PROGRAM Standard Operating Procedure – Laboratory Services	
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:

Type	Swab • Amie's with or without charcoal
Source	• Combined introital (vaginal and anorectal area) swab • Vaginal swabs are not the specimen of choice but will be processed
Stability	If the sample is received in the laboratory and processed greater than 48 hours from collection: • Add specimen quality comment: "Delayed transport may adversely affect pathogen recovery"
Storage Requirements	Room temperature
Criteria for rejection and follow up action	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: catalase and Strep latex test

SUPPLIES:

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

EQUIPMENT

- Biosafety cabinet
- 35° CO_2 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 hang 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
Processing swabs for GBS screen	
1	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.
2	The evening technologist will incubate the rack of LIM broths in the CO_2 incubator before leaving for the evening.
3	At 14:00, after 18 to 24 hours incubation, subculture the broth to StrepB *Select* agar: • Remove the required number of StrepB *Select* plates from the refrigerator and bring to room temperature • Saturate a sterile swab in the broth and rotate against the wall of the tube above the liquid to remove excess inoculum • Inoculate GBS with the swab • Ensure all surfaces of swab make contact with the agar • Streak for isolated growth using a disposable inoculation needle
4	Incubate the media: • Place GBS in the O_2 incubator in the 14:00 pm new urine rack

INTERPRETATION OF RESULTS:

Step	Action	
1	• Observe GBS plate at 18 to 24 hours • Examine for blue colonies	
2	**IF**	**THEN**
	No blue colonies seen at 24 hours	• Record observations in the LIS • Re-incubate plate in O_2 incubator on the "Old urine culture" shelf
	No blue colonies seen at 38-48 hours	• Record observations in the LIS • Workup complete. • GBS not isolated
	Blue colonies seen at 24 or 38 hours	• Record observations in the LIS • Subculture colonies to BA plate if no isolated colonies are present • From BA sub-plate or original GBS plate, perform: 1. Catalase
	IF	**THEN**
	Catalase POSITIVE	• Record observations in LIS • Workup complete • GBS not isolated
	Catalase NEGATIVE	• Record observations in LIS • Perform Strep latex test for Group B
	IF	**THEN**
	Strep B latex test NEGATIVE	• Record observations in LIS • Workup complete • GBS not isolated
	Strep B latex test POSITIVE	• Record observations in LIS • GBS isolated
	IF	**THEN**
	Group B screen is positive Penicillin allergy NOT present	• Susceptibility testing not performed
	Group B screen is positive Penicillin allergy present	• Perform susceptibility testing as per ASTM

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	• Report: **"No Streptococcus agalactiae (Group B) isolated"** • A copy will automatically print to STH OBS (SOBS)
GBS isolated and no penicillin allergy indicated in clinical history	• Choose key 7 on STRB keypad to add isolate: **"Streptococcus agalactiae (Group B)"** • List quantitation as **"Isolated"** • The following isolate comments will be added: **&A336** and **&IAPO** • A copy will automatically print to STH OBS (SOBS)
GBS isolated and clinical history indicates penicillin allergy	• Choose key 8 on the STRB keypad to add isolate: **"Streptococcus agalactiae (Group B)"** • List quantitation as **"Isolated"** • The following isolate comment will be added: **&A336** • KB susceptibility panel for GBS screen is ordered • Report susceptibility results as per ASTM • A copy will automatically print to STH OBS (SOBS)

LIMITATIONS:

1. 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.
2. If an inoculum contains a high density of *Streptococcus agalactiae*, the medium around the deposit may be coloured.
3. The colonies of some species, other than *Streptococcus agalactiae* (for example, *Streptococcus pyogenes*, *Streptococcus porcinus* and *Streptococcus gallolyticus*) may appear blue.
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 ≤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.* (4th 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* (11th ed.). ASM Press
3. BioRad Laboratories. (2009/08). *StrepB Select* package insert

APPROVAL:

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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 StrepB *Select*	L. Steven
3.0	30 Dec 20	Procedure reviewed and added to NTHSSA policy template	L. Steven