

Sputum Specimen Collection

Note: Terms in bold are defined in the **Definitions** section.

If you have any questions or comments contact IPC at ipcsurvstdadmin@ahs.ca.

Best practice recommendations

Purpose

- To outline IPC best practices for safely collecting sputum to protect healthcare workers and patients.

Application

This recommendation should be followed by all Alberta Health Services (AHS) staff, medical staff, volunteers, students and other persons acting on behalf of AHS.

1. IPC practices

- 1.1 Use [Routine Practices](#), e.g., [Infection Prevention and Control Risk Assessment \(IPC RA\)](#), hand hygiene and environmental cleaning, for all patients, at all times, to reduce the risk of infection transmission.
 - 1.1.1 Follow the AHS hand hygiene [policy](#) and [procedure](#).
 - 1.1.2 Refer to the [IPC Acute Care Resource Manual](#) to determine if **Additional Precautions** are required.
 - 1.1.3 Initiate Additional Precautions (Airborne, Contact, Droplet) as indicated. Routine Practices continue even with the application of Additional Precautions.
 - 1.1.4 If an airborne isolation (**negative pressure**) room is recommended but not available refer to [Management of Patients Requiring Airborne Isolation in the Absence of Airborne Isolation Rooms](#).
 - 1.1.5 Sputum induction is an [aerosol-generating medical procedures](#) (AGMP), i.e. procedures that can induce the production of **aerosols** as a result of manipulation of a person's airway. Additional precautions are required if the patient has a known or suspected communicable disease. For example:
 - **Influenza Like Illness** - Refer to the [Assessing the Need for Additional Precautions Respiratory ILI Algorithm](#).
 - **Active pulmonary Tuberculosis** (TB) - Preferred placement for sputum collection is in an airborne isolation room. Patients may be asked to don a procedure/surgical mask during transport. Staff don a fit tested **N95 respirator** before entering the room. Early implementation of [Airborne Precautions](#) reduces the risk of transmission.
 - **MERS-CoV** - Refer to the [Assessing the Need for Additional Precautions Respiratory ILI Algorithm](#) and to the [Contact and Droplet Precautions Information Sheet](#).
- 1.2 Place Additional Precautions signage in a visible location at the entrance of the patient's room. For example, Airborne Precautions Sign or Airborne and Contact Precautions Sign.

Recommendations

2. Sputum collection

- 2.1 Refer to AHS protocols on Insite or contact the applicable program (TB and Respiratory Therapy) for sputum collection details.
- 2.2 Refer to AHS [Provincial Laboratory Guide to Specimen Collection](#) for information about tests available, specimen requirements, accompanying documentation, transportation instruction and turn-around-times.

3. Air clearance times for airborne isolation rooms

- 3.1 Keep the room door closed to allow airborne particles to clear/settle. Refer to the [AHS IPC Resource Manual for Acute Care TB Pulmonary Disease recommendations](#) for air clearance times in airborne precaution rooms or refer to the recommendations below:

Non-negative pressure rooms

- Do not admit a new patient into this room for at least 2 hours. If entering room before 2 hours wear an N95 respirator.

Negative pressure rooms

- Do not admit a new patient into this room for at least 45 minutes. If entering room before 45 minutes wear an N95 respirator.

Alternatively, if specific air exchange rates for the room are known, refer to CDC [air clearance rates](#) to determine air clearance times.

Definitions

Additional Precautions means the use of extra measures for contact with a patient known to or suspected to be infected or colonized with certain micro-organisms and based on the potential for transmission of the micro-organism.

Aerosols means a suspension of tiny particles in the air, such as dusts, mists, or fumes, whose motion is governed principally by particle size. These particles may be inhaled or absorbed by the skin, and can sometimes cause adverse health effects for workers.

Airborne exposure may occur if small particles (i.e. aerosols containing droplet nuclei) with viable microorganisms are generated, propelled over short or long distances and inhaled. Airborne communicable diseases such as TB are spread from person to person through the air when the infected person breathes out, coughs, sneezes or sings, or undergoes an aerosol generating medical procedure.

Airborne infection isolation room (AIR) means a single-occupancy patient care room used to isolate people with a suspected or confirmed airborne infectious disease. Environmental factors are controlled in an AIR to minimize the transmission of infectious agents that are usually transmitted from person to person by droplet nuclei associated with coughing or aerosolization of contaminated fluids. An AIR should provide negative pressure in the room (so that no air flows out of the room into adjacent areas) and should direct exhaust of air from the room to the outside of the building or re-circulate the air through a HEPA filter before returning it to circulation.

Fit testing means the process of fitting an N95 respirator to those that require protection against potentially harmful airborne particles in the workplace as per the Respiratory Protection Code of Practice. It is everyone's individual responsibility to have the proper N95 skills, knowledge and tools to protect themselves and the people around them in the workplace.

Induced sputum means a sputum specimen produced for diagnostic tests by aerosol administration of a hypertonic saline solution. Sputum induction is a non-invasive procedure used to obtain a sputum specimen

for laboratory diagnostics in a patient with apparent lung secretions but a non-productive cough, who is unable to spontaneously expectorate.

Negative pressure means special ventilation to create inward directional airflow to the room, relative to the adjacent area. Negative pressure keeps air from flowing out of the room and into adjacent rooms or areas.

N95 respirator means a disposable particulate respirator that is $\geq 95\%$ efficient at removing $0.3 \mu\text{m}$ particles (the most penetrating particle size) and is not resistant to oil. Staff must be fit tested for the appropriate size respirator.

Tuberculosis (TB) active pulmonary disease means the presence of current active pulmonary TB disease, most often on the basis of positive bacteriology but in approximately 15%-25% of cases on the basis of appropriate clinical and/or radiological and/or pathological presentation as well as treatment response.

References

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3. Canadian Thoracic Society. Canadian Tuberculosis Standards. 8th Edition, Canadian Journal of Respiratory, Critical Care and Sleep Medicine. 2023. Supplement SA. Retrieved from <https://www.tandfonline.com/toc/ucts20/current>.



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For more information contact
ipcsurvstdadmin@ahs.ca
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