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Communicable Disease Control Manual

Chapter 4: Tuberculosis

Appendix D: Sputum Induction



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APPENDIX D: SPUTUM INDUCTION

1.1 INDICATIONS

Sputum induction may be recommended to obtain sputum from clients who are unable to spontaneously expectorate specimens for testing¹. **A physician's order is required.**

1.2 PRECAUTIONS

Observe clients undergoing sputum induction throughout the procedure as sputum induction can cause bronchospasm. Symptoms can include excessive, uncontrolled coughing, wheezing, and shortness of breath.

Have Salbutamol (ventolin) available for immediate use in the event bronchospasm occurs. Health care providers assisting with sputum induction should be familiar with current recommendations on the initial management of bronchospasm in non-hospital settings.

NOTE: Consult with TB Services or the ordering physician in advance of sputum induction for clients with asthma, bronchitis, COPD, and clients that are heavy smokers. Prophylactic salbutamol and use of 0.9% saline instead of 3% sodium chloride (hypertonic saline) may be indicated.

1.3 INFECTION PREVENTION AND CONTROL

Out-patient Facility:

- Schedule sputum induction at the end of the day or after regular hours to minimize transmission risk.
- Do sputum induction only in areas that meet airborne infection isolation room (AIIR) requirements. Refer to Chapter 15 of the [Canadian Tuberculosis Standards \(2014\)](#) for information on characteristics of AIIR.
- Provide clients with masks (surgical/procedure type) before arrival or immediately at reception to be worn throughout the visit except while undergoing the sputum induction procedure.
- Wear a fit-tested and seal-checked disposable N95 particulate respirator while providing care to clients undergoing sputum induction (see [Appendix B](#)).
- Keep windows and doors **CLOSED** at all times during the procedure, and afterward for as long as is necessary for air clearance in the room. Consult facility policies/procedures for information on room air clearance times.
- Separate yourself from the room where sputum induction is being done while the procedure is underway, if the client can be monitored safely from outside (e.g., through a view window in the door).
- Place signage on all entrances into the area indicating that door/windows are to be kept closed, and when the room will be safe to enter without personal respiratory protection.
- Use routine facility cleaning procedures for terminal cleaning of AIIRs. If it is necessary to clean the area before the appropriate room air clearance time has passed, a fit-tested and seal-checked disposable N95 particulate respirator should be worn.

¹ Ultrasonic nebulizers are preferred over other nebulizers as they deliver a higher volume of nebulized saline (up to 70-90 mL over 15 minutes). In the absence of an ultrasonic nebulizer, routine saline nebulizers can be used, but may result in a lower specimen yield and sensitivity of results. When a routine saline nebulizer is used, this should be noted in the client's chart.



1.4 PROCEDURE FOR SPUTUM INDUCTION (1)

Procedure	Key Points
Wear a fit-tested and seal-checked disposable N95 particulate respirator when providing care for clients undergoing sputum induction. Assess the client and review chart for any precautions. Prepare for management of respiratory distress (eg. Ventolin) per facility protocol.	
Prepare the nebulizer, following manufacturer's instructions	<ul style="list-style-type: none"> • Only sterile solutions should be used • Use aseptic technique to place appropriate volume of sterile saline solution into the nebulizer chamber (approximately 3 mL for standard nebulizers) • Test nebulizer to ensure that adequate mist is produced
Prepare the client for the procedure	<p>Review:</p> <ul style="list-style-type: none"> • Purpose of the procedure • Possible side effects and when and how to call for help or assistance if needed • How to use the nebulizer unit and air compressor • Importance of staying in the room or booth until coughing has stopped • When the results will be available
Explain how to collect the specimen	<ul style="list-style-type: none"> • Rinse mouth or drink water prior to beginning procedure to remove oral contaminants • Breath in and out as per normal • Cough vigorously if spontaneous coughing does not occur • Cover mouth with tissue when coughing, except to expectorate into the specimen container • Open the specimen container and expectorate into it, taking care not to touch the inside of the container or the inside of the cap • Continue until at least 5 mL of sputum has been collected • When enough sputum has been collected, close the specimen container tightly and place it in the plastic bag
Ensure necessary equipment is present and client understands all instructions before turning the compressor on. Observe the client at all times during the procedure, watching carefully for signs of respiratory distress and manage per facility protocol.	
Completing or stopping the procedure	<ul style="list-style-type: none"> • Once 5-10mL of sputum has been obtained* • Once 15 minutes of nebulisation has been reached • If the client complains of dyspnea, chest tightness or wheeze and or feels light-headed or nauseated



	<p>*NOTE: If unable to obtain 5mL of sputum, repeat procedure x 1 only. If still unable to obtain 5mL of sputum specimen, do not repeat a third time.</p>
Procedure	Key Points
Ensure the client remains in the room until coughing has subsided	<ul style="list-style-type: none">• Contain infectious particles in the room <p>NOTE: If procedure is being done in an outpatient facility and it becomes necessary for the client to leave room before s/he has stopped coughing, ensure s/he dons a surgical/procedure-type mask.</p>
Ensure that door is kept closed after the client has completed the procedure and left the room	<ul style="list-style-type: none">• Prevent contaminated air from moving into other areas• Place a sign on all entrances into the area indicating doors/windows are to be kept closed, and when the room will be safe to enter. Consult facility policies/procedures for information on room air clearance times.
Submit specimens for TB testing	<ul style="list-style-type: none">• Ensure the specimen container is labeled properly (see Appendix C). <p>NOTE: Induced sputum specimens can appear thinner and more watery than spontaneously expectorated specimens. Ensure the specimen is identified as "induced sputum" on the requisition or it could be rejected by the laboratory.</p>
Wait required time for room to clear of infectious airborne particles or wear a fit-tested and seal-checked, disposable N-95 particulate respirator when entering the room.	
Clean room and nebulizer unit, and discard of disposable items according to jurisdictional procedures/protocols.	



REFERENCES

1. Curry International Tuberculosis Center, 2011: Tuberculosis Infection Control: A Practical Manual for Preventing TB, [73-86]. [Cited 2014 Mar 20]. Available from: <https://www.currytbcenter.ucsf.edu/products/tuberculosis-infection-control-practical-manual-preventing-tb>.