Supplement C: Preparedness and Response in Healthcare Facilities

Summary of Changes in Version 2

The current version of Supplement C emphasizes that SARS preparedness and response planning in healthcare facilities should not occur in a vacuum but rather should build on existing preparedness activities and relationships with the public health community. Although healthcare facilities will likely play a key role in the follow-up of exposed patients and healthcare workers, it will be important to coordinate these activities with the local health department, especially for patients being discharged and for healthcare workers who live in the community. Supplement C now recommends that healthcare facilities work with health departments to coordinate this follow-up. Because activity restrictions for healthcare workers who have been exposed to SARS-CoV might depend on the level of SARS-CoV transmission in the community, Supplement C now recommends coordinating decisions on these restrictions with the health department, in accordance with the guidance in Supplement D.

The recommendations for surveillance in healthcare settings have been revised for consistency with the recommendations in Supplement B. The guidance clarifies that, in patients who have epidemiologic links to SARS-CoV, the presence of either fever or lower respiratory symptoms should prompt further evaluation. In addition, in accordance with the new SARS case definition, when persons have a high risk of exposure to SARS-CoV (e.g., persons previously identified through contact tracing or self-identified as close contacts of a laboratory-confirmed case of SARS-CoV disease; persons who are epidemiologically linked to a laboratory-confirmed case of SARS-CoV disease), the clinical criteria should be expanded to include, in addition to fever or lower respiratory symptoms, the presence of two or more other early symptoms of SARS-CoV disease.

The term “universal respiratory etiquette” has been changed to “respiratory hygiene/cough etiquette.” Because patients with respiratory infections may not present with fever, the document clarifies that the recommended practices apply to all patients with symptoms of a respiratory infection.

The section on staffing emphasizes that healthcare workers will need logistical and emotional support to help them cope with the challenges of responding to a SARS outbreak.

Supplement C: Preparedness and Response in Healthcare Facilities
(continued from previous page)

Contents

Supplement C: Preparedness and Response in Healthcare Facilities
(continued from previous page)

Preparedness and Response in Healthcare Facilities

Goals

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

Key concepts

- Rapid decision making and implementation of control strategies are essential to limiting the spread of SARS-CoV.
- Significant transmission of SARS-CoV occurs in hospitals and other healthcare settings.
- Healthcare workers, patients, and visitors can propagate and disseminate infection within and outside healthcare facilities.
- SARS-CoV transmission occurs primarily during unprotected exposures to unrecognized cases in both inpatient and outpatient settings.
- SARS-CoV transmission occurs primarily through large respiratory droplets and close-contact exposures (probably including fomites).
- SARS-CoV transmission may also occur through small-particle aerosols, especially during aerosol-generating procedures.
- Strict adherence to appropriate infection control practices, including use of personal protective equipment, is very effective in preventing transmission.

Priority activities

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

Supplement C: Preparedness and Response in Healthcare Facilities
(continued from previous page)

I. Rationale and Goals

Transmission of SARS-CoV in healthcare facilities was a major factor in the spread of SARS 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 (Booth 2003). Even in Hong Kong, where there was significant community transmission, 21% of all SARS cases occurred in healthcare workers (Ho 2003). 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 (Peiris 2003), 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 (Varia 2003).

The large number of hospital personnel who contracted SARS-CoV disease demonstrates the importance of early detection, infection control, and contact tracing 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 (Varia 2003). 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-producing procedures and lapses in infection control technique (CDC 2003).

SARS-CoV transmission in a healthcare facility 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 (Seto 2003). The success of these measures depends on exhaustive planning, clear communication, collaboration among disciplines, authoritative leadership, and provision of relevant support.

This Supplement provides recommendations for how to prepare for and respond to an introduction of SARS-CoV in a healthcare facility. 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 preparedness plans and protocols**.

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

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

(continued from previous page)

II. Lessons Learned

The following lessons from the global experience with SARS-CoV 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-CoV disease in staff, patients, and visitors contribute to rapid spread of the virus.
- Optimal control efforts require continuous analysis of the dynamics of SARS-CoV transmission in the facility and the community.
- A response to SARS can strain the resources and capacity of a healthcare facility.
- 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-CoV, 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.

Ideally, SARS planning will not occur in a vacuum but will build on existing preparedness and response plans for bioterrorism or other infectious disease emergencies and will be addressed by the same groups responsible for developing those plans.

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 a 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.

Supplement C: Preparedness and Response in Healthcare Facilities
(continued from previous page)

- Identify a SARS coordinator to direct planning and response efforts and serve as the facility's point of contact for communication 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 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 outpatient 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 and other 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 (see Core Document, III.B) 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.

Supplement C: Preparedness and Response in Healthcare Facilities
(continued from previous page)

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

Activities

- Consider using simulations ("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 in Healthcare Facilities

Components of Preparedness and Response in Healthcare Facilities

- Surveillance and Triage
- Clinical Evaluation
- Infection Control and Respiratory Hygiene
- Patient 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-CoV disease is the basis for control. SARS case surveillance, including surveillance in healthcare facilities, is also discussed in Supplement B and in the SARS response matrices for healthcare facilities (Appendix C1). Some key surveillance activities specific to healthcare facilities are described below.

Objective 1: ***In the absence of SARS-CoV transmission worldwide***, establish surveillance aimed at early detection of cases and clusters of severe unexplained respiratory infections (i.e., pneumonia) that might signal the re-emergence of SARS-CoV.

Activities

- Participate in surveillance activities to detect new cases of SARS-CoV disease, in accordance with public health guidelines (See Supplement B).
- Consider SARS-CoV disease in patients who require hospitalization for radiographically confirmed pneumonia or acute respiratory distress syndrome of unknown etiology and who have one of the following risk factors in the 10 days before illness onset:

Supplement C: Preparedness and Response in Healthcare Facilities
(continued from previous page)

  - Travel to mainland China, Hong Kong, or Taiwan,[1] or close contact[2] with an ill person with a history of recent travel to one of these areas, *OR*
  - Employment in an occupation associated with a risk for SARS-CoV exposure (e.g., healthcare worker with direct patient contact; worker in a laboratory that contains live SARS-CoV), *OR*
  - Part of a cluster of cases of atypical pneumonia without an alternative diagnosis
- Be alert for clusters of pneumonia among two or more healthcare workers who work in the same facility.
- Post visual alerts (in appropriate languages) at the entrances to all outpatient facilities (emergency departments, physicians' offices, clinics) instructing patients to inform healthcare personnel of lower respiratory symptoms when they first register for care and to practice "respiratory hygiene/cough etiquette" precautions (detailed below).
- Ensure that clinicians know where and how to promptly report a potential SARS case to hospital and public health officials (See Supplement B).

Objective 2: **In the *presence* of person-to-person SARS-CoV transmission anywhere in the world**, establish surveillance to promptly identify and report all new U.S. cases of SARS-CoV disease in persons who 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-CoV transmission locally, nationally, and internationally.
- Train intake and triage staff on how to assess for SARS risks and to use any applicable screening tools.
- Educate clinical healthcare providers about the signs and symptoms of and current risk factors for SARS-CoV disease (e.g., locations where there is SARS-CoV transmission).
- Institute a strategy to identify, evaluate, and monitor the health of staff and patients who are potentially exposed to SARS-CoV.
- 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 Section H: Access Controls). In addition to visual alerts, other potential screening measures include:
  - Priority triage of persons with lower respiratory symptoms
  - Triage stations outside the facility to screen patients before they enter
  - Telephone screening of patients with appointments
- Report cases that meet the screening criteria, in accordance with health department instructions.

[1] The 2003 SARS-CoV outbreak likely originated in mainland China, and neighboring areas such as Taiwan and Hong Kong are thought to be at higher risk due to the large volume of travelers from mainland China. Although less likely, SARS-CoV may also reappear from other previously affected areas. Therefore, clinicians should obtain a complete travel history. If clinicians have concerns about the possibility of SARS-CoV disease in a patient with a history of travel to other previously affected areas (e.g., while traveling abroad, had close contact with another person with pneumonia of unknown etiology or spent time in a hospital in which patients with acute respiratory disease were treated), they should contact the health department.

[2] Close contact: A person who has cared for or lived with a person with SARS-CoV disease or had a high likelihood of direct contact with respiratory secretions and/or body fluids of a person with SARS-CoV disease. Examples of close contact include kissing or hugging, sharing eating or drinking utensils, talking within 3 feet, and direct touching. Close contact does not include activities such as walking by a person or briefly sitting across a waiting room or office.

Supplement C: Preparedness and Response in Healthcare Facilities
(continued from previous page)

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" for evaluation of possible SARS patients, to separate potential SARS patients from other patients seeking care at the healthcare facility (see Section E: Engineering and Environmental Controls).

Objective 3: Conduct surveillance of healthcare workers caring for SARS patients.

Activities

- Healthcare workers caring for SARS patients are at increased risk for becoming infected with SARS-CoV and disseminating the virus to others. Use of personal protective equipment (PPE) will help to minimize this risk, but healthcare workers may not always be aware of minor breaches in PPE. Therefore, healthcare workers who are in close contact with SARS patients should undergo daily monitoring for symptoms suggestive of SARS-CoV disease. Because of their high risk of exposure to SARS-CoV, the clinical criteria for healthcare workers who are in close contact with SARS patients should be expanded to include, in addition to fever or lower respiratory symptoms, the presence of two or more of the other early symptoms of SARS-CoV disease (subjective fever, chills, rigors, myalgia, headache, diarrhea, sore throat, rhinorrhea).

B. Clinical Evaluation of Symptomatic Persons

To date, no specific clinical or laboratory findings can distinguish SARS-CoV disease 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-CoV disease 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, infrequent presence of upper respiratory tract symptoms, presence of radiographic evidence of pneumonia in most patients by day 7 to 10 of illness, and lymphopenia.

The clinical set point for considering SARS-CoV disease will vary by likelihood and level of risk of exposure. Potential sources of exposure will vary by the status of SARS-CoV transmission 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 respirator fit-tested emergency staff to evaluate possible SARS patients.
- Instruct staff to wear appropriate PPE (see Supplement I).

Objective 2: **In the *absence* of SARS-CoV transmission worldwide**, perform a routine evaluation of patients with respiratory illnesses and maintain a low index of suspicion for SARS-CoV disease.

In the absence of person-to-person SARS-CoV transmission anywhere in the world, the overall likelihood that a patient with fever or respiratory illness has SARS-CoV disease will be exceedingly

Supplement C: Preparedness and Response in Healthcare Facilities
(continued from previous page)

low unless there are both typical clinical findings and some accompanying epidemiologic evidence that raises the suspicion of exposure to SARS-CoV. Therefore, the diagnosis should be considered only in patients who require hospitalization for radiographically confirmed pneumonia (or acute respiratory distress syndrome) of unknown etiology and who have an epidemiologic history that raises the suspicion for SARS-CoV disease.

Activities

- Evaluate patients requiring hospitalization for radiographically confirmed pneumonia (or acute respiratory distress syndrome) of unknown etiology according to the algorithm (Figure 1) in *Clinical Guidance on the Identification and Evaluation of Possible SARS-CoV Disease among Persons Presenting with Community-Acquired Illness* (www.cdc.gov/ncidod/sars/clinicalguidance.htm).

- In the absence of SARS-CoV transmission worldwide, evaluation and management for possible SARS-CoV disease should be considered only for adults, unless special circumstances make the clinician and health department consider a child to be at potentially higher risk.

Objective 3: ***In the presence of person-to-person SARS-CoV transmission worldwide***, increase the index of suspicion as appropriate based on the patient's symptoms and epidemiologic risk factors.

Activities

- Once person-to-person SARS-CoV transmission has been documented anywhere in the world, a diagnosis of SARS-CoV disease should still be considered in patients who require hospitalization for radiographically confirmed pneumonia (or acute respiratory distress syndrome) of unknown etiology and who have an epidemiologic history that raises the suspicion for exposure to SARS-CoV (see above).

- In addition, all patients with fever or lower respiratory symptoms should be questioned about recent close contact with persons suspected to have SARS-CoV disease and about exposure to locations in which recent SARS-CoV transmission is known or suspected to have occurred. Persons with such an exposure history should be evaluated according to the algorithm (Figure 2) in *Clinical Guidance on the Identification and Evaluation of Possible SARS-CoV Disease among Persons Presenting with Community-Acquired Illness* (www.cdc.gov/ncidod/sars/clinicalguidance.htm).

- For persons with a high risk of exposure to SARS-CoV (e.g., persons previously identified through contact tracing or self-identified as close contacts of a laboratory-confirmed case of SARS-CoV disease; persons who are epidemiologically linked to a laboratory-confirmed case of SARS-CoV disease), the clinical criteria should be expanded to include, in addition to fever or lower respiratory symptoms, the presence of other early symptoms of SARS-CoV disease (subjective fever, chills, rigors, myalgia, headache, diarrhea, sore throat, rhinorrhea). The more common early symptoms include chills, rigors, myalgia, and headache. In some patients, myalgia and headache may precede the onset of fever by 12-24 hours. However, diarrhea, sore throat, and rhinorrhea may also be early symptoms of SARS-CoV disease.

(continued from previous page)

- Establish procedures for managing symptomatic healthcare workers. Healthcare workers who have cared for or been exposed to a SARS patient and who develop symptoms(s) within 10 days after exposure or patient care should immediately:
  - Contact infection control, occupational health, or a designee in each facility where they work, and
  - Report to the predetermined location for clinical evaluation.

- Manage symptomatic healthcare workers according to the algorithm (Figure 2) in *Clinical Guidance on the Identification and Evaluation of Possible SARS-CoV Disease among Persons Presenting with Community-Acquired Illness* (www.cdc.gov/ncidod/sars/clinicalguidance.htm). Decisions on return to work should be guided by policies or regulations defined by the facility and/or health department.

- Typical symptoms of SARS-CoV disease may not always be present in elderly patients and those with underlying chronic illnesses. Therefore, the diagnosis should be considered for almost any change in health status when such patients have strong risk factors.

- Once SARS-CoV transmission has been documented, the evaluation algorithm established for adults can be used in children with the following caveats:
  - Both the rate of development of radiographically confirmed pneumonia and the timing of development of such radiographic changes in children 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.

C. Infection Control and Respiratory Hygiene/Cough Etiquette

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

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

Activities

- Educate staff about the importance of strict adherence to and proper use of standard infection control measures, especially hand hygiene and isolation (see Supplement I).
- Reinforce education on the recommended procedures for Standard, Contact, and Airborne Infection Isolation precautions (www.cdc.gov/ncidod/hip/ISOLAT/Isolat.htm and Supplement I).
- Ensure that healthcare workers have access to respirator 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 exposed to SARS-CoV.
- 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 PPE, 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.

Supplement C: Preparedness and Response in Healthcare Facilities
(continued from previous page)

Objective 2: Emphasize the importance of respiratory hygiene/cough etiquette practices to help decrease transmission of respiratory infections.

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 hygiene/cough 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 hygiene/cough etiquette practices for preventing the spread of respiratory illnesses.
- Consider initiating a standard "respiratory hygiene/cough etiquette strategy" for the facility as described in the box below.

Respiratory Hygiene/Cough Etiquette Strategy for Healthcare Facilities

Respiratory hygiene/cough etiquette

To contain respiratory secretions, all persons with signs and symptoms of a respiratory infection, regardless of presumed cause, should be instructed to:

- Cover the nose/mouth when coughing or sneezing.
- Use tissues to contain respiratory secretions.
- Dispose of tissues in the nearest waste receptacle after use.
- Perform hand hygiene after contact with respiratory secretions and contaminated objects/materials.

Healthcare facilities should ensure the availability of materials for adhering to respiratory hygiene/cough etiquette in waiting areas for patients and visitors:

- Provide tissues and no-touch receptacles for used tissue disposal
- Provide conveniently located dispensers of alcohol-based hand rub
- Provide soap and disposable towels for hand washing where sinks are available

Masking and separation of persons with symptoms of respiratory infection

During periods of increased respiratory infection in the community, offer masks to persons who are coughing. Either procedure masks (i.e., with ear loops) or surgical masks (i.e., with ties) may be used to contain respiratory secretions; respirators are not necessary. Encourage coughing persons to sit at least 3 feet away from others in common waiting areas. Some facilities may wish to institute this recommendation year-round.

Droplet precautions

Healthcare workers should practice Droplet Precautions (i.e., wear a surgical or procedure mask for close contact), in addition to Standard Precautions, when examining a patient with symptoms of a respiratory infection. Droplet Precautions should be maintained until it is determined that they are no longer needed (www.cdc.gov/ncidod/hip/ISOLAT/Isolat.htm).

Supplement C: Preparedness and Response in Healthcare Facilities
(continued from previous page)

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, separated 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 Supplement I).

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

Although most SARS-CoV transmission appears to occur through droplet and contact exposures, transmission by fomites and by the airborne route remain possibilities. 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. In some settings, a lack of AIIRs and/or a need to concentrate infection control efforts and resources within the facility 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 SARS patients, without use of AIIRs, effectively interrupted transmission. Thus, although single AIIRs are recommended for SARS isolation, other strategies may provide effective overall infection control.

Supplement C: Preparedness and Response in Healthcare Facilities
(continued from previous page)

Basic Activities

- As possible, admit patients with possible SARS-CoV disease to an AIIR (See Supplement I). An AIIR is a single-patient room in which environmental factors are controlled to minimize the possibility of airborne transmission of infectious agents. These rooms have specific requirements for controlled ventilation, negative pressure, and air filtration and monitoring, which are detailed in the *Guideline for Environmental Infection Control in Health-Care Facilities, 2003* (www.cdc.gov/ncidod/hip/enviro/guide.htm).

- If there is a lack of AIIRs and/or a need to concentrate infection control resources, or if AIIRs are available only in locations housing immunosuppressed patients (e.g., bone marrow transplant wards), patients may be cohorted in single rooms on nursing units that have been modified to accommodate SARS patients (see Section E: Engineering and Environmental Controls, and Supplement I).

- Even if a facility has chosen to cohort SARS patients, AIIRs are preferred for: 1) patients who are known to have transmitted SARS-CoV to other persons and 2) 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, perform procedures/tests in the patient's room (see Supplement I).

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 Section E: Engineering and Environmental Controls).

- In the context of significant SARS-CoV transmission in the facility, 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 areas during the 2003 outbreak, a logical expansion of a SARS unit was designation of certain facilities as SARS hospitals. This decision facilitated cohorting of staff and focused resources on one or a few hospitals. As shown by the experience in Toronto and Taiwan, however, designation of SARS hospitals is a difficult policy to implement. Hospitals that were not seriously affected did not want to become the repository of all SARS cases for fear of liability, 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 also take into account the availability of specialty services, both at the designated facility and at other facilities in the area.

Supplement C: Preparedness and Response in Healthcare Facilities
(continued from previous page)

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 capacity of rooms and units that will be used to house 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 (www.cdc.gov/ncidod/hip/enviro/guide.htm).
- Determine how non-AIIR rooms designated for SARS patient 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 can 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 allows the unit to be made negative pressure to surrounding areas and allows for a pressure gradient with air flow from the "cleanest" (nurses' station) to the "least clean" (patient room) area.
  - Rooms that can be converted to negative pressure in relation to the hallway
- Identify a 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 during triage and initial evaluation.
  - Determine needed ventilation, imaging, laboratory, and restroom facilities, water supply, etc., for the evaluation center.
  - Determine appropriate traffic routes and modes of transport for patients who must be transported 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 Supplement I).

F. Exposure Reporting and Evaluation

Unrecognized patients were a significant source of transmission during the 2003 SARS outbreak. Thus, rapid reporting and evaluation of persons exposed to SARS-CoV will be an important measure in early identification and isolation. Although healthcare facilities may play an active role in the follow-up of exposed patients and healthcare workers, it will be important for such follow-up to be coordinated with the health department.

Objective 1: Ensure that staff members understand the risks of SARS-CoV 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).

(continued from previous page)

Include a mechanism for sharing information with the health department on exposed patients who are being discharged and also on exposed healthcare workers.

- Establish procedures for managing unprotected high-risk exposures. These occur when a healthcare worker is in a room with a SARS patient during a high-risk aerosol-generating procedure or event 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-CoV disease, the worker:
  - Should be excluded from duty (e.g., administrative leave) for 10 days after the date of the last high-risk exposure.
  - Should be actively monitored for the development of symptoms for 10 days after the date of the last high-risk exposure. Because a healthcare worker with an unprotected high-risk exposure has been exposed to a known SARS patient, the worker should be monitored not only for fever or lower respiratory symptoms but also for the presence of the other early symptoms of SARS-CoV disease (subjective fever, chills, rigors, myalgia, headache, diarrhea, sore throat, rhinorrhea).

  Decisions regarding activity restrictions (e.g., quarantine, home/work restrictions) outside the facility should be discussed with the health department, in accordance with the recommendations in Supplement D.

- 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 recommended infection control precautions are either absent or breached. If a healthcare worker has an unprotected, non-high-risk exposure and has **no symptoms of SARS**, the healthcare worker:
  - Need not be excluded from duty.
  - Should be actively monitored for the development of fever or respiratory symptoms for 10 days after the date of the last exposure. Because a healthcare worker with an unprotected, non-high-risk exposure has been exposed to a known SARS patient, the worker should be monitored not only for fever or lower respiratory symptoms but also for the presence of the other early symptoms of SARS-CoV disease (subjective fever, chills, rigors, myalgia, headache, diarrhea, sore throat, rhinorrhea).

  Decisions regarding activity restrictions (e.g., quarantine, home/work restrictions) outside the facility should be discussed with the health department in accordance with the recommendations in Supplement D.

- Healthcare workers who develop symptoms during the follow-up period should:
  - Contact infection control, occupational health, or a designee in each facility where they work and
  - Be evaluated in accordance with the SARS clinical algorithm (www.cdc.gov/ncidod/sars/clinicalguidance.htm).

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.

Supplement C: Preparedness and Response in Healthcare Facilities
(continued from previous page)

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. 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 the prolonged use of PPE 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 mass-casualty response. Non-healthcare workers, retired healthcare workers, and volunteers may be potential resources. However, use of alternative staffing resources will require training and support.

Experience from other countries has shown that healthcare workers are likely to experience significant physical and emotional stress both during and after an outbreak of SARS. These issues must also be addressed.

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 PPE (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 respirator fit-tested in advance (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 (see Supplement I for PPE recommendations for respiratory procedures)
  - Respiratory procedures team (e.g., bronchoscopy, sputum induction) using appropriate PPE (see Supplement I for PPE recommendations for respiratory procedures)
- 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 SARS patient-care areas. ICPs should continue not only to implement appropriate infection control measures but also to 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, work restrictions, and compliance.

Supplement C: Preparedness and Response in Healthcare Facilities
(continued from previous page)

Activities

- Inform healthcare workers that they are expected to comply with all infection control and public health recommendations. Alert them that recommendations may change as an outbreak progresses.
- Develop criteria for work restrictions for healthcare workers.
- Develop systems for follow-up of healthcare workers 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 "working quarantine" to ensure sufficient staffing levels. Healthcare workers on working quarantine should travel only between home and the healthcare facility for the duration of the restriction. Limitations on alternative employment will be needed.

Objective 4: Provide needed assistance and resources to help healthcare workers cope with the stresses of responding to a SARS outbreak.

Activities

- Arrange to provide assistance to healthcare workers on work quarantine with activities of daily life, including obtaining food, running errands, and providing child care.
- Arrange to provide healthcare workers with access to mental health professionals as needed to cope with the stresses of an outbreak.

H. Access Controls

When SARS-CoV 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. Restricting access to the facility will increase the efficacy of surveillance and screening measures.

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

Activities

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

I. Supplies and Equipment

SARS patient care requires both consumable (e.g., PPE) and durable (e.g., ventilators) supplies. Experience in other countries indicates that a SARS outbreak not only can strain a facility's supply of these resources but also can affect the ability to order replacement supplies.

Supplement C: Preparedness and Response in Healthcare Facilities
(continued from previous page)

Objective 1: Determine the current availability of and anticipated need for supplies and equipment that would be used in a SARS outbreak.

Basic Activity

- 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 (N-95 or higher level)
  - Personal air-purifying respirator (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
  - Portable x-ray units

Enhanced activity

- 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 and to the public, press, and political leaders. These needs can overwhelm resources that are essential to other response activities.

Objective 1: Communicate regularly with the health department about SARS-related activities.

Activities

- Establish a mechanism for regular contact with the local health department to report SARS activity in the facility and receive information on SARS activity in the community.
- Establish a reporting process to review discharge planning of SARS patients and information on exposed patients and healthcare workers with health department officials 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: Communicate with facility staff 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.

Supplement C: Preparedness and Response in Healthcare Facilities
(continued from previous page)

- 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 clarity and accuracy. Prepare plans for: 1) internal notification and communication with patients and healthcare workers, 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 issues 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. Some of these issues include:

Facilities
- Designation of certain hospitals to be the primary providers of SARS patient care
- 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 workers in quarantine or on home/work restrictions
- Communication with and coordination of contract staff and independent physician groups

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 workers in jobs for which they are not specifically trained

Supplement C: Preparedness and Response in Healthcare Facilities
(continued from previous page)

References

Booth CM, Matukas LM, Tomlinson GA, Rachlis AR, Rose D, et al. Clinical features and short-term outcomes of 144 patients with SARS in the Greater Toronto area. JAMA 2003;289:2801-9.

CDC. Cluster of severe acute respiratory syndrome cases among protected health-care workers -- Toronto, Canada, April 2003. MMWR 2003;52:433-6.

Ho AS, Sung JJY, Chan-Yeung M. An outbreak of severe acute respiratory syndrome among hospital workers in a community hospital in Hong Kong. Ann Intern Med 2003 139:564-7.

Peiris JSM, Chu CM, Cheng VCC, et al. Clinical progression and viral load in a community outbreak of coronavirus-associated SARS pneumonia: a prospective study. Lancet 2003;361:1767-72.

Seto WH, Tsang D, Yung RWH, Ching TY, et al. Effectiveness of precautions against droplets and contact in prevention of nosocomial transmission of severe acute respiratory syndrome (SARS). Lancet 2003;361:1519-20.

Varia M, Wilson S, Sarwal S, McGeer A, et al. Investigation of a nosocomial outbreak of severe acute respiratory syndrome (SARS) in Toronto, Canada. Can Med Assoc J 2003;169:285-92.

(continued from previous page)

Appendix C1
Matrices for SARS Response in 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 world 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 in a Healthcare Facility

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 of transmission due to:
- A large number of SARS patients,
- A significant number of unprotected exposures 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 nosocomial transmission of SARS-CoV 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 illnesses in patients and staff may represent SARS-CoV disease.

Matrices for SARS Response in Healthcare Facilities

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

- For the **inpatient and emergency department settings** (Matrix 1), control measures depend on both the level of SARS activity in the facility and in the community. If SARS patients are seen in the 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.
- In the **outpatient and long-term care settings** (Matrix 2 and Matrix 3), control measures depend on the level of SARS activity in the community.

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

Supplement C: Preparedness and Response in Healthcare Facilities
(continued from previous page)

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 have SARS cases. • In accordance with recommendations for respiratory hygiene/cough etiquette, instruct all patients with respiratory illnesses to perform hand hygiene and cover the nose/mouth when coughing or sneezing. Manage these patients with Droplet Precautions until determined that they are not needed. • **In the presence of person-to person SARS-CoV transmission in the world but no known transmission in the area around the facility**: o Place signs at all entry points detailing symptoms of and current epidemiologic risk factors for SARS and directing persons meeting these criteria to an appropriate area for evaluation. o Initiate screening of patients on entry to the emergency department for symptoms and epidemiologic links suggesting SARS. Patients with fever or lower respiratory symptoms ***and*** SARS risk factors should perform hand hygiene, wear a surgical mask (if possible), and be isolated in accordance with the recommendations in Supplement I. If airborne isolation is not possible, consider cohorting, with all patients wearing surgical masks. Evaluate patients according to the algorithm (Figure 2) in *Clinical Guidance on the Identification and Evaluation of Possible SARS-CoV Disease among Persons Presenting with Community-Acquired Illness* (www.cdc.gov/ncidod/sars/clinicalguidance.htm). o If a patient's risk of exposure to SARS-CoV is high (e.g., close contact with a laboratory-confirmed case of SARS-CoV disease), the clinical criteria should be expanded to include other early symptoms of SARS-CoV disease. • **In the presence of SARS-CoV transmission in the area around the facility**: o All persons should perform hand hygiene on entry. o Actively screen all persons entering the facility for fever and lower respiratory symptoms. All patients presenting with fever or lower respiratory symptoms should perform hand hygiene, wear a surgical mask (if possible), and be isolated for SARS in accordance with the recommendations in Supplement I. If airborne isolation is not possible, consider cohorting, with all patients wearing surgical masks. Evaluate patients according to the algorithm (Figure 2) in *Clinical Guidance on the Identification and Evaluation of Possible SARS-CoV Disease among Persons Presenting with Community-Acquired Illness* (www.cdc.gov/ncidod/sars/clinicalguidance.htm). o If a patient's risk of exposure to SARS-CoV is high (e.g., close contact with a laboratory-confirmed case of SARS-CoV disease), the clinical criteria should be expanded to include other early symptoms of SARS-CoV disease. o Intake/triage staff should follow SARS infection control and PPE guidance, as specified in Supplement I. o Limit visitors (e.g., one per patient per day). o Screen all visitors for SARS risk factors and symptoms. o Limit elective admissions and procedures. o Consider designating an area as a "SARS evaluation center" and sending all patients presenting with fever or respiratory symptoms to the center for evaluation.

Supplement C: Preparedness and Response in Healthcare Facilities
(continued from previous page)

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 person-to-person SARS-CoV transmission in the world but NO known transmission in the area around the facility:** o Patients presenting with fever or lower respiratory symptoms ***and*** epidemiologic risk factors for SARS should perform hand hygiene, wear a surgical mask (if possible), and be isolated for SARS in accordance with the recommendations in Supplement I. If airborne precautions are not possible, consider cohorting, with all patients wearing surgical masks. Evaluate patients according to the algorithm (Figure 2) in *Clinical Guidance on the Identification and Evaluation of Possible SARS-CoV Disease among Persons Presenting with Community-Acquired Illness* (www.cdc.gov/ncidod/sars/clinicalguidance.htm). o If a patient's risk of exposure is high (e.g., close contact with a laboratory-confirmed case of SARS-CoV disease), the clinical criteria should be expanded to include, in addition to fever or lower respiratory symptoms, the other early symptoms of SARS-CoV disease. • **In the presence of person-to-person SARS-CoV transmission in the world but NO known transmission in the area around the facility:** o Patients presenting with fever or lower respiratory symptoms should perform hand hygiene, wear a surgical mask (if possible), and be isolated in accordance with the recommendations in Supplement I. If airborne isolation is not possible, consider cohorting, with all patients wearing surgical masks. Evaluate patients according to the algorithm (Figure 2) in *Clinical Guidance on the Identification and Evaluation of Possible SARS-CoV Disease among Persons Presenting with Community-Acquired Illness* (www.cdc.gov/ncidod/sars/clinicalguidance.htm). o If a patient's risk of exposure is high (e.g., close contact with a laboratory-confirmed case of SARS-CoV disease), the clinical criteria should be expanded to include, in addition to fever or lower respiratory symptoms, the other early symptoms of SARS-CoV disease. 3) Designated personnel • Assign only selected, trained, and fit-tested emergency department staff to evaluate possible SARS cases. Staff should follow SARS infection control and PPE guidance, as specified in Supplement I. 4) Surveillance • Depending on directives from local/state health departments, consider reporting of patients requiring hospitalization for unexplained pneumonia who have risk factors for SARS, as specified in Supplement B. 5) Healthcare worker restrictions • Healthcare workers should notify the SARS coordinator at each facility where they work and have at least 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.

Supplement C: Preparedness and Response in Healthcare Facilities
(continued from previous page)

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 I). 2) Patient placement • Same as for "No cases of SARS in the facility." Add: • Place admitted known or potential SARS patients in AIIRs if available. • Consider cohorting admitted patients in private rooms on designated SARS units, depending on personnel and availability of AIIRs. Modify designated floors/rooms as possible. 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 appropriate respiratory protection (see Supplement I) for emergency resuscitation or respiratory procedures in known or potential SARS patients. 4) Surveillance • Conduct active surveillance targeted to healthcare workers providing care to SARS patients (e.g., 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 healthcare workers with unprotected exposures to SARS patients during high-risk procedures, and institute checks to evaluate possible symptoms. • Healthcare workers with other (non-high-risk) unprotected exposures to a SARS patient should undergo checks for possible symptoms. Furlough of these workers could be considered.

Supplement C: Preparedness and Response in Healthcare Facilities
(continued from previous page)

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 nosocomial transmission with all cases linked to a clearly identified source	1) Triage activities/access controls • Same as for "A few cases in the facility but all cases are imported." Add: • Regardless of the level of SARS activity in the 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: 3) Designated personnel • Same as for "A few cases in the facility but all cases are imported." 4) Surveillance • Implement active healthcare worker surveillance (symptom monitoring) throughout the facility. • Monitor all healthcare worker absenteeism and illnesses (e.g., through the occupational medicine clinic); evaluate for links to known SARS cases. • Monitor for and evaluate all new fevers and lower respiratory illnesses among patients. Place any patient with unexplained fever or lower respiratory symptoms on SARS precautions, and evaluate in accordance with the algorithm (Figure 2) in *Clinical Guidance on the Identification and Evaluation of Possible SARS-CoV Disease among Persons Presenting with Community-Acquired Illness* (www.cdc.gov/ncidod/sars/clinicalguidance.htm). • If a patient's risk of exposure is high (e.g., close contact with a laboratory-confirmed case of SARS-CoV disease), the clinical criteria should be expanded to include, in addition to fever or lower respiratory symptoms, the other early symptoms of SARS-CoV disease. 5) Healthcare worker restrictions • Same as for "A few cases in the facility but all cases are imported."

Supplement C: Preparedness and Response in Healthcare Facilities
(continued from previous page)

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

Level of SARS activity	Suggested actions
Cases attributed to nosocomial transmission with NO clearly identified source	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 as soon as medically indicated, with contact restrictions and health department follow-up per recommendations in Supplement D 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 potential SARS-CoV transmission from someone who develops SARS). When in contact with SARS patients, all persons should continue to follow SARS infection control guidance and PPE as specified in Supplement I. 4) Surveillance • Same as for "A larger number of cases or linked transmission." Add: • Place any patient with new fever or lower respiratory illness (not just unexplained) on SARS precautions and evaluate in accordance with the SARS clinical algorithm. • If a patient's risk of exposure is high (e.g., close contact with a laboratory-confirmed case of SARS-CoV disease), the clinical criteria should be expanded to include, in addition to fever or lower respiratory symptoms, the other early symptoms of SARS-CoV disease. 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.

Supplement C: Preparedness and Response in Healthcare Facilities
(continued from previous page)

Matrix 2: Recommendations for Outpatient Facilities/Areas

Level of SARS activity	Suggested actions
No person-to-person SARS transmission reported anywhere in the world	1) Patient screening and precautions • In accordance with recommendations for respiratory hygiene/cough etiquette, instruct all patients with symptoms of a respiratory infection to perform hand hygiene and cover the nose/mouth. Manage these patients with Droplet Precautions until it is determined that they are not needed. If there are likely to be delays in moving patients out of the waiting area, consider dividing the area so that patients with respiratory illnesses do not sit near others. 2) Healthcare worker precautions • Healthcare workers seeing patients with respiratory illness should use Droplet Precautions. • 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 waterless hand-hygiene products, surgical masks, and other applicable PPE and will need to consider the logistics of implementing a respiratory hygiene/cough etiquette strategy.

Supplement C: Preparedness and Response in Healthcare Facilities
(continued from previous page)

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

Level of SARS activity	Suggested actions
Presence of person-to-person SARS transmission worldwide but no known transmission in the area around the facility	1) Patient screening and precautions • Same as for "No person-to-person SARS transmission in the world." Add: • Screen all patients and visitors with fever or lower respiratory symptoms for SARS epidemiologic links (e.g., travel to endemic areas or contact with known cases). • Instruct anyone with fever or lower respiratory symptoms ***and*** epidemiologic risks for SARS to wear a surgical mask (if tolerated) and to 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. • If a patient's risk of exposure is high (e.g., close contact with a laboratory-confirmed case of SARS-CoV disease), the clinical criteria should be expanded to include, in addition to fever or lower respiratory symptoms, the other early symptoms of SARS-CoV disease. • Manage outpatients in accordance with *Clinical Guidance on the Identification and Evaluation of Possible SARS-CoV Disease among Persons Presenting with Community-Acquired Illness* (www.cdc.gov/ncidod/sars/clinicalguidance.htm). 2) Healthcare worker precautions • Same as for "No person-to-person SARS transmission in the world." Add: • Healthcare workers who are in direct contact with patients who might have SARS should wear full SARS PPE (see Supplement I). 3) Infrastructure issues • Same as for "No person-to-person SARS transmission in the world." Add: • The facility will need a supply of PPE (e.g., gowns, gloves, eye protection, respirators [N-95 or higher level]).
Known transmission in the area around the facility	1) Patient screening and precautions • Screen all patients and visitors for fever and lower 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. • If a patient's risk of exposure is high (e.g., close contact with a laboratory-confirmed case of SARS-CoV disease), the clinical criteria should be expanded to include, in addition to fever or respiratory symptoms, the other early symptoms of SARS-CoV disease. 2) Healthcare worker precautions • Same as for "Person-to-person SARS transmission worldwide but no known transmission in the area around the facility." 3) Infrastructure issues • Same as for "Person-to-person SARS transmission worldwide but no known transmission in the area around the facility."

Supplement C: Preparedness and Response in Healthcare Facilities
(continued from previous page)

Matrix 3: Recommendations for Long-Term Care Facilities

Level of SARS activity	*Suggested actions*
No person-to-person SARS transmission reported anywhere in the world	1) Patient precautions • In accordance with recommendations for respiratory hygiene/cough etiquette, patients who develop symptoms of a respiratory infection should be placed on Droplet Precautions until determined that they are not needed. 2) Healthcare worker precautions • Healthcare workers seeing patients with respiratory illness should use Droplet Precautions and practice frequent hand hygiene. 3) Infrastructure issues • The facility will need supplies for Droplet Precautions (masks, gloves and gowns) and hand hygiene.
Presence of person-to-person SARS transmission worldwide, but no known transmission in the area around the facility	1) Patient precautions • Same as for "No person-to-person SARS transmission reported anywhere in the world." Add: • Screen all potential admissions for symptoms and epidemiologic links to SARS. 2) Healthcare worker precautions • Same as for "No person-to-person SARS transmission reported anywhere in the world." 3) Infrastructure issues • Same as for "No person-to-person SARS transmission reported anywhere in the world." 4) Access controls • Visitors should be screened for symptoms and epidemiologic links to SARS cases. 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 person-to-person SARS transmission reported anywhere in the world." • All new admissions should be evaluated at an acute-care facility (no direct admissions). Patients with fever or lower respiratory symptoms should be evaluated according to the algorithm (Figure 2) in *Clinical Guidance on the Identification and Evaluation of Possible SARS-CoV Disease among Persons Presenting with Community-Acquired Illness* (www.cdc.gov/ncidod/sars/clinicalguidance.htm) 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 lower 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 person-to-person SARS transmission reported anywhere in the world." • Healthcare workers should undergo symptom monitoring. Symptomatic healthcare workers should be furloughed and evaluated according to the algorithm (Figure 2) in *Clinical Guidance on the Identification and Evaluation of Possible SARS-CoV Disease among Persons Presenting with Community-Acquired Illness* (www.cdc.gov/ncidod/sars/clinicalguidance.htm). 3) Infrastructure issues • Same as for "No person-to-person SARS transmission reported anywhere in the world."

Supplement C: Preparedness and Response in Healthcare Facilities
(continued from previous page)

	4) Access controls • Visitors should be actively screened for symptoms. • Visitors with symptoms should not be allowed into the facility.

Supplement C: Preparedness and Response in Healthcare Facilities
(continued from previous page)

Appendix C2
Checklist for SARS Preparedness in Healthcare Facilities

The most common source of transmission of SARS-CoV has been healthcare facilities. Consequently, control of spread in healthcare facilities is critical to controlling SARS. The keys to quickly controlling SARS are rapid and appropriate decision making and rapid and effective implementation of response activities. The need for rapid and effective responses requires that planning and preparedness activities precede SARS-CoV activity.

The following checklist is a planning tool for healthcare providers. The checklist format is not intended to set forth mandatory requirements or establish national standards for healthcare preparedness. Rather, each healthcare facility should determine for itself whether it is adequately prepared for disease outbreaks in accordance with its own procedures.

Structure for planning and decision making
- ❑ Designate a planning and response committee that includes representatives from a variety of departments (e.g., administration, infection control, hospital epidemiology, etc.)
- ❑ Identify the local or state health department contact who will serve as liaison for SARS preparedness planning and response.
- ❑ Identify a SARS coordinator to serve as the facility's point of contact for communication of information internally and externally.

Written SARS preparedness and response plan
- ❑ Develop written policies and work practices for SARS patients that minimize the risk of transmission to other patients, healthcare workers, and visitors.
- ❑ Define a system to review and update the plan as new information and strategies develop.

Function and capacity of the facility to respond to SARS
- ❑ Test the facility's SARS response capabilities of the facility by using "table top" or other exercises.
- ❑ Identify criteria and methods for measuring compliance with the implementation of response activities.
- ❑ Develop strategies to quickly correct deficiencies in implementation of response activities.

Surveillance, screening, triage, and evaluation in healthcare facilities
- ❑ Ensure that clinicians can promptly detect, report, and manage potential SARS patients.
- ❑ Identify a local or state health department contact to coordinate surveillance for cases of SARS.
- ❑ Develop measures for symptom monitoring and reporting of healthcare workers and patients potentially exposed to SARS-CoV, in accordance with public health recommendations.
- ❑ Educate clinical healthcare providers about signs and symptoms of and risk factors for SARS-CoV disease.
- ❑ Be prepared to recognize and report unusual clusters of pneumonia.
- ❑ Know where and how to promptly report a potential SARS case to hospital and public health officials.
- ❑ Develop procedures for rapidly implementing appropriate isolation and infection practices for potential SARS patients.
- ❑ Develop procedures to perform an appropriate and safe evaluation of patients with SARS-like illnesses that accounts for level of SARS-CoV transmission.

Infection control, isolation, and cohorting measures, and environmental controls
- ❑ Develop comprehensive isolation and infection control guidelines and strategies for patient-related activities in the hospital and optimal overall safety of staff, patients, and visitors.
- ❑ Develop a patient placement and transport plan that ensures appropriate isolation and infection control strategies to minimize the risk of transmission to staff, patients, and visitors.

Supplement C: Preparedness and Response in Healthcare Facilities
(continued from previous page)

- ❑ Develop a plan to formally monitor and reinforce compliance with PPE measures and to update those measures as needed as a SARS outbreak progresses.
- ❑ Develop optimal patient placement strategies that account for the availability of AIIRs.
- ❑ Review and ensure that air-handling capacity of rooms is adequate for isolation and infection control needs of SARS patients.

Exposure reporting and evaluation of risk

Educate staff regarding:

- ❑ Modes of SARS-CoV transmission
- ❑ Risks associated with different patient-care procedures
- ❑ Risks to healthcare workers, patients, and visitors
- ❑ Importance of reporting exposures and illness
- ❑ How and to whom to report SARS-CoV exposures and illness

Administrative and organizational 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.
- ❑ Determine whether a small group of staff, including ancillary staff, could be assigned responsibility for providing initial care for SARS patients.
- ❑ For teaching hospitals, determine what role, if any, students and other trainees (e.g., residents, fellows) will play in the care of SARS patients.
- ❑ Develop a strategy to meet the staffing needs as the number of SARS patients increases and/or personnel become ill or are quarantined.
- ❑ Develop a strategy to ensure the availability of a sufficient number of infection control practitioners (ICPs) to allow for daily monitoring and assessment of all patient-care areas.
- ❑ Develop a plan for healthcare workers that includes criteria for furloughs and work restrictions, appropriate measures to help healthcare workers comply with restrictions (including access to mental health professionals), follow-up after unprotected exposures to SARS patients, and notification of multiple facilities at which they work.
- ❑ Establish criteria and protocols for controlling access to hospitals, including admissions, transfers, discharges, and visitors.
- ❑ Develop a plan that determines when and how to involve security services to enforce access limitations.
- ❑ Establish criteria and protocols to determine when to close the facility to new admissions and transfers.
- ❑ Assess anticipated needs for consumable and durable resources required to provide care for various numbers of SARS patients, and develop a plan to meet the extra need.
- ❑ Develop a back-up plan to deal with the possibility of limited supplies.

Communication and reporting

- ❑ Establish a mechanism and contacts for regular communications with the state and local health departments.
- ❑ Develop a plan to communicate with and report to health departments information on SARS activity in the healthcare facility and information on exposed visitors.
- ❑ Develop a plan for discharge of SARS patients and appropriate follow-up and case management in the community.
- ❑ Address jurisdictional and procedural issues for the investigation of nosocomial SARS outbreaks.
- ❑ Develop a plan to provide daily updates to the infection control staff and the hospital administration regarding SARS activity in the facility and the community.

Supplement C: Preparedness and Response in Healthcare Facilities
(continued from previous page)

- ❑ Develop a plan for the flow and release of information related to SARS patient care or SARS-CoV transmission in the facility.
- ❑ Develop criteria to determine whether and how the facility will establish a SARS hotline for public inquiries.

Community healthcare delivery

Determine how the healthcare facility will participate in and be affected by community-level healthcare-related issues such as:

- ❑ Community management of SARS patients
- ❑ Expansion of AIIR facilities
- ❑ Training of first responders to safely manage SARS patients
- ❑ Development of community-wide strategies to meet healthcare worker shortages
- ❑ PPE supplies
- ❑ Funding needs
- ❑ Legal regulations
- ❑ Liability issues related to healthcare personnel