

Infection Control Guidance for Health Care Workers in Health Care Facilities and Other Institutional Settings¹
SEVERE ACUTE RESPIRATORY SYNDROME (SARS)

The following fact sheet has been developed to assist health care workers (HCWs) prevent the transmission of SARS in institutions where patients suspected of having or diagnosed with SARS are being cared for². The infection control guidance is for HCWs caring for suspect or probable SARS cases. Please be advised that as more information about the cause of this illness becomes available, the information provided below may change.

For Case definitions, please visit our website: www.sars.gc.ca

The recommendations are based on the following assumptions:

- ▶ Clinical presentation of SARS is of a prodromal illness with sudden onset of fever. The lower respiratory phase begins within 3-7 days after onset of prodrome.
- ▶ Transmission is occurring through close contact with a symptomatic person. Close contact means having cared for, lived with or had face to face (within one metre) contact with, or direct contact with respiratory secretions, body fluids and/or stool of a person with SARS.
- ▶ The cases that are the most ill are the most communicable.
- ▶ There may be transmission during the prodromal period, when early symptoms are present.
- ▶ Transmission from an asymptomatic person is unlikely.
- ▶ All current evidence indicates that infection control measures, including the use of NIOSH approved N95 respirator (mask)³ or equivalent and eye protection, are effective in preventing transmission to care givers.

Until the etiology and route of transmission are known, **in addition to routine practices**, infection control measures for all possible and suspect SARS inpatients should include:

- ▶ **Airborne precautions** (including an isolation room with negative pressure relative to the surrounding area and use of an N 95 respirator (mask)³ or equivalent for persons entering the room).
- ▶ **Droplet and Contact precautions** (including use of gown, gloves and eye protection for contact with patients or their environment).

More stringent infection control recommendations may be required in specific situations (e.g. outbreak management in a health care facility).

¹Institutional settings include, but are not limited to, acute care hospitals, emergency departments, rehabilitation hospitals, mental health hospitals, and long term care facilities.

²Please refer to the Health Canada Infection Control Guidelines: Routine Practices and Additional Precautions for Preventing the Transmission of Infection in Health Care and Guidelines for Preventing the Transmission of Tuberculosis in Canadian Health Care Facilities and Other Institutional Settings.

³Respirators (masks) should filter particles one micron in size, have a 95% filter efficiency and provide a tight facial seal (less than 10% leak). Provided that an adequate facial seal is present, respirators that are NIOSH certified N95, N99, N100 meet or exceed the minimum recommendations. Other respirators (masks) may meet the filtration and fit requirements. Respirators should be fit checked. Check manufacturer's written specifications.

Patient Triage

- Triage staff should assess any patient with a fever over 38°C and one or more respiratory symptoms. The patient should be given a surgical mask to wear and interviewed immediately to determine their travel history, contact with a person diagnosed with SARS, or contact with a hospital that was closed because of SARS. If the person meets the definition for a suspect case of SARS, the individual should be moved to a separate assessment area, preferably a room with negative pressure in relation to surrounding areas. If a negative pressure room is not available, the patient should be in a single room with the door closed.
- Triage staff should wear an N 95 respirator (mask)³ or equivalent as well as eye protection (goggles or face shield) when assessing a patient suspected of having SARS. Keep mask on until SARS has been ruled out. If SARS is ruled out, then the respirator (mask) may be reused. If SARS has not been ruled out, then do not reuse the respirator (mask) after removal. HCWs in contact with a suspect or probable SARS case should not reuse the respirator (mask). When not caring for a SARS patient, if it is necessary to reuse the respirator, it should be worn, removed and stored in a manner that will prevent the HCW from becoming contaminated by the patient secretions. If an N95 respirator or equivalent is not immediately available, a surgical mask should be worn as it may provide some protection.⁴
- Patients under investigation for SARS should wear a surgical mask until SARS is excluded or until they are admitted to their room.
- Patients under investigation for SARS should be isolated separately from patients with a diagnosis of SARS.
- Triage staff should immediately inform the infection control department that a patient is under investigation for SARS.
- A consultation with an infectious disease specialist is recommended.
- Persons accompanying a patient should be given a surgical mask. If the decision is made that this is a suspect or probable SARS case that will be admitted, the visitor should be given an N95 respirator (mask)³ or equivalent and instructed regarding fit.

Precautions

In order to prevent self-contamination, health care providers should be instructed (and monitored if necessary) in the proper method for donning and removing personal protective equipment.

1. Hand Hygiene

Hand hygiene is the most important measure in preventing the spread of infection.

- Hand hygiene should be performed :
 - before contact with a patient
 - after any direct contact with a patient, before contact with the next patient
 - after contact with body fluids, secretions and excretions
 - after contact with items known or considered likely to be contaminated with respiratory secretions (e.g. oxygen tubing, masks, used tissues)
 - immediately after removing gloves and other protective equipment.

⁴A surgical mask will capture large wet particles near the nose and mouth of the wearer, thus preventing the spread from the wearer to others. However, the surgical mask does not provide adequate respiratory protection to the wearer (HCW) if the infection is airborne.

- Waterless, alcohol-based antiseptic hand rinses are effective for hand hygiene and should be readily available. If there is visible soiling, hands should be washed with soap and water before using waterless antiseptic hand rinses. If soap and water are unavailable, cleanse hands first with detergent-containing towelettes to remove visible soil.
- HCWs should not wash hands in patient washrooms.
- Patients should be instructed in proper hand hygiene.

2. **Respiratory and Eye Protection**

2.1 General Procedures

- NIOSH approved N 95 respirators (masks)³ or the equivalent are recommended for HCWs during all patient contact.
 - Respirators (masks) should be closely fitted to the face to prevent leakage around the edges and be fit checked. Respirators (masks) should be fit checked for adequate seal each time that they are used. To fit check a mask, the wearer takes a quick forceful inspiration to determine if the mask seals tightly to the face.
 - Respirators (masks) with expiration valves may be used by HCWs.
 - Respirators (masks) with expiration valves **should not** be used for suspect or probable SARS patients, because the expiratory valve could disseminate the virus into the environment.
 - A respirator (mask) which has been exposed to a case of probable SARS is considered contaminated and should be discarded. Appropriate hand hygiene and glove use should be followed.
 - A respirator (mask) should be removed carefully using the straps so as not to contaminate the HCW.
 - Respirators should be changed according to the manufacturer's recommendations.
 - Respirators are disposable but can be re-used repeatedly (unless the HCW was in contact with a suspect or probable SARS case) by the same HCW if they are properly handled and stored. Respirators should be stored in a clean, dry location. Discard the mask if it is crushed, wet, or has become contaminated by patient secretions.
 - If an N 95 respirator (mask)³ or equivalent is not immediately available, a surgical mask should be worn as it provides some protection against droplets⁴.
 - Eye protection (goggles or full face shields) should be worn:
 - ▶ when providing direct patient care unless the patient is wearing a mask.
 - ▶ during cough producing and aerosol-generating procedures⁵
 - ▶ where there is a potential for splattering or spraying of blood or other body substances
 - The eye protection should protect the eyes from splashes in all directions.
 - Prescription eye glasses **do not** provide adequate protection from droplets.
 - Goggles and face shields should be removed with care and if re-used, cleaned in a manner that will not contaminate the HCW. They should be cleaned between uses according to the manufacturer's recommendations using low level disinfection at a minimum.
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2.2 Cough Producing and Aerosol-Generating Procedures⁵

- A risk assessment should be performed prior to these procedures to determine the need for administrative controls, environmental controls, and personal protective equipment.
- The stimulation of coughing and aerosol-generating procedures on patients with suspect or probable SARS should be limited to those deemed medically necessary.
- All aerosol-generating procedures should be performed using airborne and contact precautions including an isolation room with negative pressure relative to the surrounding area and use of an N 95 respirator (mask)³ or equivalent for all persons in the room.
- **Eye protection (e.g. goggles or full face shields), gowns and gloves should be worn by all persons in the room.**
- Eye protection, (e.g. goggles or full face shields) should protect the eyes from splashes from all directions.
- At this time there is no evidence to support the need for enhanced respiratory personal protective equipment (PPE) such as the powered air purified respirator system (PAPRS) during high risk procedures involving airway interventions including endotracheal intubation and extubation. Additionally, enhanced PPE, and the increased complexity involved in the removal and disposal/cleaning/decontamination of this equipment, may increase the potential risk of self contamination.
- If PAPRS are used, specific protocols for removing, handling and decontaminating them safely between patients should be in place as the more complex the apparatus, the more difficult it is to avoid contamination of the wearer.
- Predetermined administrative controls (e.g. keeping the number of people in the room to a minimum during high risk procedures, ensuring that there is adequate equipment in the room) and environmental controls (e.g. staff performing the procedure should ensure that contaminated equipment and surfaces are discarded or cleaned/disinfected before leaving the room) should be established and followed.

3. Gloves

- Gloves should be used as an additional measure, not as a substitute for hand hygiene.
- Clean, non-sterile medical quality gloves of adequate size to wearer should be worn for all patient contact.
- Gloves should be put on before entering the patient's room.
- Gloves should be removed and hands washed prior to leaving the patient's room.
- Gloves should not be reused or washed.

4. Gowns

- Long sleeved gowns should be worn by all HCWs entering the room of a suspect or probable SARS patient.
- Gowns should be removed before leaving the patient's room.

5. Potential aerosol-generating procedures include aerosolized medication treatments (ie albuterol), diagnostic sputum induction, bronchoscopy, airway suctioning, and endotracheal intubation.

5. Patient Accommodation

- The following two preferences for patient accommodation are ranked in descending order of preference:
 - i. rooms with negative pressure in relation to surrounding areas with a minimum of 6-9 air exchanges per hour. The air should be discharged outside of the building and away from intake ducts, or through a high efficiency filter if recirculated.
 - ii. single patient rooms with toilet, hand washing and bathing facilities in the room.
- The patient's door should be kept closed whether or not patient is in the room.

6. Patient Transport within the Facility

- Ideally, patients should be confined to their rooms and patient movement outside of the room should be avoided as much as possible. All procedures (including blood collection) should be performed in the patient's room whenever possible.
- Patients should be out of their rooms for essential procedures only. If this is necessary, the transport route should avoid well populated areas if possible and a dedicated patient elevator, with no other patients on it, should be used.
- Patients should wear a surgical mask while out of their rooms. If patients cannot tolerate a surgical mask they should not leave their rooms except under extraordinary circumstances.
- If unable to keep mask on an infant, an incubator can be used for infant transportation.
- Personnel in the area to which patient is to be transported should receive prior notification and be aware of precautions to follow.

7. Patient Transfer between Institutions

- Patients with SARS should not be transferred to other health-care facilities unless medically necessary.
- It is not recommended that patients with SARS be transferred solely for the purpose of accommodation in a negative pressure room.
- If transfer is medically necessary, all necessary precautions should be taken to protect the HCW and other individuals including:
 - transport route should be the shortest route to exit the facility, with no exposure of individuals not involved in the transport.
 - a dedicated patient elevator, with no other individuals on it, should be used.
 - **during the transport, all HCWs should wear an N95 respirator (mask)³ or equivalent, eye protection, gown, and gloves.**
 - the patient should wear a surgical mask during the transfer. If the patient cannot tolerate a mask, a towel should be placed over his/her nose and mouth.

8. Patient Care Equipment (Refer to *Infection Control Guidelines Hand Washing, Cleaning, Disinfection and Sterilization in Health Care*. See web address on last page.)

- Disposable equipment should be used whenever possible.
- Equipment that is visibly soiled should be cleaned promptly with soap and water, detergents or enzymatic agents.
- Equipment should be cleaned and disinfected prior to being used with other patients. The reprocessing method required for a specific item depends on the item's intended use, the risk of infection to the patient, and the amount of soiling.

- Reusable respiratory equipment should undergo high level disinfection as a minimum, or sterilization between uses, following the manufacturer's recommendations (see Fact Sheet *Infection Control Guidance for Respiratory Equipment and Devices* at Health Canada website: <http://www.sars.gc.ca>).
- 9. Environmental Control**
- Frequent cleaning of environmental surfaces and noncritical patient care items using hospital grade germicide with virucidal label claim is recommended. Frequently touched surfaces require frequent cleaning. (Refer to *Infection Control Guidelines Hand Washing, Cleaning, Disinfection and Sterilization in Health Care*, see web address on last page).
 - Sufficient quantity of germicide in the correct concentration applied with a clean cloth are components of an effective cleaning process. Comply with contact time on label and workplace safety requirements.
 - Personnel involved in cleaning and disinfection activities should wear appropriate personal protective equipment: N95 respirator (mask) or equivalent³, eye protection (goggles or face shield), disposable gown and disposable gloves.
 - Personnel who are assigned this responsibility should be trained and supervised in cleaning and disinfection methods.
 - Soiled linen: Routine practices are sufficient. Linen should be transported from the patient's room in leak-resistant, closed laundry bags.
 - Waste: Routine practices should be applied to handling clinical waste. Double bagging of waste is not required. Routine sharps precautions should be followed.
- 10. Visitors to the room of a Suspected or Probable SARS Patient**
- Patient visits should not be permitted; exceptions may be made on compassionate grounds after prior discussion with infection control personnel.
 - Visitors should be instructed on appropriate infection control precautions (i.e., hand hygiene, long sleeved gowns, gloves, N95 respirator (mask)³ or equivalent prior to entering the room. If an N95 respirator (mask) or equivalent is not immediately available, a surgical mask should be worn as it may provide some protection⁵.
- 11. Patient and Family Education**
- Patients and family members should understand the nature of their illness and the reason for the precautions being used in order to minimize the risk of transmission of SARS to family and friends during their hospital stay and upon their return to the community.
- 12. Postmortem Care**
- Routine practices should be applied during postmortem procedures.
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Infection Control Guidelines Hand Washing, Cleaning, Disinfection and Sterilization in Health Care

<http://www.hc-sc.gc.ca/hpb/lcdc/publicat/ccdr/98pdf/cdr24s8e.pdf>

Infection Control Guidelines Routine Practices and Additional Precautions for Preventing the Transmission of Infection in Health Care

<http://www.hc-sc.gc.ca/hpb/lcdc/publicat/ccdr/99vol25/25s4/index.html>

Guidelines for Preventing the Transmission of Tuberculosis in Canadian Health Care Facilities and Other Institutional Settings

<http://www.hc-sc.gc.ca/pphb-dgspsp/publicat/ccdr-rmtc/96vol22/22s1/index.html>