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Update #5: Outbreaks of Severe Acute Respiratory Syndrome (SARS): Information and Recommendations for Health Care Providers

**Please distribute to Emergency Department Staff, Infectious Disease Physicians,
Internists, Pulmonologists, Pediatricians, Family Practice Physicians,
Infection Control Staff, Outpatient Clinic Staff, and Laboratory Directors**

The New York State Department of Health (NYSDOH) is providing this update to hospitals, outpatient clinics and local health departments to provide current information on the outbreak of SARS:

- **New York State has identified 47 cases (NYS excluding NYC: 26; New York City: 21) who meet the Centers for Disease Control and Prevention (CDC) case definition for SARS. All 47 cases are associated with travel to affected regions and not the result of transmission to healthcare workers or family contacts in New York State. To date, there have been no coronavirus positive SARS cases identified in NYS.**
- **A travel advisory has been issued for Taiwan, where community transmission is under investigation. The CDC advises that people planning elective or nonessential travel to Taiwan may wish to postpone their trips until further notice. Taiwan should be added to the list of affected areas when triaging respiratory illness.**
- **Updated CDC SARS Interim Case Definition.**
- **Updated infection control precautions for healthcare facilities across the healthcare continuum, including information on the reuse of respirators.**
- **Updated guidance on the management of health care workers exposed to SARS patients.**

I. REPORTING SUSPECT OR PROBABLE SARS CASES

Effective April 10, 2003, on an emergency basis, SARS was added to the reportable disease list (Section 2.1 of the New York State Sanitary Code). Physicians should immediately report any suspect or probable SARS cases to the local health department. If there are difficulties reaching your local health department, please contact the NYSDOH. During business hours, call 518-473-4436; after hours, call 1-866-881-2809. In New York City, call the Bureau of Communicable Disease at 1-212-788-9830; after hours, call the Poison Control Center at 1-212-764-7667 or 1-800-222-1222.

The CDC has recently revised the case definition for SARS (**updated 4/30/03**):

Case Classification:

- **Probable case:** meets the clinical criteria for severe respiratory illness of unknown etiology with onset since February 1, 2003 and the epidemiologic criteria.
- **Suspect case:** meets the clinical criteria for moderate respiratory illness of unknown etiology with onset since February 1, 2003 and the epidemiologic criteria.

1. Clinical Criteria:

- Asymptomatic or mild respiratory illness
- Moderate respiratory illness
 - a. Temperature of $>100.4^{\circ}\text{F}$ (38°C) oral temperature AND
 - b. One or more clinical findings of respiratory illness (e.g., cough, shortness of breath, difficulty breathing, or hypoxia).
- Severe respiratory illness
 - a. Temperature of $>100.4^{\circ}\text{F}$ (38°C) oral temperature AND
 - b. One or more clinical findings of respiratory illness (e.g., cough, shortness of breath, difficulty breathing or hypoxia), AND
 - c. Radiographic evidence of pneumonia, or respiratory distress syndrome, or autopsy findings consistent with pneumonia or respiratory distress syndrome without an identifiable cause.

2. Epidemiologic Criteria:

- Travel (including transit in an airport) within 10 days of onset of symptoms to an area with current or recently documented or suspected community transmission of SARS (including Mainland China and Hong Kong Special Administrative Region; Hanoi, Vietnam; Singapore; Toronto, Canada; **Taiwan**).

OR

- Close contact* within 10 days of onset of symptoms with a person known or suspected to have SARS infection.

*Close contact includes having cared for, having lived with, or having had direct contact with respiratory secretions and/or body fluids of a person known to be a suspected SARS case.

3. Laboratory Criteria:

- Confirmed
 - a. Detection of antibody to SARS-associated coronavirus (SARS-CoV) in specimens obtained during acute illness or >21 days after illness onset, or
 - b. Detection of SARS-CoV RNA by RT-PCR confirmed by a second PCR assay, by using a second aliquot of the specimen and a different set of PCR primers, or
 - c. Isolation of SARS-CoV.
- Negative
 - a. Absence of antibody to SARS-CoV in convalescent serum obtained >21 days after symptom onset.
- Undetermined
 - a. Laboratory testing either not performed or incomplete.

II. GUIDANCE FOR INFECTION CONTROL FOR SUSPECT OR PROBABLE SARS CASES (INCLUDING CLINIC, AMBULATORY, AND HOSPITAL SETTINGS)

For the Emergency Department and Other Outpatient Settings: Worldwide, health-care workers have been reported to develop SARS after caring for patients with SARS. Transmission appears to have occurred with close contact to patients with SARS before instituting recommended infection control precautions. It is imperative to have a high index of suspicion when approaching a patient with respiratory symptoms and ask the appropriate triage questions. Triage personnel need to be trained in the SARS screening protocol that is included. Also, signs that include questions with regard to the symptoms, and travel history associated with the acquisition of SARS infection, as well as exposure to a possible SARS case, should be posted in a prominent location for heightening patient awareness.

Personal protective equipment (masks, gloves and eye protection) should be readily available for triaging personnel. All patients who present with respiratory symptoms, which include influenza-like symptoms such as fever, myalgias, headache, dry cough, shortness of breath, or difficulty breathing, should immediately be given a surgical mask and be screened for SARS. If the patient screening is questionable for SARS, the triaging personnel should don a mask and other personal protective equipment, as needed, to prevent exposure while completing the screening of the patient for SARS, particularly if the patient cannot tolerate a mask. An N-95 respirator or higher is the preferred mask, but a surgical mask can be worn if there is no access to N-95 respirators. (See section below on the reuse of respirators.) Any patients with respiratory symptoms that have had travel to affected areas (i.e., mainland China and Hong Kong; Hanoi, Vietnam; Singapore; Taiwan; and Toronto, Canada) or an exposure to a known or suspect SARS case within 10 days of onset should be considered for SARS in their differential diagnosis. The patient should be immediately placed in an airborne isolation room (or private room with the door closed, if not available) and be placed on the following precautions to prevent exposures:

- **Standard Precautions:** Includes the use of personal protective equipment for all patient contact to prevent an exposure to blood, skin, mucous membranes, and clothing. We additionally recommend the use of eye protection for all direct patient contact with a suspect SARS case. Hand hygiene (use of an alcohol-based waterless hand cleanser or washing hands with soap and water for 15 seconds) must be performed before donning gloves and after removing personal protective equipment.

- Contact Precautions: Includes the use of gown and gloves for all contact with the patient and the patient's environment. Equipment should be dedicated or disinfected after each use.
- Airborne Precautions: Includes isolating the patient in a room with negative pressure relative to the surrounding area and use of an N-95 filtering disposable respirator or powered air purified respirator (PAPR)* for persons entering the room. Where possible, a qualitative fit test should be conducted for N-95 respirators; detailed information on fit testing can be accessed at: <http://www.osha.gov/SLTC/etools/respiratory/oshfiles/fittesting1.html>. Airborne isolation rooms should be smoke tested prior to usage and daily when in use to validate they are working properly.

* If N-95 respirators or PAPRs are not available, a surgical mask should be worn. See Section III on reuse of respirators. Every effort should be made to have N-95 respirators available.

The Infection Control Practitioner of the facility should be notified immediately if a suspect or probable SARS case is identified. The Infection Control Practitioner should also notify the Local Health Department.

For the Inpatient and Other Institutional Settings: Worldwide, healthcare workers have been reported to develop SARS after caring for patients with SARS. Transmission appears to have occurred with close contact to patients with SARS before instituting recommended infection control precautions. It is imperative to have a high index of suspicion when approaching a patient with respiratory symptoms and ask the appropriate triage questions. Triage personnel need to be trained in the SARS screening protocol.

If a suspect or probable SARS patient is admitted to the hospital, infection control measures should include Airborne Precautions, including negative pressure isolation rooms (<http://www.cdc.gov/ncidod/hip/ISOLAT/Isolat.htm>). If this is not possible, patients should be placed in a private room with a closed door, and all persons entering the room should wear N-95 respirators or PAPRs. Regardless of the availability of facilities for Airborne Precautions, Standard and Contact Precautions should be implemented for all suspect or probable SARS patients, as outlined above.

Aerosol-generating Procedures: CDC has reported that several clusters of SARS cases associated with aerosol-generating procedures in Toronto, Hong Kong, Singapore and Hanoi, Viet Nam. These procedures may have facilitated transmission of the etiologic agent of SARS in some cases. Procedures that induce coughing can increase the likelihood of droplet nuclei being expelled into the air. These potentially aerosol-generating procedures include aerosolized medication treatments (e.g., albuterol), diagnostic sputum induction, bronchoscopy, airway suctioning, and endotracheal intubation. For this reason, healthcare personnel should ensure that patients have been evaluated for SARS before initiation of aerosol-generating procedures. Evaluation for SARS should be based on the most recent case definition available for SARS. Aerosol-inducing procedures should be performed on patients who may have SARS only when such procedures are deemed medically necessary. These procedures should be performed using airborne precautions as previously described for other infectious agents, such as *Mycobacterium tuberculosis*; (See CDC's Guidelines for Preventing the Transmission of *Mycobacterium tuberculosis* in Health-Care Facilities). In summary, when aerosol-generating procedures are performed:

- The number of personnel in the room should be limited to essential staff.
- Standard, (e.g., hand hygiene and **sealed eyewear protection**), Airborne (e.g., respiratory protective devices with a filter efficiency of greater than or equal to 95%), and Contact (e.g., gloves and gown) Precautions should be applied.
- Respirator fit should be reassessed.
- Consider the use of other higher-level respiratory protection (e.g., N99, N100, half or full face elastomeric, or powered air purifying respirator).

Reuse of Respirators: If at all possible, once a respirator is worn in the presence of a SARS patient, the respirator should be considered potentially contaminated with infectious material, and touching the outside of the device should be avoided. Upon leaving the patient's room, the disposable respirator should be removed and discarded, followed by hand hygiene. If a sufficient supply of respirators is not available, healthcare facilities may consider reuse as long as the device has not been obviously soiled or damaged. Data on reuse of respirators for SARS are not available. If N-95 respirators are reused for contact with SARS patients, implement a procedure for safer reuse to prevent contamination through contact with infectious droplets on the outside of the respirator (e.g., wear a surgical mask or face shield over the respirator). Detailed guidance is available at <http://www.cdc.gov/ncidod/sars/respirators.htm>

III. MANAGEMENT OF HEALTH CARE WORKERS EXPOSED TO SARS PATIENTS

To prevent unprotected health care worker exposures, all facilities should address the following:

- Review current procedures for early detection and isolation of suspect and probable SARS patients,
- Educate all health care personnel on signs and symptoms of SARS and recommended infection control practices,
- Review use of personal protective equipment with health care personnel, including physicians, who may care for SARS patients, and
- Follow current recommendations for aerosol-generating procedures in suspect or probable SARS patients.

If an **unprotected high-risk exposure** to a SARS infected patient occurs in the health care setting, **asymptomatic health care workers should be excluded from duty** (e.g., administrative leave) for 10 days following the exposure. Unprotected high-risk exposure is defined as presence in the same room as a probable SARS patient during a high-risk aerosol-generating procedure or event and where recommended infection control precautions are either absent or breached. Aerosol-generating procedures or events include aerosolized medication treatments, diagnostic sputum induction, bronchoscopy, endotracheal intubation, airway suctioning, and close facial contact during a coughing paroxysm. Health care workers who are excluded from duty should limit interactions outside the home, and should not go to work, school, church, or other public areas

Health care workers who have other (not high-risk) unprotected exposures to patients with SARS need not be excluded from duty, but should undergo active surveillance for symptoms as advised previously in close contact with the Local Health Department. Prior to reporting for duty each day, the health care worker should be interviewed regarding respiratory symptoms and have their temperature measured by employee health or other designee.

Health care workers who have exposures to patients with SARS while using proper infection control should still monitor their health for fever or respiratory symptoms, including measurement of body temperature at least twice daily for 10 days following the last exposure to a SARS patient. These health care workers should be contacted regularly by employee health or other designee to inquire about fever or respiratory symptoms.

Any health-care worker who has cared for or been exposed to a SARS patient who develops fever or respiratory symptoms within the 10 days following the last exposure should be immediately excluded from work and monitored for disease resolution or progression.

- If symptoms improve or resolve within 72 hours after first symptom onset, the person may be allowed to return to work after consultation with infection control and the local health department.
- If symptoms meet or progress to meet the case definition for SARS (e.g., develop fever and respiratory symptoms), infection control precautions should be continued until 10 days after the resolution of fever, provided respiratory symptoms are absent or improving.
- If after 72 hours the illness does not progress to meet the case definition, but the individual has a persistent fever or unresolving respiratory symptoms, he/she should be tested for SARS coronavirus infection. Infection control precautions should also be continued for an additional 72 hours, at the end of which time a clinical evaluation should be performed. If case definition criteria are not met at that time, the person may be allowed to return to work after consultation with infection control, the evaluating clinician and the local health department.

IV. ENVIRONMENTAL GUIDANCE FOR SARS IN THE HEALTHCARE SETTING (INCLUDING CLINIC, AMBULATORY, AND HOSPITAL SETTINGS)

Suspect and probable SARS cases should be placed in airborne isolation room. The airborne isolation room should be smoke tested before usage and daily when in use to validate it is working properly. If the facility does not have an airborne isolation room, a room with physical barriers and a door should be used. The door should remain closed while the patient is in the room.

Emergency Department and Other Outpatient Settings

The patient should be given a surgical mask in the room, and should remain masked while in the facility, if they can physically tolerate it. If masking the patient is not feasible, the patient should be asked to cover his/her mouth with a disposable tissue when coughing, sneezing or talking.

□ After the patient leaves the room, the door should remain closed to new patients for the following time in minutes to achieve a removal efficiency of 99% (*Guidelines for Preventing the Transmission of Mycobacterium tuberculosis in Health-Care Facilities*. MMWR/October 28,1994/Vol.43/No. RR-13) :

- For 1-2 air changes per hour (ACH): 138 minutes;*
- For 6 ACH: 46 minutes;**
- For 12 ACH: 23 minutes***

* Usual ACH for regular rooms.

** Most older constructed Airborne Isolation Rooms.

***Newer constructed Airborne Isolation Rooms.

Housekeeping staff who are fit-tested for proper respiratory equipment (e.g. N-95 mask) may enter the room in the interim for cleaning. If the staff are not fit-tested, they must wait the designated time until cleaning of the room can be performed.

□ Cleaning: Gown and gloves are to be worn for all cleaning of the environment in the room where a suspect SARS case was seen. Frequently touched surfaces in the examining room (exam table, counter tops, and any non-critical equipment used, such as blood pressure cuffs) should be wiped down with an Environmental Protection Agency (EPA)-registered low - or intermediate – level disinfectant and allowed to dry as per manufacturer’s instructions. Examples of acceptable disinfectants are:

- A 1:10 dilution of bleach (5.25% sodium hypochlorite) prepared fresh for use daily;
- Phenolics;
- Quaternary ammonium compounds.

After cleaning is performed, gloves are to be removed, and hand hygiene must be performed.

Inpatient Setting

Personnel involved in cleaning and disinfection activities should wear full protective attire as is required for contact and airborne precautions (disposable gown, gloves and N95 respirator) plus eye protection as long as the patient is in the room. Once the patient has left the room and the designated time above has elapsed, only gown and gloves are needed for cleaning.

Inpatient rooms should be cleaned and disinfected daily and at the time of patient transfer or discharge.

- Surfaces to be cleaned daily include:
 - a. Horizontal surfaces (e.g., over-bed table, night stand);
 - b. Frequently touched surfaces (e.g., bed rails, phone);
 - c. Lavatory facilities.
- Terminal cleaning and disinfection following transfer or discharge:
 - a. Surfaces described above;
 - b. Obviously soiled vertical surfaces;
 - c. Frequently touched surfaces such as light cords, switches and door knobs;
 - d. Curtain dividers should be changed and laundered.

Solutions used for cleaning and disinfection should be discarded after use. Thoroughly rinse and clean housekeeping equipment after use in a SARS room or area and allow equipment to dry. Launder mop reusable mop heads and cleaning cloths according to current practice.

V. ADDITIONAL INFORMATION

For additional information on this evolving outbreak, please check the following sites:

Centers for Disease Control and Prevention:

<http://www.cdc.gov/ncidod/sars/>

World Health Organization

<http://www.who.int/en/>

Updates on this outbreak, as well as the CDC and WHO alerts, will be posted on the NYSDOH’s Health Alert Network (HAN): <https://commerce.health.state.ny.us/hpn>

Reference on infection control precautions:

Garner JS, Hospital Infection Control Practices Advisory Committee. Guideline for isolation precautions in hospitals. *Infect Control Hosp Epidemiol* 1996;17:53-80, and *Am J Infect Control* 1996;24:24-52. <http://www.cdc.gov/ncidod/hip/ISOLAT/Isolat.htm>

Information in this alert was adapted from the CDC's Interim Domestic Guidance on the Use of Respirators to Prevent transmission of SARS, May 6, 2003; Interim Recommendations for Cleaning and Disinfection of the SARS Patient Environment, April 28, 2003; Updated Interim Domestic Guidelines for Triage and Disposition of Patients Who May have Severe Acute Respiratory Syndrome (SARS), April 25, 2003; Interim Guidance on Infection Control Precautions for Patients with Suspected Severe Acute Respiratory Syndrome (SARS) and Close Contacts in Households, April 29, 2003; Updated Interim Domestic Infection Control Guidance in the Health-Care and Community Setting for Patients with Suspected SARS, May 1, 2003; Interim Domestic Guidance for Management of Exposures to Severe Acute Respiratory Syndrome (SARS) for Health-Care and Other Institutional Settings, May 7, 2003; Updated Interim U.S. Case Definition for Severe Acute Respiratory Syndrome (SARS), April 30, 2003; Interim Travel Advisory: Taiwan, May 1, 2003.