

<b>PROGRAM Standard Operating Procedure – Laboratory Services</b>	
Title: MIC31200 – GBS Screen	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:	

**GUIDING PRINCIPLE:**

10-35% of women are asymptomatic carriers of Group B *Streptococcus* (*Streptococcus agalactiae*, GBS) in the genital and gastrointestinal tracts. GBS may be transmitted to the neonate at birth and remains a leading cause of serious illness and death in newborn populations. A selective enrichment broth must be used for initial processing of prenatal GBS specimens as it significantly improves detection of GBS.

StrepBSelect is a selective, chromogenic, agar-based medium for the isolation and presumptive identification of *Streptococcus agalactiae*. This medium is particularly suited to screening for GBS in vaginal or vaginal-rectal specimens from pregnant women.

**PURPOSE/RATIONALE:**

To screen for Group B Streptococcus (GBS) in vaginal/rectal specimens.

**SCOPE/APPLICABILITY:**

This procedure applies to Medical Laboratory Technologists (MLTs) processing specimens for GBS screen.

**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>Combined introital (vaginal and anorectal area) swab</li> <li>Vaginal swabs are not the specimen of choice but will be processed</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:**

- LIM Broth (LIM), StrepB *Select* agar (GBS) and Blood agar (BA)
- Identification reagents: catalase and Strep latex test

**SUPPLIES:**

- Disposable inoculation needles
- Wooden sticks
- Glass test tubes
- Sterile pipettes

**EQUIPMENT**

- Biosafety cabinet
- 35° CO<sub>2</sub> incubator
- 35° ambient air incubator

**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.

**Disclaimer Message:** This is a **CONTROLLED** document for internal use only. Any documents appearing in paper form are not controlled and should be checked against the electronic file version prior to use.

**QUALITY CONTROL:**

- Refer to MIC60040-Culture Media Quality Control procedure
- Refer to Test Manual for reagent quality control procedures

**PROCEDURE INSTRUCTIONS:**

Step	Action
<b>Processing swabs for GBS screen</b>	
<b>1</b>	Place swab in LIM broth, break off leaving the swab in the broth medium and loosely recap. Leave broth in the rack in the BSC.
<b>2</b>	The evening technologist will incubate the rack of LIM broths in the CO <sub>2</sub> incubator before leaving for the evening.
<b>3</b>	At 14:00, after 18 to 24 hours incubation, subculture the broth to StrepB <i>Select</i> agar: <ul style="list-style-type: none"> <li>• Remove the required number of StrepB <i>Select</i> plates from the refrigerator and bring to room temperature</li> <li>• Saturate a sterile swab in the broth and rotate against the wall of the tube above the liquid to remove excess inoculum</li> <li>• Inoculate GBS 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>
<b>4</b>	Incubate the media: <ul style="list-style-type: none"> <li>• Place GBS in the O<sub>2</sub> incubator in the new urine rack</li> </ul>

**INTERPRETATION OF RESULTS:**

Step	Action	
<b>1</b>	<ul style="list-style-type: none"> <li>• Observe GBS plate at 18 to 24 hours</li> <li>• Examine for blue colonies</li> </ul>	
<b>2</b>	<b>IF</b>	<b>THEN</b>
	No blue colonies seen at 24 hours	<ul style="list-style-type: none"> <li>• Record observations in the LIS</li> <li>• Re-incubate plate in O<sub>2</sub> incubator on the "Old urine culture" shelf</li> </ul>
	No blue colonies seen at 38-48 hours	<ul style="list-style-type: none"> <li>• Record observations in the LIS</li> <li>• Workup complete.</li> <li>• GBS not isolated</li> </ul>
	Blue colonies seen at 24 or 38 hours	<ul style="list-style-type: none"> <li>• Record observations in the LIS</li> <li>• Subculture colonies to BA plate if no isolated colonies are present</li> <li>• If isolated colonies are present, perform Strep latex test for Group B</li> </ul>
	<b>IF</b>	<b>THEN</b>
	Strep B latex test NEGATIVE	<ul style="list-style-type: none"> <li>• Record observations in LIS</li> <li>• Workup complete</li> <li>• GBS not isolated</li> </ul>
Strep B latex test POSITIVE	<ul style="list-style-type: none"> <li>• Record observations in LIS</li> <li>• GBS isolated</li> </ul>	

**Disclaimer Message:** This is a **CONTROLLED** document for internal use only. Any documents appearing in paper form are not controlled and should be checked against the electronic file version prior to use.

IF	THEN
Group B screen is positive Penicillin allergy NOT present	<ul style="list-style-type: none"> <li>Susceptibility testing not performed</li> </ul>
Group B screen is positive Penicillin allergy present	<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

**REPORTING INSTRUCTIONS:**

IF	REPORT
GBS not isolated	<ul style="list-style-type: none"> <li>Report: <b>"No Streptococcus agalactiae (Group B) isolated"</b></li> <li>A copy will automatically print to STH OBS (SOBS)</li> </ul>
GBS isolated and no penicillin allergy indicated in clinical history	<ul style="list-style-type: none"> <li>Choose key 7 on STRB keypad to add isolate: <b>"Streptococcus agalactiae (Group B)"</b></li> <li>List quantitation as <b>"Isolated"</b></li> <li>The following isolate comments will be added: <b>&amp;A336 and &amp;IAPO</b></li> <li>A copy will automatically print to STH OBS (SOBS)</li> </ul>
GBS isolated and clinical history indicates penicillin allergy	<ul style="list-style-type: none"> <li>Choose key 8 on the STRB keypad to add isolate: <b>"Streptococcus agalactiae (Group B)"</b></li> <li>List quantitation as <b>"Isolated"</b></li> <li>The following isolate comment will be added: <b>&amp;A336</b></li> <li>KB susceptibility panel for GBS screen is ordered</li> <li>Report susceptibility results as per ASTM</li> <li>A copy will automatically print to STH OBS (SOBS)</li> </ul>

**LIMITATIONS:**

- As with any chromogenic medium, it is important to streak at closely spaced intervals in order to obtain well-isolated colonies: the morphology and colour of the colonies will then be more typical.
- If an inoculum contains a high density of *Streptococcus agalactiae*, the medium around the deposit may be coloured.
- The colonies of some species, other than *Streptococcus agalactiae* (for example, *Streptococcus pyogenes*, *Streptococcus porcinus* and *Streptococcus gallolyticus*) may appear blue.

**Disclaimer Message:** This is a **CONTROLLED** document for internal use only. Any documents appearing in paper form are not controlled and should be checked against the electronic file version prior to use.

4. The intrinsic demands of some *Streptococci* can lead to absence or partial inhibition of their growth.
5. Prenatal GBS screening should be done between 35-37 weeks gestation as GBS colonization can be transient and colonization early in pregnancy is not predictive of early-onset GBS disease. Late third trimester colonization status has been used as a proxy of intrapartum colonization. The negative predictive value of GBS cultures performed  $\leq 5$  weeks before delivery is 95%-98%; however, the clinical utility decreases when a prenatal culture is performed more than five weeks before delivery because the negative predictive value declines.

**CROSS-REFERENCES:**

- MIC60040-Culture Media Quality Control

**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>ed.). ASM Press
3. BioRad Laboratories. (2009/08). *StrepB Select* package insert

**APPROVAL:**

\_\_\_\_\_  
Date

**REVISION HISTORY:**

REVISION	DATE	Description of Change	REQUESTED BY
1.0	15 May 17	Initial Release	L. Steven
2.0	22 Oct 18	Updated to include new chromogenic agar <i>StrepB Select</i>	L. Steven
3.0	30 Dec 20	Procedure reviewed and added to NTHSSA policy template	L. Steven

**Disclaimer Message:** This is a **CONTROLLED** document for internal use only. Any documents appearing in paper form are not controlled and should be checked against the electronic file version prior to use.