

Operational Directives	WRHA Infection Prevention & Control Program	
	Pediatric Gastric Aspirate Collection for Tuberculosis Diagnosis	Page 1 of 4
	Approval Signature: Original signed by Lori Lamont	Supersedes: New
	Date of Approval: January 2019	
Review Date: January 2022		

1.0 **PURPOSE:**

- 1.1 To provide direction and standardize the method with which gastric aspirates are collected for the diagnosis of *Mycobacterium tuberculosis* in the pediatric population throughout the region.

2.0 **PREAMBLE:**

- 2.1 Gastric aspiration (GA) is a technique used to collect mycobacterial cultures from young children when sputum cannot otherwise be collected. [\[4.2\]](#)
- 2.2 As a child sleeps, the mucociliary mechanisms sweep mucus up the airways into the mouth. The child then swallows the mucus. Swallowed mucous of *tuberculosis* positive patients often contains *Mycobacterial tuberculosis* (MTB) organisms which can then be sent for culture and testing. The highest yield specimens occur first thing in the morning due to this mucociliary mechanism. [\[4.4\]](#)
- 2.3 Data on GA multiple sampling in one day compared to specimens obtained once daily on three consecutive days suggests that hourly sampling is a higher MTB yielding process in young children; it also offers the benefit of earlier treatment start. [\[4.1\]](#)

3.0 **OPERATIONAL DIRECTIVES:**

- 3.1 Always consult Pediatric Infectious Diseases Specialist or Pediatric Respiriology before gastric aspirates are collected.
- 3.2 **Patient Preparation**
 - 3.2.1 Collect gastric aspirates after patient has had at least 6 hours of sleep and before gastric emptying is stimulated through ambulation or by eating
 - 3.2.3 Ensure patient did not eat or drink overnight
 - 3.2.4 Patient to remain NPO during collection of all three aspirates
 - 3.2.4 Collect gastric aspirates using [Airborne Precautions](#) (see Acute Care Infection Prevention & Control Manual) [\[4.2\]](#)

3.20.1



3.3 Sample Collection

3.3.1 Collect 3 gastric aspirates one hour apart using the following timing:

- First sample at **0500 hours**
- Second sample at **0600 hours**
- Third sample at **0700 hours**

Consult either **Pediatric Infectious Diseases Specialist** or **Pediatric Respiriology** if further investigation is warranted. Two more samples may be collected:

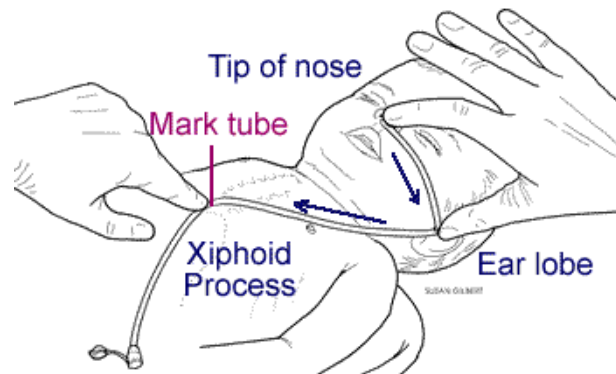
- **Day Two**, immediately upon waking
- **Day Three**, immediately upon waking

3.3.2 **Supplies** [\[4.4\]](#)

- N95 respirator for all individuals present in room
- Non sterile gloves
- 10 French or larger nasogastric (NG) tube
 - or suction tube if tube will be removed immediately after aspirate
- 30 cc syringe with appropriate connector for tube
- Marker
- Sterile water
- Sterile screw capped leak proof container
- Appropriate [requisition](#) and patient label
- Specimen bag
- A second person to assist in keeping the patient immobile

3.3.3 **Prepare to insert NG tube**

- Perform hand hygiene.
- Collect and assemble equipment, ensure suction is in working order. Connect oral suction to wall suction and have it available at the bedside.
- If necessary enlist the help of a second person to help keep the child immobile during the procedure, or swaddle the child if appropriate.
- Measure the expected distance from nose to stomach by stretching the tube from the tip of the nose to the earlobe and down to the bottom of the midpoint between the umbilicus and xiphoid process.



- Mark this spot on the tube using your marker; this is the distance the tube should be inserted into the stomach. [\[4.4\]](#)
- Place the child in the supine position, preferably with the head elevated if possible (semi-fowlers).
Perform hand hygiene, apply non-sterile gloves.

3.3.4 Insert tube in patient. [\[4.4\]](#)

- Determine preferred nostril for insertion:
 - Inspect nostrils and observe for obstruction
 - Alternate nostrils if a tube has recently been in place
- Before tube insertion, moisten the tube in the child's mouth or dip the tip of tube in sterile water for at least 5 seconds. Avoid bacteriostatic lubricants when possible.
- With the patient's head in a neutral position, insert the tube into the nare, directing it posteriorly. Aim the tip of the tube parallel to the nasal septum and superior to the surface of the hard palate.
- Flex child's head forward, toward their chest when the tube has passed through the nasopharynx, ask him or her to swallow or when appropriate provide a soother to encourage swallowing.
- Pass the measured length of the tube quickly down into the stomach once the child swallows the tube.
- If resistance to passage or a spring back of the tube is felt, pull back, rotate tube (one wrist rotation) and attempt to re-advance
- If resistance persists, withdraw the tube, allow the patient to rest, re-lubricate the tube, and insert it into the other nare. If necessary obtain new NG e.g., tube damaged, occluded, or contaminated.
- **Never use force when placing an NG tube. Do not force it past resistance, which causes trauma to the mucosa .** [\[4.5\]](#)

3.3.5 Assess tube placement

- Aspirate gastric contents into the tube
- Observe for any changes in child's behavior or respiratory status from baseline
- Confirmation of tube placement includes comparison to patient's baseline assessment of respiratory status and behavior and two of the following: [\[4.6\]](#)
 - Abdominal X-ray verifying tube is in stomach
 - Aspirate gastric contents. Note any resistance and the total volume aspirated. Observe the visual characteristics of the aspirates, noting the color and consistency.
 - Measure pH of Gastric aspirates. Gastric pH should be 5.5 or less, secretions from the tracheobronchial tree and small intestine have a pH of 6 or greater.

Once the desired tube position is obtained, anchor tube with securement device/alternative to the child's face.

Measure and document external tube length. Measurement includes the point at which the tube leaves the nares or mouth to the end of the tube. Compare original measurement each time tube is subsequently used.

3.3.6 Obtain Gastric Aspirate Specimen

- Aspirate stomach contents and place into specimen container; 10cc of gastric contents required for testing.
- If less than 10 cc of mucus is aspirated, reposition the tube and/or the patient to maximize the yield of gastric contents. [\[4.4\]](#)
- If less than 10 cc of mucus is still not aspirated, re-check placement of the tube and instill 20-30 cc of sterile water into the tube and quickly withdraw. (Note: the organism is most viable when not exposed to saline or preservatives). Add this aspirate to the aspirate obtained before the sterile water was instilled.



3.4 Specimen containers

- 3.4.1 Collect in a sterile screw capped leak proof container. Transport to lab as soon as possible. Hold samples at 4 degrees Celsius while awaiting transport. ^[4.3]
- 3.4.2. Identify specimen as Mycobacteria gastric sample as specific lab preparation is required.
- 3.4.3 Collect samples when the site Microbiology lab is open or will be open within 2 hours of collection.
HSC: Monday to Friday 0745-2330; Saturday and Sunday 0745-2300.
SBGH: daily 0800-2200.
- 3.4.4 Add 100mg of sodium carbonate to the sample to neutralize acidity if transport to lab will be delayed by greater than 4 hours. ^[4.3]
- 3.4.5 Remove gloves after disposing of equipment.
Perform Hand Hygiene.

4.0 REFERENCES:

- 4.1 A Review of *Mycobacterium tuberculosis* Culture Yield from Three Daily Gastric Aspirate Specimens versus Multiple Samples Obtained in One Day (2013-2017). (2018). M.A. Barbari, R. Consunji-Araneta.
- 4.2 [Canadian Tuberculosis Standards, 7th Edition](#). (2014, February 17). Public Health Agency of Canada. Accessed December 20, 2018.
- 4.3 [Clinical Microbiology Sample Collection Manual](#) - Under AFBs. (July 2014). Diagnostic Services Manitoba. Accessed December 20, 2018.
- 4.4 Curry International TB Center (2018) Pediatric [Tuberculosis: A Guide to the Gastric Aspirate \(GA\) Procedure](#). Accessed December 20, 2018.
- 4.5 Nasogastric or Orogastric Tube Insertion and Removal (Pediatric) (July 2017). Elsevier Performance Manager: Clinical Skills. Available at [Nursing Skills Online](#).
- 4.6 [Pediatric Confirmation of Nasally or Orally Inserted Gastric Tube for Feeding or Drainage WRHA Child Health Clinical Practice Guideline](#). Accessed January 15, 2019.

Operational Directive Contacts:

Amoy Thompson, Tuberculosis Infection Control Professional
Christine Turenne, Lab Scientist, Microbiology
Heather Adam, Clinical Microbiologist
Janice Briggs, Infection Prevention and Control Specialist
Joanne Embree, Physician
Kristy Bigelow, Infection Control Professional
Michelle Delorme, Pediatric TB Nurse Clinician
Mohammad Aman Barbari, Clinical Assistant, Children's Respiratory
Nathan Wilson, Infection Control Professional
Rachel Dwilow, Physician
Raquel Consunji-Araneta, Pediatrician
Sarah Mankelow, Manager of Patient Care, Children's Respiratory