, TB, or HIV control programs).
- As needed, modify and adopt sample forms provided by CDC (Appendix B4).

Additional elements relating to preparedness planning for surveillance and management of SARS contacts are found in Supplement D.

Objective 2*:* Identify all contacts of all SARS cases.

Infectiousness in SARS patients appears to begin with the onset of clinical illness. Although the exact duration of infectiousness is not known, it is recommended that patients with SARS avoid contact with other persons for up to 10 days after resolution of symptoms. Contact tracing is the systematic identification of persons who may have been exposed to patients with SARS-CoV during the infectious period. The extent and timing of a contact investigation may depend on the index of suspicion and available resources, with immediate investigation warranted for newly identified confirmed or probable cases and a limited or delayed response for potential SARS patients with ambiguous clinical presentation and less convincing SARS exposure.

Activities for state and local health departments

- Initiate identification of a patient's contacts as soon as possible after a diagnosis of SARS.
- Obtain information about the case and their contacts during the case's infectious period from the case, next of kin, workplace representative, or others with appropriate knowledge of the case-patient's recent whereabouts and activities.
- In some instances, consideration should be given to identifying persons who had contact with the case-patient before the patient's onset of illness, in the event that they may have been exposed to the same source of infection as the case. These would include situations in which the case-patient's source of infection is unclear or was not previously recognized (e.g., an index case among a group of tourists).

Objective 3: Prioritize contacts on the basis of estimated risk of exposure.

In some instances, large numbers of potential contacts or resource limitations may make it impractical to perform optimum contact follow-up in a complete and timely fashion. These situations will call for a means of prioritizing contacts on the basis of their estimated risk of SARS exposure.

Activities for state and local health departments

- Consider using an algorithm for stratifying SARS exposure risk that takes into account: a) the strength of evidence underlying the diagnosis of SARS in the index case, b) duration and nature of the contact's exposure to the case, including the case-patient's severity of illness at the time of contact, and c) host factors.
- After a review of contact priority lists and available resources, state authorities may decide to limit contact-related activities to the highest priority group(s).
- In all situations, identify and monitor household and other close contacts of probable and confirmed SARS cases.

Objective 4: Ensure adequate counseling, evaluation, and monitoring of contacts.

Activities for state and local health departments

- Communicate with contacts to alert them of their potential exposure, evaluate their current health status, and provide instructions regarding ongoing health monitoring including directions for seeking medical care.
- Monitoring of contacts may be an active process (e.g., regular workplace body temperature monitoring) or "passive" (i.e., contacts monitor their own symptoms).
- Contacts may be instructed about voluntary or mandatory restrictions on their activities to prevent the spread of SARS. (The need for such restrictions will depend on several factors, such as the nature of exposure to the case, dynamics of the outbreak at that particular time and place, and availability of resources; see Supplement D for specific guidance related to this topic.)

Objective 5: Ensure the use of proper procedures to identify all contacts and to evaluate, monitor, and report contacts.

Activities for state and local health departments

- Use appropriate personal protective equipment when interacting closely with contacts (Supplement C).
- Trace each contact whose name, address and/or telephone number is provided.
- Use work and school contact numbers, telephone directories, voting lists, neighborhood interviews, site visits, "hangouts," etc. to trace contacts when contact information is unknown or incomplete. If contacts cannot be found through these mechanisms, other sources for notification of potential contacts (such as media announcements) may have to be considered.
- Locate and interview each contact to confirm exposure to the SARS case, document the presence or absence of fever or respiratory symptoms in the contact, and identify additional contacts who may not have been listed by the case.
- For contacts who are free of symptoms at the time of interview, initiate plans for ongoing symptom monitoring for 10 days after the last contact with the SARS case.
- If a contact is symptomatic with fever or respiratory symptoms, make arrangements for appropriate medical evaluation using recommended precautions (Supplement C).
- Any contacts with symptoms should be counseled, interviewed and reported as a suspected SARS case using the appropriate case reporting form, and his/her contacts should be identified.
- If contact tracers discover that any contacts have left the state, they should notify the supervisor responsible for out-of-state contacts. The supervisor will then notify the appropriate authorities.

V. Information Management

Rapid and timely reporting of SARS cases and dissemination of information are key to the management of a SARS outbreak. As part of the SARS Incident and Command Management System (see Supplement A), CDC is currently developing a web-based SARS case reporting system. In its final form, this system will allow for data input through two mechanisms based on the capacities at the state health departments: 1) direct entry into a web-based interface, and 2) upload of data from electronic databases maintained at the state level into the web-based interface. Data that are reported to the CDC will be exported as an analyzable data set in a pre-defined format to state health departments on a daily basis. Results of laboratory testing at CDC will be integrated into the database that is transmitted to the states.

Contact tracing and monitoring will require substantial data management resources. The information technology needs for timely surveillance and management of contacts of SARS cases are under discussion among CDC and partners in state and local health departments.

SARS has recently been designated a nationally notifiable disease (see Appendix B1). A code has been designated for SARS in NETSS (event code 10575). Core data on cases meeting SARS-CoV disease classifications will be reported to CDC through NETSS and transmitted to the relevant CDC program office.

List of Appendices for Supplement B

Appendix B1
CSTE Position Statement, 26 June 2003
Appendix B2
SARS Surveillance Case Definition (draft; publication pending)
Appendix B3
SARS Case Report Form
Appendix B4
SARS Contact Report Forms (under development)

Appendix B1
CSTE Position Statement, 26 June 2003

http://www.cste.org/PS/2003pdfs/2003finalpdf/03-id-12%20SARS2003_final.pdf

Appendix B2
SARS Surveillance Case Definition

(draft – publication pending)

Appendix B3
SARS Case Report Form

Surveillance Report for Persons under Investigation for SARS-CoV Infection

		Form Approved OMB 0920-0599
1. I.D.s	**CDC** *Automatically generated*	**STATE ID # :**
Date reported to state or local health department: *Day* ☐☐ ☐☐ ☐☐☐☐ *Mo. Year*		*Date reported to CDC will be automatically generated*

2. Submitted by: *(automatically generated via certificates)*	Last Name:	First Name:	**State:** (dropdown)
Phone: ( )	Email:	Affiliation:	

3. Patient Information: General demographics

City of current residence: County:		State of Current Residence: *(dropdown)*	
Age at onset: _____	☐ Years ☐ Months	Sex	☐ Male ☐ Female
Ethnicity: ☐ Hispanic or Latino ☐ Non-Hispanic or Latino	Race: *(mark 1 or more)* ☐ American Indian/Alaskan Native ☐ Asian ☐ Black or African American ☐ White ☐ Native Hawaiian /Other Pacific Islander ☐ Unknown		
Nationality/Citizenship: _____		Residency:	☐ U.S. Resident ☐ Non-U.S. Resident

Optional patient information:

Last Name:	First Name:

Clinical Information				
4. Signs and Symptoms	Date of symptom onset:	MM	DD	YYYY

Did the person have a fever? _ Yes _ No _ Unknown

If yes: Date of fever onset: __ ___ / ___ ___ / ___ ___ ___ ___ *(mm/dd/yyyy)*
Was temperature > 38°C (100.4°F)? _ Yes _ No _ Unknown _ Subjective fever only

Did the patient have any lower respiratory symptoms (e.g., cough, shortness of breath, difficulty breathing)? _ Yes _ No _ Unknown

Was a chest X-ray or CAT scan performed? _ Yes _ No _ Unknown
If yes, did the patient have radiographic evidence of pneumonia or respiratory distress syndrome (RDS)?
_ Yes _ No _ Unknown

5. Clinical status

Date of first health care evaluation for this illness: __ __ / __ __ / __ __ __ __
(mm/dd/yyyy)

Was patient hospitalized for > 24 hours during course? □ Yes □ No □ Unknown
If yes:
Name of Hospital: _____ City: _____ State: _____

Date of Hospitalization:	MM	DD	YY	Date of Discharge	MM	DD	YY

Was patient ever admitted to the intensive care unit (ICU)? _ Yes _ No _ Unknown

Was patient ever placed on mechanical ventilation? _ Yes _ No _ Unknown

Did the patient die as a result of his/her illness? _ Yes _ No _ Unknown
If yes: Date of death: __ __ / __ __ / __ __ __ __ *(mm/dd/yyyy)*

Was an autopsy performed? _ Yes _ No _ Unknown
Was pathology consistent with pneumonia or RDS? _ Yes _ No _ Unknown

6. SARS Epidemiologic Risk Factors	
Is the individual a healthcare worker?* ☐ Yes ☐ No ☐ Unknown * *A person who has close contact to patients, patient care areas (e.g. patient room) or patient care items (e.g., linens)*	*If yes,* ***specify*** ☐ Physician ☐ Nurse/PA ☐ Laboratory ☐ Other: _____ Does patient have DIRECT patient care? ☐ Yes ☐ No ☐ Unknown
If not a healthcare worker, occupation: _____	
In the 10 days prior to illness onset, did the patient have the following?	
A. Close contact in the 10 days prior to symptom onset with a laboratory-confirmed SARS case or an ill person epidemiologically linked to a lab-confirmed case?	**A.** ☐ Yes ☐ No ☐ Unknown *If yes, will go to 7 then return*
B. Have close contact with a person considered a *suspect or probable* case as defined by WHO?**	**B.** ☐ Yes ☐ No ☐ Unknown *If yes, will go to 7 then return*
C. Travel to <u>foreign</u> or <u>domestic</u> area with documented or suspected recent local transmission of SARS cases? ***Define WHO suspect and probable here or at end of document*	**C.** ☐ Yes ☐ No ☐ Unknown *If yes*, to what area? *(check all)* *(Updated list of affected countries /areas)*

7. Contact history	Contact information for ill contact(s) identified by question **6 A** or **B** above *These ill contacts should have been identified previously and have been given either a CDC or STATE ID. If an ID has not been given, enter contact name, but update when ID number is available.*
Contact ***Data for more than one contact can be entered here***	CDC ID of contact: _____ ***OR*** STATEID of contact: _____ ***OR*** *(only if ID unavailable)* Name of contact (first, middle initial, last): _____

Nature of contact: _ Same household _ Healthcare environment
_ Coworker _ Other _____

SARS classification of **contact** (check 1 only):
(If the contact was previously entered into the SARS database and an ID number assigned, the SARS classification was assigned at that time and is indicated below. If the classification below is incorrect, please go to the entry form for this contact to correct)

_ Suspect case (per WHO definition) _ Probable case (per WHO)
_ Ill person who is epidemiologically linked to a lab-confirmed SARS-CoV case
_ laboratory-confirmed SARS-CoV positive case

Did **contact** recently travel to an area with SARS transmission? □ Yes □ No □ Unknown
(If contact previously entered into the SARS database and an ID number assigned, the area of travel was entered at that time and is indicated below. If the area of travel below is incorrect, please go to screen for this contact to correct)

If yes, where? _____

8. Travel History

Was the patient **symptomatic** during travel from a SARS affected area or within 24 hours of return to the US or local area?
_ Yes _ No _ Unknown *If yes,* please complete **TRAVEL MODULE** *(This will pop up if answer is yes)*

If recent foreign travel, did the patient receive a **Health Alert** or other SARS educational information on arrival in the United States? _ Yes _ No _ Unknown

9. Classification of patient by state or municipality (using CSTE/CDC definitions)

DRAFT DRAFT

Initial classification:

_ Report under investigation *(give options?)*

_ Probable SARS-CoV case

_ Confirmed SARS-CoV case

Updated classification:

Date updated: ____/ ____/ _____

_ Report under investigation *(give options?)*

_ Probable SARS-CoV case

_ Confirmed SARS-CoV case

_ Not a case: negative serology (>28 days post onset)

_ Not a case: alternative diagnosis accounts for illness

10. Laboratory Evaluation (The lab folks would like the ONSET DATE already entered to appear again here or next square. Possible?)

Local SARS testing: (series of variables, many with dropdowns)

1. **Specimen** *(dropdown choices: whole blood, plasma, serum, nasopharyngeal swab, oropharyngeal swab, sputum, broncheoalveolar lavage, NP wash/aspirate, tracheal aspirate, pleural tap, stool, tissue)* If tissue, specify_____
2. **Date collected** *(mm/dd/yyyy)*
3. **Test requested** *(dropdown choices: PCR, acute serology, convalescent serology, culture)*
4. **Source of local testing** *(dropdowns: Public health lab, LRN, commercial lab, other)*
5. **Results of local SARS testing** *(dropdowns: pending, positive, negative, indeterminate)*

Was an **alternative respiratory pathogen detected?**

_ Yes _ No _ Unknown

If yes, alternative pathogen (dropdown: influenza A, influenza B, RSV, rhinovirus, adenovirus, *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Mycoplasma*, *Chlamydia pneumoniae*, human parainfluenza virus 1, human parainfluenza 2, human parainfluenza 3, human metapneumovirus, other)

If other: _____

Lab comments

Were specimens sent to CDC?

If yes, what specimens? *(Check all that apply)*

Dropdown: whole blood, plasma, serum (acute), serum (convalescent), NP swab, OP swab, sputum, NP wash/aspirate, tracheal aspirate, pleural tap, broncheoalveolar lavage, stool, tissue (specify:_____)

Date specimen sent: ___ /___ /_____

CDC test results: *(these will be added as available by CDC)*

9. For STATE/LOCAL use only

Notes:

Notes:

Appendix B4
SARS Contact Report Forms

(under development)

PUBLIC HEALTH GUIDANCE FOR COMMUNITY-LEVEL PREPAREDNESS AND RESPONSE TO SEVERE ACUTE RESPIRATORY SYNDROME (SARS)

SUPPLEMENT C: PREPAREDNESS AND RESPONSE IN HEALTHCARE FACILITIES

Goals

- Rapidly identify and isolate all potential SARS patients.
- Implement strict infection control practices to prevent transmission.
- Strengthen communications in healthcare facilities and between healthcare facilities and health departments.

Key concepts

- Most exposures to SARS occur in hospitals or other healthcare settings from SARS-CoV-infected patients.
- SARS-CoV-infected healthcare workers, patients, and visitors can propagate and disseminate infection within and outside healthcare facilities.
- SARS-CoV transmission risks are primarily from unprotected exposures to unrecognized cases in both inpatient and outpatient settings.
- SARS-CoV transmission occurs primarily through large respiratory droplets and close contact with infected patients.
- Exposure during aerosol-generating procedures may increase transmission risks.
- Strict adherence to appropriate infection control practices, including use of personal protective equipment, helps prevent transmission.

Priority activities

- Organize a planning committee to develop an institutional preparedness and response plan.
- Develop surveillance, screening, and evaluation strategies for various levels of SARS activity.
- Develop plans to implement effective infection control measures.
- Determine the current availability of infrastructure and resources to care for SARS patients and strategies for meeting increasing demands.
- Determine how the staffing needs for the care of SARS patients will be met.
- Determine strategies to communicate with staff, patients, and the health department and to educate staff and patients.

I. Rationale and Goals

Transmission of SARS-CoV in healthcare facilities was a major factor in the spread of SARS-CoV during the 2003 global epidemic. In areas with extensive outbreaks, the virus spread most readily among hospital workers caring for SARS patients, other patients, and visitors. In Toronto, 77% of the patients in the first phase of the outbreak were infected in the hospital setting, and half of all SARS cases in Toronto were in healthcare workers. Even in Hong Kong, where there was significant community transmission, 21% of all SARS cases occurred in healthcare workers. Factors that likely contribute to the disproportionate rate of transmission in healthcare settings include: 1) a higher virus titer in respiratory secretions during the second week of illness when patients are likely to be hospitalized, 2) use of ventilators, nebulizers, endotracheal intubation, and other droplet- and aerosol-generating devices and procedures, and 3) frequent exposures of workers to patients, their secretions, and potentially contaminated environments.

The large number of hospital personnel who contracted SARS demonstrates the importance of early detection and infection control in limiting the spread of disease. In every region in which major outbreaks were reported, a substantial proportion of cases resulted from delays in clinical recognition and isolation of patients. SARS-CoV was also transmitted by infected visitors and by hospitalized patients with other medical conditions that masked the symptoms of SARS. Case recognition and implementation of appropriate precautions greatly reduced the risks of SARS-CoV transmission. However, even with appropriate precautions, there were isolated reports of transmission to healthcare workers in the settings of aerosol-generating procedures and lapses in infection control technique.

SARS-CoV transmission in a healthcare setting presents occupational and psychological challenges that, in the 2003 outbreaks, required heroic efforts to overcome. Experience also indicates, however, that early detection and isolation of cases, strict adherence to infection control precautions, and aggressive contact tracing and monitoring can minimize the impact of a SARS outbreak. The success of these measures depends on exhaustive planning, clear communication, and collaboration among disciplines, authoritative leadership, and provision of relevant support.

This Supplement provides suggestions for how to prepare for and respond to an introduction of SARS in healthcare facilities. It outlines basic response measures as well as the enhanced activities that may be needed to address larger outbreaks. As preparedness and response activities for SARS are in many ways analogous to those required for other types of emergency and mass-casualty events, planning for SARS may only require integration of SARS-specific activities into existing plans and protocols.

The goals of a preparedness and response plan in healthcare facilities are to:

- Rapidly identify and isolate all potential SARS patients.
- Implement strict infection control practices to prevent transmission.
- Strengthen communications in healthcare facilities and between healthcare facilities and health departments.

II. Lessons Learned

The following lessons from the global experience with SARS in healthcare settings have been considered in developing this document:

- Strict adherence to contact and droplet precautions, along with eye protection, seems to prevent SARS-CoV transmission in most instances. Airborne precautions may provide additional protection in some instances.
- Undetected cases of SARS in staff, patients, and visitors contribute to rapid spread of SARS-CoV.
- Optimal control efforts require continuous analysis of the dynamics of SARS-CoV transmission in the facility and the community.
- A response to SARS can push the capacity of a healthcare facility to its limits.
- The social and psychological impact of SARS can be substantial, both during and after an outbreak.
- The most effective systems for controlling a nosocomial outbreak are those that are developed and tested before an outbreak occurs.
- Communication needs can overwhelm and paralyze response capacity; good information management strategies are essential to an efficient and effective response.

III. Preparedness Planning for Healthcare Facilities

All U.S. healthcare facilities need to be prepared for the rapid pace and dynamic features of a SARS outbreak. All hospitals should be equipped and ready to care for a limited number of SARS patients as part of routine operations and also to care for a larger number of patients in the context of escalating transmission. Plans should outline the administrative, environmental, and communication measures and the individual work practices required to detect the introduction of SARS, prevent its spread, and manage the impact on the facility and the staff.

This document details planning issues that should be addressed in preparing for potential SARS outbreaks. It will be important for planning committees to consider the logistics of both basic and enhanced control measures. Section IV, Recommended Preparedness and Response Activities in Healthcare Facilities, below, details activities that should be discussed by a planning committee. The response matrices in Appendix C1 provide specific recommendations on implementing these measures.

Objective 1: Develop a planning and decision-making structure that ensures the capacity of the healthcare facility to detect and respond effectively to SARS.

Activities

- Designate an internal, multidisciplinary planning committee with responsibility for SARS preparedness and response. Select persons with decision-making authority and appropriate technical expertise, and include representatives from all potentially affected groups. An existing preparedness team with appropriate membership (e.g., bioterrorism response) could take on this role.
- Identify the local or state health department staff member who will serve as liaison for SARS preparedness planning and response. If possible, include this person on the planning committee.

- Identify a SARS coordinator to direct planning and response efforts and to serve as the facility's point of contact for communication of information internally (i.e., in the facility and/or healthcare system) and externally (i.e., to public health agencies, other healthcare facilities, law enforcement agencies, media, and other partners).
- Consider including representatives from the following groups on the SARS planning committee:
    - Administration/senior management (including fiscal officer)
    - Infection control/hospital epidemiology
    - Hospital disaster/emergency coordinator
    - Engineering/physical plant/industrial hygiene/institutional safety
    - Nursing administration
    - Medical staff (including out-patient areas)
    - Intensive-care unit
    - Emergency department
    - Laboratory services
    - Respiratory therapy
    - Environmental services (housekeeping, laundry)
    - Public relations
    - Security
    - Materials management
    - Education/training/staff development
    - Occupational health
    - Diagnostic imaging
- Consider including representatives from the following areas as adjunct members to provide additional expertise and support:
    - Infectious diseases
    - Mental health
    - Risk management
    - Labor and unions
    - Human resources
    - Pharmacy
    - Emergency medical technicians ("first responders")
    - Social work
    - Director of house staff/fellowship training programs
    - Pulmonary medicine
    - Pathology
    - Local law enforcement

Objective 2: Develop a written SARS preparedness and response plan.

Activities

- Develop a written plan that considers/accounts for each of the topics addressed in the box below and in Section IV: Components of Preparedness and Response in Healthcare Facilities.
- Ideally, the logistics of both basic and enhanced measures should be discussed in advance of a SARS outbreak.
- Formulate written policies and work practices to ensure the prompt triage, identification, and management of possible SARS patients while minimizing the risk of transmission to other patients, personnel, and visitors.
- Devise a system for periodic review and updating of the plan as indicated.

Objective 3: Assess the capacity of the facility to respond to SARS.

Activities

- Consider using "table top" or other exercises to test the facility's response capacities.
- Identify criteria and methods for measuring compliance with response measures (e.g., infection control practices, case reporting, patient placement, healthcare worker illness surveillance).
- Develop strategies to quickly correct deficiencies.

IV. Recommended Preparedness and Response Activities for Healthcare Facilities

Components of Preparedness and Response in Healthcare Facilities

- Surveillance and Triage
- Clinical Evaluation of Patients
- Infection Control and Respiratory Etiquette
- Patient Placement, Isolation, and Cohorting
- Engineering and Environmental Controls
- Exposure Reporting and Evaluation
- Staffing Needs and Personnel Policies
- Hospital Access Controls
- Supplies and Equipment
- Communication and Reporting

A. Surveillance and Triage

As with any disease control effort, surveillance for cases of SARS is the basis for control. SARS case surveillance, including surveillance in healthcare facilities, is discussed in detail in Supplement B and in the SARS response matrices (Appendix C1). Some key surveillance activities specific to healthcare facilities are described below.

Objective 1: In the *absence* of known SARS activity worldwide, establish surveillance aimed at early detection of cases and clusters of respiratory infections that might signal the re-emergence of SARS.

Activities

- Participate in surveillance activities to detect new SARS cases, in accordance with public health guidelines (See Supplement B).
- Screen all patients hospitalized with pneumonia for the three following characteristics that might indicate a higher index of suspicion for SARS-CoV infection:
  - In the 10 days before illness onset, travel to or close contact with other ill persons who recently traveled to a previously affected SARS area, or
  - Employment as a healthcare worker, or
  - Close contact with person(s) recently found to have radiographic evidence of pneumonia without an alternative diagnosis
- Post visual alerts (in appropriate languages) at the entrances to all outpatient facilities (emergency departments, physicians' offices, outpatient clinics) requesting that patients inform healthcare personnel of respiratory symptoms when they register for care and describing recommended "respiratory hygiene" precautions (detailed below).
- Ensure that clinicians know where and how to promptly report a potential SARS case to hospital and public health officials.

Objective 2: In the *presence* of global SARS activity, establish surveillance to promptly identify and report all new SARS cases that present for evaluation at the facility.

Basic Activities

- Continue to implement case detection and reporting efforts as detailed above and in Supplement B.
- Develop a strategy and assign responsibility for regularly updating clinicians and intake and triage staff on the status of SARS locally, nationally, and internationally.
- Train intake and triage staff on how to assess risks for SARS and use any applicable tools to screen patients.
- Educate clinical healthcare providers about the signs and symptoms of and current risk factors for SARS.
- Institute a strategy to monitor the health of staff and patients who are potentially exposed to SARS.
- Determine the threshold at which screening of persons entering the facility will be initiated and at what point screening will escalate from passive (e.g., signs at the entrance) to active (e.g., direct questioning). Screening will likely need to be coordinated with access controls (see below). In addition to visual alerts, other potential screening measures include:

  - Priority triage of persons with respiratory symptoms
  - Triage stations outside the facility to screen patients before they enter
  - Telephone screening of patients with appointments
- Screen all patients presenting to emergency rooms or hospital clinics with a fever or symptoms of lower respiratory infection for SARS risk factors. Report any potential SARS cases or clusters of febrile respiratory illness among healthcare workers according to the guidance in Supplement B.

Enhanced Activities

- Develop plans to actively screen all persons entering the facility.
- Determine at what point the facility will open a designated "SARS evaluation center" to separate potential SARS patients from other patients seeking care at the healthcare facility (see Engineering Controls).

B. Clinical Evaluation of Patients

To date, no specific clinical or laboratory findings can distinguish SARS from other respiratory illnesses reliably and rapidly enough to inform management decisions that must be made soon after a patient presents to the healthcare system. Therefore, early clinical recognition of SARS still relies on a combination of clinical and epidemiologic features. Although exposure history is a main factor in the diagnosis, many SARS patients do share some suggestive clinical characteristics. These include: presence of fever and other systemic symptoms 2 to 7 days before onset of a dry cough and dyspnea, presence of radiographic evidence of pneumonia in most patients by day 7 to 10 of illness, infrequent presence of upper respiratory tract symptoms, and lymphopenia.

The clinical set point for considering SARS will vary by likelihood and level of risk of exposure. Potential sources of exposure will vary by the status of SARS locally, nationally, and globally. Potential SARS patients need to be evaluated and managed in a way that protects healthcare workers, other patients, and visitors.

Objective 1: Ensure that potential SARS patients are evaluated using safe work practices.

Activities

- Assign only trained and fit-tested emergency staff to evaluate possible SARS patients.
- Instruct staff to wear appropriate personal protective equipment (PPE) (see Appendix C2).
- Use droplet precautions when caring for any patient with both fever and respiratory symptoms.

Objective 2: In the *absence* of known SARS activity worldwide, perform a routine evaluation of respiratory illnesses and maintain a low index of suspicion for SARS.

In the absence of SARS-CoV transmission anywhere in the world, the overall likelihood that a given patient with fever or respiratory illness has SARS will be exceedingly low unless there are both typical clinical findings and some accompanying epidemiologic evidence that raises the suspicion of exposure to

SARS-CoV. An approach for evaluating patients with pneumonia in the absence of SARS worldwide is described in Appendix C1.

Activities

- For all patients with febrile and/or respiratory illnesses, perform a routine diagnostic and therapeutic workup.
- For patients with radiographically confirmed pneumonia that is severe enough to require hospitalization, follow the procedures described in Appendix C2.
- In the setting of no transmission in the world, evaluation and management for possible SARS should be considered only for adults, unless there are special circumstances that make the clinician and health department consider a child to be of potentially higher risk.

Objective 3: In the *presence* of SARS activity worldwide, increase the index of suspicion for SARS as appropriate based on the patient's symptoms and epidemiologic risk factors.

Once SARS activity has been documented anywhere in the world, the positive predictive value of even early clinical symptoms (e.g., fever or respiratory symptoms in the absence of pneumonia), while still low, may be more acceptable if used in combination with an epidemiologic link to a setting in which SARS has been documented.

Basic Activities

- Question all patients with fever or respiratory symptoms about recent close contact with persons suspected to have SARS and about exposure to locations in which recent SARS-CoV transmission is documented or suspected to have occurred. Persons with such an exposure history should be evaluated for SARS-CoV infection as described in Appendix C3.
- Once SARS activity has been documented in the world, the algorithm established for adults (Appendix C3) can be used in children with the following caveats:
  - The timing and rate of development of radiographically confirmed pneumonia are unknown.
  - The positive predictive value of rapid virus antigen detection tests (e.g., RSV) "in season" will be higher in a pediatric population.
  - Pneumococcal and legionella urinary antigen testing are not recommended for routine diagnostic use in children.
- Typical symptoms of SARS may not always be present in elderly patients and those with underlying chronic illnesses, such as renal failure. Therefore, the diagnosis should be considered for almost any change in health status, even in the absence of typical clinical features of SARS, when such patients have strong epidemiologic risk factors for SARS.

Enhanced Activities

- In the midst of a community outbreak in which transmission is occurring in well-defined settings with all cases linked to other cases, continue the activities outlined in Appendix C3. In addition, consider a diagnosis of SARS in all persons with radiographic evidence of pneumonia (even if not hospitalized) if they:
  - Have close contact with documented pneumonia, or

  - Have had exposure to hospitals or outpatient clinics in the 10 days prior to symptom onset (includes healthcare workers and non-healthcare workers)
- In the midst of a community outbreak in which transmission is widespread and epidemiologic linkages between cases are not well defined, consider SARS in any patient presenting with fever or respiratory illness.
- In hospitals known to or suspected of having patients with SARS, clinicians and public health officials must be particularly vigilant about evaluating fever and respiratory illnesses among inpatients.

C. Infection Control and Respiratory Etiquette

Objective 1: Reinforce basic infection control practices in the healthcare facility.

SARS provides a reminder of the risks of nosocomial transmission of respiratory pathogens and an opportunity to improve overall infection control in healthcare facilities. During the 2003 epidemic, public health authorities quickly recognized the importance of infection control as the primary means for containing SARS. All healthcare facilities need to reemphasize the importance of basic infection control measures for the control of SARS.

Activities

- Educate staff about the importance of strict adherence to and proper use of standard infection control measures, especially hand hygiene and isolation (see Appendix C2).
- Reinforce education on the recommended procedures for standard, contact and airborne precautions (http://www.cdc.gov/ncidod/hip/ISOLAT/Isolat.htm)
- Ensure that personnel have access to fit-testing and instructions on respirator use.
- Determine how infection control training and education will be provided for all hospital personnel and visitors who may be affected by SARS.
- Develop posters and instructional materials designed to: 1) teach appropriate hand hygiene and standard precautions, 2) teach the correct sequence and methods for donning and removing personal protective equipment, 3) instruct on actions to take after an exposure, 4) instruct visitors and patients with symptoms and SARS risk factors to report to a specified screening and evaluation site.

Objective 2: Emphasize the importance of respiratory etiquette to help decrease transmission of SARS-CoV and other respiratory pathogens.

Many viral and some bacterial respiratory pathogens (e.g., influenza, adenovirus, respiratory syncitial virus, *Mycoplasma pneumoniae*) share transmission characteristics with SARS-CoV and are also frequently transmitted in healthcare settings. Implementation of **"**respiratory etiquette**"** practices can decrease the risk of transmission from unrecognized SARS patients and also control the spread of other, more common, respiratory pathogens.

Activities

- Educate patients about the importance of respiratory etiquette practices for preventing the spread of respiratory illnesses.
- Consider initiating "**a universal respiratory etiquette strategy"** for the facility. Provide surgical masks or tissues to all patients presenting with respiratory symptoms, place patients with respiratory symptoms in a private room or cubicle as soon as possible, and implement use of surgical masks by healthcare personnel during evaluation of patients with respiratory symptoms. Additional components of a universal respiratory etiquette strategy are delineated in the box below.

Universal Respiratory Etiquette Strategy for Healthcare Facilities

- Provide surgical masks to all patients with symptoms of a respiratory illness. Provide instructions on the proper use and disposal of masks.
- For patients who cannot wear a surgical mask, provide tissues and instructions on when to use them (i.e., when coughing, sneezing, or controlling nasal secretions), how and where to dispose of them, and the importance of hand hygiene after handling this material.
- Provide hand hygiene materials in waiting room areas, and encourage patients with respiratory symptoms to perform hand hygiene.
- Designate an area in waiting rooms where patients with respiratory symptoms can be segregated (ideally by at least 3 feet) from other patients who do not have respiratory symptoms.
- Place patients with respiratory symptoms in a private room or cubicle as soon as possible for further evaluation.
- Implement use of surgical or procedure masks by healthcare personnel during the evaluation of patients with respiratory symptoms.
- Consider the installation of plexiglass barriers at the point of triage or registration to protect healthcare personnel from contact with respiratory droplets.
- If no barriers are present, instruct registration and triage staff to remain at least 3 feet from unmasked patients and to consider wearing surgical masks during respiratory infection season.
- Continue to use droplet precautions to manage patients with respiratory symptoms until it is determined that the cause of symptoms is not an infectious agent that requires precautions beyond standard precautions.

D. Patient Placement, Isolation, and Cohorting

Appropriate patient placement is a significant component of effective SARS control. Each healthcare facility should develop a strategy and procedures to: 1) quickly separate potential SARS patients from other patients, and 2) implement appropriate isolation precautions.

Objective 1: Develop strategies for triage and admission that minimize the risk of transmission to staff, patients, and visitors.

Activities

- Determine where and how possible SARS patients will be triaged, evaluated, diagnosed, and isolated.
- Admit patients only when medically indicated or if appropriate isolation in the community is not possible.
- If a patient with SARS symptoms and risk factors does not meet the criteria for admission and is to be sent home, discuss the case with the health department to ensure adequate home isolation and follow-up (See Supplement D).
- Review admission procedures, and determine how they can be streamlined to limit the number of patient encounters for healthcare personnel.
- Determine a method for tracking and monitoring all SARS patients in the facility.

Objective 2: Develop a patient transport plan to safely move SARS patients within the facility.

Activities

- Identify appropriate paths, segregated from main traffic routes as much as possible, for entry and movement of SARS patients in the facility, and determine how these pathways will be controlled (e.g., dedicated SARS patient corridors, elevators).
- Optimize necessary patient transport (see Appendix C2).

Objective 3: Ensure optimal strategies for isolation of possible SARS patients in the healthcare facility.

Although most SARS-CoV transmission appears to occur through droplets, close contact, and, possibly, fomite exposures, airborne transmission remains a possibility. Therefore, patients who require hospitalization should be admitted to an airborne infection isolation room (AIIR) or specially adapted SARS unit or ward where they can be managed safely and appropriately. In some settings, a lack of AIIRs and/or a need to concentrate infection control efforts and resources may lead to a strategy of cohorting patients in individual rooms on the same floor, rather than placing them in AIIRs throughout the hospital. This strategy physically isolates SARS patients from non-SARS patients and also makes it possible to dedicate resources and appropriately trained staff to their care. Experience in some settings in Taiwan and Toronto demonstrated that cohorting of SARS patients effectively interrupted transmission, without AIIRs. Thus, although AIIRs are recommended for SARS isolation, there may be instances when other strategies provide better overall infection control.

Basic Activities

- As possible, admit potential SARS patients to an AIIR. An AIIR is a single-patient room in which environmental factors are controlled to minimize the transmission of infectious agents that can be transmitted by the airborne route. These rooms have specific requirements for controlled

ventilation, negative pressure, and air filtration and monitoring that are detailed in *Guideline for Environmental Infection Control in Health-Care Facilities, 2003* (http://www.cdc.gov/ncidod/hip/enviro/guide.htm).

- If AIIRs are widely spaced throughout the facility, or if there are large number of SARS patients, patients may be cohorted in single rooms on nursing units that have been modified to accommodate SARS patients (see Engineering Controls).
- Even when a facility has a SARS unit, AIIRs are preferred for:
  - Patients who are known to have transmitted SARS-CoV to other persons
  - Patients in whom the risk of SARS is being assessed (to avoid putting non-SARS-CoV-infected patients on a SARS unit)
- Determine where SARS patients will have various procedures (e.g., collection of respiratory specimens) performed. Whenever possible, hospitalized SARS patients should have procedures/tests done in their own rooms, rather than being transported to other areas (see Appendix C2).

Enhanced Activities

- Determine at what point the facility will designate a special SARS nursing unit, and determine how that unit would be modified to accommodate SARS patients (see Engineering Controls).
- In the context of significant SARS-CoV transmission, high patient volume, or frequent unprotected exposures, devise and implement a plan for cohorting patients and healthcare workers. Patients might be divided into the following cohorts: 1) patients who are exposed and asymptomatic; 2) patients who are exposed and symptomatic but do not meet the SARS case definition; 3) patients who meet the case definition; 4) non-exposed patients.
- Consider the need/practicality of a designated SARS hospital. In some of the 2003 outbreak areas, a logical expansion of a SARS unit or ward to cohort patients and staff was designation of certain facilities as SARS hospitals. This decision facilitated cohorting of staff and focused resources in one or a few hospitals. As shown by the experience in Toronto and Taiwan, however, designation of SARS hospitals is a difficult policy decision to implement. Hospitals that were not seriously affected did not want to become the repository of all SARS cases for fear of liability and negative public relations and financial impact. Even where this policy was successful, patients with SARS still presented to other facilities. Thus, all hospitals still needed to be vigilant for SARS and able to handle the initial triage, stabilization, and transfer of patients. The decision to create a SARS hospital requires the involvement of hospital leadership, health departments, and other community officials. The ultimate decision-making authority may vary by jurisdiction. The decision must take into account the availability of specialty services, both at the designated facility and at other facilities in the area.

E. Engineering and Environmental Controls

Optimal functioning and maintenance of the facility's environment are important components of SARS control.

Objective 1: Ensure that the air-handling capacity of rooms and units housing SARS patients is adequate for isolation and infection control.

Activities

- Determine the current capacity for isolating SARS patients in ICU and non-ICU settings.
- Ensure that AIIRs are functioning properly and are maintained in accordance with current recommendations (see http://www.cdc.gov/ncidod/hip/enviro/guide.htm).
- Determine how non-AIIR rooms designated for SARS care might be modified to achieve appropriate airflow direction and/or air exchanges.
- Determine the best location in the hospital for a SARS unit in which patients and the staff caring for them could be cohorted. Determine how to modify existing rooms/units/floors as needed to meet the engineering requirements for a SARS unit. Ideally this location would have the following characteristics:
  - An air-handling system that would allow the unit to be made negative pressure to surrounding areas and allow for a pressure gradient with air flow from the "cleanest" (nurses' station) to the "least clean" (patient room) area.
  - Rooms that could also be converted to negative pressure in relation to the hallway
- Identify a separate designated space for a SARS evaluation center, which may be a temporary structure or make use of existing structures. The purpose is to separate potential SARS patients from other patients seeking care at the healthcare facility.
  - Determine needed ventilation, restroom facilities, water supply, etc., for the center.
  - Determine appropriate traffic routes and modes of transport for patients who must be taken from the evaluation center to the healthcare facility.
- Designate an environmental/housekeeping specialist to verify that cleaning and disinfection methods and staff are appropriately prepared to provide SARS patient care at the facility (see Appendix C2).

F. Exposure Reporting and Evaluation

Unrecognized patients were a significant source of transmission during the SARS outbreaks. Thus, rapid reporting and evaluation of persons exposed to SARS will be an important measure in early identification and isolation.

Objective 1: Ensure that staff understand the risks of SARS exposure, the importance of reporting exposures and illness, and the procedures for reporting exposures and illness.

Activities

- Establish an exposure reporting process that includes various methods for identifying exposed personnel (e.g., self-reporting by employees, logs of personnel entering SARS patient rooms).
- Establish procedures for managing unprotected high-risk exposures. These occur when a healthcare worker is in the same room as a probable SARS patient during a high-risk aerosol-generating procedure and the recommended infection control precautions are either absent or breached. If

a healthcare worker has an unprotected high-risk exposure but has no symptoms of SARS, the worker:
  - Should be excluded from duty (e.g., administrative leave) for 10 days following the date of the last high-risk exposure
  - Need not limit activities outside the healthcare setting but should be vigilant for development of fever and/or respiratory symptoms
  - Should undergo and document/record active surveillance for the development of respiratory symptoms
- Establish procedures for managing unprotected exposures that are not high-risk. These occur when a healthcare worker is in a room or patient-care area with a SARS patient (not during a high-risk procedure) and the worker is not wearing the required personal protective equipment. Or, the worker is in a room or patient-care area with a SARS patient and realizes that s/he has self-contaminated (e.g., touched one's face while caring for the patient, touched one's face during removal of protective equipment). If a healthcare worker has an unprotected exposure and has no symptoms of SARS, the worker:
  - Need not be excluded from duty because of the exposure.
  - Need not limit activities outside the healthcare setting.
  - Should be vigilant for development of fever and/or respiratory symptoms.
  - Should undergo active surveillance for the development of respiratory symptoms, records of the surveillance should be kept.
- Establish procedures for managing symptomatic healthcare workers. Any healthcare worker who has cared for or been exposed to a SARS patient and who develops fever or respiratory symptom(s) within 10 days after exposure or patient care should immediately: 1) contact infection control, occupational health, or designee, and 2) report to the predetermined location for clinical evaluation.
  - If symptoms improve or resolve within 72 hours after first onset, the worker should follow policies or regulations defined by the facility and health department. Infection control precautions can be discontinued, and the healthcare worker may return to work.
  - Healthcare workers who meet or progress to meet the SARS case definition should continue infection control precautions for 10 days after resolution of fever, provided respiratory symptoms are absent or improving.
  - If the illness does not progress to meet the case definition but the worker has persistent fever or unresolving respiratory symptoms, infection control precautions should be continued for an additional 72 hours, at the end of which a clinical evaluation should be performed. Workers who do not meet the case definition for SARS at that time should follow policies or regulations defined by the facility and health department. Return to work can be considered in consultation with infection control and employee health staff.

G. Staffing Needs and Personnel Policies

A SARS outbreak challenges a healthcare facility's ability to meet staffing, organizational, and resource needs. During an outbreak of any size, existing staffing shortages may be amplified by illness among staff members, fear and concern about SARS, and isolation and quarantine of exposed staff or ill/exposed family members. Staffing shortages are also likely to escalate as an outbreak progresses.

To address staffing shortages, healthcare workers may need to be relocated to different settings or modify the type of services they usually provide. The strain involved in SARS patient care and prolonged use of personal respiratory protection may intensify staffing challenges. Healthcare personnel will need special training in the details of SARS preparedness planning, infection control, crisis management, exposure management, and skills required for a SARS mass-casualty response. During an outbreak, all employees will require considerable personal support to keep working.

Non-healthcare workers or retired healthcare workers may be retained to provide supplementary services. Volunteers will also be a potential source of human resources to facilitate the management of healthcare services during an emergency response. Use of the alternative staffing resources will, however, require training and support during an outbreak response.

During the preparedness period, it is important to plan for how staffing services might be provided, as some strategies might require changes in policy or even in legislation.

Objective 1: Develop strategies to meet the range of staffing needs that might be required to manage a SARS outbreak.

Activities

- Determine the minimum number and categories of personnel needed to care for a single patient or small group of patients on a given day. Given the high burden of wearing SARS personal protective equipment (especially prolonged respirator wear), staffing may need to be increased to allow PPE-free time.
- Determine whether a small group of staff, including ancillary staff (perhaps divided into multiple teams), could be assigned responsibility for providing initial care for SARS patients. These staff members would be well trained in infection control practices, would be fit-tested in advance for respirators (preferably to multiple manufacturers' models), and would serve as a resource to other staff when additional patients are admitted. Examples of such teams include:
    - Initial care team of medical, nursing, housekeeping, and ancillary staff
    - Emergency response team to provide resuscitation, intubation, and emergency care to possible or known SARS patients using appropriate PPE with highest levels of protection
    - Respiratory procedures team (e.g., bronchoscopy, sputum induction) using appropriate PPE with highest levels of protection
- For teaching hospitals, determine what role, if any, students and other trainees (e.g., residents, fellows) will play in the care of SARS patients.
- Determine how staffing needs will be met as the number of SARS patients increases and/or staff become ill or are quarantined.

Objective 2: Ensure that infection control staffing is adequate.

Activities

- Ensure the availability of a sufficient number of infection control practitioners (ICPs) to allow for daily monitoring and assessment of all patient-care areas. ICPs should not only implement appropriate infection control measures but

also stop practices that are ineffective. Designees who can help ICPs during outbreaks should be identified.
- When patients are isolated, designate staff members to formally monitor and reinforce compliance with PPE measures.

Objective 3: Develop personnel policies for exposure management and work restrictions and measures to help healthcare workers comply with restrictions.

Activities
- Inform all healthcare personnel that they are expected to comply with all infection control and public health recommendations. Alert them that recommendations may change as a SARS outbreak progresses.
- Develop criteria for healthcare worker furloughs and work restrictions.
- Develop systems for follow-up of healthcare personnel after unprotected exposures to SARS patients.
- Instruct healthcare workers to notify each facility at which they work if any of those facilities is providing care to SARS patients.
- If quarantine is used as an exposure management tool, some healthcare workers may be placed on "home/work restrictions" to ensure sufficient staffing levels. Healthcare workers on home/work restrictions should travel only between home and the healthcare facility for the duration of the restriction. Appropriate measures should be developed to help healthcare workers comply with the restriction (e.g., assistance with obtaining food, running errands, child care). Limitations on alternative employment will be needed.
- Healthcare workers should have access to mental health professionals to help them cope with the emotional strain of managing a SARS outbreak.

H. Hospital Access Controls

When SARS is present in the community surrounding a healthcare facility, preventing unrecognized SARS patients from entering the facility will be essential. Appropriate surveillance and screening measures are detailed in the surveillance section of this document and in Supplement B. However, restricting access to the facility will assist in implementing effective surveillance and screening.

Objective: Develop criteria and plans to limit access to the healthcare facility.

Activities
- Establish criteria and protocols for limiting hospital admissions, transfers, and discharges, in accordance with local/state recommendations and regulations, in the event that nosocomial SARS-CoV transmission occurs in the healthcare facility.
- Establish criteria and protocols for closing the facility to new admissions and transfers, if this becomes necessary.
- Establish criteria and protocols for limiting hospital visitors.
- Determine when and how to involve security services to enforce access limitations. Consider meeting with local law enforcement officials in advance to determine what assistance they might be able to provide.

I. Supplies and Equipment

Both consumable (e.g., PPE) and durable (e.g., ventilators) supplies will be needed to care for SARS patients. Experience in other countries indicates that a SARS outbreak not only may strain a facility's supply of these resources but also may affect the ability to order replacement supplies.

Objective: Determine the current availability of and anticipated need for supplies and equipment that would be used in a SARS outbreak.

Basic Activities

- Assess anticipated needs for consumable and durable resources that will be required to provide care for various numbers of SARS patients, and determine at what point extra resources will be ordered.
- Consumable resources include:
    - Hand hygiene supplies (antimicrobial soap and alcohol-based waterless hand hygiene products)
    - Disposable particulate respirators (N95 or higher)
    - Personal air-purifying respiratory (PAPR) hoods and power packs (if applicable)
    - Goggles and face shields (disposable or reusable)
    - Gowns
    - Gloves
    - Surgical masks
- Durable resources include:
    - Ventilators
    - Portable HEPA filtration units and other room air-circulation devices
    - Portable X-ray units

Enhanced Activities

- Establish back-up plans in the event of limited supplies

J. Communication and Reporting

A SARS outbreak will generate a need for rapid analysis of the status of patients and transmission in the healthcare facility and reporting of this information to public health officials as well as to the public, the media, and political leaders. These needs can overwhelm resources that are essential to other response activities.

Objective 1: Ensure adequate communication with the health department.

Activities

- Establish a mechanism for regular contact with the local health department to report and receive information on SARS activity in the healthcare facility and the community.
- Establish a reporting process to review discharge planning of SARS patients with health department officials to ensure appropriate follow-up and case management in the community.
- Establish a process for reporting to the health department information on exposed visitors to ensure appropriate follow-up and case management in the community.
- Discuss jurisdictional and procedural issues for the investigation of nosocomial SARS outbreaks.

Objective 2: Develop plans to communicate with other healthcare facilities and the public.

Activities

- Determine how to provide daily updates to the infection control staff and the hospital administration regarding SARS activity in the facility and the community.
- Determine the preferred flow and release of information related to SARS patient care or transmission in the facility. Public relations/media staff should work with the SARS coordinator or designee to ensure the clarity and accuracy of information. Prepare plans for: 1) internal notification and communication with patients and healthcare personnel, 2) external communication with the media and the public, coordinated with local public health officials, and 3) development of templates for frequently asked questions, notifications, press releases, and other communication tools.
- Determine whether and how the facility will establish a SARS hotline for public inquiries, if needed.

V. Community Healthcare Delivery Issues

A SARS outbreak may generate resource needs that exceed the scope of a particular healthcare facility and must be addressed at the community level, with representation from healthcare systems, public health, and industry. These issues include the following:

Facilities

- Designation of SARS hospitals
- Designation, development, and staffing of community SARS evaluation centers
- Construction and certification of new AIIRs
- Criteria/procedures for and impact of closure of facilities
- Establishment of alternative "overflow" facilities

Personnel

- Protection and training of first responders
- Personnel surge capacity for heavily affected hospitals
- Coordination of volunteer efforts
- Assistance to healthcare personnel in quarantine or on home work restrictions

Supplies

- Implications (e.g., fit-testing) of an emergency change in respirator type during an outbreak
- Adequacy of supplies of PPE and other equipment and materials
- Coordination of donated items

Finance

- Requisition and distribution of emergency funds to assist with construction and modifications of facilities to care for SARS patients, overtime payment for healthcare and other personnel, costs of healthcare worker furloughs, lost revenues and other expenses

Legal / regulatory

- Regulations to ensure that no facility can refuse to care for patients with SARS
- Certification of new AIIRs
- Liability issues related to healthcare personnel working in jobs for which they are not specifically trained

List of Appendices for Supplement C

Appendix C1
SARS Response Matrices for Healthcare Facilities
Appendix C2
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Appendix C3
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Appendix C1
SARS Response Matrices for Healthcare Facilities

Framework for Contingency Planning

SARS-CoV transmission risks in healthcare facilities depend not only on the extent of SARS activity in the community and worldwide but also on the level of SARS activity in the facility. Recommended strategies for SARS response are therefore based on the following framework, which provides options for escalating or otherwise modifying control measures based on facility-specific categories of SARS activity and transmission risks.

Categories of SARS Activity and Transmission Risk

No cases of SARS in the facility – Healthcare facilities in this category are those in which:

- No potential or known SARS patients are being cared for as inpatients or outpatients, AND
- No known transmission of SARS-CoV to patients, visitors, or healthcare workers has occurred.

A few cases in the facility, but all cases are imported (NO nosocomial transmission) – Facilities in this category are those that are providing care to a limited number of potential or known SARS cases as inpatients or outpatients (e.g., in the emergency department) but in which no recognized SARS-CoV transmission to other patients, visitors, or healthcare workers has occurred.

A larger number of SARS cases in the facility OR nosocomial transmission with all cases linked to a clearly identified source – Facilities in this category include those with an elevated risk for transmission due to:

- A large number of SARS patients,
- A significant number of unprotected exposures to a SARS patient among patients, visitors, or healthcare workers, OR
- Transmission to other patients or to healthcare workers under circumstances in which the exposures are clearly understood and control measures are in place to prevent further spread.

Cases attributed to nosocomial transmission with NO clearly identified source – Facilities in this category include those with known nosocomial transmission of SARS in which the presence of unlinked cases (i.e., cases in which the exposure risk cannot be clearly identified) makes it difficult to determine which patients and visitors may have been exposed; therefore, all new-onset febrile illness may represent SARS.

Matrices for SARS Response in Healthcare Facilities

The matrices on the following pages summarize suggested SARS control measures in healthcare facilities.

- For the inpatient setting (Matrix 1), control measures depend on both the level of SARS activity in the facility and in the community.
- In the outpatient and longterm-care settings (Matrices 2 and 3) control measures depend on the level of SARS activity in the community. If SARS patients are seen in a facility's emergency department, but no SARS patients are admitted to the facility, the emergency department may require more extensive control measures than the inpatient areas.

These matrices are intended to provide guidance on potential control measures. Facilities will need flexibility in implementing control measures, as requirements will likely change as the outbreak progresses and more information becomes available.

Matrix 1: Recommendations for Inpatient Facilities and Emergency Departments

Level of SARS activity	Suggested actions
No cases of SARS in the facility	1) Triage activities/facility access controls • Notify the SARS coordinator or designee of any transfers from facilities that do have SARS cases. • Instruct all patients with respiratory symptoms to wear a surgical mask (if not contraindicated). Manage these patients with droplet precautions until determined that the cause of symptoms is not an infection that requires droplet precautions. Instruct patients who cannot wear a mask to cover the nose and mouth with tissues when coughing or sneezing. • In the presence of known cases of SARS worldwide but no known SARS-CoV transmission in the area around the facility: o Place signs at all entry points detailing symptoms of and any current epidemiologic risk factors for SARS. Signs should direct any person meeting these criteria to an appropriate screening area for evaluation. o Initiate screening of patients on entry to the emergency department for symptoms and epidemiologic links suggesting SARS. Patients with febrile illness and epidemiologic risks should perform hand hygiene, wear a surgical mask, and be placed on airborne precautions. Consider cohorting, with all patients wearing surgical masks, if airborne isolation is not possible. o Intake/triage staff should practice frequent hand hygiene and may wear surgical masks during respiratory season. • In the presence of known SARS-CoV transmission in the area around the facility: o Actively screen all persons entering the facility for symptoms; all persons should perform hand hygiene on entry. o Instruct all patients presenting with febrile illness or respiratory symptoms to wear a surgical mask; place these patients on airborne precautions. Consider cohorting, with all patients wearing surgical masks, if airborne isolation is not possible. o Intake/triage staff should follow full SARS personal protection guidance. o Limit visitors (e.g., one per patient per day). o Screen all visitors for SARS epidemiologic risks and symptoms. o Maintain a log of visitors to SARS patients to assist in contact tracing. o Limit elective admissions/procedures. • Designate an area as a SARS evaluation center. Send all febrile patients who present to emergency departments and clinics to the fever assessment clinic.

Matrix 1: Recommendations for Inpatient Facilities and Emergency Departments (continued)

Level of SARS activity	Suggested actions
No cases of SARS in the facility (continued)	2) Patient placement • In the presence of known SARS activity worldwide but no known transmission in the area around the facility, instruct all patients presenting with febrile respiratory symptoms and epidemiologic SARS risk factors to wear a surgical mask; place these patients on airborne precautions. Consider cohorting, with all patients wearing surgical masks, if airborne precautions are not possible. • In the presence of transmission in the area around the facility, instruct all febrile patients to wear a surgical mask; place these patients on airborne precautions. Consider cohorting, with all patients wearing surgical masks, if airborne isolation is not possible. 3) Designated personnel • Assign only selected, trained, and fit-tested emergency department staff to evaluate possible SARS cases. Staff should follow full SARS personal protection guidance. 4) Surveillance • Depending on directives from local/state health departments, consider reporting all healthcare workers hospitalized with unexplained pneumonia. 5) Healthcare worker restrictions • Healthcare workers should notify the facility's SARS coordinator and have daily symptom checks, if: o They are caring for a SARS patient in another facility. o They are also working in another facility that has reported nosocomial SARS-CoV transmission. o They have close contact with SARS patients outside the hospital.

Matrix 1: Recommendations for Inpatient Facilities and Emergency Departments (continued)

Level of SARS activity	Suggested actions
A few cases in the facility, but all cases are imported (NO nosocomial transmission)	1) Triage activities/facility access controls • Same as for no cases of SARS in the facility. Add: • No visitors to SARS patients unless necessary (e.g., parents, translators); visitors must receive infection control training. • Designate specific SARS patient-flow routes (e.g., emergency department to designated elevator to AIIR; AIIR to radiology). • Clean rooms housing SARS patients in accordance with current recommendations (see Supplement C4). 2) Patient placement • Same as for no cases of SARS in the facility. Add: • Place admitted SARS patients in AIIRs if available. • Consider cohorting admitted patients in private rooms on designated SARS units depending on personnel and availability of AIIRs. 3) Designated personnel • Same as for no cases of SARS in the facility. Add: • Assign only selected, trained, and fit-tested staff to SARS patient care (includes designated ancillary personnel). • Assign a selected, trained, and fit-tested team with access to highest levels of respiratory protection as a designated response team for emergency resuscitation of known or potential SARS patients. 4) Surveillance • Active surveillance targeted to healthcare workers providing care to SARS patients (e.g., daily symptom monitoring). 5) Healthcare worker restrictions • Same as for no cases of SARS in the facility. Add: • No eating or drinking in SARS patient-care areas. • Furlough workers with unprotected exposures to a SARS patient during high-risk procedures (see Appendix C2), and institute daily checks to evaluate possible symptoms. • Healthcare workers with other (non-high risk) unprotected exposures to a SARS patient should have daily checks to evaluate for possible symptoms. Furlough of these workers may be considered.

Matrix 1: Recommendations for Inpatient Facilities and Emergency Departments (continued)

Level of SARS activity	Suggested actions
A larger number of SARS cases in the facility, OR any facility in which nosocomial transmission has occurred but in which all nosocomial cases have a clearly identified source	1) Triage activities/access controls • Same as for a few cases in the facility but all cases are imported. Add: • Irrespective of SARS activity in community around the facility: o Limit visitors (e.g., one per patient per day). o Maintain a log of all visitors to SARS patients to aid in contact tracing. o Limit elective admissions/procedures. o All healthcare workers and visitors should have a fever check and perform hand hygiene on entry. 2) Patient placement • Same as for a few cases in the facility but all cases are imported. Add: • Based on availability of AIIRs, considering cohorting SARS patients in private rooms on designated wards; modify existing rooms and designate staff to accommodate. 3) Designated personnel • Same as for a few cases in the facility but all cases are imported. 4) Surveillance • Active healthcare worker surveillance (daily symptom monitoring) throughout the facility. • Monitor all healthcare worker absenteeism and illnesses (e.g., through occupational medicine clinic); evaluate for links to known SARS cases. • Monitor for and evaluate all new fevers and respiratory illnesses in patients and healthcare workers. Place anyone with unexplained fever or any respiratory illness on SARS precautions, and evaluate in accordance with the SARS evaluation algorithm (Appendix C3). 5) Healthcare worker restrictions • Same as for a few cases in the facility but all cases are imported.

Matrix 1: Recommendations for Inpatient Facilities and Emergency Departments (continued)

Level of SARS activity	Suggested actions
Any facility in which nosocomial transmission has occurred and the nosocomial cases have NO clearly identified source (unlinked transmission)	1) Triage activities/access controls • Same as for a larger number of cases or linked transmission. Add: • No visitors allowed in hospital unless necessary (e.g., parents, translators); visitors must receive infection control training. • Close emergency department and facility to admissions and transfers. 2) Patient placement • Same as for a larger number of cases or linked transmission. Add: • Consider cohorting patients and staff to care for patients in the following categories: o Afebrile patients with no close SARS contact -- discharge as soon as medically indicated o Afebrile patients with close SARS contact -- discharge with contact restrictions and health department follow-up per community SARS policy o Febrile or symptomatic patients not meeting case definition o Patients meeting case definition 3) Designated personnel • Same as for a larger number of cases or linked transmission. Add: • All persons in the facility should wear a surgical mask when not providing patient care (this is not meant to serve as SARS PPE but to limit transmission if anyone has SARS). When in contact with SARS patients, all persons should wear SARS PPE. 4) Surveillance • Same as larger number of cases or linked transmission. Add: • Place any person with fever (not just unexplained fever) or respiratory symptoms on SARS precautions, and evaluate in accordance with the SARS evaluation algorithm (Appendix C3). 5) Healthcare worker restrictions • Same as for a larger number of cases or linked transmission. Add: • Depending on staffing issues, either: o Implement home/work restrictions for all healthcare workers in the facility, or o Restrict movement to work and home for all healthcare workers who worked in an area of the facility where nosocomial transmission may have occurred.

Matrix 2: Recommendations for Outpatient Facilities/Areas

Level of SARS activity	Suggested actions
No SARS activity reported anywhere in the world	1) Patient screening and precautions • Encourage patients with respiratory symptoms to report symptoms to the triage/intake staff. • Encourage all patients with respiratory symptoms to perform hand hygiene and wear a surgical mask. Move these patients from the waiting area to a private exam room as soon as feasible. Instruct patients who cannot wear a surgical mask to cover the nose and mouth with tissues when coughing or sneezing. If there are likely to be delays in moving patients out of the waiting area, divide the area so that patients with respiratory symptoms do not sit near others. 2) Healthcare worker precautions • Healthcare workers seeing patients with respiratory illness should wear surgical masks and practice frequent hand hygiene. • During respiratory illness season, intake/triage staff should practice frequent hand hygiene and could be given the option of wearing surgical masks. 3) Infrastructure issues • The facility will need a supply of surgical masks and waterless hand-hygiene products.

Matrix 2: Recommendations for Outpatient Facilities/Areas (continued)

Level of SARS activity	Suggested actions
Presence of SARS activity worldwide but no known transmission in the area around the facility	1) Patient screening and precautions • Same as for no SARS activity in the world. Add: • Screen all patients and visitors with respiratory symptoms for known SARS epidemiologic links (e.g., travel to endemic areas or contact with known cases). • Instruct anyone with respiratory symptoms or fever and epidemiologic risks for SARS to wear a surgical mask and perform hand hygiene. Place these patients immediately in a private room. Transfer these patients as soon as possible to a facility where they can be isolated appropriately during the evaluation. Notify receiving facilities that the patient is being sent for evaluation of SARS. 2) Healthcare worker precautions • Same as for no SARS activity in the world. Add: • Healthcare workers who are in direct contact with patients who might have SARS should wear full SARS PPE. 3) Infrastructure issues • Same as for no SARS activity in the world. Add: • The facility will need a supply of gowns, gloves, eye protection, and respirators (e.g., N95).
Known transmission in the area around the facility	1) Patient screening and precautions • Screen all patients and visitors for fever and respiratory symptoms both when appointments are made and when they arrive at the clinic. Refer persons with these symptoms to a facility where they can be isolated appropriately during evaluation. Warn receiving facilities that the patient is being sent for evaluation of SARS. 2) Healthcare worker precautions • Same as for cases in the world but no transmission around the facility 3) Infrastructure issues • Same as for cases in the world but no transmission around the facility

Matrix 3: Recommendations for Long-term-care Facilities

Level of SARS activity	Suggested actions
No SARS activity reported anywhere in the world	1) Patient precautions • Place patients who develop febrile respiratory illnesses on droplet precautions until determined that the cause of the symptoms is not an infectious agent requiring droplet precautions. 2) Healthcare worker precautions • Healthcare workers seeing patients with respiratory illness should follow appropriate precautions and practice frequent hand hygiene. 3) Infrastructure issues • The facility will need supplies for droplet precautions (masks, gloves and gowns) and waterless hand-hygiene products.
Presence of SARS activity worldwide, but no known transmission in the area around the facility	1) Patient precautions • Same as for no SARS in the world. 2) Healthcare worker precautions • Same as for no SARS in the world. 3) Infrastructure issues • Same as for no SARS in the world. 4) Access controls • Screen visitors (passively with signs, or actively) for symptoms and epidemiologic links to SARS cases (travel, close contact with SARS patients). Visitors with symptoms and epidemiologic links should not be allowed into the facility.
Known transmission in the area around the facility	1) Patient precautions • Same as for no SARS in the world. • All new admissions should be evaluated at an acute-care facility (no direct admissions). Patients with symptoms should be evaluated according to the SARS clinical algorithm (Appendix C3) before being admitted. Patients who are asymptomatic but had exposures should be observed for 10 days for the development of symptoms before they are admitted. • If there is significant transmission in the community around the facility, initiate surveillance for nosocomial respiratory illness, and transfer all patients who develop such illness to an acute-care facility for evaluation. Acute-care facilities should be notified that the patients are being transferred for evaluation of SARS. 2) Healthcare worker precautions • Same as for no SARS in the world. • Healthcare workers should undergo daily symptom surveillance. Healthcare workers with fever or respiratory symptoms should be furloughed for 72 hours and may return to work only if they become asymptomatic during that time. 3) Infrastructure issues • Same as for no SARS in the world. 4) Access controls

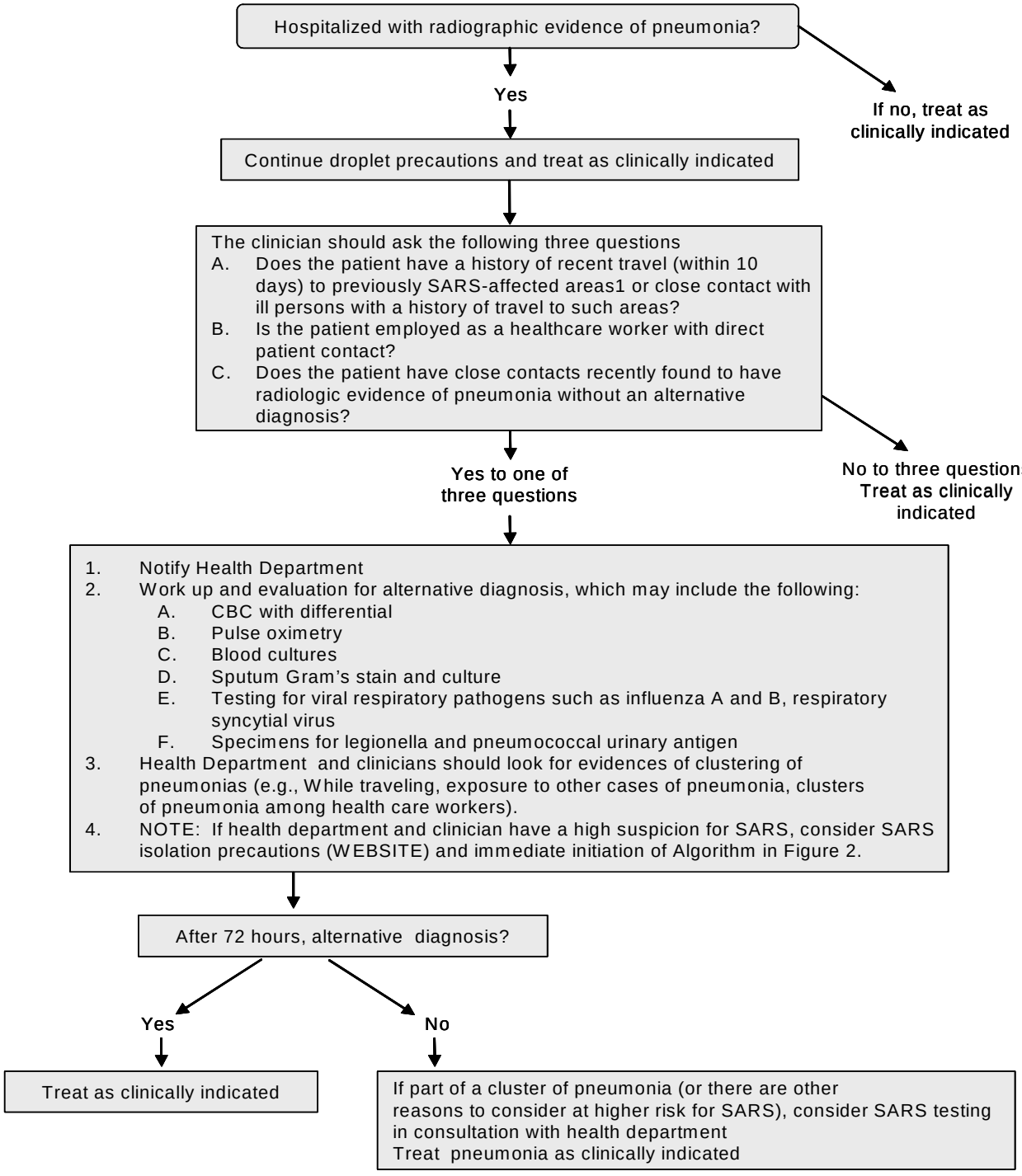
	• Screen visitors actively for symptoms. • Do not allow visitors with symptoms into the facility.

Appendix C2

Prevention of SARS Transmission in Healthcare Settings: Consolidated Infection Control Guidance

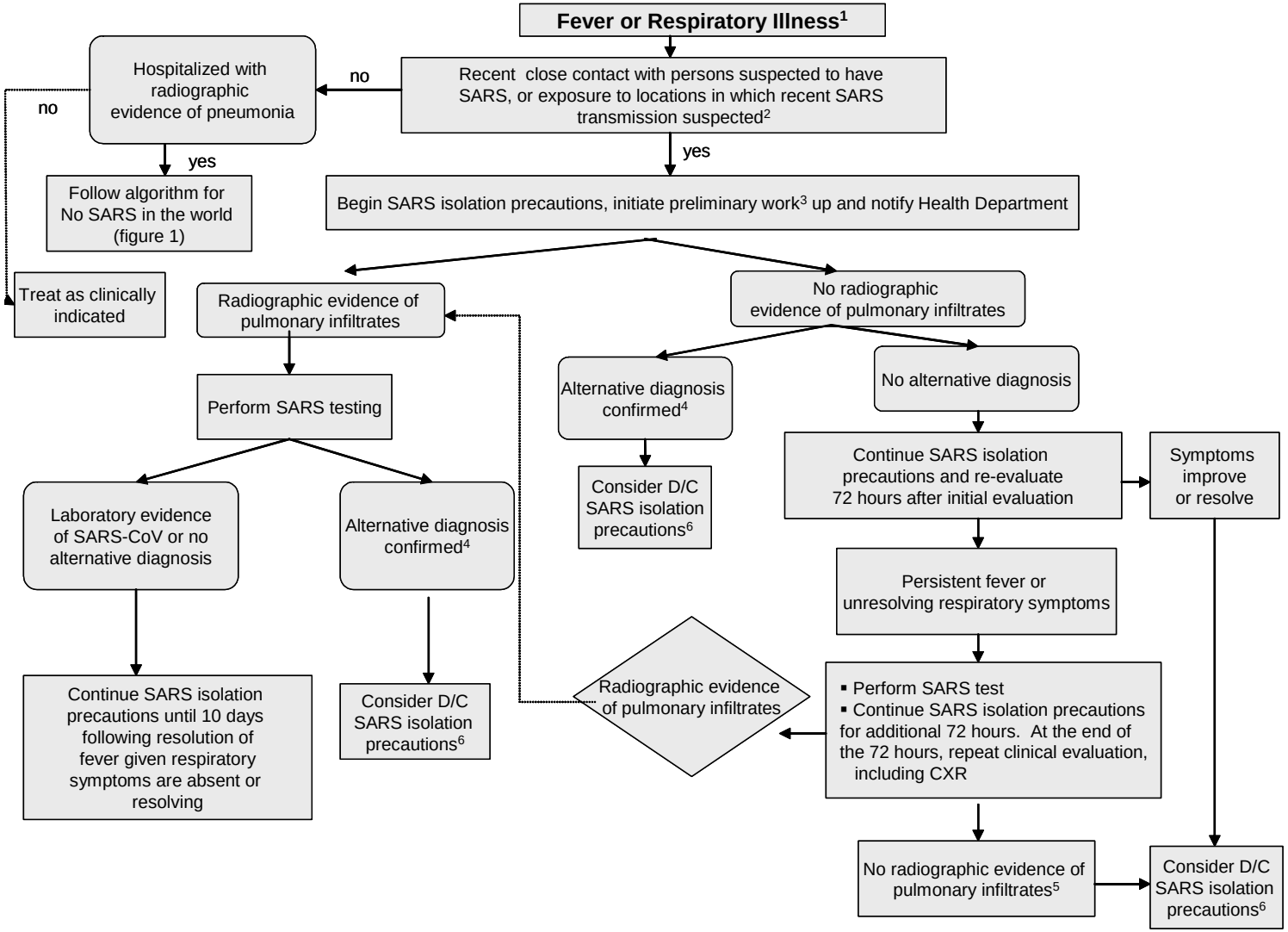
(in development)

Appendix C3
Algorithm for evaluation and management of patients hospitalized with radiographic evidence of pneumonia, in the absence of known SARS activity worldwide



[1]Previously SARS-affected areas are defined as XXXXX.

Appendix C4
Algorithm for management of fever or respiratory symptoms in the presence of SARS activity worldwide



[1]Clinical description of SARS: Clinical judgment should be used to determine when symptoms trigger initiation of the algorithm. The earliest symptoms of SARS usually include fever, chills, rigors, myalgia, and headache. In some patients, myalgia and headache may precede the onset of fever by 12-24 hours. Diarrhea may also be an early manifestation. Respiratory symptoms often do not appear until 2-7 days after the onset of illness and most often include shortness of breath and/or dry cough. Although not diagnostic, the following laboratory abnormalities have been seen in some patients with laboratory confirmed SARS-CoV infections:

- Lymphopenia with normal or low white blood cell count
- Elevated transaminases
- Elevated creatine phosphokinase
- Elevated lactate dehydrogenase
- Elevated C-reactive protein
- Prolonged activated partial thromboplastin time

[2]Exposure history for SARS: Once SARS-CoV transmission is documented in the world:

- In settings of no or limited local secondary transmission of SARS-CoV**,** patients are considered exposed to SARS if, within 10 days of symptom onset, the patient has:
  - Close contact with someone suspected of having SARS, OR
  - A history of foreign travel (or close contact with an ill person with a history of travel) to a location with documented or suspected SARS, OR
  - Close contact to a domestic location with documented or suspected recent transmission of SARS.
- In settings with more extensive transmission, all patients with fever or respiratory symptoms should be evaluated for possible SARS, since the ability to determine epidemiologic links will be lost.

[3]Work up: Initial diagnostic testing for suspected SARS patients may include:

- Chest radiograph
- Pulse oximetry
- Blood cultures
- Sputum Gram's stain and culture
- Testing for viral respiratory pathogens, notably influenza A and B and respiratory syncytial virus (RSV)
- Legionella and pneumococcal urinary antigen testing if radiographic evidence of pneumonia.

An acute serum sample and other available clinical specimens (respiratory, blood, and stool) should be saved for additional testing until a specific diagnosis is made.

SARS testing may be considered as part of the initial workup if there is a high level of suspicion for SARS based upon exposure history. For additional details on specialized laboratory testing options available through the health department and laboratory response network (LRN), see Supplement F.

[4]Alternative diagnosis: An alternative diagnosis should be based only on laboratory tests with high positive predictive value (e.g., blood culture, viral culture, Legionella urinary antigen, pleural fluid culture, transthoracic aspirate). The presence of an alternative diagnosis does not necessarily rule out co-infection with SARS-CoV. In some settings, PCR testing for bacterial and viral pathogens can also be used to help establish alternative diagnoses.

[5]Radiographic testing: Chest CT may show evidence of an infiltrate before a chest radiograph (CXR). Therefore, a chest CT should be considered in patients with a strong epidemiologic link to a known SARS case and a negative CXR 6 days following onset of symptoms. Alternatively, the patient should remain in SARS isolation and the CXR should be repeated on day 9 after symptom onset.

[6]Discontinuation of SARS isolation precautions: SARS isolation precautions should be discontinued only after consultation with local public health authorities and the evaluating clinician. Factors that might be considered include the strength of the epidemiologic exposure to SARS, nature of contact with others in the residential or work setting, strength of evidence for an alternative diagnosis, and evidence for clustering of pneumonia among close contacts. Isolation precautions should be discontinued on the basis of an alternative diagnosis only when the following criteria are met:

- Absence of strong epidemiologic link to known cases of SARS
- Alternative diagnosis confirmed using test with high positive predictive value
- Clinical manifestations entirely explained by alternative diagnosis
- No evidence of clustering of pneumonia cases among close contacts (unless >1 case in the cluster confirmed to have the same alternative diagnosis)
- All SARS cases identified in surrounding community can be epidemiologically linked to known cases or locations in which transmission is known to have occurred.

PUBLIC HEALTH GUIDANCE FOR COMMUNITY-LEVEL PREPAREDNESS AND RESPONSE TO SEVERE ACUTE RESPIRATORY SYNDROME (SARS)

SUPPLEMENT D: COMMUNITY CONTAINMENT MEASURES, INCLUDING NON-HOSPITAL ISOLATION AND QUARANTINE

Goals

- Reduce the risk of exposure to SARS by separating and restricting the movement of persons suspected to have SARS
- Reduce the risk of transmission of SARS-CoV by restricting the movement of persons who may have been exposed to infectious SARS patients but are not yet ill.
- Reduce the overall risk of transmission of SARS-CoV at the population level by limiting social interactions and preventing inadvertent exposures.

Key concepts

- Tracing and monitoring of contacts of SARS patients is resource intensive yet critical for containment and early recognition of illness in persons at greatest risk of becoming infected and transmitted infection to others.
- Isolation and quarantine are standard practices in public health; both aim to control exposures to infected or potentially infected persons, and both raise legal, social, financial, and logistical challenges that should be anticipated and addressed.
- Isolation applies to people who are known to have an illness, whereas quarantine applies to those who may have been exposed to an illness but are not ill.
- Quarantine is a collective action for the common good. Modern quarantine must be designed not only to prevent disease transmission in the community but also to ensure prompt delivery of medical care and support to exposed persons and protect individual civil liberties.
- Quarantine was an integral part of SARS control in some settings with extensive transmission and can be implemented in various ways depending on specific needs.
- Quarantine does not have to be mandatory, and compliance does not have to be 100% for the measure to be effective.
- Effective implementation of quarantine requires a clear understanding of the roles and legal authorities of public health staff at local, state, and federal levels and cooperation and collaboration with traditional and non-traditional partners.
- Obtaining and maintaining public trust is key to successful implementation of these measures. Clear messages about the criteria, justification, role, and duration of quarantine and ways in which persons will be supported during the quarantine period will help generate public trust.
- Measures such as cancellation of public events or the implementation of community "snow-days" can reduce the risk of exposure to SARS at the population level by limiting social interactions and preventing inadvertent exposures.

Priority activities

- Isolate SARS patients and suspects in homes, hospitals, or designated community-based settings.
- Monitor contacts of SARS cases, and consider quarantine of contacts if needed.
- Implement community-based control measures, such as cancellation of public events and closure of schools, depending on the extent of the outbreak and the availability of resources.
- Establish the infrastructure to deliver essential goods and services to persons in quarantine and isolation.

I. Rationale and Goals

Community containment strategies, including isolation and quarantine, are fundamental measures that have been used for centuries to control the spread of communicable diseases. Before 2003, quarantine had been used rarely in the last century, due in part to the negative connotations associated with past use. Modern quarantine differs substantially from the quarantine of the past and proved to be critically important for the containment of the 2003 global SARS outbreaks.

Isolation of SARS patients separates them from healthy persons and restricts their movement to prevent transmission to others. It also allows for the focused delivery of specialized health care to ill persons and protects healthy persons from becoming ill. Quarantine of persons who may have been exposed to SARS but are not ill is intended to identify those at greatest risk for developing SARS and to prevent transmission in the event that they develop SARS (see Box).

Quarantine of exposed contacts can have added benefits beyond the obvious purpose of separating exposed persons from unexposed persons. The first benefit, reducing the risk of further transmission from infected persons who appear healthy, applies to infectious diseases (e.g., measles) in which transmission can occur before the onset of symptoms. This is currently not believed to be the case with SARS. A second, frequently under-appreciated benefit, is a reduction in the interval between the onset of symptoms and the institution of appropriate precautions to prevent transmission. From a practical perspective, several steps need to occur during this period (e.g., recognition of symptoms, presentation to a healthcare provider, establishment of a SARS diagnosis) before appropriate isolation precautions are instituted. The utility of quarantine in this context is to identify through contact tracing those at greatest risk for the onset of SARS symptoms, separate them from others and restrict their movements, actively monitor them for symptoms, and institute appropriate isolation procedures as soon as symptoms are detected. In this way, quarantine reduces both the period of risk of transmission and the number of persons exposed.

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 to protect the public's health (see Supplement A). Broader community containment measures, such as cancellation of public gatherings, implementation of community "snow days," institution of temperature monitoring in public places, and use of masks, may also reduce SARS-CoV transmission by limiting social interactions at the population level and preventing inadvertent SARS exposures. The goals of these measures are to:

- Reduce the risk of transmission of infection at the community level from SARS patients and from persons who have been exposed to infectious SARS patients but are not yet ill.
- Reduce the overall risk of transmission of SARS-CoV at the population level when transmission is occurring in the community

II. Lessons Learned

During the 2003 outbreak in the United States, the community containment strategy consisted mainly of coordinating SARS response activities through CDC's Director's Emergency Operations Center and providing information and education to the public, healthcare workers, and others. This included issuing guidelines and fact sheets, holding press conferences, and meeting with groups and communities that were experiencing stigmatization. CDC also recommended isolation of SARS patients until they were no longer infectious. This practice allowed patients to receive appropriate care, and it helped contain the spread of illness to healthcare workers and other patients. Those who were severely ill were cared for in hospitals. Those whose illnesses were mild were cared for at home. Sick persons being cared for at home were asked to avoid contact with other persons and to remain at home until 10 days after the resolution of fever, provided respiratory symptoms were absent or improving. In the United States, where there was little or no transmission of SARS-CoV, individual or population-based quarantine was not recommended. CDC advised persons who were exposed but not symptomatic to monitor themselves for symptoms and advised home isolation and medical evaluation if symptoms appeared.

In contrast, other countries, many of whom were much more severely affected, implemented both individual and population-based or geographic quarantine measures, including quarantine of travelers arriving from other SARS-affected areas, of work and school contacts, and, in some cases, of entire apartment complexes or areas of a city. Other community-based strategies used in other countries for controlling and preventing SARS transmission included: 1) requiring fever screening before entry to schools, work sites, and other public buildings, 2) requiring use of face masks in certain settings, such as public transportation systems, 3) implementing population-wide temperature monitoring and SARS fever hotlines and referrals services, and 4) implementing community-level disinfection strategies.

Large-scale quarantine was used for the first time in decades in several countries that were severely affected by the SARS outbreak in 2003. The impact and effectiveness of individual community-based isolation and quarantine measures and specific community- and population-level interventions undertaken to contain the SARS epidemic globally are not yet fully understood, but some important generalizations can be made. Overall, strategies associated with timely and successful control of local outbreaks were characterized by 1) rapid responses, and 2) early and aggressive use of movement restrictions and other interventions. Other lessons learned from this modern experience with community containment include:

- Most, but not all, SARS patients have a clear history of exposure to another patient or to a specific setting with recognized SARS-CoV transmission.
- Strict infection control measures are needed for isolation of SARS patients; these may be difficult to implement in household and community settings.
- Tracing and monitoring of contacts of SARS patients is resource intensive but critical to the containment and early recognition of illness in persons at greatest risk.
- Quarantine was an integral part of SARS control in some settings with extensive transmission.
- A variety of quarantine strategies (e.g., home quarantine, work quarantine) have been used, depending on specific needs.

- Isolation and quarantine raise legal, social, financial, and logistic challenges (e.g., compensation, provision of services, prevention of stigma) that should be anticipated and addressed.
- Quarantine does not have to be mandatory, and compliance does not have to be 100% to be effective.
- Effective implementation of quarantine requires a clear understanding of the roles and legal authorities of public health staff at local, state, and federal levels.
- Effective implementation of quarantine requires identification of appropriate traditional and non-traditional partners (e.g., law enforcement) and their engagement in coordinated planning and response.
- The financial, social, and psychological impact of quarantine measures is substantial; preparedness planning should include measures to reduce this impact.
- Obtaining and maintaining public trust is key to successful implementation of these measures. Clear messages about the criteria, justification, role, and duration of quarantine and ways in which persons will be supported during the quarantine period will help generate public trust.
- Community control measures such as cancellation of public events and other "snow day"-type measures may reduce the risk of exposure to SARS at the population level by limiting social interactions.

Isolation and Quarantine

Isolation is the separation and restriction and movement or activities of ill infected persons who have a contagious disease, for the purpose of preventing transmission to others.

- Isolation allows for the focused delivery of specialized health care to persons who are ill, and it protects healthy persons from becoming ill.
- Ill persons are usually isolated in a hospital, but they may also be isolated at home or in a designated community-based facility, depending on their medical needs.
- "Isolation" is typically used to refer to actions performed at the level of the individual patient.

Quarantine is the separation and restriction of movement or activities of persons who are not ill but who are believed to have been exposed to infection, for the purpose of preventing transmission of diseases.

- Persons are usually quarantined in their homes, but they may also be quarantined in community-based facilities.
- Quarantine can be applied to an individual or to a group of persons who are exposed at a large public gathering or to persons believed exposed on a conveyance during to international travel.
- Quarantine can also be applied on a wider population- or geographic-level basis. Examples of this application include the closing of local or community borders or erection of a barrier around a geographic area ("cordon sanitaire") with strict enforcement to prohibit movement into and out of the area.

Isolation and quarantine are optimally performed on a voluntary basis, per instructions of healthcare providers and health officials. However, many levels of government (local, state, federal) have the basic legal authority to compel mandatory isolation and quarantine of individuals and communities when necessary to protect the public's health.

III. Isolation of SARS Patients

Objective: Ensure appropriate separation and confinement of patients with SARS during the period of communicability.

Preventing transmission from possible or known cases is critical to controlling SARS. Accomplishing this requires limiting the public interactions of possible or known SARS patients (e.g., work, school, out-of-home child care) and preventing transmission wherever the patients are housed during the period of infectivity (10 days after the resolution of fever, provided respiratory symptoms are absent or improving). SARS patients should be admitted to a healthcare facility for isolation only if clinically indicated or if isolation at home or other community facility cannot be achieved safely and effectively. Although isolation of a limited number of SARS patients may be initially accomplished in a hospital setting, local and state authorities should be prepared in the event of large outbreaks to isolate patients and potentially infected contacts at home or in alternative facilities designated for this purpose. **Isolation of SARS patients in hospitals is described in detail in Supplement C**. The following measures are recommended for isolation of SARS patients in residential settings or in alternative care facilities in the community.

Basic Activities: Isolation of SARS patients at home

- Before a SARS patient occupies a residence for home isolation, the residence should be inspected. The purpose of the inspection is to: 1) ensure that the residence has the features necessary for provision of appropriate care to the patient, and 2) determine if sufficient infection control measures can be established to keep household members and the community at minimal risk of exposure. The designated primary caregiver should conduct the on-site inspection.
- A residence should meet the following minimum requirements for home isolation of a SARS patient:
  - Availability of a primary caregiver to assist the patient with basic needs
  - Functioning telephone, electricity, and potable water
  - Separate bedroom that will be occupied only by the SARS patient during the isolation period. The bedroom should have a floor-to-ceiling wall with a door that can be kept closed at all times and a means for isolating a central air-conditioning unit that serves this room.
  - Accessible separate bathroom that is designated for use only by the SARS patient
- During the period of isolation, household members not providing care should be relocated if possible so that only the primary caregiver and the patient remain in the residence.
- If relocation of household members is not possible, their contact with the SARS patient should be minimized. Persons at risk of serious SARS complications (e.g., persons with underlying heart or lung disease, persons with diabetes mellitus, elderly persons) should not have contact with the patient.

- All persons in contact with the SARS patient should be provided with adequate PPE and instructions for use. Ensure that they understand and adhere to appropriate infection control practices.
- All persons in contact with the SARS patient should carefully follow recommendations for hand hygiene, particularly after contact with body fluids (e.g., respiratory secretions, urine, feces). See the "Guideline for Hand Hygiene in HealthCare Settings" (http://www.cdc.gov/handhygiene/) for more details.
- If possible, a SARS patient should wear a surgical mask during close contact with uninfected persons to prevent the spread of infectious droplets. When a SARS patient is unable to wear a surgical mask, household members should wear surgical masks when in close contact with the patient.
- Household waste soiled with body fluids of SARS patients, including facial tissues and surgical masks, may be discarded as normal waste.
- Household members and other close contacts of SARS patients should be vigilant for fever (i.e., measure temperature twice daily) and respiratory symptoms; if these develop, they should seek medical attention immediately.

Enhanced Activities: Isolation of SARS patients in designated facilities in the community

If a surge in patients overwhelms existing healthcare capacity or if home isolation is not feasible for individual patients, jurisdictions might need to use alternative facilities in the community for isolation of SARS patients. SARS preparedness planning must address the availability and use of existing or temporary structures, the management of patients housed in these facilities, and resources for needed supplies and services.

- Assemble a team to identify appropriate locations and resources for community SARS isolation facilities, establish procedures for activating them, and coordinate activities related to patient management.
- Consider these criteria in selecting a location for the facility:
  - Sufficient space to house a temporary structure (e.g., section of a hospital parking lot)
  - Sufficient potable water and electricity
  - Space for ancillary equipment and services (e.g., exhaust fans, support housing, security)
  - Access for vehicles
- Consider the use of both existing and temporary structures. Options for existing structures include: community health centers, nursing homes, apartments, schools, dormitories, and hotels. Options for temporary structures include: trailers, barracks, tents, or "bubble systems."
- To determine priorities among available facilities, consider these features:
  - Separate rooms for patients, or areas amenable to isolation of patients with minimal construction
  - Independent ventilation for each room or isolation area
  - Feasibility of modifying existing infrastructure as need for engineering controls
  - Feasibility of controlling access to the facility and to each room

- Availability of potable water, bathroom, and shower facilities
- Facilities for patient evaluation, treatment, and monitoring
- Capacity for providing basic needs to patients
- Rooms and corridors that are amenable to disinfection
- Facilities for accommodating staff
- Facilities for collecting, disinfecting, and disposing of infectious waste
- Facilities for collecting and laundering infectious linens and clothing
- Ease of access for delivery of patients and supplies
- Legal/property considerations

- Additional considerations include:
  - Staffing and administrative support
  - Training required to use the facility
  - Ventilation and other engineering controls
  - Ability to support appropriate infection control measures
  - Availability of food services and supplies
  - Ability to provide an environment that supports the social and psychological well-being of patients
  - Ability to provide appropriate security and access control
  - Ability to support appropriate medical care, including emergency procedures
  - Access to communication systems that allow for dependable communication within and outside the facility
  - Ability to adequately monitor the health status of facility staff

IV. Management of Contacts of SARS Cases

Objective: To monitor and evaluate contacts of SARS cases to ensure early identification of illness and rapid institution of infection control precautions to prevent further spread.

Basic Activities

In a limited SARS outbreak, contacts of SARS cases may be managed through either active or passive monitoring alone and without any restriction of movement unless they develop symptoms of disease. Consideration should be given to confining and/or restricting the movement of contacts with high-risk exposures (e.g., healthcare workers involved in an aerosol-generating procedures on a SARS patient) even in the absence of symptoms (see Enhanced Activities below). Contacts of SARS cases should be contacted regularly by the health department and advised to:

- Be vigilant for fever (i.e., measure temperature twice daily) or respiratory symptoms for a 10-day period after exposure.
- Seek healthcare evaluation immediately if they develop symptoms.
- Inform a healthcare provider in advance of presenting at a healthcare facility that they may have been exposed to SARS.

Enhanced Activities

In the event of a large SARS outbreak or high-risk exposure, application of quarantine should be considered as a means of interrupting transmission. The

purpose of quarantine of contacts is to reduce transmission by separating them from others, monitoring them for signs and symptoms, and instituting appropriate infection control precautions as soon as symptoms are detected. Frequent monitoring (e.g., twice a day) ensures that the period between symptom onset and institution of precautions is minimized, and separation ensures that the number of persons exposed during that period is also minimized.

Quarantine can be complicated and resource intensive for public health officials to implement, and it can be inconvenient or even quite difficult for quarantined persons to endure. Decisions about quarantine must strike a balance based on the epidemiologic situation and available resources. Efforts to identify high-risk contacts and tailor the approach for quarantine may take more work up front but may reduce the resources needed for monitoring and maintenance of quarantine. On the other hand, focusing too narrowly may result in missing more cases. In some cases, limited resources for contact tracing may make it more feasible to apply quarantine more broadly. Resources for contact monitoring and management for the additional contacts must then be ensured.

Options for quarantine

Quarantine represents a range of possible interventions that may be applied at the individual, small group, or even community levels (community levels described below). Quarantine is usually used for:

- Individuals with close contact (e.g., household contacts of a person with SARS)
- Small groups with close contact (e.g., coworkers, healthcare workers with unprotected exposure)
- Larger groups with unspecified extent of exposures (e.g., social groups, congregate settings, passengers on conveyances)
- Communities in which the level of exposure for individuals is not known but interventions are needed to control potential population exposure by increasing social distance and limiting interactions and movement within a community

Types of quarantine

- Home quarantine -- Quarantine at home is most suitable for contacts who have a home environment in which their basic needs will be met and where protection of unexposed household members is feasible.
- Quarantine in designated facilities -- Contacts who do not have an appropriate home environment for quarantine or contacts who do not wish to be quarantined at home may be quarantined in specific facilities designated for this purpose.
- Work quarantine – This applies to healthcare workers or other essential personnel who have been exposed to SARS patients and who may need to continue working (with appropriate infection control precautions) but who are quarantined either at home or in a designated facility during off-duty hours.

Home quarantine

Certain minimum criteria must be met to enable optimal implementation of home quarantine:

- Access to educational materials about SARS and quarantine
- Ability to monitor one's own symptoms (or have them monitored by a parent or guardian)
- Basic utilities (water, electricity, garbage collection, and heating and air-conditioning as appropriate)
- Basic supplies (clothing, food, hand hygiene supplies, laundry services)
- Mechanisms for addressing special needs (e.g., filling prescriptions)
- Mechanism for communication, including telephone (for monitoring by health staff, reporting of symptoms, and accessing support services)
- Accessibility to healthcare workers or ambulance personnel
- Access to food and food preparation
- Access to supplies such as thermometers, fever logs, phone numbers for reporting symptoms or accessing services, and emergency numbers (these can be supplied by health authorities if necessary)
- Mental health and other psychological support services

Management of household members of contacts in home quarantine

- No specific precautions are needed for household members of contacts in home quarantine as long as the person under quarantine remains asymptomatic. If the contact develops symptoms, s/he should immediately notify medical/public health authorities to obtain medical evaluation. Standard precautions described for SARS patients in home isolation should be followed.
- Household members can go to school, work, etc., without restrictions unless the quarantined person develops symptoms. If the quarantined person develops symptoms, household members should remain at home and contact public health authorities for instructions.
- Household members can provide valuable support to quarantined persons by helping them feel less isolated and ensuring that essential needs are met.

Monitoring and support of persons under quarantine

- Monitor daily, or more frequently if feasible, for fever and any respiratory symptoms.
- Monitor compliance with quarantine through daily visits or telephone calls.
- Provide a hotline number for quarantined persons to call if they develop symptoms or have other immediate needs.
- If a quarantined person develops symptoms suggestive of SARS, arrangements should be made for immediate medical evaluation of the patient. The patient should be asked to follow standard precautions for SARS patients in home isolation until an evaluation is performed.
- Quarantined persons may need a variety of support services. These might include:
  - Psychological support
  - Essential services (food, supplies, other basic needs).
  - Care for family members.
  - Economic assistance

V. Community-Based Control Measures

Objective: Reduce the risk of transmission of SARS-CoV at the population level by limiting social interactions or preventing inadvertent exposures.

Community-based control measures are designed to reduce the risk of SARS at the population level by either decreasing social interactions (e.g., canceling public events, scaling back public transit schedules, implementing community "snow days") or by implementing mass measures that might prevent inadvertent SARS exposures (e.g., temperature monitoring in public places; use of masks). It should be noted, however, that the effectiveness of these mass measures has not been completed evaluated. The decision to institute community containment measures and the nature and scope of the measures should be decided based on the extent of the outbreak and the availability of resources. Factors to consider in determining thresholds for community action include:

- Number of cases and contacts
- Characteristics of local transmission
  - Extent of spread
  - Whether source is known
  - Generations of transmission
  - Rapidity of spread
- Exposure categories for cases and contacts
  - Travel
  - Healthcare worker
  - Household
  - Other
  - Unlinked
- Morbidity and mortality
- Movement into or out of the community
- Local healthcare and public health resources
- Level of public cooperation and trust vs. risk of public panic

Basic Activities

- Provide community information and education about SARS, its spread, and how to prevent spread
- Promote "respiratory hygiene" and handwashing.

Enhanced Activities

- "Snow days" or "shelter in place"
- Suspension of public gatherings
- Temperature monitoring in public buildings and places
- Recommended or mandatory mask use
- Closing of public buildings and spaces
- Cancellation of events
- Closing of non-essential government functions (public libraries, DMV)
- Request voluntary or mandate closing of businesses and institutions (e.g., schools)

- Curfews
- Restrictions on travel (air, rail, water, motor, pedestrian)
- Closing or scaling back of mass transit
- Geographic or population-based movement restrictions

Logistical Considerations
Implementation of community containment measures on a large scale requires jurisdictions to address enormous logistic, economic, ethical, and psychological challenges. These challenges include:

- Provision of essential services and support
  - Food
  - Supplies
  - Medical attention
  - Caretaking
  - Continuation of work/school (telecommuting; home-based curricula)
  - Financial issues
- Mental health
  - Stigma management
  - Psychological support
- Enforcement
  - Closure of borders
  - Border surveillance/monitoring (SARS checkpoints)
  - Travel permits and credentialing

VI. Roles and Responsibilities

Historical precedents, both legal and practical, suggest that states have primary authority to invoke and enforce quarantine in their own jurisdictions. This authority derives from the states' "police power," i.e., the inherent authority of a government to enact laws and promote regulations to safeguard the health and welfare of its citizens. As a result of this authority, the individual states are responsible for intrastate isolation and quarantine practices and conduct their activities in accord with their respective statutes. Of note, quarantine is not the only public health action that can be compelled by state health authorities. Others include school immunization laws and TB treatment laws.

Current quarantine laws, regulations, and enforcement procedures vary widely from state to state, as do state-level lists of notifiable and quarantinable diseases. Many of these laws date back to the nineteenth century. In response to a request from CDC, the Center for Law and the Public's Health at Georgetown and Johns Hopkins Universities has developed a "Model State Emergency Health Powers Act" to assist state governments in reviewing quarantine laws to ensure they are adequate to respond to modern disease and bioterrorism concerns (http://www.publichealthlaw.net/MSEHPA/MSEHPA2.pdf).

At the federal level, the HHS Secretary has statutory responsibility for preventing the introduction, transmission, and spread of communicable diseases from foreign countries into the United States, e.g., at international ports of arrival, and from one state or possession to another. The communicable diseases for which federal isolation and

quarantine are authorized are set forth through executive order of the President. A new executive order was recently issued adding SARS to the list of detainable communicable diseases. By statute, the HHS Secretary may accept state and local assistance in the enforcement of federal quarantine regulations and may also assist state and local officials in the control of communicable diseases. For more information on legal authorities, and a checklist on legal considerations for SARS Preparedness, see Appendices D-4 and D-5.

VII. Enforcement of Community Containment Measures

Data from modeling studies suggest that community containment measures such as quarantine are effective for controlling an outbreak even if compliance is less than perfect. Optimally, quarantine applied on a voluntary basis will afford sufficient compliance to attain the necessary effect. Nevertheless, protocols must be established for enforcement of both individual and community measures when higher levels of compliance are required.

For enforcement of individual quarantine restrictions, protocols should be developed for follow-up of persons who cannot be reached by phone. Such protocols might include a threshold period for non-responsiveness that should trigger a home visit or other means to locate the individual. Partnerships with law enforcement and other community-based officials will be helpful in tracing the whereabouts of persons who have violated restrictions. Alternative arrangements should be available for those who cannot or will not comply with voluntary home-based quarantine. These might include:

- Issuance of official, legally binding quarantine orders
- Posting a guard outside the home
- Use of ankle bracelet surveillance monitors
- Use of detention facilities

Enforcement of community-wide containment measures is necessarily more complex given the larger number of persons involved. Although some measures, such as canceling of public events or scaling back of mass transit services, are self-enforcing, others (e.g., restrictions on travel between areas) might require use of physical measures such as barricades or roadblocks. Implementation of such measures requires close partnership and cooperation with law enforcement at the local and state levels. In more extreme situations, federal law enforcement resources may also be required.

VIII. Preparedness Planning

A checklist for preparedness planning for community containment measures is provided in Appendix D6.

List of Appendices for Supplement D

Appendix D1
Community Containment Matrices
Appendix D2
Interim Guidance on Infection Control Precautions for Patients with Suspected Severe Acute Respiratory Syndrome (SARS) and Close Contacts in Households
Appendix D3
Information for SARS Patients and Their Close Contacts
Appendix D4
Fact Sheet on Legal Authorities for Isolation/Quarantine
Appendix D5
Threshold Determinants for the Use of Community Containment Measures
Appendix D6
Preparedness Checklist for Community Containment Measures

Appendix D1
Community Containment Matrices

Matrix 1: Community Management of Cases and Contacts

Level of SARS activity	Suggested actions
SARS activity worldwide, but only imported cases	1) Responsibility/authority/general considerations • Health department responsibility o Contact tracing o Coordination of orders for activity restrictions • CDC responsibility o Coordination of notification to health department for contacts associated with conveyances • Other considerations o Enforcement of activity restrictions may require fines, penalties, guard, or relocation to guarded facility. o Financial support may be needed for persons in quarantine/isolation. 2) Location of isolation/quarantine • Healthcare facility, home, or alternate care facility, depending on need and availability. • As numbers increase, community-based alternate care facility(ies) may be required. 3) Management of asymptomatic contacts • Monitoring and quarantine (when used) preferred voluntary; may be compulsory if noncompliant. • Quarantine generally not required unless deemed appropriate/necessary by circumstances and/or resources. • Passive or active daily monitoring (as resources allow) for clinical status; persons who develop symptoms should be isolated and evaluated per guidelines. • May be housed as cohorts, if rapid isolation can be ensured for persons who develop symptoms. • Activity/movement restrictions as indicated; avoid entry to high-risk settings (e.g., hospitals).
SARS activity in U.S. and community, with extensive transmission and effective control measures	1) Responsibility/authority/general considerations • Prioritize contact tracing based on risk and patterns of transmission • As number of cases and contacts increases, law enforcement and other community resources may be needed. 2) Location of isolation/quarantine • Healthcare facility, home, or alternate care facility, depending on need and availability. • Establish appropriate non-hospital alternative care facility(ies). 3) Management of asymptomatic contacts • Reevaluate/consider enhanced movement restrictions and quarantine measures.

	• Active daily monitoring for clinical status and compliance with activity restrictions. • Daily review of symptom/temperature logs for all under quarantine.
SARS activity in U.S. and community, with extensive transmission and ineffective control measures	1) Responsibility/authority/general considerations • Number of cases and contacts may make contact tracing impractical. When attempted, prioritize based on risk and patterns of transmission. 2) Location of isolation/quarantine • Healthcare facility, home, or alternate care facility, depending on need and availability. • Establish designated healthcare facilities for ill cases. 3) Management of asymptomatic contacts • Quarantine, voluntary or mandatory. • Active daily monitoring for clinical status and compliance with activity restrictions. • Daily review of symptom/temperature logs for all under quarantine.
SARS transmission controlled/eliminated; no new cases reported	• Daily monitoring for clinical status and compliance with activity restrictions (if any), with daily review of symptom/temperature log for all under quarantine. • Discontinue contact monitoring measures after duration of incubation period. • Discontinue isolation/quarantine measures at the conclusion of three incubation periods after the last reported case. • Discontinue maintenance of designated facilities at the conclusion of three incubation periods after the last reported case. • Discontinue enforcement measures at time of discontinuation of other isolation/quarantine interventions.

Matrix 2: Community Containment Measures

Level of SARS activity	Suggested actions
SARS activity worldwide, but only imported cases	• No community-wide control measures required. • Hospitals and other high-risk sites should screen persons on entry.
SARS activity in U.S. and community, with extensive transmission and effective control measures	• Consider measures such as: o Fever/symptoms monitoring before public gatherings or entrance to public places o Community-wide "shelter in place" or "snow day" strategies o Community-wide triage system for persons with fever (e.g., call centers to screen outpatients before office presentation, fever evaluation centers, triage to designated centers) o Cancellation of public events o Closing of public places and schools o Restriction of mass transit o Distribution of products/education materials on hand hygiene o Distribution/use of masks for selected essential personnel • Disseminate information (in appropriate languages) on restrictions in the quarantine zone (e.g, print/broadcast media; posters, leaflets, flyers, door-to-door). • Disseminate information on quarantine rationale, procedures, restrictions to neighboring zones/communities. • Persons in quarantine may require financial support; mental health support. • Health department should coordinate orders for community-wide restrictions. • Enforcement may require fines, penalties, barricades, visible signs of boundary enforcement. • Identify alternative means of supplying essential services; provide focused and community-wide reassurance re: restoration of these services.
SARS activity in U.S. and community, with extensive transmission and ineffective control measures	• Initiate measures such as: o Fever/symptoms monitoring before public gatherings or entrance to public places o Mandatory community-wide "shelter in place" or "snow day" strategies o Community-wide triage system for persons with fever (e.g., call centers to screen outpatients before office presentation, fever evaluation centers, triage to designated centers) o Cancellation of public events o Closing of public places and schools o Restriction of mass transit as necessary o Restriction of access routes o Distribution and use of masks

	• Minimize movements into quarantined areas by use of monitoring checkpoints, curfews, travel permits, health certificates. • Disseminate information (in appropriate languages) on restrictions to all persons in quarantine zone; may require use of print/broadcast media; posters, leaflets, flyers; door-to-door visitation. • Disseminate information on quarantine rationale, procedures, restrictions to neighboring zones/communities. • Establish cooperative arrangements with neighboring zones/communities to prevent movement into or out of quarantine zone. • Clearly define who may enter quarantine zone. • Persons in quarantine may require financial support; mental health support. • Identify alternative means of supplying essential services; provide focused and community-wide reassurance re: restoration of these services. • Health department should coordinate orders for community-wide restrictions; enforcement may require fines, penalties, barricades, visible signs of boundary enforcement, credentialing and movement permits, visible presence of law enforcement officials.
SARS transmission controlled/eliminated; no new cases reported	• Discontinue isolation/quarantine measures at the conclusion of three incubation periods after the last reported case. • Discontinue maintenance of designated facilities at the conclusion of three incubation periods after the last reported case. • Discontinue enforcement measures at time of discontinuation of other isolation/quarantine interventions.

Appendix D2
Interim Guidance on Infection Control Precautions for Patients with SARS and Close Contacts in Households

Appendix D3
Information for SARS Patients and Their Close Contacts

Appendix D4
Fact Sheet on Legal Authorities for Isolation/Quarantine

Appendix D5
Threshold Determinants for Use of Community Containment Measures

Parameter	Variable
Epidemiologic parameters of the outbreak	Absolute number of cases
	Rate of incident cases
	Number of hospitalized cases
	Number and percent of cases with no identified epidemiologic link
	Morbidity (including disease severity) and mortality
	Number of contacts under surveillance and/or quarantine
Healthcare resources	Hospital/facility bed capacity
	Isolation/negative pressure room capacity
	Staff resources
	Patient/staff ratio
	Number of isolated or quarantined staff
	Availability of specifically trained specialists and ancillary staff
Equipment and supplies	Availability of ventilators
	Availability of other respiratory equipment
	Availability of personal protective equipment and other measures
	Availability of therapeutic medications (SARS and non-SARS specific)
Public health resources	Investigator to case and contact ratios
	Number of contacts under active surveillance
	Number of contacts under quarantine
	Ability to rapidly trace contacts (number of untraced/interviewed contacts)
	Ability to implement and monitor quarantine (staff to contact ratio)
	Ability to provide essential services (food, water, etc.)
Community cooperation, mobility and unrest	Degree of compliance with voluntary individual isolation
	Degree of compliance with active surveillance and voluntary individual quarantine
	Degree of movement out of the community
	Degree of community unrest, i.e. protesting, riots, looting, etc.

Appendix D6
Preparedness Checklist for Community Containment

General

- ❑ Establish an incident command structure that can be used for SARS response
- ❑ Establish a legal preparedness plan
- ❑ Establish relationships with essential partners, such as law enforcement, first responders, healthcare facilities, and the legal community.
- ❑ Plan for monitoring and assessing factors that determine types and levels of response, including the epidemiologic profile of the outbreak, available local resources, and level of public acceptance and participation
- ❑ Develop message strategies for the public, government decision makers, healthcare and emergency response providers, and the law enforcement community.

Management of cases and contacts (including quarantine)

- ❑ Develop protocols, tools, and databases for
  - o Case surveillance
  - o Clinical evaluation and management
  - o Contact tracing, monitoring, and management
  - o Reporting criteria
- ❑ Develop standards and tools for home and non-hospital isolation and quarantine
- ❑ Establish supplies for non-hospital management of cases and contacts
- ❑ Establish a telecommunications plan for "hotlines" or other services for
  - o Case and contact monitoring and response
  - o Fever triage
  - o Public information
  - o Provider information
- ❑ Plan to ensure provision of essential services and supplies to those in isolation and quarantine, including:
  - o Food and water
  - o Shelter
  - o Medicines and medical consultations
  - o Mental health and psychological support services
  - o Other supportive services, i.e. day care, etc.
  - o Transportation to medical treatment, if required
- ❑ Plan to address issues of compensation, job security, and prevention of stigmatization

Non-hospital-based isolation of cases

- ❑ Identify appropriate community-based facilities for isolation of cases without substantial health care requirements
- ❑ Develop policies related to use of these facilities
- ❑ Identify facilities for persons for whom home isolation is indicated but who do not have an appropriate home setting, such as travelers and homeless populations.

- ❑ Ensure that required procedures for assessment of potential isolation or quarantine sites are available and up to date.

Community containment measures

- ❑ Ensure that legal authorities and procedures are in place to implement the various levels of movement restrictions as necessary
- ❑ Identify key partners and personnel for the implementation of movement restrictions, including quarantine, and provision of essential services and supplies:
  - o Law enforcement
  - o First responders
  - o Other government service workers
  - o Utilities
  - o Transportation industry
  - o Local businesses
  - o Schools and school boards
- ❑ Develop training programs and drills
- ❑ Ensure fit-testing and training in PPE for all identified responders and providers as necessary
- ❑ Develop plans for mobilization and deployment of public health and other community service personnel

PUBLIC HEALTH GUIDANCE FOR COMMUNITY-LEVEL PREPAREDNESS AND RESPONSE TO SEVERE ACUTE RESPIRATORY SYNDROME (SARS)

SUPPLEMENT E: MANAGING INTERNATIONAL TRAVEL-RELATED TRANSMISSION RISK

Goals

- Prevent the introduction of SARS (and spread from an introduction) into the United States from SARS-affected areas.
- Prevent exportation of SARS from the United States if domestic transmission presents an increased risk of exportation.
- Reduce the risk of SARS 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.

Key concepts

- SARS can spread rapidly on a global scale through international travel if control measures are not implemented.
- SARS-CoV transmission is usually localized and often limited to healthcare settings or households; therefore, the risk of SARS to travelers visiting an affected area is low unless they are exposed to these settings.
- Patients with SARS can transmit infection to other passengers on conveyances and should postpone travel until they are no longer infectious.
- Active follow-up of passengers on conveyances with SARS cases can help promptly identify infected passengers and prevent further spread.
- Transmission of SARS-CoV on conveyances can occur only if an undetected case boards. Therefore, the primary preventive strategy is to prevent symptomatic persons from traveling.

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 the risk of acquiring SARS-CoV infection during travel.
- If SARS-CoV transmission in the United States presents an increased risk of exporting SARS 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.

I. Rationale and Goals

The rapid global spread of SARS is facilitated by international travel, as illustrated by the initial dissemination of the SARS outbreak from Hong Kong. Travelers visiting SARS-affected areas are potentially at risk of contracting SARS. However, even in settings with large outbreaks, SARS-CoV transmission is generally localized and often limited to specific settings (e.g., hospitals) or households of SARS patients. Consequently, the overall of risk of SARS for outbound travelers who are not exposed to these settings is low. Nevertheless, nearly all U.S. SARS cases were in travelers to SARS-affected areas. Screening and evaluating passengers for SARS-like symptoms, educating them about SARS, and reporting illness should therefore decrease the risk of traveler-associated SARS. Because SARS-CoV can sometimes also be transmitted on conveyances (e.g., airplanes), it is also important to prevent spread from an ill passenger with a SARS-like illness and to identify and monitor contacts on the conveyance for SARS-like illness.

Because of the significant impact of travel on spread of communicable diseases such as SARS, legal authority exists at local, state, and federal levels to control the movement of persons with certain communicable diseases within and between jurisdictions. The types of measures that might be used to modify the risk of travel-related SARS range from distribution of health alert notices and arrival screening to quarantine of new arrivals and restrictions or prohibitions of nonessential travel. Although the states have authority for movement restrictions within states, federal laws govern movement between states or across international borders. Thus, airports and other ports of entry are sites of multiple overlapping jurisdictions where the interplay between various authorities must be clearly understood. (see Appendix E1)

The overall goals of activities to manage international travel-related SARS-CoV transmission risk are to:

- Prevent the introduction of SARS (and spread from an introduction) into the United States from SARS-affected areas.
- Prevent exportation of SARS from the United States if domestic transmission presents an increased risk of exportation.
- Reduce the risk of SARS among outbound travelers to SARS-affected areas.
- Prevent the spread of SARS-CoV on a conveyance with a SARS patient as well as spread on arrival.

II. Lessons Learned

During the 2003 global response, the control strategy for the United States included issuance of travel alerts and advisories (See box) and distribution of health alert notices to travelers arriving from areas with SARS to facilitate early identification of imported cases and response to reports of ill passengers. CDC staff met more than 11,000 direct and indirect flights from SARS areas and distributed more than 2.7 million health alert notices to arriving passengers as well as to persons arriving at 13 U.S. land border crossings near Toronto and departing passengers at the Toronto airport. Health alert notices informed returning travelers of potential exposure to cases of SARS. They alerted travelers to the symptoms of SARS and advised them

to promptly seek medical attention if symptoms develop. The notices also provided information and additional instructions for physicians (See Box).

CDC quarantine staff also met planes reporting an ill passenger to facilitate having the passenger evaluated for possible SARS, collecting locating information on the other passengers, and coordinating with federal and local authorities. If the ill passenger was determined to be a possible SARS case, then the locating information was forwarded to state and local health departments for contact-tracing activities.

Border and travel-related activities implemented in other countries more seriously affected by SARS included pre-departure temperature and symptom screening, arrival screening (asking passengers about travel history and possible exposure to SARS), "stop lists" (maintaining lists of persons who were SARS suspects or contacts to prevent them from traveling), and quarantine of all travelers returning from other SARS areas.

Lessons learned from this response informed the recommendations included in this Supplement. These lessons included the following:

- SARS can spread rapidly on a global scale through international travel if control measures are not implemented.
- SARS-CoV transmission is usually localized and often limited to healthcare settings and households; therefore, the risk of SARS to travelers visiting an affected area is low unless they are exposed to these settings.
- Patients with SARS can transmit infection to other passengers on conveyances and should postpone travel until they are no longer infectious.
- SARS-CoV transmission can occur within the close confines of conveyances. Resulting infections usually represent a failure to recognize symptomatic index cases and their high-risk contacts who should have been prevented from traveling.
- Active follow-up of passengers on conveyances with SARS cases can help promptly identify infected passengers and prevent further spread.

III. Activities Directed to Inbound Travelers

The nature and scope of activities related to travelers entering or in the United States will differ depending on the extent of SARS in the United States and in the country or countries from which the passenger has traveled (See Appendix E1). When SARS activity is absent or limited in the United States, then efforts will focus on promptly identifying cases imported from SARS-affected areas and preventing further spread from such cases. Guidelines have been developed for various groups who might be arriving from areas affected by SARS (Appendices E2, E3, E4). If active transmission of SARS is occurring in a U.S. city or area, then it will be important to prevent spread to other areas in the United States, possibly by restricting or even prohibiting travel into or from the affected area.

> **Objective**: Prevent spread from SARS-CoV-infected travelers to the United States.
>
> **Basic Activities**

- Inform incoming travelers about SARS, and provide guidance on monitoring their health and reporting illness to the appropriate authorities. This may be accomplished by use of:
  - Video or public announcement on the conveyance just before arrival
  - Distribution of health alert notices upon arrival (Appendix E5)
  - Posters or public announcements in airports
- Screen travelers for symptoms of SARS and recent high-risk exposures to SARS (e.g., SARS patients or high-risk settings) through a self-administered questionnaire.
- Evaluate travelers who report symptoms of SARS during travel (see below -- Section V: Activities Related to SARS on Conveyances).
- Quarantine inspectors at the quarantine stations and other public health workers in locations near other ports of entry will respond to reports of ill passengers on airplanes or other conveyances arriving from areas with SARS.

Enhanced Activities

- If the level of transmission in another country is high, incoming passengers from this area might require enhanced screening and evaluation through:
  - Visual inspection of all travelers as they disembark
  - Temperature monitoring
- Quarantine inspectors at the quarantine stations and other public health workers in locations near other ports of entry will meet all airplanes or other conveyances arriving from areas with SARS to question crew members about any ill passengers and to visually inspect passengers upon disembarkation.
- If the level of SARS-CoV transmission in an area in the United States is sufficiently high to present a substantial risk to travelers, then non-essential travel to this area may be restricted, stopped, or subjected to increased surveillance measures.
- Other activities that may be considered but whose effectiveness is unclear (especially given the resources required for implementation) include:
  - Ten-day quarantine of all passengers arriving from SARS areas
  - Collection of locating information on all arriving passengers

IV. Activities Directed to Outbound Travelers

Activities related to outbound travelers will vary based on the extent of SARS-CoV transmission in the United States and at the destination (Appendix E1). If there is little SARS activity in the United States, the goal is to inform travelers about the risk of SARS and appropriate measures to reduce the risk of acquiring SARS during travel (Appendix E6). If there is extensive SARS-CoV transmission in the United States, then preventing the exportation of SARS will be an added objective.

Objective: Minimize outbound travelers' risk for exposure to SARS during travel or the risk of spreading SARS-CoV to other localities.

Basic Activities

- Issue travel alerts and advisories (see Box).

- Provide educational materials to travelers on measures to reduce the risk of SARS.

Enhanced Activities

- Prohibit travel (e.g., cancel flights) to locations with extensive SARS-CoV transmission (see below – Section VII: Roles and Responsibilities).
- If the level of SARS-CoV transmission in the United States presents an increased risk of exportation, than some or all of the following might be implemented:
  - Pre-departure screening (e.g., temperature monitoring, visual screening) of outbound travelers.
  - Health certifications, i.e., requiring travelers to have a medical examination before departure, with a doctor's statement that they are free of SARS symptoms and have not had close contact to a SARS patient in the past 10 days.
  - Stop lists, i.e., maintaining lists of SARS cases and close contacts at ports of departure against which travelers' names can be checked to prevent them from traveling.

Travel Alerts and Travel Advisories

- Travel alerts and advisories are notifications of an outbreak of disease occurring in a geographic area. A ***travel alert***, a lower-level notice, 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.
- When the health risk for travelers is thought to be high, a ***travel advisory*** recommending against nonessential travel to the area is issued. Travel advisories are intended to reduce the number of travelers to high-risk areas and the risk for spreading disease to other areas.
- CDC issues travel alerts and advisories based on evidence of transmission, spread of disease, and effectiveness of local prevention efforts. The quality of local disease surveillance and the accessibility of medical care are additional considerations.

V. SARS on Conveyances

A SARS patient on a conveyance presents a risk of transmission to other passengers and to non-passengers on arrival and a risk of further spread from other passengers who become infected.

Objective: Protect co-passengers and crew members from SARS-CoV-infected passengers and from transmission associated with passengers exposed to the index case.

Activities

Management of a potential SARS patient on a conveyance

- Isolate the potential SARS patient as completely as possible from other passengers and the crew. The ill passenger should wear a surgical mask
- Ensure that persons caring for the ill passenger follow infection control measures recommended for cases of SARS (See Supplement C).
- If possible, designate a separate toilet for the exclusive use of the ill passenger.
- Notify the airport or land port at destination so that health authorities are prepared to manage the ill passenger and evaluate other passengers.

Management on arrival

- Separate the ill passenger from exposed, well co-passengers at the soonest moment both in transit and after arrival.
- On arrival, the ill passenger should be placed in isolation and assessed by port health authorities.
- Other passengers should be assessed for illness and types of exposures to the ill passenger and other potential SARS exposures. EMS and local emergency departments can perform these evaluations using appropriate precautions. It is preferable that protocols and memoranda of understanding with ambulance services and hospitals are pre-established.

Management of passengers and crew on the same conveyance

- Locating information -- Collect locating information for all passengers and crew. This information should be obtained directly from passengers, if possible. If a potential SARS case on a conveyance is not detected until after arrival, this information can be obtained from:
    - Passenger manifests
    - Staff lists
    - Customs forms
- Monitoring -- All passengers on board should be informed about SARS and advised to seek immediate medical attention if symptoms develop within 10 days of the flight. Close contacts of the case need particular attention.
- Quarantine –In some circumstances (e.g., if the ill passenger had contact with a laboratory-confirmed SARS case and had significant respiratory symptoms during a prolonged flight), temporary detention of the plane and arrangement for monitoring and quarantine of all passengers may be warranted. Home quarantine may be used for persons who live in the port of arrival, whereas quarantine in a designated facility should be arranged for the others.

VI. De-escalation of Control Measures

Objective 1: Downgrade or remove travel alerts and advisories as appropriate.

Activities

- CDC will downgrade a travel advisory to a travel alert when there is:
  - Adequate and regularly updated reporting of surveillance data from the area
  - No evidence of ongoing community transmission for 20 days (two incubation periods) after the onset of symptoms for the last case without an epidemiologic link, as reported by public health authorities.
- CDC will remove a travel alert when there is:
  - Adequate surveillance data from the area
  - No evidence of new cases for 30 days (three incubation periods) after the date of onset of symptoms for the last case, as reported by public health authorities.
  - Limited or no recent instances of exported cases from the area. An exported case is defined as a case that meets the case definition for a probable case and that has one of the following characteristics: 1) laboratory confirmation of SARS-CoV, 2) close contact within 10 days of onset of symptoms with a person known or suspected to have SARS, or 3) exposure in a setting during a time of known or suspected SARS-CoV transmission.

Objective 2: Reduce measures used for inbound travelers as appropriate.

Activities

- For all arriving passengers from areas with SARS activity:
  - Continue general education for passengers from a particular area until the travel alert has been lifted (30 days after the onset of symptoms for the last case in that area). Because travel patterns may make it difficult to determine passengers' points of origin, it may be more practical to continue general education for a longer duration, depending on where SARS activity is occurring.
  - Continue screening passengers, but consider discontinuing these activities when the area of origin is downgraded from a travel advisory to a travel alert.
- For ill passengers arriving from areas with SARS activity:
  - Continue passive monitoring the travel alert for that area has been lifted (30 days after the onset of symptoms for the last case from that area). Because travel patterns may make it difficult to determine passengers' point of origin, it may be more practical to continue general education for a longer duration, depending on where SARS activity is occurring.
  - Continue active monitoring, but consider discontinuing these activities when the area of origin is downgraded from a travel advisory to a travel alert.

Objective 3: Reduce other measures used for outbound travelers as appropriate.

Activities

- Continue pre-departure fever and symptom screening for passengers departing from areas with ongoing community transmission, but consider discontinuing these activities 20 days after the onset of symptoms for the last unlinked case.

- Continue stop lists until there are no longer any cases under isolation or contacts under quarantine.

Objective 4: Reduce measures for management of SARS on conveyances as appropriate.

Activities

- Continue meeting flights with an ill passenger on board who has SARS-like symptoms. If the passenger is seriously ill, conduct evaluation and follow-up as per the usual protocols.
- Continue to collect locating information as long as the passenger has symptoms compatible with SARS and has traveled from an area with ongoing community transmission (under a travel advisory). For areas that have been downgraded to a travel alert, locating information may not be needed unless the ill passenger had contact with a known source or had another strong epidemiologic link.
- The need for monitoring and quarantine for contacts of a passenger from an area on travel alert will be determined after the ill passenger has been fully evaluated.

VII. Roles and Responsibilities

Because jurisdictions and authorities at airports and other ports of entry overlap, it is important that local, state and federal staff establish protocols and outline roles and responsibilities in advance of a public health emergency.

Currently, eight of the international airports have permanent federal quarantine staff (http://www.cdc.gov/ncidod/dq/quarantine_stations.htm). These federal quarantine staff have primary responsibility for handling the quarantine-related travel activities described above. State and local public health staff may provide assistance depending on the workload. At other airports and ports, local and state public health staff or other deployed persons will have primary responsibility, under the coordination of regional quarantine personnel. The local health jurisdiction will have primary responsibility for follow-up and management of passengers who may have been exposed to a SARS case on a conveyance.

Most local or state jurisdictions have adequate quarantine authority to require a person with possible SARS or their contacts to be detained for evaluation. Federal authority can be used if necessary. Public health officials should work closely with local, state, and federal law enforcement to enforce quarantine authority for persons who do not cooperate voluntarily.

VIII. Preparedness Planning

A. Legal authority for restricting movement

- Public health officials should work closely with their legal counterparts to ensure that the legal authority for movement restrictions at the local, state, and federal levels is known and understood and to establish boundaries of authority and processes to address multi-jurisdictional issues (See Supplement A).

- Develop plans for making decisions on movement restrictions, such as: 1) requirements for pre-departure screening, 2) requirements for arrival screening and/or quarantine, 3) travel prohibitions on cases and contacts, 4) restrictions related to use of mass transit systems, 5) restriction or prohibition of non-essential travel, and 6) closure of national or state borders.
- Work closely with local, state, and federal law enforcement to develop plans for enforcement of these restrictions.

B. Engagement of key partners

- Preparedness planning should begin by identifying key partners representing: 1) law enforcement (local, state, federal), 2) legal community, 3) emergency medical services (for evaluation of ill arriving passengers and transportation to the hospital), 4) hospital personnel, 5) transportation industry personnel, and 6) other emergency management personnel. The partners should be involved in the planning process.
- Develop plans for the training, mobilization, and deployment of pertinent public health and other staff.
- Conduct training programs and drills.
- Provide fit-testing and training in use of PPE for persons at risk for exposure to possible SARS cases.

C. Protocols for management of ill arriving passengers

Public health officials and quarantine staff, in collaboration with legal and law enforcement authorities, should develop protocols for the management of ill arriving passengers at ports of entry, including provisions for:

- Meeting flights with a reported ill passenger
- Separation of the ill passenger during assessment
- Assessment of and referral for evaluation and care for the ill passenger
- Transportation of the ill passenger to a designated healthcare facility
- Collection of locating information on other passengers and crew
- Collection of the flight manifest, customs declarations, and other information for contact tracing
- Identification of any other ill passengers and their separation from well passengers
- Quarantine of contacts if necessary, including transportation to a quarantine facility
- Enforcement for uncooperative ill passengers or contacts

D. Memoranda of understanding (MOU) with healthcare facilities, transport services, and physicians

- Public health officials should work with federal quarantine staff to develop MOUs with hospitals near ports of entry; these facilities must be equipped to isolate, evaluate, and manage possible SARS patients (see Supplement C).
- Agreements should include arrangements with a designated emergency medical service for on-site assessment of ill passengers and transportation to a hospital for evaluation.

E. Designation of quarantine facility

Public health officials should identify a facility for travelers who are designated as contacts and who require quarantine but cannot be quarantined at home.

F. Roles and responsibilities

Roles and responsibilities should be outlined for the various partners and the various levels of jurisdiction (local, state, and federal) for each component of the response.

For additional information and material on prevention of SARS travel-related risks, see **http://www.cdc.gov/ncidod/sars/travel.htm**.

Appendices for Supplement E

Appendix E1
Travel-Related SARS Response Matrices
Appendix E2
Interim Guidance for Institutions or Organizations Hosting Persons Arriving from Areas with Severe Acute Respiratory Syndrome (SARS)
Appendix E3
Interim Guidelines for Businesses and Other Organizations with Employees Returning to the United States from Areas with SARS
Appendix E4
Guidelines for International Adoptees and Their Families
Appendix E5
Health Alert Notice for International Travelers Arriving in the United States from Areas with SARS
Appendix E6
Interim Guidelines and Recommendations: Prevention, Identification and Management of Suspect & Probable Cases of SARS on Cruise Ships

Appendix E1

Travel-Related SARS Response Matrices

Matrix 1: Suggested Activities for Inbound Travelers

Level of SARS activity	Suggested actions, by situation in originating location
No known SARS activity worldwide **or** known SARS activity but only imported cases	***Imported cases; limited transmission in location of origin*** • Distribute health alert notices to all arrivals • Passive monitoring of all arriving passengers for • development of symptoms. • Persons who develop symptoms should self-report before presentation to provider. • Follow quarantine officer protocol for arriving ill • passengers. o Follow procedures for ill contacts. o Collect 30-day contact information for passengers on conveyances with ill passenger. • Consider enhanced surveillance for ill passengers. ***Extensive transmission/effective control measures*** • Active surveillance for ill passengers. • Symptom screening for all arriving passengers. • Medical evaluation for all passengers with symptoms. • Consider 10-day quarantine for asymptomatic arrivals. • Collect contact information on all arriving passengers. ***Extensive transmission/ineffective control measures*** • Prohibit all non-essential arrivals. • Medical screening upon arrival. • Mandatory 10-day quarantine for all asymptomatic • arrivals. • Collect contact information on all arriving passengers.
SARS activity in U.S. and community, with extensive transmission and effective control measures	***Imported cases; limited transmission in location of origin*** • Minimize non-essential travel. • Consider restricting travel within jurisdictions. • Arrivals should follow procedures based on situation in • location of origin. ***Extensive transmission/effective control measures*** • Minimize non-essential travel. • Consider restricting travel within jurisdictions. • Arrivals should follow procedures based on situation in • location of origin. ***Extensive transmission/ineffective control measures*** • Prohibit all non-essential arrivals.

	• Medical screening upon arrival. • Mandatory 10-day quarantine for all asymptomatic • arrivals. • Collect contact information on all arriving passengers.
SARS activity in U.S. and community, with extensive transmission and ineffective control measures	***Imported cases; limited transmission in location of origin*** • Prohibit all non-essential arrivals. • Arrivals should follow procedures based on situation in location of origin. ***Extensive transmission/effective control measures*** • Prohibit all non-essential arrivals. • Arrivals should follow procedures based on situation in location of origin. ***Extensive transmission/ineffective control measures*** • Prohibit all non-essential arrivals. • Medical screening upon arrival. • Mandatory 10-day quarantine for all asymptomatic • persons. • Collect contact information on all arriving passengers.

Matrix 2: Suggested Activities for Outbound Travelers

Level of SARS activity	Suggested actions
No known SARS activity worldwide	• No special activities
SARS activity in U.S. and community, but only imported cases	• Issue travel alerts for countries with limited transmission. • Issue travel advisories for countries with extensive • transmission. • Prohibit non-essential travel to countries where • control measures are deemed inadequate. • Consider: o Medical screening at all exit points o Travel prohibition for all persons meeting case definition with epidemiologic link to transmission setting o Medical assessment for all with signs/symptoms without epidemiologic link • Prohibit travel for persons under quarantine.
SARS activity in U.S. and community, with extensive transmission and effective control measures	• Issue international travel alerts/advisories/prohibitions as • above. • Issue alerts/advisories/prohibitions for domestic • destinations based on setting and transmission pattern. • Initiate medical screening of departing passengers at all exit points. • Prohibit travel for all persons meeting case definition. • Prohibit travel for all persons under quarantine. • Require health certificate for exit.
SARS activity in U.S. and community, with extensive transmission and ineffective control measures	• Issue international travel alerts/advisories/prohibitions as above. • Issue domestic alerts/advisories/prohibitions as above. • Prohibit nonessential outbound travel. • Require health certificate for essential travel. • Implement medical screening at all exit points. • Prohibit travel for all persons meeting case definition. • Prohibit travel for all persons under quarantine.

PUBLIC HEALTH GUIDANCE FOR COMMUNITY-LEVEL PREPAREDNESS AND RESPONSE TO SEVERE ACUTE RESPIRATORY SYNDROME (SARS)

SUPPLEMENT F: LABORATORY DIAGNOSIS

Goals

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

Key concepts

- Efficient SARS diagnostic assays have been developed, but they frequently do not provide a definitive diagnosis early in illness.
- Although the sensitivity of current assays probably cannot be improved significantly, changes in the type, quality, and processing of specimens may improve the ability to detect SARS-CoV infection in patients.
- The majority of SARS-like illnesses will be caused by other respiratory pathogens; rapid and accurate diagnosis of these infections will make it easier to manage community anxiety about SARS-like illnesses.
- The possibility of false-positive and false-negative results with both PCR and serologic assays should always be considered when interpreting results; clear strategies to minimize such possibilities and to confirm test results are essential.

Priority activities

- Improve the ability to detect SARS-CoV infection by optimizing the selection and timing of specimen collection and specimen processing.
- Provide SARS 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 diagnostics.
- Provide guidance on laboratory safety for SARS and other respiratory diagnostic testing and for possible 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.

I. Rationale and Goals

Laboratory diagnostics are essential for detecting and documenting a reappearance of SARS, responding to and managing outbreaks, and managing concerns about SARS in patients with other respiratory illnesses. The identification of the etiologic agent of SARS, SARS-CoV, led to the rapid development of enzyme immunoassays (EIA) and immunofluorescence assays (IFA) for SARS antibody and reverse-

transcriptase PCR (RT-PCR) assays for SARS RNA. These assays can be very sensitive and specific for detecting antibody and RNA, respectively, in the later stages of SARS-CoV infection. Both are less sensitive, however, for detecting infection early in illness.

Most patients in the early stages of SARS illness have a low titer of virus in respiratory and other secretions and require time to mount an antibody response. In one study (in patients treated with high-dose steroids and ribavirin), nasopharyngeal (NP) aspirates were found to be PCR positive in <40% of patients during the first week of illness and in >50% of patients during the second week of illness (ref). During the second week of illness, stool specimens were found to be PCR positive in a higher percentage of patients than were NP aspirates. Limited data suggest that serum may be the best specimen for SARS PCR diagnostics during the first few days of illness. SARS antibody tests may be positive as early as 8-10 days after onset of illness and often by 14 days after onset of illness, but sometimes not until 28 days after onset of illness. Diagnostic assays for other respiratory pathogens may be helpful in differentiating SARS from other illnesses, but SARS patients can sometimes be infected with SARS-CoV and another respiratory pathogen simulataneously.

CDC's laboratory diagnostics plan is designed to achieve two primary goals:

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

II. Lessons Learned

The following lessons learned from the global and U.S. experience with SARS laboratory diagnostics have been considered in developing this plan:

- High-quality SARS diagnostic assays have been developed, but they frequently do not provide a definitive diagnosis early in illness and need to be used and interpreted carefully.
- Although the sensitivity of SARS PCR and antibody assays probably cannot be significantly improved, changes in the type, quality, and quantity of specimens and in procedures for processing specimens may improve the detection of SARS-CoV infection in patients.
- The majority of SARS-like illnesses will be caused by other respiratory pathogens. Diagnosis of these infections will often make it easier to manage community anxiety about SARS.
- The possibility of false-positive and false-negative results with both PCR and serologic assays should always be considered when interpreting results. Clear strategies to minimize such possibilities and to confirm test results are essential.

III. CDC's Laboratory Diagnostics Plan

CDC is planning and embarking on a range of laboratory diagnostics activities that will enhance the capacity to detect a reappearance of SARS and respond to and manage outbreaks. Objectives and descriptions of these activities are as follows.

Objective 1: Expand public health access to high-quality SARS diagnostics.

Activities

- Assay deployment -- CDC has deployed SARS diagnostic assays under an Investigative Device exemption (IDE) from the Food and Drug Administration (FDA) and an IRB-approved protocol.

SARS PCR assays were deployed through the Laboratory Response Network (LRN) to selected laboratories in nearly all states; serologic assays have been deployed to nearly all state public health laboratories.

- Proficiency testing -- To assess the availability and quality of SARS diagnostics in laboratories that received CDC's PCR and antibody assays, CDC will distribute a panel of positive and negative specimens for testing (proficiency panels). The receiving laboratories will test these specimens and send their results to CDC for analysis of findings and responses to a questionnaire. These data will provide information on the laboratory's readiness to perform SARS diagnostics (see Appendix F1).

- Assessment of SARS diagnostics in non-public health laboratories -- Determining the availability and quality of SARS testing in non-public health laboratories will provide an assessment of overall laboratory diagnostic preparedness. Several clinical pathology professional organizations conduct laboratory surveys and distribute proficiency panels. CDC will assist with SARS surveys and provide proficiency panels so that the professional organizations can assess the status of SARS diagnostics in their members' laboratories.

- Confirmatory testing -- Positive SARS PCR test results should be confirmed in a reference laboratory. Confirmatory testing is particularly important in areas with a low prevalence of SARS, where the positive predictive value of the assay is likely to be quite low. CDC will conduct confirmatory testing during the early phases of an outbreak. Other laboratories that are proficient in SARS diagnostics will participate in confirmatory testing as outbreaks escalate. Early in an outbreak, positive serologic tests should also be confirmed; later tests conducted in a proficient laboratory do not required confirmation. A key factor in the value of confirmatory PCR testing is specimen handling. To interpret confirmatory test results, the aliquot of the specimen submitted for testing should not have been at risk for template contamination or degradation. The approach and interpretation of confirmatory testing must consider all potential sources and types of template contamination (i.e., whole viral genome, portions of the genome, or PCR products). Strategies for confirmatory testing are provided in Appendix F2.

Objective 2: Improve the ability to detect SARS-CoV infection by optimizing the selection and timing of specimen collection and processing.

Activities

- Specimen collection -- CDC has developed guidance for health departments and laboratorians to maximize the efficiency and accuracy of diagnostic procedures. Clinicians and laboratorians are asked to:

  - Collect multiple specimens -- The type and timing of specimen collection is important to maximize the probability of identifying evidence of SARS-CoV infection. Since it is not yet clear which specimen type is best for detecting viral RNA, it is important to collect different types of specimens and at multiple times during the illness. Appendix F3 provides guidance on the type and timing of specimens for SARS diagnostics.

  - Handle specimens correctly -- CDC has developed guidance for specimen collection, handling, and shipping (Appendices F3). State and local health departments can use these guidelines to educate clinicians on appropriate methods of collecting, handling and shipping specimens appropriately.

- Assay sensitivity -- CDC will evaluate ways to improve assay sensitivity, such as extracting RNA from a larger volume of the specimen and including a larger amount of template RNA in the PCR reaction. CDC is developing capture IgG and IgM assays using expressed proteins as the antigens. Preliminary data suggest that antibody assays using the SARS-CoV S protein might detect an antibody response earlier in the illness.

Objective 3: Ensure that SARS specimens are handled safely and the SARS diagnostic tests are used and interpreted appropriately.

Activities

- Biosafety guidance -- The recent laboratory-acquired SARS-CoV infection in Singapore (ref) underscores the need to handle SARS specimens and SARS-CoV-infected tissue culture material safely. CDC has developed guidelines for handling these types of specimens and materials (Appendix F4). State and local health departments can use these guidelines to educate personnel in viral diagnostic, research, and clinical laboratories about safe specimen handling.

- Test interpretation -- Clinicians should interpret SARS test results in consultation with state or local health department officials and with consideration of data on the clinical and epidemiologic features of the illness and the type and timing of specimen collection. CDC has developed guidelines to guide state and local health department staff in their consultations with clinicians about test interpretation (Appendix F5).

- Data reporting and integration -- State and local health departments will collect clinical and epidemiologic data on potential SARS cases and report cases to CDC through a web-based reporting system. CDC will send laboratory data back to state and local health departments daily. The clinical and epidemiologic information reported to CDC and downloaded back to the states can provide a source of patient information that can help laboratorians consider appropriate testing strategies and interpret test results. With guidance from state and local health departments, CDC will facilitate access to data as requested. In addition, results of laboratory testing on any specimens submitted to CDC will be integrated into the data provided to state and local health departments, allowing timely dissemination of this information.

- Training and education -- SARS diagnostic assays have an important role in detecting an introduction of SARS, managing a SARS outbreak, and addressing concerns about SARS. The healthcare and public health communities should be aware of the value, limitations, and appropriate use and interpretation of SARS diagnostics. CDC will provide training and educational material that state and local health departments can use to educate clinicians and public health workers about SARS diagnostics.

- Coordination -- Coordinated information sharing among clinicians, laboratorians, and epidemiologists is central to efficient investigation of potential SARS cases. CDC will assist public health laboratories and epidemiologists in developing rapid and coordinated strategies for: 1) collecting, tracking, and testing specimens, 2) interpreting test results, 3) reporting information to clinicians, and 4) communicating results to CDC, other public health officials, and the public.

Objective 4: Ensure the availability of SARS diagnostic testing kits and protocols for testing other respiratory pathogens.

Activities

- Diagnostic supplies -- The existing supply of SARS PCR and serologic kits is limited. To ensure the availability of a sufficient number of kits to meet routine public health needs and the anticipated high demand associated with simultaneous outbreaks, CDC is monitoring both the deployment and number of kits. After patterns of use have been determined, CDC will plan the production of new kits to ensure that the supply can meet both projected baseline needs and the accelerated use associated with a SARS outbreak.

- Tests for alternative respiratory agents -- CDC will complete the development and initial evaluation of real-time PCR assays for the most important common respiratory pathogens in the United States and make primer and probe sequences and protocols available to the LRN laboratories and other public health laboratories.

Appendices for Supplement F

Appendix F1
Proficiency Testing for Public Health Laboratories Performing SARS Co-V EIA and RT-PCR Diagnostics
Appendix F2
SARS Specimen Testing Guidelines – RT-PCR and Serology
Appendix F3
Guidelines for Collection of Specimens from Potential Cases of SARS
Appendix F4
Laboratory Biosafety Guidelines for Handling and Processing Specimens Associated with SARS
Appendix F5
Fact Sheet for Clinicians: Interpreting SARS Test Results from CDC and Other Public Health Laboratories

Appendix F1
Proficiency Testing for Public Health Laboratories Providing SARS-CoV EIA and RT-PCR Diagnostics

CDC has developed and validated diagnostic assays for SARS-CoV, including an enzyme immunoassay (EIA) for detection of serum antibodies to SARS-CoV and a reverse transcription-polymerase chain reaction (RT-PCR) assay for detection of SARS-CoV RNA. Both the EIA and the RT-PCR tests are sensitive and highly specific for diagnosis of SARS-CoV infection. Testing with these assays is now available through state public health laboratories and CDC's Laboratory Response Network (LRN).

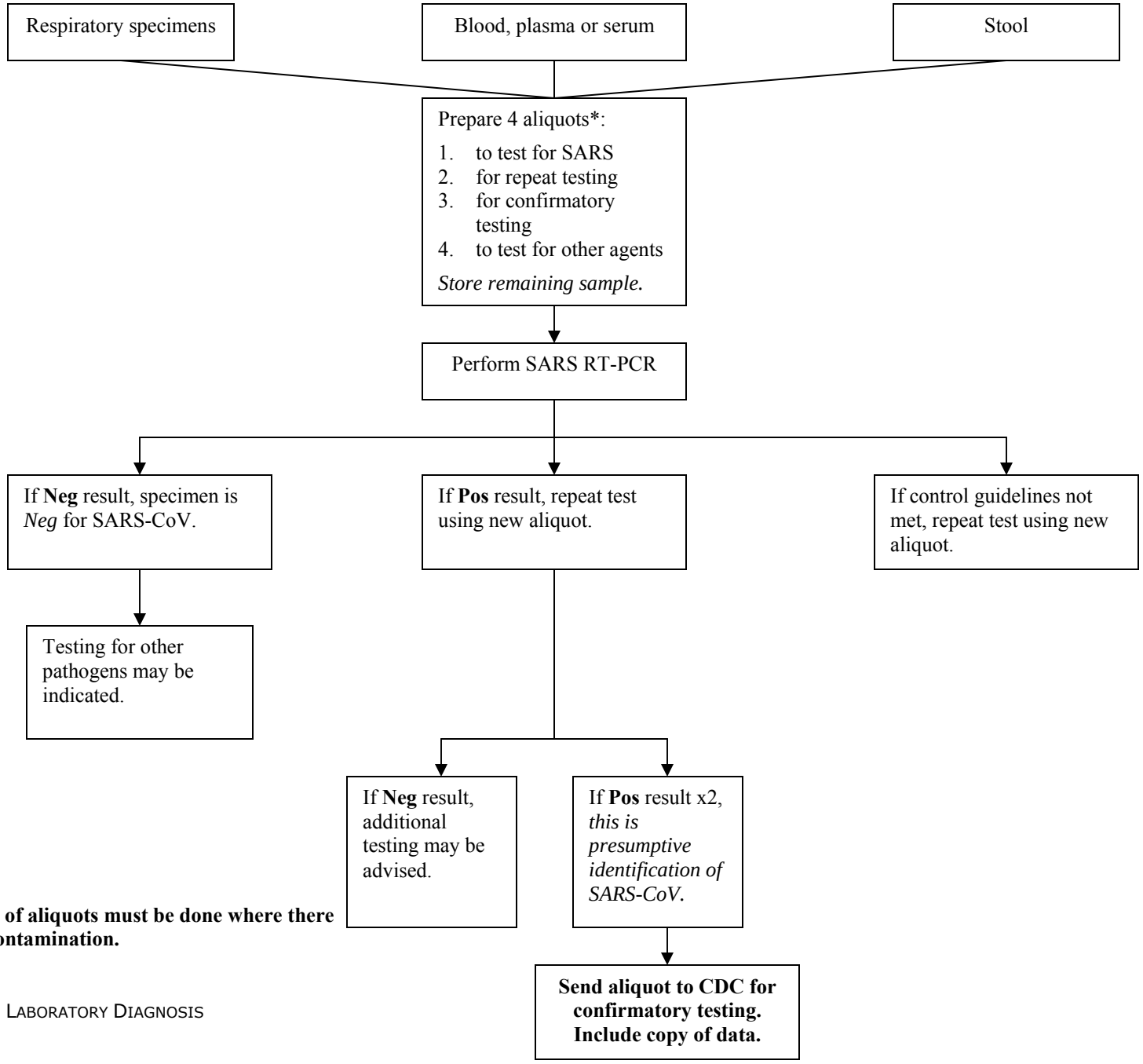
CDC is implementing a quality assurance study to evaluate each laboratory's testing proficiency. To demonstrate competence in performing these tests, public health and LRN laboratories must successfully identify positive and negative specimens provided in the proficiency panels.

Process for Proficiency Panel Testing:

1. EIA proficiency panels will be shipped to designated public health laboratories and RT-PCR proficiency panels will be distributed through CDC's LRN.
2. Each laboratory should complete testing promptly and return results by the designated date.
3. Proficiency panel test results must be returned by electronic mail using a designated format.
4. Each laboratory will receive a complete summary of their own results as well as an aggregate summary of performance from all laboratories completing the proficiency testing.
5. CDC will provide a certificate of participation to the participating laboratory to help fulfill their quality assurance requirements.

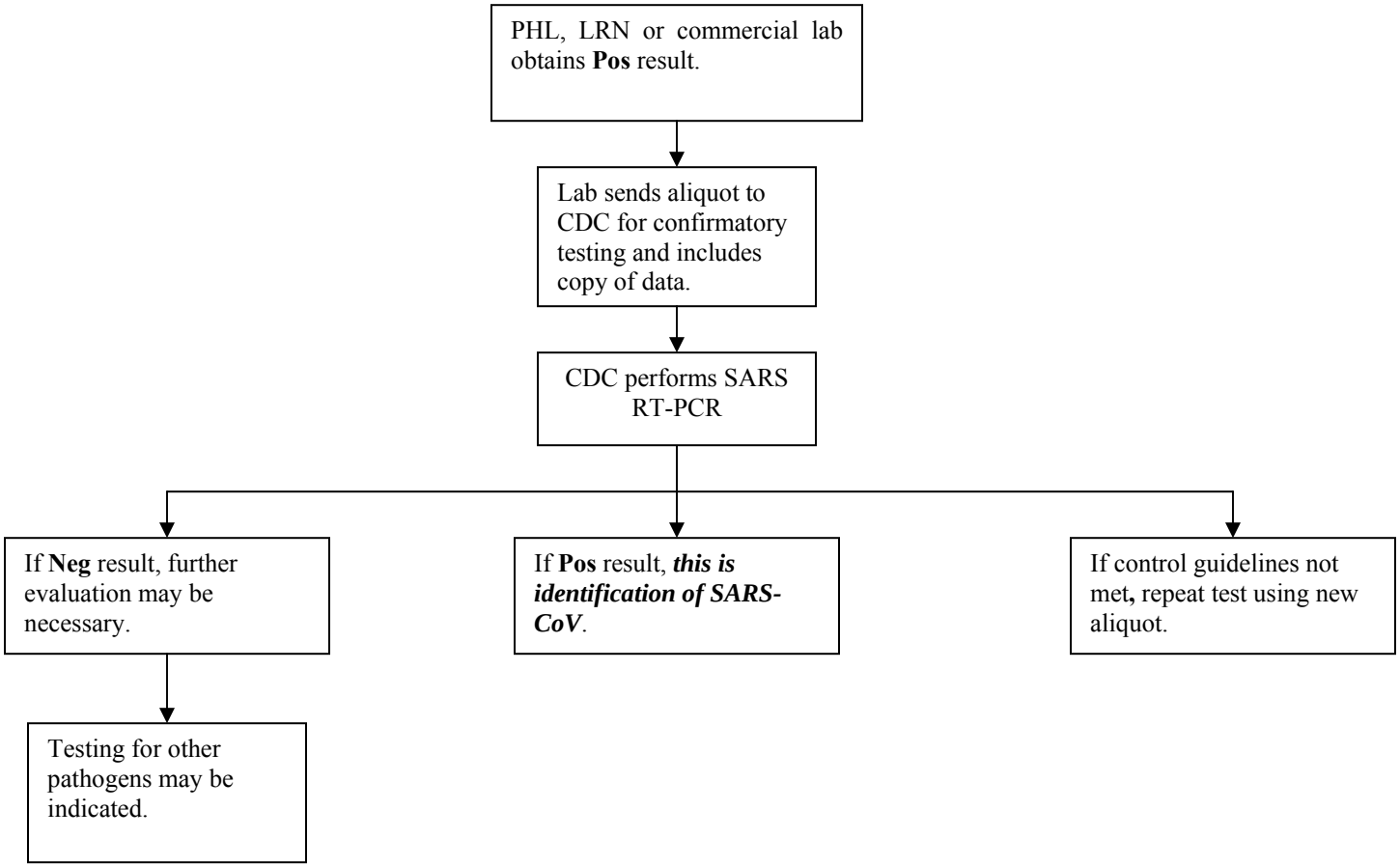
Results obtained from a laboratory's proficiency testing will initially be considered "educational" and will not require laboratories to undergo additional training as remediation. However, successful completion of the proficiency test will be required for a public health or LRN laboratory to be approved as a confirmatory test site.

Appendix F2
SARS RT-PCR Specimen Testing Guidelines

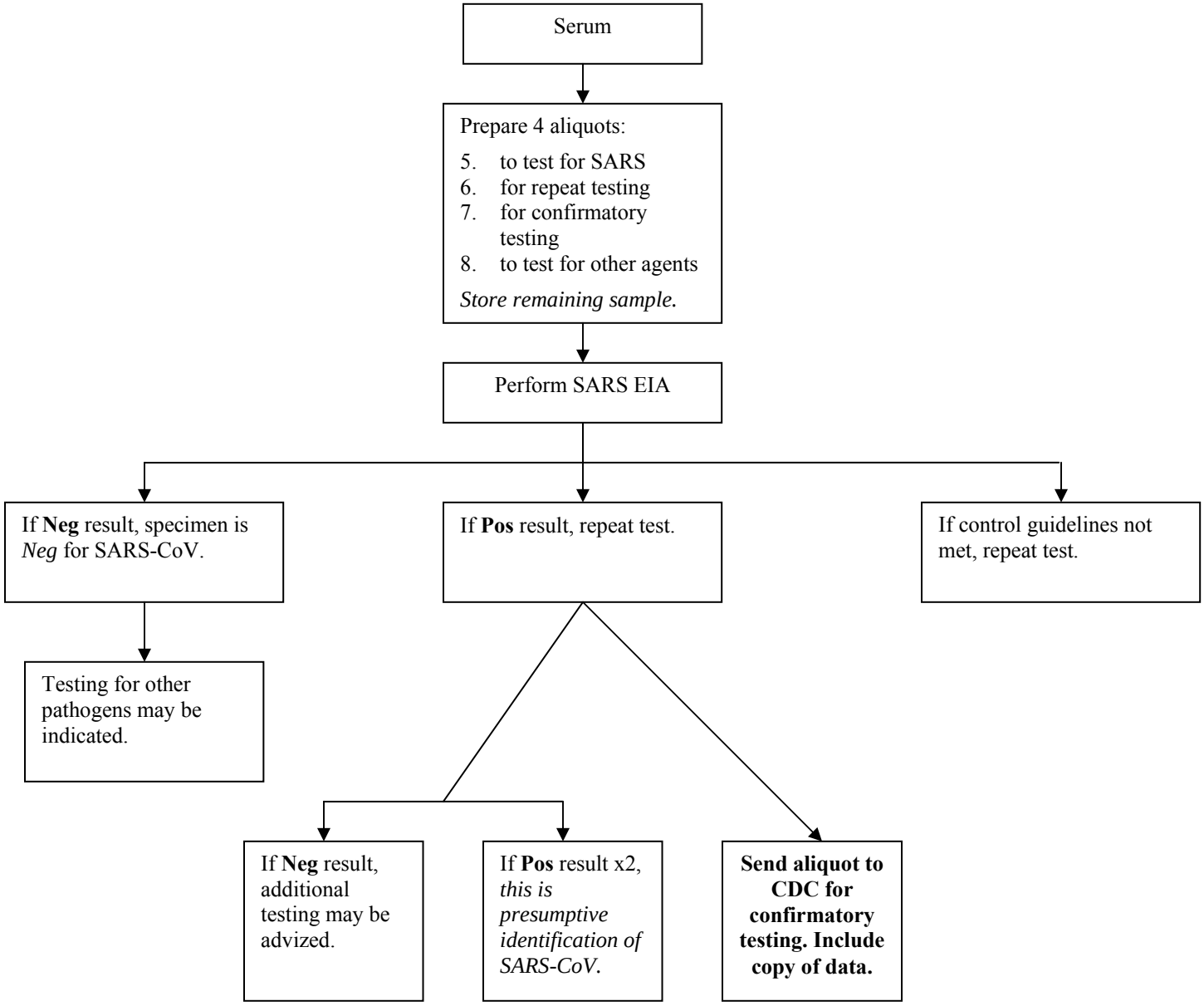


*** Preparation of aliquots must be done where there is no risk of contamination.**

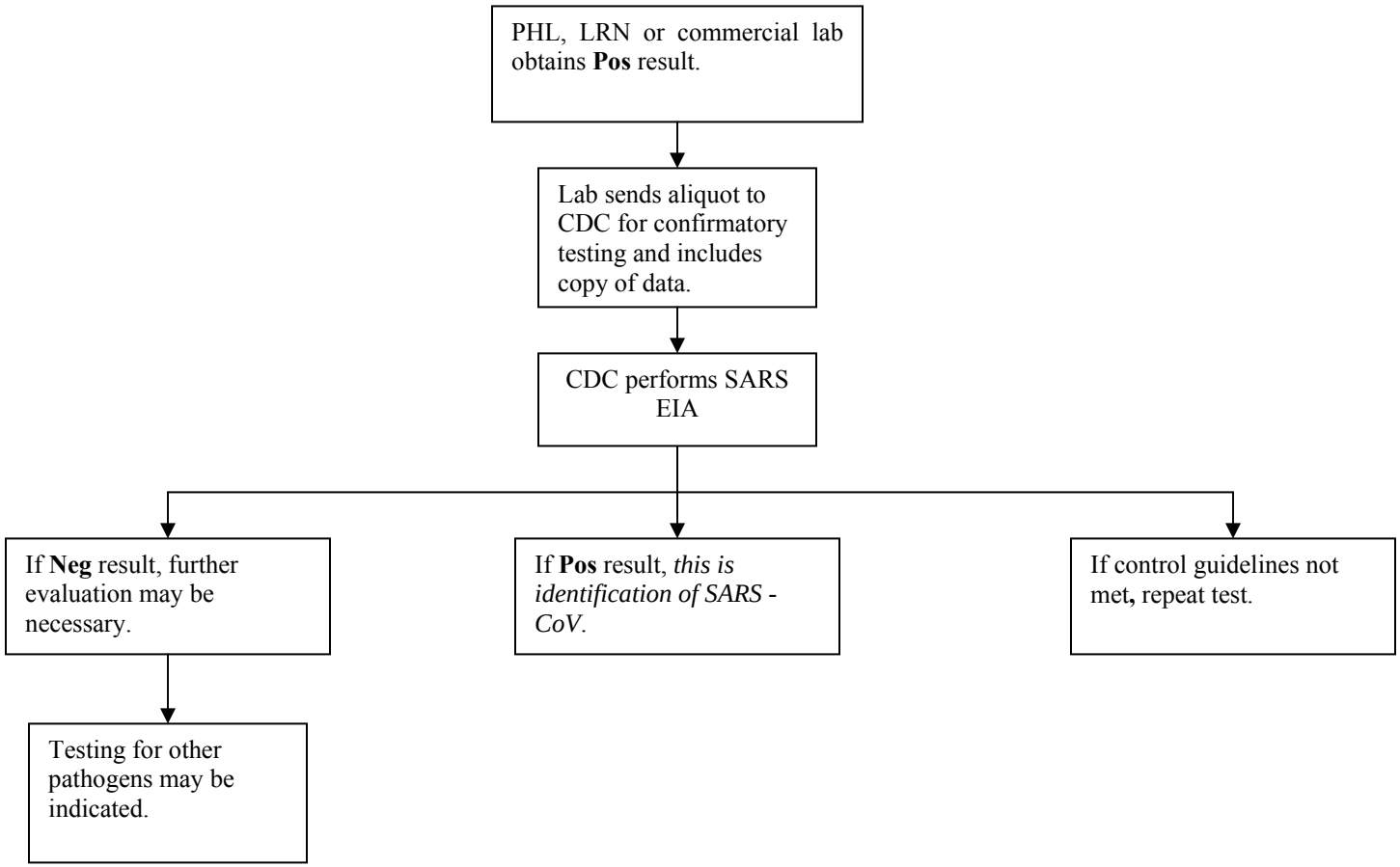
SARS RT-PCR Confirmatory Testing Guidelines



SARS Serology Specimen Testing Guidelines



SARS Serology Confirmatory Testing Guidelines



Appendix F3
Guidelines for Collection of Specimens from Potential Cases of SARS

Key Messages

- Consult your state or local health department to determine the appropriateness and details of SARS testing.
- It is preferable to collect multiple specimens from different sites and at different times during illness.

Please contact your state health department /state epidemiologist for consultation to determine whether patients meet the SARS case definition before collecting and shipping specimens for SARS testing. For contact information, refer to: www.cste.org/members/stateandterritorialepi.asp. When possible, it is preferable to collect multiple specimens for testing. For example, collect specimens from two different sites on the same day (e.g. one nasopharyngeal swab and a stool specimen or another respiratory specimen) and additional specimens later during the illness.

Respiratory Tract Specimens

Respiratory specimens should be collected as soon as possible in the course of the illness for most respiratory pathogens. The likelihood of recovering most viruses diminishes markedly >72 hours after symptom onset. In contrast, for SARS-CoV, the amount of virus may increase later in the course of the illness.

Seven types of respiratory specimens may be collected for viral and/or bacterial diagnostics. These include: 1) nasopharyngeal wash/aspirates; 2) nasopharyngeal swabs; 3) oropharyngeal swabs; 4) broncheoalveolar lavage; 5) tracheal aspirate 6) pleural tap or 7) sputum (see chart on page 5 for recommended specimen type). Nasopharyngeal wash/aspirates are the specimen of choice for detection of most respiratory viruses and are the preferred collection method among children aged <2 years.

Before collecting specimens, review infection control precautions at:
http://www.cdc.gov/ncidod/sars/infectioncontrol.htm and
http://www.cdc.gov/ncidod/sars/aerosolinfectioncontrol.htm.

Upper respiratory tract

- Collection of nasopharyngeal wash/aspirate
  Have the patient sit with the head tilted slightly backward. Instill 1 - 1.5 ml of nonbacteriostatic saline (pH 7.0) into one nostril. Flush a plastic catheter or tubing with 2 - 3 ml of saline. Insert the tubing into the nostril parallel to the palate. Aspirate nasopharyngeal secretions. Repeat this procedure for the other nostril. Collect specimens in sterile vials. Each specimen container should be labeled with ID number and the date collected. If shipped domestically, ship with cold packs to keep sample at 4°C. If shipped internationally, ship on dry ice.
- Collection of nasopharyngeal or oropharyngeal swabs
  Use only sterile dacron or rayon swabs with plastic shafts. Do **NOT** use calcium alginate swabs or swabs with wooden sticks, as they may contain substances that inactivate some viruses and inhibit PCR testing.
  - Nasopharyngeal swabs - Insert swab into nostril parallel to the palate and leave in place for a few seconds to absorb secretions. Swab both nostrils.

- Oropharyngeal swabs - Swab both posterior pharynx and tonsillar areas, avoiding the tongue. Place swabs immediately into sterile vials containing 2 ml of viral transport media. Break applicator sticks off near the tip to permit tightening of the cap. Each specimen container should be labeled with ID number and the date collected. If shipped domestically, ship with cold packs to keep sample at 4°C. If shipped internationally, ship on dry ice.

Lower respiratory tract

- Collection of broncheoalveolar lavage, tracheal aspirate, pleural tap
  If these specimens have been obtained, half should be centrifuged and the cell-pellet fixed in formalin. Remaining unspun fluid should be placed in sterile vials with external caps and internal O-ring seals. If there are no internal O-ring seals, then seal tightly with the available cap and secure with Parafilm®. Each specimen container should be labeled with ID number and the date the sample was collected. If shipped domestically, ship with cold packs to keep sample at 4°C. If shipped internationally, ship fixed cells at room temperature and unfixed cells frozen.
- Collection of sputum
  Educate the patient about the difference between sputum and spit. Have the patient rinse the mouth with water then expectorate deep cough sputum directly into a sterile screw-cap sputum collection cup or sterile dry container. If shipped domestically, ship with cold packs to keep sample at 4°C. If shipped internationally, ship on dry ice.

Blood Components

Collection of serum for antibody or RT-PCR testing

Acute serum specimens should be collected and submitted as soon as possible. If the patient meets the case definition, convalescent specimens should be collected > 28 days after the onset of illness.

Collect 5-10 ml of whole blood in a serum separator tube. Allow blood to clot, centrifuge briefly and collect all resulting sera in vials with external caps and internal O-ring seals. If there are no internal O-ring seals, then seal tightly with the available cap and secure with Parafilm®. A minimum of 200 microliters of serum is preferred for each test which can easily be obtained from 5 mL of whole blood.

Pediatric patients: a minimum of 1cc of whole blood is needed for testing. If possible, collect 1cc in both an EDTA and clotting tube. However, if only 1cc can be obtained, please use a clotting tube for collection.

Each specimen container should be labeled with ID number and the date the specimen was collected. If unfrozen and transported domestically, ship with cold packs to keep sample at 4°C. If frozen or transported internationally, ship on dry ice.

Collection of EDTA blood/plasma for RT-PCR

Collect 5-10 ml of blood in an EDTA (purple-top) tube. Transfer to vials with external caps and internal O-ring seals. If there are no internal O-ring seals, then seal tightly with the available cap and secure with Parafilm®. Each specimen container should be labeled with ID number and date of collection. Blood specimens should be stored and shipped with cold packs to keep sample at 4°C.

Stool

Collection of stool for PCR

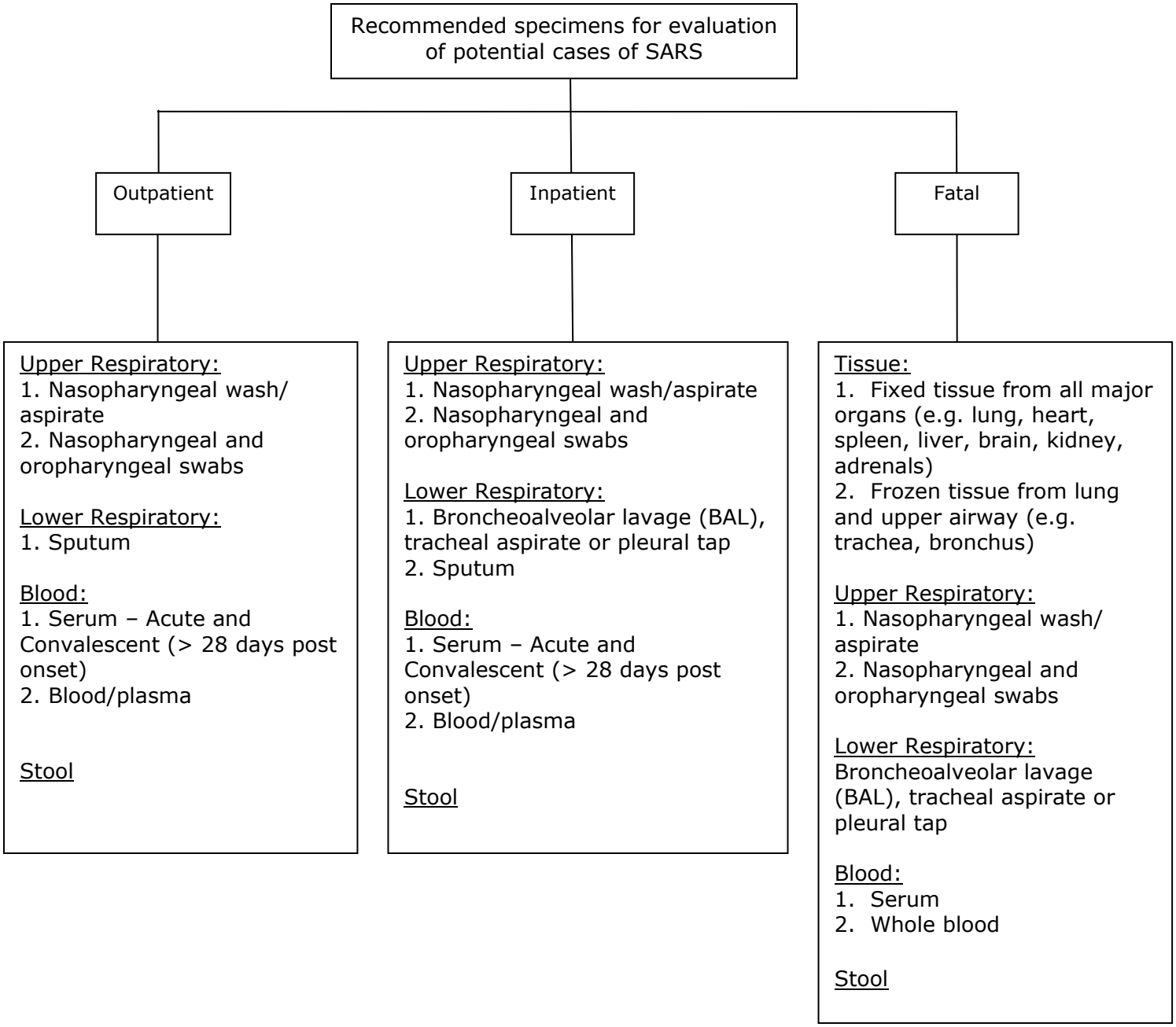
Begin collecting stool specimens as soon as possible in the course of the illness. Although collecting earlier specimens is ideal, SARS-CoV has been detected in stool as late as one month post symptom onset.

Place each stool specimen, of as large a quantity as can be obtained (collect at least 10 cc), in a leak-proof, clean, dry container, and refrigerate at 4°C. Patients may drape plastic kitchen wrap across the back half of the toilet, under the toilet seat, to facilitate collection of stool specimens.

Refrigerate or freeze tubes after specimens are placed in them. If specimens will be examined within 48 hours after collection, they can be refrigerated; however, if specimens must be held longer than 48 hours, freeze them as soon as possible after they are collected. Although storage in an ultra-low freezer (-70°C) is preferable, storage in a home-type freezer (if it is properly set at -20°C) is acceptable for short periods.

Note: Packaging, shipping and transport of specimens from suspect and probable SARS cases must follow the current edition of the International Air Transport Association (IATA) Dangerous Goods Regulations at (www.iata.org/dangerousgoods/index) and US DOT 49 CFR Parts 171-180 (hazmat.dot.gov/rules.htm).

Step-by-step instructions on appropriate packaging and labeling are available at: www.cdc.gov/ncidod/sars/pdf/packingspecimens-sars.pdf.


Recommended specimens for evaluation of potential cases of SARS
Outpatient
Inpatient
Fatal
Upper Respiratory:
1. Nasopharyngeal wash/ aspirate
2. Nasopharyngeal and oropharyngeal swabs
Lower Respiratory:
1. Sputum
Blood:
1. Serum – Acute and Convalescent (> 28 days post onset)
2. Blood/plasma
Stool
Upper Respiratory:
1. Nasopharyngeal wash/aspirate
2. Nasopharyngeal and oropharyngeal swabs
Lower Respiratory:
1. Broncheoalveolar lavage (BAL), tracheal aspirate or pleural tap
2. Sputum
Blood:
1. Serum – Acute and Convalescent (> 28 days post onset)
2. Blood/plasma
Stool
Tissue:
1. Fixed tissue from all major organs (e.g. lung, heart, spleen, liver, brain, kidney, adrenals)
2. Frozen tissue from lung and upper airway (e.g. trachea, bronchus)
Upper Respiratory:
1. Nasopharyngeal wash/ aspirate
2. Nasopharyngeal and oropharyngeal swabs
Lower Respiratory:
Broncheoalveolar lavage (BAL), tracheal aspirate or pleural tap
Blood:
1. Serum
2. Whole blood
Stool

Priority specimens to collect during the course of illness for evaluation of potential cases of SARS*

Specimen	< 1 week post symptom onset	1-3 weeks post symptom onset	> 3 weeks post symptom onset
Serum** (serum separator tube)	++	++	++
Blood (EDTA/purple top tube for plasma)	++	+	-
Respiratory (deep cough sputum is preferred over other respiratory specimens)	++	++	+
Stool	+	++	++

* Priority is based on the likelihood that the specimen will be positive in a SARS-CoV-infected person.
** To rule out SARS serologically, it is important to collect serum > 28 days post onset.

++ Priority specimen(s)
- Not recommended

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)

Appendix F4
Laboratory Biosafety Guidelines for Handling and Processing Specimens Associated with SARS

Key Messages

- Laboratories performing routine hematology and clinical chemistry studies may handle potential SARS specimens similarly to specimens containing other bloodborne pathogens (e.g. hepatitis or HIV, see specific biosafety guidelines at www.cdc.gov/od/ohs/biosfty/bmbl4/bmbl4s7f.htm).
- Laboratories performing serology or RT-PCR testing should handle potential SARS specimens using Standard Precautions (previously Universal Precautions).
- A detailed description of recommended facilities, practices, and protective equipment for the various laboratory biosafety levels (BSLs) can be found in the CDC/NIH Biosafety in Microbiological and Biomedical Laboratories Manual at www.cdc.gov/od/ohs/biosfty/bmbl4/bmbl4s3.htm.

It is estimated that several thousand diagnostic specimens from patients with SARS have been processed in routine clinical laboratories throughout the world and to date there has been no reported cases of SARS illness among laboratory workers performing diagnostic assays; however, there has been one reported case in a research laboratory setting where the SARS-CoV was being propagated. Until more information about the transmission of the SARS agent in the laboratory setting is known, precautions should be taken in handling these specimens. Effective and timely communication between clinical and laboratory staff is essential in minimizing the risk incurred in handling specimens from patients in whom SARS is suspected. Specimens from patients who may have SARS should be labeled accordingly and the laboratory should be alerted to insure proper specimen handling. Listed below are biosafety guidelines for handling these specimens.

Blood Specimens (blood, serum, plasma)

These specimens may be handled using Standard Precautions (previously Universal Precautions). Careful attention should be given to hand hygiene after removal of gloves and especially before touching the eyes or mucosal surfaces.

Any procedure with the potential to generate fine particulate aerosols (e.g. vortexing or sonication of specimens in an open tube) should be performed in a biological safety cabinet (BSC). The use of sealed centrifuge rotors or sample cups, if available, should be employed for centrifugation. Ideally, these rotors or cups should be loaded and unloaded in a BSC. Procedures performed outside of a BSC should be performed in a manner that minimizes the risk of exposure to an inadvertent sample release.

Work surfaces and equipment should be decontaminated after specimens are processed. Standard decontamination agents that are effective against lipid-enveloped viruses should be sufficient.

Other Specimens (e.g., respiratory secretions, stool, urine, tissue)

The following activities should be performed in BSL-2 facilities with standard BSL-2 work practices:

- Pathologic examination and processing of formalin-fixed or otherwise inactivated tissues.

- Molecular analysis of extracted nucleic acid preparations.
- Electron microscopic studies with glutaraldehyde-fixed grids.
- Routine examination of bacterial and mycotic cultures.
- Routine staining and microscopic analysis of fixed smears.
- Final packaging of specimens for transport to diagnostic laboratories for additional testing. Specimens should already be in a sealed, decontaminated primary container.

The following activities involving manipulation of untreated specimens should be performed in BSL-2 facilities and in a Class II biological safety cabinet:

- Aliquoting and/or diluting specimens.
- Inoculation of bacterial or mycological culture media.
- Performing diagnostic tests that don't involve propagation of viral agents in vitro or in vivo.
- Nucleic acid extraction procedures involving untreated specimens.
- Preparation and chemical- or heat-fixing of smears for microscopic analysis.

Laboratory workers should wear protective equipment including disposable gloves and laboratory coats. Work surfaces should be decontaminated on completion of work with appropriate disinfectants and all disposable waste autoclaved.

Any procedure or process that cannot be conducted within a biological safety cabinet requires use of the appropriate combinations of personal protective equipment (e.g., respirators, face shields) and physical containment devices (e.g., centrifuge safety cups or sealed rotors). Acceptable methods of respiratory protection include a properly fit tested NIOSH approved filter respirator (N-95 or higher); or powered air-purifying respirators (PAPRs) equipped with high efficiency particulate air (HEPA) filters. Accurate fit testing is a key component of effective respirator use. Personnel who cannot wear fitted respirators because of facial hair or other fit-limitations should wear loose fitting hooded or helmeted PAPRs. Centrifugation should be carried out using sealed centrifuge cups or rotors that are unloaded in a biological safety cabinet.

The following activities require BSL-3 facilities and BSL-3 work practices:

- SARS-CoV propagation in cell culture.
- Initial characterization of viral agents recovered in cultures of SARS specimens.

When a procedure or process cannot be conducted within a biological safety cabinet, then appropriate combinations of personal protective equipment (e.g., respirators, face shields) and physical containment devices (e.g., centrifuge safety cups or sealed rotors) **must** be used.

The following activities require Animal BSL-3 facilities and BSL-3 work practices:

- Inoculation of animals for potential recovery of the agent from SARS samples.
- Protocols involving animal inoculation for characterization of putative SARS agents.

Consideration may also be given to referral of specimens to a suitably equipped reference laboratory.

Packaging, shipping and transport of specimens from suspect and probable SARS cases must follow the current edition of the International Air Transport Association (IATA) Dangerous Goods Regulations at (www.iata.org/dangerousgoods/index) and US DOT 49 CFR Parts 171-180 (hazmat.dot.gov/rules.htm). Step-by-step instructions on appropriate packaging and labeling can be viewed at this page (www.cdc.gov/ncidod/sars/pdf/packingspecimens-sars.pdf).

Appendix F5
Fact Sheet for Clinicians: Interpreting SARS Test Results from CDC and Other Public Health Laboratories

Key messages

- A positive RT-PCR test result for SARS-CoV should be considered provisional until the result and infection status are confirmed by independent testing.
- A negative test result for SARS-CoV usually does not rule out SARS and should not affect patient management or infection control decisions.

Important definitions

Term	Definition
SARS	Severe acute respiratory syndrome. A clinical syndrome characterized by fever, lower respiratory symptoms, and radiographic evidence of pneumonia.
SARS-CoV	SARS-associated coronavirus. A newly described coronavirus that is genetically and antigenically distinct from other human coronaviruses.
SARS-CoV infection	A condition wherein a patient is infected with SARS-CoV.
SARS-CoV positive (refers to a specimen)	A clinical or laboratory specimen that is demonstrated by using a validated and appropriately controlled assay to have SARS-CoV antigen or RNA or antibodies reactive with SARS-CoV antigens.
Seroconversion	• A 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.
RT-PCR positive for SARS-CoV (refers to a patient)	SARS-CoV RNA detected using a validated assay from: • At least two different clinical specimens, or • The same type of clinical specimen collected on two, or more, occasions during the course of illness.
Laboratory confirmed SARS-CoV infection	• Seroconversion to SARS-CoV, or • PCR positive for SARS-CoV based on concordant results from testing conducted in two independent laboratories.

The Centers for Disease Control and Prevention (CDC) and other institutions have been working to develop strategies to detect and control the spread of severe acute respiratory syndrome (SARS). Information on SARS, including the case definition and infection control guidelines, is available on the CDC SARS website (www.cdc.gov/ncidod/sars/index.htm). Information regarding SARS laboratory testing may change as we continue to learn more about this disease. You can check this page for the most up-to-date version of this document.

The cause of SARS has been determined to be infection with a previously unrecognized human coronavirus, called SARS-associated coronavirus (SARS-CoV). It is possible, however, that other pathogens might have a role in some cases of SARS.

Our previous experience with SARS-CoV infections demonstrates that the best guide to diagnosing SARS infection is exposure to a SARS-infected person, or to a setting where SARS-CoV is being transmitted, or to persons who are part of an unusual cluster of atypical pneumonia (See – for details on diagnosing SARS-CoV infection). Persons without a potential risk of SARS exposure should usually not be tested for SARS-CoV.

Following are some key issues that clinicians providing care for patients with SARS may find useful when interpreting SARS-CoV test results.

What tests for SARS-CoV are available?

CDC has developed and validated an enzyme immunoassay (EIA) for detection of serum antibody to SARS-CoV, and a reverse transcription-polymerase chain reaction (RT-PCR) assay, for detection of SARS-CoV RNA. The EIA has been distributed to most state public health laboratories and the RT-PCR has been distributed to most laboratories in the Laboratory Response Network (LRN). Both the EIA and RT-PCR tests are sensitive and highly specific for SARS-CoV. The ability to diagnose SARS-CoV infection in the patient, however, is often limited by either the low concentration of virus in most clinical specimens (RT-PCR assays) or by the time it takes a person to mount a measurable antibody response to SARS (serologic assays). The likelihood of detecting infection is increased if multiple specimens, e.g. stool, serum, and respiratory tract specimens, are collected at several times during the course of illness.

1. CDC considers detection of SARS-CoV antibody as the most reliable indicator of infection. Since previous infection is still rare in most populations, seroconversion is not needed to diagnose infection. Therefore, the presence of SARS-CoV antibody in someone without a previous history of SARS is indicative of recent infection. Serologic tests can rule out SARS infection if the serum specimen is collected >28 days after onset of illness. Some people do not mount an antibody response (test positive) until more than 28 days after onset of illness. Patients with a negative antibody test result whose specimens were obtained 28 or fewer days after illness onset should have another serum specimen collected >28 days after onset of symptoms.
2. Reverse transcription-polymerase chain reaction (RT-PCR) for SARS-CoV RNA is a very sensitive and specific assay when performed appropriately. This test can detect SARS-CoV RNA in serum, stool, upper and lower respiratory specimens, various tissues and occasionally urine specimens. Testing multiple specimen types at several times during the course of illness should increase the likelihood of detecting infection.
3. Other tests for detection of SARS-CoV infection include immunofluorescence assay (IFA) for SARS antibody, SARS-CoV isolation studies, electron microscopic studies, and immunohistologic or in situ hybridization studies on tissue specimens. The IFA assays for SARS-CoV antibody gives results essentially identical to those for the EIA for SARS antibody. Cell culture, electron microscopy and histologic studies are less frequently used and less sensitive than RT-PCR. Cell culture for SARS-CoV should only be done under BSL3 conditions in BSL3 laboratory (see the biosafety guidelines at www.cdc.gov/ncidod/sars/sarslabguide.htm)

What does it mean if a patient with SARS has a positive test result for SARS-CoV?
Laboratory test results should always be considered together with clinical observations and epidemiologic data in making a final diagnosis. A positive PCR result should be confirmed by a qualified second laboratory to ensure that this result is not an artifact of laboratory contamination. A positive serologic result is less likely to result from a laboratory artifact, but should also be subjected to confirmatory testing. If the results are confirmed, then a positive RT-PCR or serologic test result indicates that the patient has been recently infected with SARS-CoV (unless they have a previous history of SARS). For guidelines for managing SARS-CoV-infected patients visit Updated Interim Domestic Infection Control Guidance in the Health-Care and Community Setting for Patients with Suspected SARS.

How is a SARS-CoV test confirmed?
Positive antibody tests should be confirmed by retesting the specimens in an independent laboratory. Positive RT-PCR results should be confirmed by repeat testing of the original specimen AND by testing of the same specimen in an independent lab using a validated assay.

What does it mean if a patient with SARS has a negative test result for SARS-CoV?
The only conclusive rule out test for SARS-CoV is a negative antibody result on a serum specimen collected >28 days after onset of illness. A negative antibody result on serum specimens collected ≤ 28 days after onset of illness or a negative RT-PCR test does not rule out SARS-CoV infection. Clinical specimens do not always have sufficient virus to be detected by RT-PCR and an antibody response may not be detected in some patients until >28 days after onset of illness. With the exception of a >28 antibody test, a negative test result should not affect patient management or infection control decisions. If SARS continues to be a diagnostic concern, additional specimens should be collected and tested.

What does it mean if the test results are positive for other respiratory diseases?
A positive test results for another respiratory pathogen does not rule out SARS-CoV infection. SARS patients can be co-infected with SARS-CoV and other respiratory pathogens. Thus, detection of another respiratory pathogen does not eliminate the possibility of SARS-CoV infection. In some circumstances, however, detection of another respiratory pathogen may help rule out SARS-CoV infection, e.g. the other pathogen is detected in multiple patients in a cluster of cases and can fully explain the severity of illness.

Should a patient with SARS who has a negative SARS-CoV test result continue to be held using isolation precautions recommended by CDC and other public health authorities?
As noted above, the interpretation of negative SARS-CoV test results varies depending on the type of specimen, timing of specimen collection, and the test was performed. With the exception of a >28 day negative serologic test result, a negative SARS-CoV test result should not affect patient isolation or management decisions. The clinical features of the illness and the type and risk of exposure are the keys to making patient management and isolation decisions.

All SARS patients should limit interactions outside the home and should not go to work, school, out-of-home childcare, or other public areas until 10 days after resolution of fever and respiratory symptoms. During this time, the infection control precautions for SARS patients should be followed (www.cdc.gov/ncidod/sars/ic-closecontacts.htm).

Has the new information about SARS-CoV changed the recommendations for medical treatment for patients with SARS?
The discovery that SARS-CoV is the cause of SARS has not changed treatment recommendations (see CDC's SARS website for treatment information at www.cdc.gov/ncidod/sars/treatment.htm). Research is currently underway to determine if an effective anti-viral treatment for SARS-CoV can be found.

Should a person who traveled to an area where there is community transmission (see the case definition at www.cdc.gov/ncidod/sars/casedefinition.htm) of SARS or who had contact with a SARS patient be tested even if not ill?

People who have potentially been exposed to SARS patients and are well should only be tested as part of research studies. The exposed person may contact their state health department or CDC about participating in studies of persons exposed to SARS.

What other investigations related to SARS are planned?

The state health department or CDC may contact some SARS patients regardless of whether the SARS-CoV test result was positive or negative about participating in SARS studies. If a person volunteers to participate in such studies, they may be asked to provide additional information and/or specimens.

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).

PUBLIC HEALTH GUIDANCE FOR COMMUNITY-LEVEL PREPAREDNESS AND RESPONSE TO SEVERE ACUTE RESPIRATORY SYNDROME (SARS)

SUPPLEMENT G: COMMUNICATION

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.
- 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.
- Address rumors, inaccuracies, and misperceptions as quickly as possible, and prevent stigmatization of affected groups.

Key concepts

- Timely dissemination of accurate and science-based information on what is known and not known about SARS and the progress of the response effort builds public trust and confidence.
- Coordination of messages and release of information among federal, state, and local health officials and affected institutions are critical to avoiding contradictions and confusion that can undermine public trust and impede containment measures.
- Information should be technically correct and sufficiently complete to support policies and actions without being patronizing.
- Guidance to community members on actions needed to protect themselves and their family members and colleagues is essential for crisis management.
- Information presented during an outbreak should be limited to specific data and results; messages should omit speculation, over-interpretation of data, overly confident assessments of investigations and control measures, and comments related to other jurisdictions.
- Rumors, misinformation, misperceptions, and stigmatization of specific groups must be addressed promptly and definitively.
- Education and training of healthcare workers and public health staff on appropriate strategies to recognize SARS and implement control measures is key to containing a SARS outbreak.

Priority activities

- Identify key messages about SARS 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.

I. Rationale and Goals

During the 2003 SARS response, health communications figured prominently among the tools used to contain the outbreak. The response to outbreaks and the threat of outbreaks necessitated extensive communications activities. Experience showed that, although a media/communications plan cannot alleviate the threat of SARS or solve associated public health problems, good communication can guide the public, the media, and healthcare providers in responding appropriately and complying with exposure-control measures as required.

This document describes the communication plans and activities that are suggested to prepare for a possible recurrence of SARS and activities that would be needed to respond to a SARS outbreak. This plan identifies information necessary for major planning, preparedness, and communication response activities of state and local health departments and provides guidance for coordinating efforts with CDC and other entities. The goals of this Supplement are to provide local and state communications specialists with suggestions and guidance to:

- Instill and maintain public confidence in the nation's public health system and its ability to respond to and manage a SARS outbreak
- 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
- Provide accurate, consistent, and comprehensive information about SARS
- Address rumors, inaccuracies, and misperceptions as quickly as possible, and prevent stigmatization of affected groups

II. Lessons Learned

After the SARS response of 2003, federal, state, and local public health colleagues conducted internal debriefings to prepare for a future SARS occurrence. At CDC, communications officers, in consultation with state and local partners, identified the following as "lessons learned" for the next SARS response:

- Timely dissemination of accurate and science-based information on what is known and not known about SARS and the progress of the response effort builds public trust and confidence.
- Coordination of messages and release of information among federal, state, and local health officials and affected institutions are critical to avoiding contradictions and confusion that can undermine public trust and impede containment measures.
- Information should be technically correct and sufficiently complete to support policies and actions without being patronizing.
- Guidance to community members on actions needed to protect themselves and their family members and colleagues is essential for crisis management.
- Information presented during an outbreak should be limited to specific data and results; messages should omit speculation, over-interpretation of data, overly confident assessments of investigations and control measures, and comments related to other jurisdictions.
- Rumors, misinformation, misperceptions, and stigmatization of affected groups must be addressed promptly and definitively.

- Education and training of healthcare workers and public health staff on appropriate strategies to recognize SARS and implement control measures is key to containing a SARS outbreak.

III. Key Messages

Lessons learned from the Spring 2003 experience will help local, state, and national communications specialists refine their communications planning to facilitate appropriate and decisive actions in response to a re-emergence. The foundation for effective communication is a set of key messages that can be used consistently to highlight and reinforce the lessons learned and generate an appropriate response to SARS that minimizes risk while ensuring a strong and rapid response. These messages should be developed with the input of all decision-makers in the SARS response, and all communication messages should emanate from these central points. The following are examples for consideration:

- We have learned a great deal about SARS that is helping us prepare for the possibility that it will return.
- A SARS diagnosis is guided by a history of exposure to SARS or to a setting in which transmission is occurring.
- Most exposures to SARS occur in healthcare facilities and households. Community exposures outside of these settings have been reported, but these occurred rarely, under special circumstances, and, with few exceptions, after close contact with ill persons. Persons at risk in healthcare facilities include healthcare workers, patients, and visitors. In households, the greatest risk is to family members of SARS patients.
- In most instances, SARS outbreaks were localized to specific communities and often to specific locations or facilities in a community. For example, in Canada, most SARS cases occurred in Toronto, and in Toronto, most cases occurred in hospitals.
- SARS can be controlled by rapid, appropriate public health action that includes surveillance, identification and isolation of SARS cases, infection control, intense contact tracing, and quarantine of persons who may have been exposed to SARS. These measures can be a temporary inconvenience to those involved but are essential for containing SARS outbreaks.
- The United States is preparing for a possible reappearance of SARS by: 1) educating healthcare workers about SARS diagnosis, 2) developing SARS surveillance systems to determine if and where SARS has re-emerged, 3) developing guidelines for preventing transmission in different settings, 4) improving laboratory tests for SARS, and 5) developing better guidance for treating SARS patients.
- At this time, there is no evidence of ongoing transmission of SARS anywhere in the world. In the absence of SARS transmission, there is no need for concern about travel or other activities. Up-to-date information on SARS is available on CDC's SARS website (www.cdc.gov/ncidod/SARS).

IV. Preparing for a Communications Response

In the absence of SARS, states and localities need to prepare and disseminate messages to encourage vigilance for the possible reappearance of SARS-CoV and to specify activities to prevent its spread. Communications personnel need to assess communication needs and capacity, develop criteria and procedures for requesting

CDC communications assistance, and develop mechanisms for coordinating the activities of on-site CDC communications experts with local/state communication resources. If SARS-CoV transmission is confirmed, the community will look to state and local health departments as an information resource. Public information officers and communications specialists should be prepared for the surge of requests and inquiries generated by reports of SARS activity. The following suggestions should be considered for optimal preparedness.

Objective 1: Assess the readiness of the jurisdiction to meet communication needs during a SARS outbreak.

Activities

- Assess the information needs of healthcare providers. Most healthcare providers lack experience with SARS and will need information on how to diagnose, report, and manage possible cases. Communications specialists should have an understanding of healthcare provider's knowledge about surveillance and reporting, diagnostics, transmission, exposure management, and issues such as concern for self-protection and possible use of quarantine and isolation.
- Assess the information needs of the general public. Public perceptions about SARS may reflect misunderstandings and inaccuracies that can exacerbate fears and may impede containment efforts. Assessment of public knowledge and beliefs should guide the preparation of risk communication messages and strategies. Information strategies may include surveys, focus groups, and consultation with professional and civic groups.
- Consider logistical considerations that can influence the effectiveness of health communications. Consideration may include:
  - Adequacy of printing/graphic design contracts and resources to meet emergency needs
  - Availability of tools (cell phones, email equipment, laptops) needed by communications staff at the time of deployment. A "Go-Kit" to enable staff to set up operations wherever necessary is optimal.
  - Capacity of hotlines and web servers to accommodate increased usage
  - Availability of emergency personnel to staff hotlines and communication centers for extended hours and days
  - Adequacy of training in risk communication, media relations, and SARS epidemiology, clinical features, diagnostics, and surveillance.

Objective 2: In the absence of known SARS activity worldwide, make preparations for a rapid and appropriate communications response to a global recurrence or introduction into the United States.

Activities

- Prepare to manage media demands. The first jurisdiction(s) with possible or confirmed cases of SARS can expect a deluge of media attention. Local communications personnel will need to determine capacity and develop procedures for addressing demands. This may include requesting CDC communications assistance and coordinating the activities of on-site CDC communications experts with local/state communication resources.

- Increase the range and type of educational materials that will be available during an outbreak. As possible, coordinate efforts with other agencies and organizations to avoid duplication.
    - Develop a portfolio of communication, information, and education sources and materials on topics including: clinical and laboratory diagnostics, infection control, isolation and quarantine, stigmatization management, travel control authority, legal issues, and agencies' roles and responsibilities.
    - Develop and present formal educational curricula and materials in multiple formats for professional audiences.
    - Coordinate with partner agencies to prepare and establish appropriate public, healthcare provider, policy maker, and media responses to a case or outbreak of SARS, including an understanding of how the public health system will respond, roles and responsibilities of the different sectors involved, and reasonable expectations regarding the scope and effect of public health actions.
    - Establish protocols to communicate the data that will need to be reported daily after confirmation of SARS activity (e.g., morbidity and mortality figures; geographic location of cases; number of persons affected; number of persons hospitalized). As appropriate, coordinate with the CDC Director's Emergency Operations Center (DEOC) and CDC's Emergency Communications System (see below).
- Establish a mechanism in advance for reviewing and clearing SARS-related messages and materials.
- Identify a spokesperson and subject matter experts who will be available during an outbreak. The spokesperson will require training in media relations and risk communication.
- Develop websites to help manage information requests. Materials may be developed in advance and stored on a server. Health departments may choose to use or adapt materials posted on CDC's SARS website (http://www.cdc.gov/ncidod/sars).
- Consider establishing a toll-free public information hotline. Although a CDC information hotline will be available during an outbreak, state and local health departments may also wish to provide this service for local residents. Hotline staff should be trained in advance and will need access to an evolving database of frequently asked questions.
- In coordination with other emergency response personnel, identify an algorithm or specific events that will activate emergency operations activities.
- Be prepared to make use of available federal assistance**.** If requested, CDC communication experts can be dispatched immediately to a community that has a confirmed case of SARS. These persons can help coordinate communication and media relations' activities in the field and assist in the coordination of communication with public and private healthcare providers and other agencies responsible for the outbreak response.

Objective 3: Increase knowledge and awareness of SARS, and enhance understanding of preparations for its reappearance and the appropriate response to a global recurrence or introduction into the United States.

Activities

- Initiate the preparation and some dissemination of messages and materials to increase the knowledge of the public, healthcare professionals, policymakers, media, and others about SARS, travelers' advisories and alerts, infection control measures, patient management strategies, community containment measures including quarantine, and laboratory diagnostics. Public understanding of measures such as isolation and quarantine will facilitate acceptance of these approaches if needed.
- Use of a variety of approaches (e.g., increasing information available through websites and the media; collaboration with professional and civic organizations) to increase the level of knowledge about SARS. Target information to healthcare providers, public health officials, policy makers, media, and other local partners.
- Be prepared to immediately address questions related to the initial case(s) and to provide guidance to the public regarding disease susceptibility, diagnosis, and management. Case counts will need to be continually placed in context.
- Be prepared to address more complex questions. As is the case with most newly emerging microbial agents, most healthcare providers have never seen a case of SARS and will be relying on state/local health departments to provide needed information rapidly.
- Ensure the availability of communications products in multiple languages, based on the demographics of the jurisdiction. Key to this requirement is the prior establishment of CDC's capacity to translate materials into relevant languages.

V. Communications Activities in the Presence of SARS

Objective 1: Coordinate local/state and national communications efforts related to SARS.

Activities

- Make every effort to work in close consultation with CDC communications colleagues to ensure a consistent and accurate communications response.
- In the event of a widespread SARS outbreak in the United States, it may be necessary to establish a Joint Information Center (JIC) in field locations where outbreak(s) are occurring. Most state and local jurisdictions currently have plans in place to facilitate such an installation if necessary. The JIC will become operational at the beginning of an HHS-wide federal response to the outbreak and will consist of representatives from all local, state, and federal agencies involved in the outbreak response. States and localities will coordinate all communication activities through the JIC or through an emergency communications center if the JIC has not been activated. The CDC Director's Emergency Operations Center (DEOC) will coordinate CDC's interface with the JIC. Additional information on the JIC is provided in Appendix G1.
- Interact, as appropriate, with CDC's Emergency Communication System (ECS). Once SARS activity is confirmed, CDC will activate the ECS to serve as a resource to state and local communications personnel and coordinate the federal public health communication response. ECS will direct all CDC SARS-related communication activities, including communication strategy development, key message development, CDC

website management, materials development and dissemination, national media relations, media monitoring, and all other national communication components. Some ECS staff will be designated to focus on national level issues, whereas others will coordinate field personnel. The ECS will fully support JIC activities.

- Interact, as appropriate, with federal communication liaisons. To better understand and to encourage a reciprocal relationship between state and local communication officials, it is important to understand the roles of the federal communication liaisons in relation to the communications portion of the SARS response plan. Additional information can be found in Appendix G2.
- Harmonize messages used at the national and local levels (see Key Messages above).

Objective 2: Keep communications staff informed and ready with accurate, up-to-date information that is relevant to the situation in the jurisdiction.

Activities

- Develop a "library" of SARS-related material for reference. Local and state health departments should develop a listing of SARS resources and references that can be readily available to communications and public information officers. Although information on SARS is available from multiple sources, CDC's website offers the most up-to-date official information. Local and state health departments should visit the CDC website at http://www.cdc.gov/ncidod/sars/ for updated guidance, protocols, press releases, travel advisories, and educational materials in other languages.
- Equip all communications staff with a resource booklet identifying websites relating to SARS. Have the information technology department bookmark these links on staff members' workstations.
- Maintain a library of relevant articles and publications in hard copy for use during field operations.
- Know the community. Ensure that communication materials address the language needs and cultural aspects of the affected community.
- Know your hotlines. Hotlines can provide ongoing guidance on new messages and materials that need to be developed to respond to public inquiries and concerns.
- Coordinate and maintain communication with local partners, such as:
  - Public affairs directors and information officers from local and state health departments
  - City and state government public affairs offices
  - Local congressional delegation and offices
  - Local police and fire departments and emergency management officials
  - Regional HHS health officers and regional Office of Emergency Preparedness
  - Local hospital public relations/affairs departments
  - State and local Emergency Operations Center coordinators
  - Federal Emergency Operations Centers

Objective 3: Communicate key messages, and provide up-to-date information on global and domestic SARS activity.

Activities

- Participate in and make available federal agency telebriefings and satellite broadcasts on SARS.
- Provide web-accessible materials on SARS.
- Be aware of local resources. The local chapters of the American Lung Association and other organizations are helpful in disseminating educational messages to the community.
- Use websites as a central component in managing information requests from the public. Strategically designed websites can be used to organize and quickly provide information, updates, fact sheets, responses to frequently asked questions, healthcare provider resources, and media materials to a range of audiences.
- Provide information for travelers. SARS activity anywhere in the world will prompt immediate attention to travelers' movements to and from affected areas and will likely result in travelers' alert messages and surveillance at relevant ports of entry.

Appendix G1
Fact Sheet: Joint Information Center

What to does it mean to a communications specialist when a JIC is operational?

Once a Joint Information Center (JIC) is operational, all media contacts and information should be handled through this center to ensure the distribution of consistent and accurate information. The JIC will:

- Issue local public health announcements and updated information on the outbreak and the response
- Disseminate information about SARS, its management, and the possible need for travel restrictions and isolation and quarantine
- Establish a "news desk operation" to coordinate and manage media relations activities
- Provide a location for state, local, and federal communication and emergency response personnel to meet and work side-by-side in developing key messages, handling media inquiries, writing media advisories and briefing documents
- Respond to frequently occurring questions by developing fact sheets, talking points (key messages), and question-and-answer documents
- Coordinate requests for spokespersons and subject matter experts
- Issue media credentials
- Address other local/regional information requests related to the outbreak that require distribution to the media and the general public
- Develop, coordinate, and manage local websites, as required

What activities should be carried out once a decision to activate a JIC has been made?

- Once widespread SARS has been verified, activate full-scale communication activities according to the state or local risk communications plan. This may include deployment of field team(s) and assessment of staffing needs for extended hours/days at the command center. Designated staff will immediately report to the communications command center.
- Ensure that the communications command center has sufficient telephone lines to permit immediate access by field deployment teams.
- Activate or enhance a toll-free hotline, if available, and add sufficient personnel to answer incoming calls. Provide telephone response staff with resources (e.g., state or CDC website address), and direct them to provide feedback on needs for development, enhancement, or revision of current materials to meet emerging information demand. To reduce the burden on local resources, callers may be directed to the CDC information hotline if necessary. Also consider implementing a dedicated line for healthcare providers.

- Create and disseminate a media advisory that provides information on the situation, major actions taken, information about SARS, public guidance, and local resources. It will be imperative to issue information updates immediately and, as possible, to correct errors and misperceptions.

- If developed, activate the local emergency SARS website, provide links to other state government web servers, and disseminate this information widely through the media. If a website has not been developed, a link can be made available to CDC's SARS website (http://www.cdc.gov/ncidod/sars/). All media and public materials should be posted to the website, and all SARS-related information should provide a website address. The website should be used heavily for media updates.
- Provide local and external partners (e.g., medical professional associations, community leaders, community groups) with information/materials that will enable them to respond to public or healthcare provider inquiries, as necessary. Arrange to hold periodic briefings with these partners.

Appendix G2
Media Relations

One person cannot handle all aspects of media relations in the event of a widespread SARS outbreak. A JIC is the best way to coordinate and manage media relations activities. Public information officers from a range of federal, state, and local agencies will need to work side-by-side handling media inquires, writing releases, and providing information on their agencies and other duties as appropriate. If a JIC is not activated, the various participants of a JIC and the ECS should establish a daily briefing among participants for coordination and communication on media briefings and media materials.

The role of the state and local health department should be made clear in all contacts with the media and in other public communications (e.g., press briefings, interviews, teleconferences). Cooperation and understanding among all the involved agencies will greatly enhance the success of the media operation. It will be important that federal health personnel (CDC), local and state health departments, and transportation agencies work together closely. Together, these groups will create and manage the flow of information to the media. It will also be important to work closely with mayoral, governor, and congressional media and communication staff. Key messages should be used consistently to convey the priorities of state and local health departments and their actions. Public information officers at state and local health departments can offer valuable insights into important issues in the state and local community, as well as guidance in dealing with local media. In addition, they can provide information about media contacts, outlets, directories, and telephone and fax numbers to facilitate distribution of information to the media. State and local personnel may be able to locate facilities and infrastructure for briefings. Media offices at local hospital should not be overlooked; they generally have good relationships with the media, as does the local fire department public information officer. In most communities, fire departments deal on a daily basis with the local media and can be valuable resources.

Public health spokespersons should answer questions concerning SARS and the actions being taken to control and respond to the outbreak. Personnel dealing with the media should be trained on the type of questions they should answer and those that should be directed elsewhere. They should also be trained in strategies for emphasizing key message in all responses. Adhering to key messages will allow communication to be consistent over time. Key messages must be science-based, reflect current knowledge, and based on good public health practice.

Communication personnel should identify and create new messages and materials that address emerging questions and concerns of the media, public, healthcare providers, policy makers, and others. As appropriate and feasible, field team communication staff should tailor SARS education and communication materials to community needs, with a special emphasis on subgroups who are most directly affected by SARS and who may be subject to stigmatization.

The ECS or Joint Information Center should implement daily routines for informing, and responding to inquiries from the media, healthcare providers, and the public:

- Establish daily or twice-daily press briefings. Once routine briefings are established, they will be invaluable in terms of relaying rapidly changing

messages. As necessary and possible, without compromising the work commitments of subject matter experts, daily activities can be extended,
- 'In-person' press briefings are best for major public health announcements.
- Ideally, the same experts will conduct the media briefings to ensure continuity of messages. Experts should be reassuring about the ability of the public health authorities to respond to a crisis but should not minimize the severity of the situation in a way that could invalidate public concern.
- Limit media briefings to 30 to 45 minutes.
- The state or local public information officer or CDC field communication media liaison should moderate, begin, and end the briefing. The moderator should: 1) set ground rules, 2) announce times of future briefings, 3) make administrative announcements, and 3) briefly introduce each panel member
- Each panel member should speak for 3 to 5 minutes on issues related to his/her area of expertise. Questions should be held until all panel members have spoken. Questions should be directed to the moderator, who will either answer the question or refer it to the appropriate panel member.
- All spokespersons should leave at the end of the briefing and avoid participating in individual media interviews.
- The state or local public information officer (or lead communication staff person) and the CDC field liaison should be notified immediately of any potential issues (e.g. inaccurate information, reports of rumors in the community, unanswered questions) that were identified during the briefing and need to be addressed.

Appendix G3
Community Relations/Outreach

Outreach to persons who may have special needs or issues that distinguish them from the general public during an outbreak of SARS will be especially important. First responders and their families, healthcare providers and medical/hospital support personnel, and transportation officials will all have special needs for information – either to be able to perform their jobs or to ensure that their own concerns about exposure and protection are being addressed.

Local communications staff will needs to establish a daily routine for coordinating and communicating with partner organizations regarding community education and outreach activities and needs, with briefings arranged as needed. Cooperation and understanding among all the involved agencies will greatly enhance the success of the community outreach/community relations operation. It will be important to work closely with local health departments' education and community outreach staff members, who can offer valuable insights into issues that are relevant to the community.

Communication staff should make use of the resources of the ECS and JIC to facilitate coordination and management of community relations activities. Community outreach staff, health education, and public health information officers from a wide range of federal, state, and local agencies will need to work side-by-side to appropriately handle community information needs. Suggested community relations activities include the following:

- Develop and maintain a contact list of key community partners, and establish regular briefings, ideally on a daily basis. Include members of healthcare organizations and transportation officials involved in the response.
- Work with healthcare providers and other affected workers (e.g., transportation personnel) to identify and address relevant issues. Staff members are much more likely to feel confident in carrying out their duties if they feel that their risks, and the risks to their families, are being addressed and minimized.
- Establish a community telephone line to respond to the questions and concerns of state and local healthcare providers, pharmacists, transportation personnel, persons under isolation or quarantine, and other special populations as appropriate. Work with partners to implement a resource and referral list for phone line staff.
- Work with local partners and response personnel to coordinate communication and health education activities by identifying needs and reporting on activities that have been planned and executed. Activities may include: a) information campaigns for affected groups, b) education campaigns and activities for healthcare providers, including first responders; c) education and communication with state and community personnel involved in meeting community needs or community actions designed to prevent the spread of the disease, and d) activities to ensure that persons under isolation or quarantine have access to needed supplies or services.
- Tailor communication and education services and messages to affected communities. This may include meeting with community partners to identify specific community resources that can be utilized and secured.
- Develop a list of healthcare facilities in the community that can be used for information dissemination and health education activities. Coordinate with CDC

staff in initiating contact with healthcare providers. Cross-train key partners to assist in education and outreach efforts.

- In coordination with epidemiologic and medical personnel, obtain and track information daily on the numbers and location of new cases, new quarantined persons, and hospitals with SARS cases. Use these reports to determine priorities among community outreach and education efforts
- Provide feedback to and coordinate with the JIC for distribution of information and identification of information needs.

Appendix G4
CDC Field communications liaisons

The CDC response to a major SARS outbreak will take place through CDC's centralized Emergency Communications System (ECS) and through the deployment of field communication personnel. The responsibilities of CDC field personnel are to: 1) inform and advise federal efforts about the local situation and developments, 2) coordinate federal activities in such a manner that they do not contradict or otherwise impede local efforts, and 3) support state and local communication efforts, as necessary. To facilitate this coordination between state and local health department personnel and CDC communication personnel, CDC has designated two critical positions -- Field Communication Media Liaison and Field Communication Community Liaison (described below). These two roles correspond to the media relations and community relations/outreach response functions described above.

CDC Field Communication Media Liaison (FCML)

Among the activities of the CDC Field Communication Media Liaison are to:

- Work with state and local officials to facilitate the effective management of local communication efforts and the on-site communications center
- Support state/local officials in facilitating the provision and management of accurate, timely, and relevant information to the public and media (and timely and appropriate responses to errors and misinformation)
- Help enhance state and local communication efforts (e.g., obtain or verify information, prepare and debrief subject matter experts)
- Provide information to the federal (CDC and HHS) communication centers regarding local issues and developments, and coordinate federal and state/local communication.
- Serve as the principal CDC media advisor in the field, and assist the CDC ECS Leadership Team by serving as a media spokesperson when appropriate
- Assist state and local officials in preparing statements and materials to inform the public about a possible or known case of SARS in the jurisdiction, explain that health officials are working with CDC to confirm or rule-out the diagnosis (or to prevent further transmission), and inform the public about measures underway to prevent the spread of infection.
- Work with the lead CDC Center for SARS (NCID) to determine the most appropriate messages and timing for the notification of the news media and general public and to ensure proper clearance of messages and materials
- Act as CDC representative for coordination with the JIC for factual and consistent distribution of information and identification of information needs
- As necessary, help locate authorized public health spokespersons, and assist in directing local media to previously identified reliable state and local subject matter experts on SARS (e.g., local health officers and infectious disease physicians)
- Assist state and local officials in preparing for media interviews, developing media materials, and scheduling and managing media interviews. This includes assisting with logistics and working with local, state, and local officials to lease space as needed for briefings and other communications activities.
- Provide regular updates to CDC's ECS regarding local developments, concerns, and issues.

CDC Field Communication Community Liaison (FCCL)

CDC's communication plans include a Field Communication Community Liaison to serve as a CDC community relations advisor in the field. This person can assist local/state health department officials and the CDC SARS Response Team Leader in serving as a contact point to local hospitals and infectious disease specialists. The liaison can play an important role in assisting with communication tasks relevant to the implementation of control measures (e.g., use of personal protective equipment, isolation and quarantine). The liaison will attend all CDC response team meetings and provide updates to the team leader and media liaison regarding community outreach and education activities.

As many community relations activities are state and local responsibilities, the liaison should coordinate with state and local officials to assess the need for assistance. Among the activities of the CDC Field Communication Community Liaison are to:

- Assist in identifying key community partners, developing and maintaining a contact list of these partners, and scheduling and participate in daily briefings
- Assist in the management of the Joint Information Center
- Assist in the management of community outreach staff
- Assist in coordination and management of training and education outreach activities for healthcare professionals
- Assist with communication and educational activities for quarantined persons
- Participate in daily staff meetings held by the CDC field team leader.
- Send a daily community outreach activity report to the CDC team leader and to CDC's DEOC
- Request the DEOC to send new materials as updated and to provide information on new and emerging questions and issues identified from hotlines and other sources
- In coordination with local authorities, maintain a daily log of community information activities to facilitate the subsequent evaluation of the outbreak response
- In coordination with local authorities, write, edit, approve, and initiate clearance procedures for customized community outreach materials. To avoid confusing or contradictory messages, materials should be cleared by the JIC, program or content expert, state/local health departments, CDC Atlanta, and HHS.
- Assist HHS, CDC, and state and local officials in working with state and community groups.