

<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): NA	
Effective Date:	Next Review Date:
Issuing Authority: Director, Laboratory and Diagnostic Imaging Services	Date Approved:
Accreditation Canada Applicable Standard: NA	

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**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.

**PURPOSE/RATIONALE:**

This standard operating procedure describes the screening for Group B *Streptococcus* (GBS) in vaginal/rectal specimens.

**SCOPE/APPLICABILITY:**

This standard operating 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

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**Criteria for rejection**

1. Unlabeled/mislabeled swab
2. Specimen container label does not match patient identification on requisition
3. Duplicate specimens obtained with same collection method within 24 hours

**REAGENTS and/or MEDIA:**

- LIM Broth (LIM), StrepB *Select* agar (GBS) and Blood agar (BA)
- Identification reagents: 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
- VITEK 2 and supplies

**SPECIAL SAFETY PRECAUTIONS:**

Containment Level 2 facilities, equipment, and operational practices for work involving infectious or potentially 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 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 the 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 plate in the O<sub>2</sub> incubator on the "Group B Agar" section of the old cultures shelf</li> </ul>

**INTERPRETATION OF RESULTS:**

Step	Action	
<b>1</b>	<ul style="list-style-type: none"> <li>• Observe GBS plate at 38 to 48 hours</li> <li>• Examine for blue colonies</li> </ul>	
<b>3</b>	If no blue colonies are seen at 38 to 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>	
<b>4</b>	If blue colonies are seen: <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>5</b>	<b>IF</b>	<b>THEN</b>
	Strep B latex test NEGATIVE	<ul style="list-style-type: none"> <li>• Record observations in the 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 the LIS</li> <li>• GBS isolated</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 9 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 A 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>VITEK AST-ST03 panel will be ordered</li> <li>Report susceptibility results as per ASTM</li> <li>A copy will automatically print to STH OBS (SOBS)</li> </ul>

### LIMITATIONS:

1. If an inoculum contains a high density of *Streptococcus agalactiae*, the medium around the deposit may be coloured.
2. The colonies of some species, other than *Streptococcus agalactiae* (for example, *Streptococcus pyogenes*, *Streptococcus porcinus* and *Streptococcus gallolyticus*) may appear blue.
3. 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

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**APPROVAL:**

\_\_\_\_\_  
Date

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**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 21	Procedure reviewed and added to NTHSSA policy template	L. Steven
4.0	05 Jun 23	Procedure reviewed and updated to add new VITEK AST-ST03 card	L. Steven

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