PROGRAM Standard Operating Procedure – Laboratory Services	
Title: MIC10300 – Blood Product Processing for Culture	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:
To rule out bacterial contamination as a potential cause of a transfusion reaction, it is essential to perform a microbiological culture on any blood products involved.

PURPOSE/RATIONALE:
This standard operating procedure describes how to process blood products for bacterial culture.

SCOPE/APPLICABILITY:
This standard operating procedure applies to Medical Laboratory Technologists (MLTs) processing blood products for bacterial culture.

SAMPLE INFORMATION:

Type	Transfusion products including: • Red blood cells • Platelets • Other products remaining after transfusion reaction
Source	Blood product bag/container
Stability	Transport remaining blood product to the laboratory immediately after transfusion reaction is detected
Storage Requirements	Refrigerated
Criteria for rejection	1. Improperly collected, labeled, transported, or handled specimens should be processed. SCM40110-Waiver of Responsibility form needs to be filled out by the responsible nurse

REAGENTS and/or MEDIA:

- Blood agar (BA), Chocolate agar (CHO), MacConkey agar (MAC), Brucella agar (BRU) and Thioglycollate broth (THIO)
- BACTEC Plus Aerobic/F culture bottles and BACTEC Lytic/10 Anaerobic/F culture bottles

SUPPLIES:

- Alcohol pads
- Disposable inoculation needles
- Sterile red top vacutainer tube
- Anaerobic jar and pouch
- Absorbent bench liner
- Butterfly needles
- Vacutainer barrel
- Syringes
- Plastic tape
- Sterile pipette
- Biohazard bags
- Black Sharpie marker
- Accel TB wipes

EQUIPMENT:

- BD BACTEC FX
- Biosafety cabinet
- 35° ambient air and 35° CO_2 incubators

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 Test Manual for reagent quality control procedures

PROCEDURE INSTRUCTIONS:

Step	Action
Ordering blood products culture in the LIS	
1	Estimate the volume of product received. This will determine what tests are ordered for the product. A full unit of blood contains 250 mL of blood.
2	Order body fluid culture testing in the LIS regardless of volume received: • Medipatient the order if required • In SoftMic, enter the Reg. by and Att. Dr as **SMIC** • Add a copy to the patient's location • Add the test ID **CXFLD** • Select the source **Blood Product** • Collect, receive and plate the order • In Micro OE Comment, enter the product unit number • Place the blood product in the BSC for processing
3	If >20 mL of product is received, also order fluid in blood culture bottle: • Medipatient the order if required • In SoftMic enter the Reg. by and Att. Dr as **SMIC** • Add a copy to the patient's location • Add the test ID **CXFBC** • Select the source **Blood Product** • Select the site **O2/ANO2 Set** • Collect and receive the order but do **NOT** plate • In Micro OE Comment, enter the product unit number • Place the blood product in the BSC for processing

Step	Action
Processing the culture	
1	A sample of the transfusion product should be processed directly from the bag and not be taken from the unit segments.
2	Set up the BSC with the following: • Absorbent pad on the working surface • Blood product specimen • 1 aerobic BACTEC vial (if CXFBC ordered) • 1 anaerobic BACTEC vial (if CXFBC ordered) • 1 sterile red top vacutainer tube • 3 alcohol pads • Accel TB wipes • 1 butterfly needle • 1 vacutainer barrel • Black Sharpie marker
3	Label the following media**:** • BA-C: Blood agar • CHO-C: Chocolate agar • MAC-O: MacConkey agar • BRU-2: Brucella agar • CONC: Sterile red top vacutainer tube

<table>
<tr><td>4</td><td colspan="2"><u>If CXFBC is ordered, prepare blood culture vials</u>:
• Place a mark at 10 mL above the level of the broth with the black Sharpie marker
NOTE: This is to ensure 10 mL of blood is placed into the vials
• Remove the caps from the vials
• Clean the septum with alcohol pads</td></tr>
<tr><td>5</td><td colspan="2">Inspect the blood product bag and determine where the material will be taken from. Select an area that is free of labels.</td></tr>
<tr><td>6</td><td colspan="2">Use an alcohol pad to clean the area where the butterfly needle will be inserted.</td></tr>
<tr><td rowspan="3">7</td><td colspan="2">Attach the vacutainer barrel to the butterfly needle and aseptically insert the needle end into the blood product bag:</td></tr>
<tr><td>IF:</td><td>THEN:</td></tr>
<tr><td>Both CXFLD and CXFBC ordered</td><td>• Using the vacutainer barrel, attach a blood culture bottle and allow to fill to the 10 mL mark
• Repeat with the second bottle
• Collect the labelled sterile red top vacutainer tube
• From the red top tube, use a sterile pipette to inoculate the culture media. Refer to MIC10000-Microbiology Specimen Handling
• Streak plates for isolation. Refer to MIC10000-Microbiology Specimen Handling
• Remove the needle from the blood product and dispose of it carefully into a sharp’s container
• Place a piece of tape over the hole and place the blood product bag into a biohazard bag. Then place into another biohazard bag and place it into the day’s specimen bucket</td></tr>
<tr><td>Only CXFLD ordered</td><td>• Using the vacutainer barrel, collect the labelled sterile red top vacutainer tube
• From the red top tube, use a sterile pipette to inoculate the culture media. Refer to MIC10000-Microbiology Specimen Handling
• Streak plates for isolation. Refer to MIC10000-Microbiology Specimen Handling
• Remove the needle from the blood product and dispose of it carefully into a sharp’s container
• Place a piece of tape over the hole and place the blood product bag into a biohazard bag. Then place into another biohazard bag and place it into the day’s specimen bucket</td></tr>
</table>

	NOTE: If there is not enough product in the bag to process CXFLD, use a sterile syringe and aseptically inject 10 mL of THIO broth into the blood bag. Shake the bag to mix the THIO with the blood product and process as above
8	• Place the sterile, red top vacutainer tube in the bucket labelled "STERILE BODY FLUIDS" in the O_2 incubator • Place MAC in the O_2 incubator on the "New Wound" shelf • Place BA and CHO plates in the CO_2 incubator on the "New Wound" shelf • Place BRU in an anaerobic jar or tray with anaerobic pouch and indicator as soon as practical after inoculation. Label jar or tray with date of 48 hour read and place in the O_2 incubator on the "WOUND ANO$_2$" shelf **NOTE:** Anaerobes should not be exposed to air for 42-48 hours after inoculation. Refer to MIC10000-Microbiology Specimen Handling • Load any blood culture vials onto the BACTEC FX analyzer as per MIC71000-BACTEC FX Instrument

LIMITATIONS:

1. False-positive reports may result from contamination of the blood product at time of performing the culture.
2. False-negative results may be caused by low numbers of organisms or by the fastidious nature of the infective organism.

CROSS-REFERENCES:

- MIC10000-Microbiology Specimen Handling
- MIC71000-BACTEC FX Instrument

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	06 Jan 25	Initial Release	L. Steven