Complete Summary

GUIDELINE TITLE

Public health guidance for community-level preparedness and response to severe acute respiratory syndrome (SARS). Version 2. Supplement C: preparedness and response in healthcare facilities.

BIBLIOGRAPHIC SOURCE(S)

Centers for Disease Control and Prevention (CDC). Public health guidance for community-level preparedness and response to severe acute respiratory syndrome (SARS). Version 2. Supplement C: preparedness and response in healthcare facilities. Atlanta (GA): Centers for Disease Control and Prevention (CDC); 2004 Jan 8. 34 p.

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version issued by the Centers for Disease Control and Prevention (CDC) on November 13, 2003.

COMPLETE SUMMARY CONTENT

SCOPE
METHODOLOGY - including Rating Scheme and Cost Analysis
RECOMMENDATIONS
EVIDENCE SUPPORTING THE RECOMMENDATIONS
BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS
IMPLEMENTATION OF THE GUIDELINE
INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES
IDENTIFYING INFORMATION AND AVAILABILITY
DISCLAIMER

SCOPE

DISEASE/CONDITION(S)

Severe acute respiratory syndrome (SARS)

GUIDELINE CATEGORY

Management
Prevention

CLINICAL SPECIALTY

Infectious Diseases
Internal Medicine
Preventive Medicine

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Clinical Laboratory Personnel
Emergency Medical Technicians/Paramedics
Health Care Providers
Hospitals
Nurses
Physician Assistants
Physicians
Public Health Departments

GUIDELINE OBJECTIVE(S)

To present recommendations for severe acute respiratory syndrome (SARS) preparedness and response in healthcare facilities

TARGET POPULATION

Persons in healthcare facilities including patients, visitors, and healthcare workers

INTERVENTIONS AND PRACTICES CONSIDERED

Components of Preparedness and Response in Healthcare Facilities

1. Surveillance and triage
2. Clinical evaluation
3. Infection control and respiratory hygiene
4. Patient isolation and cohorting
5. Engineering and environmental controls
6. Exposure reporting and evaluation
7. Staffing needs and personnel policies
8. Hospital access controls
9. Supplies and equipment
10. Communication and reporting

MAJOR OUTCOMES CONSIDERED

- Rates of transmission of severe acute respiratory syndrome-associated coronavirus (SARS-CoV) in healthcare facilities during the 2003 global epidemic
- Number of hospital personnel who contracted SARS-CoV disease during the 2003 outbreak

- Effectiveness of early detection and isolation of cases, strict adherence to infection control precautions, and aggressive contact tracing and monitoring in minimizing the impact of the 2003 outbreak of severe acute respiratory syndrome (SARS) in healthcare facilities

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Not stated

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Not stated

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

The guideline was prepared by the Centers for Disease Control and Prevention's (CDC) Severe Acute Respiratory Syndrome (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. The working groups derived the guidance document from lessons learned during the 2003 epidemic, other CDC

preparedness and response plans, and the advice, suggestions, and comments of state and local health officials and representatives of professional organizations, convened by means of teleconferences and meetings. Meetings were held on August 12-13, 2003 (public health preparedness and response), September 12, 2003 (preparedness in healthcare facilities), and September 18, 2003 (laboratory diagnostics).

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

This is an updated version of the draft guidance document issued by the Centers for Disease Control and Prevention (CDC) on November 3, 2003. CDC revised the draft based on comments received from public health partners, healthcare providers, professional organizations, and others.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

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 severe acute respiratory syndrome-associated coronavirus (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 patients with severe acute respiratory syndrome (SARS) 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.

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.

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.
- 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 next section: "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 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.

Recommended Preparedness and Response Activities in Healthcare Facilities

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 the National Guideline Clearinghouse (NGC) guideline summary Supplement B: SARS Surveillance and in the SARS response matrices for healthcare facilities (see Appendix C1 in the original guideline document). 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 the NGC guideline summary Supplement B: SARS Surveillance).
- 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:
    - Travel to mainland China, Hong Kong, or Taiwan*, or close contact** with an ill person with a history of recent travel to one of these areas
    - 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)
    - 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 in the original guideline document).
- Ensure that clinicians know where and how to promptly report a potential SARS case to hospital and public health officials (See the NGC guideline summary Supplement B: SARS Surveillance).

*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.

**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.

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 the NGC guideline summary Supplement B: SARS Surveillance.
- 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 below). 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.

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 "Engineering and Environmental Controls," below).

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, and rhinorrhea).

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 the NGC guideline summary Supplement I: Infection Control in Healthcare, Home, and Community Settings).

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 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 (see Figure 1 in Clinical Guidance on the Identification and Evaluation of Possible SARS-CoV Disease among Persons Presenting with Community-Acquired Illness).
- 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).
- 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, and 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.
- 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.
    - 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). 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., respiratory syncytial virus [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.

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 the NGC guideline summary Supplement I: Infection Control in Healthcare, Home, and Community Settings).
- Reinforce education on the recommended procedures for Standard, Contact, and Airborne Infection Isolation precautions (see www.cdc.gov/ncidod/hip/ISOLAT/Isolat.htm and the NGC guideline summary Supplement I: Infection Control in Healthcare, Home, and Community Settings).
- 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, and 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 hygiene/cough etiquette practices to help decrease transmission of respiratory infections.

Many viral and some bacterial respiratory pathogens (e.g., influenza, adenovirus, respiratory syncytial 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 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 (see www.cdc.gov/ncidod/hip/ISOLAT/Isolat.htm).

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 the NGC guideline summary Supplement D: Community Containment Measures, including Non-Hospital Isolation and Quarantine).
- 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 the NGC guideline summary Supplement I: Infection Control in Healthcare, Home, and Community Settings).

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.

Basic Activities

- As possible, admit patients with possible SARS-CoV disease to an AIIR (see the NGC guideline summary Supplement I: Infection Control in Healthcare, Home, and Community Settings). 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.
- 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 "Engineering and Environmental Controls," below, and the NGC guideline summary Supplement I: Infection Control in Healthcare, Home, and Community Settings).
- 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 the NGC guideline summary Supplement I: Infection Control in Healthcare, Home, and Community Settings).

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 and Environmental Controls," below).
- 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, and 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.

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 (see 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, and so on, 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 the NGC guideline summary Supplement I: Infection Control in Healthcare, Home, and Community Settings).

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). 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, and 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 the NGC guideline summary Supplement D: Community Containment Measures, including Non-Hospital Isolation and Quarantine.

- 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, and 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 the NGC guideline summary Supplement D: Community Containment Measures, including Non-Hospital Isolation and Quarantine.

- 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
    - Be evaluated in accordance with the SARS clinical algorithm (www.cdc.gov/ncidod/sars/clinicalguidance.htm).

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.

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 the NGC guideline summary Supplement I: Infection Control in Healthcare, Home, and Community Settings for PPE recommendations for respiratory procedures).
    - Respiratory procedures team (e.g., bronchoscopy, sputum induction) using appropriate PPE (see the NGC guideline summary Supplement I: Infection Control in Healthcare, Home, and Community Settings 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.

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 one 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.

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 the NGC guideline summary Supplement B: SARS Surveillance. 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.

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.

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.

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.
- 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.

Refer to the original guideline document for information regarding healthcare system involvement in community healthcare delivery issues.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is not specifically stated for each recommendation. The working groups derived the guidance document from lessons learned during the 2003 epidemic, other Centers for Disease Control and Prevention (CDC) preparedness and response plans, and the advice, suggestions, and comments of state and local health officials and representatives of professional organizations.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Rapid identification and isolation of all potential severe acute respiratory syndrome (SARS) patients
- Implementation of infection control practices and contract tracing to interrupt severe acute respiratory syndrome-associated coronavirus (SARS-CoV) transmission
- Rapid communication within healthcare facilities and between healthcare facilities and health departments

POTENTIAL HARMS

Not stated

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

The appendices in the original guideline document provide information to assist in implementing the preparedness and response measures:

- Appendix C1: Matrices for SARS Response Healthcare Facilities
    - Matrix 1. Recommendations for Inpatient Facilities and Emergency Departments
    - Matrix 2. Recommendations for Outpatient Facilities/Areas
    - Matrix 3. Recommendations for Long Term Care Facilities
- Appendix C2: Checklist for SARS Preparedness in Healthcare Facilities

IMPLEMENTATION TOOLS

Chart Documentation/Checklists/Forms
Patient Resources
Slide Presentation

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Staying Healthy

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Centers for Disease Control and Prevention (CDC). Public health guidance for community-level preparedness and response to severe acute respiratory syndrome (SARS). Version 2. Supplement C: preparedness and response in healthcare facilities. Atlanta (GA): Centers for Disease Control and Prevention (CDC); 2004 Jan 8. 34 p.

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2003 Nov 3 (revised 2004 Jan 8)

GUIDELINE DEVELOPER(S)

Centers for Disease Control and Prevention - Federal Government Agency [U.S.]

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GUIDELINE COMMITTEE

Centers for Disease Control and Prevention Severe Acute Respiratory Syndrome (SARS) Preparedness Committee

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Not stated

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version issued by the Centers for Disease Control and Prevention (CDC) on November 13, 2003.

GUIDELINE AVAILABILITY

Electronic copies: Available from the Centers for Disease Control and Prevention (CDC) Web site:

- HTML Format
- Microsoft Word
- Portable Document Format (PDF)

Print copies: Available from the Centers for Disease Control and Prevention, MMWR, Atlanta, GA 30333. Additional copies can be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-9325; (202) 783-3238.

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- In the absence of SARS-CoV transmission worldwide: guidance for surveillance, clinical and laboratory evaluation, and reporting. Atlanta (GA): Centers for Disease Control and Prevention (CDC); 2004 Jan 8. 15 p.

  Electronic copies: Available from the CDC Web site.

- Clinical guidance on the identification and evaluation of possible SARS-CoV disease among persons presenting with community-acquired illness. Atlanta (GA): Centers for Disease Control and Prevention (CDC); 2004 Jan 8. 15 p.

  Electronic copies: Available from the CDC Web site.

- PowerPoint Slide Set: SARS Preparedness and Response in Healthcare Facilities.

  Electronic copies: Available from the CDC Web site in PDF format and as Microsoft PowerPoint downloads.

See also:

- Appendix C1: Matrices for SARS Response in Healthcare Facilities.
- Appendix C2: Checklist for SARS Preparedness in Healthcare Facilities.

  Electronic copies: Available from the CDC Web site in PDF format and as Microsoft Word downloads.

Print copies: Available from the Centers for Disease Control and Prevention, MMWR, Atlanta, GA 30333. Additional copies can be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-9325; (202) 783-3238.

PATIENT RESOURCES

The following is available:

- Information for SARS Patients and Their Close Contacts. Atlanta (GA): Centers for Disease Control and Prevention (CDC); 2004 Feb 6.
- Infection Control Precautions for SARS Patients and Their Close Contacts in Households. Atlanta (GA): Centers for Disease Control and Prevention (CDC); 2004 Jan 8.

Electronic copies: Available from the Centers for Disease Control and Prevention (CDC) Web site.

Print copies: Available from the Centers for Disease Control and Prevention, MMWR, Atlanta, GA 30333. Additional copies can be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-9325; (202) 783-3238.

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By

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NGC STATUS

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