FACT SHEET

Guidance for SARS Preparedness for Infection Control

To prepare for the possibility of the reemergence of SARS, health care facilities need to plan now to create the infrastructure to deal with single or multiple cases of SARS.

Lessons Learned About SARS Transmission

Transmission Risks

Information from the spring 2003 outbreak suggests that SARS is transmitted primarily through close contact with infected persons. It is most likely spread via respiratory droplets; however, the possibility of airborne transmission and spread through contaminated objects cannot be excluded. Exposure to SARS patients around the time an aerosol-generating procedure (e.g., intubation, bronchoscopy, nebulizer treatment) is performed may increase transmission risks to healthcare workers.

The greatest risk of SARS transmission is from unprotected exposures to unrecognized cases in inpatient and outpatient settings. Patients and those who accompany them to a healthcare setting may be a source of infection. Therefore, prevention of SARS must begin the moment a patient or visitor walks through the door of an emergency department or outpatient office.

Healthcare Worker Protection

Observations of healthcare workers using personal protective equipment (PPE) for SARS protection identified the need for training on how to properly don, use, and remove this equipment. Wearing PPE for extended periods is burdensome and can lead to lapses in PPE protocol and opportunities for exposure. Healthcare workers may need scheduled breaks from wearing PPE to reduce this burden and provide greater safety.

SARS Preparedness Planning

SARS will be managed at the administrative level but prevented at the patient level. Frontline healthcare personnel are the key to preventing SARS. They must be alert for patients with symptoms of SARS and take immediate action to prevent transmission. Patient-focused pre-event planning is therefore essential to prepare for SARS.

Patient-Focused Pre-Event Planning in Emergency Departments and Outpatient Offices

Implementing infection control procedures can prevent the spread of SARS. When a patient with respiratory symptoms presents to an emergency department or outpatient office, there are numerous contact points at which opportunities arise for transmission, including:

- Triage and reception
- Waiting rooms
- Examination by the healthcare provider
- Transport (e.g., for diagnostic tests, hospital admission)
- During respiratory treatment
- Hospital admission

Triage and Reception

Prevention must begin at the first point at which a person with suspect or probable SARS encounters the healthcare system. Examine triage, reception, and appointment procedures. Train personnel to query patients about respiratory symptoms and to observe for such symptoms in patients and visitors. Instruct personnel in procedures to follow with patients that are symptomatic.

Waiting Rooms

As the infected patient (or an infected person accompanying the patient) waits for care, other persons in the waiting area could be exposed. Steps for preventing exposures could include:

- Posting visual alerts instructing patients to immediately report symptoms of a respiratory infection and to use "respiratory etiquette"
- Providing separate sick and well patient waiting areas

Creating physical barriers between patients and triage/reception personnel may further reduce the risk of exposure.

Respiratory Etiquette

Because SARS spreads primarily via respiratory droplets, practicing respiratory etiquette is a simple intervention that confines infectious material at its source. To facilitate respiratory etiquette, outpatient facilities should consider:

- Instructing persons with symptoms of a respiratory infection to cover their nose and mouth with a tissue when coughing or sneezing
- Making hand hygiene products and tissues available in waiting areas
- Providing designated containers for disposal of used tissues
- Offering masks to symptomatic patients

Examination by the Healthcare Provider

Examining a patient presents an opportunity for SARS transmission to healthcare personnel. In preparing for the possibility that a patient may be a suspect or probable case of SARS, it is important to plan in advance where the examination will be conducted and what PPE the provider will wear.

Healthcare providers should wear a gown, gloves, respirator (or surgical mask if a respirator is not available) and if the patient is coughing, a face shield or goggles. Assess for the availability of this equipment in the work setting. An N95 or higher respirator that has been fit tested to the healthcare worker is the preferred respiratory protection for SARS. If respirators are not available, a surgical mask should be worn. Establish a protocol and provide training on the use of PPE.

Identify an area that will be used for the initial examination of suspect or probable SARS patients. An airborne isolation room is ideal. If none is available, identify an appropriate room for this purpose, preferably one that is farthest from other patient examination areas and has the ability to have the room air directed away from the surrounding area.

Transport of Patient

Preventing SARS transmission in an emergency department or outpatient facility requires consideration of such routine procedures as patient transport and movement in the office or emergency department setting, including patient transport:

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- Determine how and by whom the patient will be transported for diagnostic procedures (e.g., chest x-ray, collection of laboratory specimens) or for hospital admission.
- Create a communication plan for notifying areas that may receive the patient (e.g., admissions office, radiology, inpatient unit) and authorities that need to know about the possible SARS case (e.g., health department, hospital infection control). Ensure phone numbers for these contacts are readily available.

Patient-Focused Pre-Event Planning in Hospitals

Hospital-based healthcare workers should also consider how patients with known or suspect SARS will be handled from the point of initial contact. One way to do this is to create scenarios based on possible events that might occur and to conduct planning exercises to develop a workable procedure for managing SARS patients. The two questions that could be used to develop scenarios are:

- What would happen today if a patient with suspect or probable SARS is being admitted to the hospital?
- What would happen today if a patient who has been in the hospital for a week with a diagnosis of pneumonia is found to have SARS?

A response plan for these scenarios can be developed from an individual (e.g., infection control professional, head nurse, attending physician) or group (e.g., nursing unit) perspective. The following are some questions to start the planning process:

- Where would the patient be isolated?
- How would the patient be handled throughout the admissions process?
- Who would care for the patient?
- Do personnel know what PPE to wear for working with suspect or probable SARS?
- Do personnel know how to properly don, use, and remove PPE?

Plan for a situation in which a SARS patient needs to be placed on a ventilator. Determine:

- Who will perform the procedure
- Where it will be performed
- What PPE will be worn

Plans should also be made for how family members and other persons who have had contact with the SARS patient will be managed and whether they will be permitted to enter the hospital.

Identify who needs to be in the communications loop and obtain their contact numbers (e.g., local health department, infection control, hospital administration)

The key concerns about a hospitalized patient with unrecognized SARS are the implementation of immediate control measures and establishing systems to identify and monitor exposures:

- Has the patient been isolated? If not, what isolation room would be used?
- Does anyone else have symptoms of SARS? How would we find out?
- Who has been exposed (e.g., healthcare workers, other patients, visitors)? How would we find out?
- What would be done with exposed patients and healthcare workers?

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Creating the Organizational Infrastructure

SARS preparedness planning is similar to disaster, bioterrorism, and pandemic influenza planning. All require:

- Multidisciplinary facility coordinating teams
- Collaboration with community and public health planning groups
- Creation of internal and external communication channels
- Patient admission planning
- Contingency planning for surge capacity

Therefore, if plans have been developed for one of these events, the infrastructure for SARS can be built on what already is in place.

The following highlights aspects of the planning process that are relevant to infection control (a more detailed planning guide for hospitals will be available on the CDC website for SARS).

Multidisciplinary Facility Coordinating Teams

A multidisciplinary team for dealing with SARS should minimally comprise representation from the following disciplines:

- Scientific leadership (healthcare, epidemiology, infection control)
- Administrative leadership
- Clinical representation
- Engineering/environmental services
- Communications/public relations
- Safety/security

Collaboration with Community and Public Health Planning Groups

Involve the following community and public health groups in SARS preparedness planning:

- State and local health department
- Disaster preparedness planning groups
- Healthcare facility planning groups

Creation of Internal and External Communications Channels

Solidify channels of organizational communication now, including:

- Health department contacts
- Chain of internal communication
- Responsibility for media communications
- Scientific spokesperson

Patient Admission Planning

Planning for the admission of SARS patients involves identifying areas that will be used for their care, and deciding whether and how these patients will be cohorted.

The following categories of patients will need to be segregated from each other; corresponding staffing assignments also may be prudent:

- Probable SARS patients
- Suspect SARS patients
- Asymptomatic patients exposed to SARS
- Asymptomatic patients NOT exposed to SARS

It will be necessary to involve facility engineering in determining the optimal locations for cohorting probable and suspect SARS patients.

Evaluate Current Airborne Isolation Capacity

Identify and check the functioning of all existing airborne isolation rooms in the facility. Also identify areas that could be converted to provide airborne isolation if necessary. Areas selected for cohorting SARS patients should be:

- Sealed off from other patient areas
- Have negative pressure relative to surrounding areas
- Have exhaust directly outside (>25 ft. from intake) or pass through an HEPA filter

Some facilities may need or want to supplement with a portable HEPA unit or ultraviolet lighting.

Configuration of SARS Units

If a SARS unit is created, some modification to the usual placement of supplies may be necessary. Therefore, planning should include assigning designated locations for PPE and other isolation supplies, waste and linen receptacles, and receptacles for soiled equipment and PPE. Responsibility should be assigned for restocking isolation units, removing waste materials and soiled linens, and reprocessing used PPE.

A SARS unit should have traffic and work patterns that limit contact with the unit and with patients to that which is necessary to provide and support patient care. Established procedures will be needed for entering and leaving the unit and for what PPE will be worn at all times in the unit and what will be worn for direct patient care. Work patterns should be established that confine contamination and limit spread to "clean" areas of the unit (e.g., nurses station). Physical barriers and signs may be used to alert healthcare workers and others that these areas are restricted.

Environmental Cleaning and Disinfection

Environmental services personnel have an important role and responsibility in containing the spread of SARS from environmental surfaces. Assess staffing needs to meet requirements for daily and terminal cleaning of SARS patient rooms and units. Consider assigning specially trained cleaning staff for this task. Establish a protocol for room cleaning and review it with assigned cleaning staff. A time-motion study of current room cleaning procedures will help in the assessment of staffing needs and identify weaknesses in the cleaning process that need to be corrected.

Educating and Training Healthcare Personnel

SARS planning needs to consider the various education and training needs of clinical and support staff. Areas for targeted education include:

- Clinical provider education on SARS
- Basics of SARS infection control

- Training in the use of PPE. Demonstration of competency in properly donning, using, and removing PPE may be useful in identifying additional training needs.
- Specialized training for designated SARS care teams, e.g., healthcare workers performing aerosol-generating procedures, designated environmental services personnel

Informational and instructional materials, including posters on PPE use and hand hygiene procedures, can be used to further supplement the training provided.

Patient and visitor information also is needed.

Monitoring Personnel and Contacts for SARS Transmission/Infection

Hospitals should establish systems for monitoring personnel and other patient contacts for symptoms of SARS. Healthcare personnel should be instructed to report exposures, and a system should be in place for managing those exposed to SARS. Details on monitoring are available in the fact sheet on surveillance.

Contingency Planning for Surge Capacity

There is no precise definition of "surge capacity." For purposes of this discussion, it is broadly defined as the point at which caring for SARS patients overstresses the hospital's ability to comfortably provide patient care. **Planning for surge capacity must be done well in advance of the arrival of a SARS patient**. The following are areas for surge capacity planning that most directly affect infection control.

Human Resource Needs

Human resource needs must be assessed for the number and categories of healthcare personnel required to provide SARS care for multiple patients. One of the underappreciated staffing considerations is the need for personnel to have PPE "breaks." Extended wearing of PPE is tiring and can lead to less attention to proper use of this equipment.

Staffing plans will need to consider the following:

- Staffing needs per patient per day based on complexity of care
- Role of students and trainees
- Need for PPE breaks
- How temporary staffing needs will be met if existing resources are exceeded
- Mental health and social service support for staff:
    - Mental health counseling for healthcare workers and their families
    - Child care services
    - Shopping services
    - Transportation
    - Lodging
    - Economic support

Consumable and Durable Resources

A SARS outbreak can place unprecedented demands on the supply of consumable and durable resources, especially respirators. Plan in advance for the supplies that might be required in the event of a surge in SARS patient admissions and how those supplies would be acquired.

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Limiting Hospital Contact

During a surge in SARS patient admissions, it will be necessary to restrict entry to essential personnel and visitors. The following should be considered:

- Policies that define who may enter the facility
- Designated entrances that will remain open and those that will be closed and how these will be controlled
- Logistics of fever screening if that is needed.

Monitor for Effectiveness

A SARS plan should also include a way to assess whether the plan is working. Methods and criteria for measuring plan adherence should be developed along with a means of identifying the effectiveness of the following interventions:

- Patient placement (e.g., appropriate segregation of suspect and probable SARS patients
- Surveillance for transmission in inpatients and healthcare workers
- Use of PPE; whether staff is appropriately donning, using, and removing protective garb. The use of a "buddy system," where healthcare workers monitor each other's use of PPE, has been suggested.

Begin **now** to prepare for SARS:

- Shore up procedures for triage and evaluation.
- Review use of PPE with personnel.
- Review current precautions for aerosol-generating procedures
- Solidify relationships with health departments.
- Engage colleagues in preparedness planning.

Infection control is everyone's responsibility.