PROGRAM Standard Operating Procedure – Laboratory Services	
Title: MIC32500 – Superficial Eye 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:
Inflammatory eye conditions can be separated into several clinical syndromes. A variety of microorganisms can play major roles, both in acute and in chronic conditions.

PURPOSE/RATIONALE:
To determine the presence or absence of bacterial pathogens in superficial eye specimens.

SCOPE/APPLICABILITY:
This procedure applies to Medical Laboratory Technologists (MLTs) processing specimens for superficial eye culture**.**

SAMPLE INFORMATION:

Type	Swab • Amie's with or with charcoal
Source	1. Conjunctiva: inflammation of the conjunctiva (the mucous membrane covering the sclera) ➢ Swab of conjunctiva surface / pus
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	1. Unlabeled/mislabelled swabs 2. Specimen container label does not match patient identification on requisition

NOTE:

- If gonorrhoeae culture is ordered on eye specimen, superficial eye culture along with gonorrhoeae culture will be performed. Refer to MIC33500-Gonorrhoeae Culture
- Refer to MIC34100-Body Fluid Culture for intraocular fluid
- Refer tissue or biopsy specimens for culture to *Dyna*LIFE

REAGENTS and/or MEDIA:

- Blood agar (BA) and Chocolate agar (CHO)
- Identification reagents: catalase, oxidase, Staph latex test, Strep latex test, etc.

SUPPLIES:

- Disposable inoculation needles
- Microscope slides
- Wooden sticks

EQUIPMENT

- Biosafety cabinet
- 35° ambient air and 35° CO_2 incubators
- Vitek 2 and supplies

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 Test Manual for reagent quality control procedures

PROCEDURE INSTRUCTIONS:

Step	Action
Processing specimens for superficial eye culture	
1	In the biosafety cabinet: • Inoculate BA and CHO with the swab • Ensure all surfaces of swab make contact with the agar • Streak for isolated growth using a disposable inoculation needle • Prepare smear by rolling the swab gently across the slide to avoid destruction of cellular elements and disruption of bacterial arrangements
2	Incubate the media: • Place BA and CHO in the CO_2 incubator
3	Allow smear to dry and perform gram stain. Gram stain must be read before culture plates. Refer to MIC20115-Gram stain procedure.

Probable pathogens	Comments
• *Haemophilus influenzae* • *Staphylococcus aureus* • *Streptococcus pneumoniae* • *Streptococcus pyogenes* • *Moraxella* spp. • *Pseudomonas aeruginosa* • *Neisseria gonorrhoeae* • *Neisseria meningitidis*	• Enterobacteriaceae may be important in hospitalized and/or immunocompromised patients and in cases of chronic bacterial conjunctivitis. • *Haemophilus parainfluenzae* can cause conjunctivitis, corneal ulcers and bacterial keratitis. Report if no other pathogens isolated.

INTERPRETATION OF RESULTS:

Step	Action
1	Ensure growth on culture media correlates with gram stain results. If discordant results are found between the gram stain and growth: • Re-examine smear and culture plates • Check for anaerobic growth • Re-incubate media to resolve • Consider re-smearing or re-planting specimen
2	• Observe BA and CHO at 24 hours and 48 hours
3	• Perform full identification and report all pathogens • Perform and report susceptibility testing as per ASTM
4	• Perform full identification and report other organisms only if there are <=3 different bacterial types • Perform susceptibility testing on these organisms and report if any of the following is true: ➢ 3-4+WBC were seen in the gram stain ➢ Organism is intracellular in the gram stain ➢ Growth is pure or predominant ➢ Patient is immunocompromised
5	If > 3 types of different bacterial types, perform minimal identification and list organisms. If multiple insignificant organisms are isolated, report as "Mixture of commensal conjunctival flora" or "Mixture of coliform organisms" as appropriate.

REPORTING INSTRUCTIONS:

IF	REPORT
No growth after 1 day	**PRELIM:** • Report: **"No Growth After 1 Day. Further report to follow"**
No growth after 2 days	**FINAL:** • Report: **"No Growth After 2 Days"**
Mix of commensal conjunctival flora	• Report: **"Mixed commensal conjunctival flora"** • List quantitation
Mix of enteric Gram-negative bacilli	• Report: **"Mixture of coliform organisms"** • List quantitation
Growth or mix of other non-pathogenic organisms	• Report **"Commensal flora"** or **"Commensal skin flora"** • List quantitation
Growth of insignificant organism(s) where minimal identification and listing is required	• Report the minimal identification (i.e. Gram Negative Bacilli - Lactose Fermenter) • List quantitation
Growth of pathogen(s)	• Report organism(s) identification • List quantitation • Add isolate comment**&A89**
Neisseria gonorrhoeae isolated and gonorrhoeae culture was not ordered	• Add organism: **"Neisseria gonorrhoeae"** • List quantification as: **"Isolated"** • Add Beta-lactamase result if positive • Add isolate comment **&REF6** • Refer isolate to APL for susceptibility testing

NOTE:

- Refer to Reportable Diseases – Public Health Act as of September 2009 for reporting to HPU1
- Refer to MIC35100-Nosocomial Infection Notification Job Aid to determine if organism needs to be copied to Stanton Infection Prevention and Control
- Refer to L-0910-Laboratory: Critical Values for results that need to be phoned to ordering location
- Refer to MIC10510-Referral of Category B Specimens to *Dyna*LIFE and Alberta Precision Laboratories for sending isolates to *Dyna*LIFE and APL

LIMITATIONS:

1. False positive cultures can result from contamination of the specimen or plates with skin flora.
2. False negative results can occur if antimicrobial agents are given prior to collection of the specimen.
3. Even with the best techniques, culture often fails to yield the infecting organism.

CROSS-REFERENCES:

- MIC10510-Referral of Category B Specimens to *Dyna*LIFE and Alberta Precision Laboratories
- MIC20115-Gram stain procedure
- MIC33500-Gonorrhoeae Culture
- MIC34100-Body Fluid Culture
- MIC35100-Nosocomial Infection Notification Job Aid

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 edition*. Washington, D.C: ASM Press

APPROVAL:

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Date

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REVISION HISTORY:

REVISION	DATE	Description of Change	REQUESTED BY
1.0	28 May 18	Initial Release	L. Steven
2.0	26 Feb 21	Procedure reviewed and added to NTHSSA policy template	L. Steven