

<b>PROGRAM Standard Operating Procedure – Laboratory Services</b>	
Title: MIC32100 – Throat Culture	Policy Number:
Program Name: Laboratory Services	
Applicable Domain: Lab, DI and Pharmacy Services	
Additional Domain(s):	
Effective Date:	Next Review Date:
Issuing Authority: Director of Health Services	Date Approved:
Accreditation Canada Applicable Standard: N/A	

**GUIDING PRINCIPLE:**

Throat swabs, as well as pharyngeal, pharyngeal abscess, and peritonsillar abscess swabs are submitted for the diagnosis of *Streptococcus pyogenes* pharyngitis. Also called Group A *Streptococcus* (GAS), these beta-haemolytic streptococci with Lancefield’s group A antigen are one of the most impressive of human pathogens. For patients who are found to have an infection with *Streptococcus pyogenes*, treatment with an antimicrobial agent is generally initiated in order to prevent the potential sequelae of rheumatic fever or glomerulonephritis. If no specific organism or infection is suggested, it should be assumed that the specimen is for the diagnosis of *Streptococcus pyogenes* pharyngitis.

**PURPOSE/RATIONALE:**

To determine the presence or absence of Group A Streptococcus in throat specimens.

**SCOPE/APPLICABILITY:**

This procedure applies to Medical Laboratory Technologists (MLTs) processing specimens for throat culture.

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### SAMPLE INFORMATION:

<b>Type</b>	Swab <ul style="list-style-type: none"><li>• Amie's with or without charcoal</li></ul>
<b>Source</b>	<ul style="list-style-type: none"><li>• Throat swab</li></ul>
<b>Stability</b>	If the sample is received in the laboratory and processed greater than 48 hours from collection: <ul style="list-style-type: none"><li>• Add specimen quality comment: "Delayed transport may adversely affect pathogen recovery"</li></ul>
<b>Storage Requirements</b>	Room temperature
<b>Criteria for rejection</b>	<ol style="list-style-type: none"><li>1. Unlabeled/mislabeled swab</li><li>2. Specimen container label does not match patient identification on requisition</li><li>3. Duplicate specimens obtained with same collection method within 24 hours</li></ol>

### REAGENTS and/or MEDIA:

- Blood agar (BA)
- Identification reagents: catalase and Strep latex test

### SUPPLIES:

- Disposable inoculation needles
- Wooden sticks
- Glass test tubes
- Sterile pipettes
- Anaerobic jar, pack and indicator

### EQUIPMENT

- Biosafety cabinet
- 35° ambient air incubator

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**SPECIAL SAFETY PRECAUTIONS:**

Containment Level 2 facilities, equipment, and operational practices for work involving infectious or potential infectious materials or cultures.

- Ensure that appropriate hand hygiene practices be used.
- Lab gown must be worn when performing activities with potential pathogens.
- Gloves must be worn when direct skin contact with infected materials is unavoidable.
- Eye protection must be used when there is a known or potential risk of exposure of splashes.
- All procedures that may produce aerosols, or involve high concentrations or large volumes should be conducted in a biological safety cabinet (BSC).
- The use of needles, syringes and other sharp objects should be strictly limited.

All patient specimens are assumed to be potentially infectious. Routine Practices must be followed. Since viable micro-organisms are used, all cultures must be handled with appropriate precautions. All equipment in contact with cultures should be decontaminated by appropriate methods.

**QUALITY CONTROL:**

- Refer to Test Manual for reagent quality control procedures

**PROCEDURE INSTRUCTIONS:**

Step	Action
<b>Processing swabs for throat culture</b>	
1	In the biosafety cabinet: <ul style="list-style-type: none"> <li>• Inoculate BA with the swab</li> <li>• Ensure all surfaces of swab make contact with the agar</li> <li>• Streak for isolated growth using a disposable inoculation needle</li> </ul>
2	Incubate the media: <ul style="list-style-type: none"> <li>• Place BA in the CO<sub>2</sub> incubator in throat rack in CO<sub>2</sub> incubator to be set up in anaerobic jar by evening technologist</li> </ul>
3	The evening technologist will incubate all plates in the throat rack anaerobically in an anaerobic jar placed in the O <sub>2</sub> incubator.

**INTERPRETATION OF RESULTS:**

Step	Action	
1	<ul style="list-style-type: none"> <li>• Observe BA plate at 24 hours and 48 hours</li> <li>• Examine for beta hemolytic colonies resembling GAS</li> </ul>	
2	<b>IF</b>	<b>THEN</b>
	No beta-hemolytic colonies seen at 18-24 hours	<ul style="list-style-type: none"> <li>• Record observations in the LIS</li> <li>• Re-incubate plates anaerobically for an additional 24 hours</li> </ul>

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	No beta-hemolytic colonies seen at 48 hours	<ul style="list-style-type: none"> <li>Record observations in the LIS</li> <li>Workup complete</li> <li>GAS not isolated</li> </ul>
	If beta-hemolytic colonies are seen at 24 or 38 hours	<ul style="list-style-type: none"> <li>Record observations in the LIS</li> <li>Perform Strep latex test for Group A</li> </ul>
	<b>IF</b>	<b>THEN</b>
	Group A Strep latex test is negative and clinical history does <u>not</u> indicate: <ul style="list-style-type: none"> <li>Sore throat/pharyngitis accompanied by a rash</li> <li>History of treatment failure</li> <li>History of recurrent pharyngitis</li> </ul>	<ul style="list-style-type: none"> <li>Record observations in LIS</li> <li>Workup complete</li> <li>GAS not isolated</li> </ul>
<b>3</b>	Group A Strep latex test is negative and clinical history does indicate: <ul style="list-style-type: none"> <li>Sore throat or pharyngitis accompanied by a rash</li> <li>History of treatment failure</li> <li>History of recurrent/persistent pharyngitis</li> </ul>	<ul style="list-style-type: none"> <li>Record observations in LIS</li> <li>Perform gram stain</li> <li>If gram-stain results are Gram-positive bacilli, perform Vitek GP card to screen for <i>Arcanobacterium haemolyticum</i></li> </ul>
	<b>IF</b>	<b>THEN</b>
	Group A Streptococcus latex testing is positive and clinical history does <u>not</u> indicate: <ul style="list-style-type: none"> <li>History of penicillin allergy</li> <li>Recurrent pharyngitis</li> <li>Treatment failure</li> <li>Current therapy with erythromycin/clarithromycin/azithromycin/clindamycin</li> <li>If requested by physician</li> </ul>	<ul style="list-style-type: none"> <li>Susceptibility testing not performed</li> </ul>
	Group A Streptococcus latex testing is positive and clinical history does indicate: <ul style="list-style-type: none"> <li>History of penicillin allergy</li> <li>Recurrent pharyngitis</li> <li>Treatment failure</li> <li>Current therapy with erythromycin/clarithromycin/azithromycin/clindamycin</li> <li>If requested by physician</li> </ul>	<ul style="list-style-type: none"> <li>Perform susceptibility testing as per ASTM</li> </ul>

**NOTE:** Each Streptococcus grouping latex test should be tested with at least one extra grouping latex suspension as a negative control

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**REPORTING INSTRUCTIONS:**

IF	REPORT
GAS not isolated Significant clinical history is <u>not</u> provided	<ul style="list-style-type: none"> <li>Report: <b>"No Streptococcus pyogenes (Group A) isolated"</b></li> </ul>
GAS not isolated Significant clinical history is provided <i>Arcanobacterium haemolyticum</i> not isolated	<ul style="list-style-type: none"> <li>Report: <b>"No Streptococcus pyogenes (Group A) isolated"</b></li> </ul>
GAS isolated Susceptibility testing not required	<ul style="list-style-type: none"> <li>Choose key 2 on STRA keypad to add isolate: <b>"Streptococcus pyogenes (Group A)"</b></li> <li>List quantitation as <b>"Isolated"</b></li> <li>The following isolate comment will be added: <b>&amp;A372</b></li> </ul>
GAS isolated Susceptibility testing is required	<ul style="list-style-type: none"> <li>Choose key 3 on STRA keypad to add isolate: <b>"Streptococcus pyogenes (Group A)"</b></li> <li>List quantitation as <b>"Isolated"</b></li> <li>KB susceptibility panel for <i>Streptococcus pyogenes</i> is ordered</li> <li>Report susceptibility results as per ASTM</li> </ul>
GAS not isolated <i>Arcanobacterium haemolyticum</i> isolated	<ul style="list-style-type: none"> <li>Report: <b>"No Group A streptococcus isolated"</b></li> <li>Report: <b>"Arcanobacterium haemolyticum"</b></li> <li>List quantitation as <b>"Isolated"</b></li> <li>Report susceptibility results as per ASTM</li> </ul>

**LIMITATIONS:**

1. A negative throat culture does not eliminate the possibility of a throat infection. Inadequate specimen collection, improper specimen handling, low organism levels in the specimen or overgrowth with normal oral microorganisms may yield a false negative result.
2. A throat culture positive for *Streptococcus pyogenes* does not distinguish between infection and colonization.

**REFERENCES:**

1. Leber, A. (2016). *Clinical microbiology procedures handbook*. (4<sup>th</sup>ed.) Washington, D.C.: ASM Press
2. Jorgensen J.H., Pfaller M.A., Carroll K.C., Funke G., Landry M.L., Richter S.S., Warnock D.W. (2015). *Manual of Clinical Microbiology, 11<sup>th</sup> edition*. Washington, D.C: ASM Press

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**APPROVAL:**

\_\_\_\_\_  
Date

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**REVISION HISTORY:**

REVISION	DATE	Description of Change	REQUESTED BY
1.0	22 Nov 17	Initial Release	L. Steven
2.0	30 Nov 18	Updated to include new Vitek 2 instrument	L. Steven
3.0	31 Dec 20	Procedure reviewed and added to NTHSSA policy template	L. Steven

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