MICROBIOLOGY

GUIDANCE FOR TAKING MYCOBACTERIAL BLOOD CULTURES

INFORMATION SHEET

Q-Pulse No	MWS9
Version	1
Site	Hub

Southwest Pathology Services

1 Introduction

Culture of blood for mycobacteria is indicated in

- Investigation for disseminated *Mycobacterium avium/intra-cellulare* (MAI) infection in severely immunocompromised patients.
- Investigation of possible *Mycobacterium chimaera* infections associated with cardiopulmonary bypass.

Mycobacterial blood cultures are collected in special media, different from the media used in standard bacterial blood cultures. These bottles must be specifically requested from the microbiology laboratory. Store at 2–25 °C in a dry location out of direct light.
Do not use after expiration date.

BD *BACTEC* Myco/F Lytic culture medium is a specific formulation for the recovery of mycobacteria from blood specimens, but other contaminating organisms may also grow.

Each bottle requires **3 - 5 ml of blood** for optimal 'fill'. If there is real difficulty obtaining blood, the minimum amount should be at least 1 ml per bottle.

2 Procedures

2.1 Equipment for Peripheral Blood Cultures

Collect equipment required according to method to be used (see Appendix A; Method A /or B and Appendix B).

Method A is winged blood collection and is **strongly recommended.**

Equipment required

- One BD Myco/F Lytic blood culture bottle
- Two 2% chlorhexidine in 70% alcohol wipes (one for bottle, one for skin)
- Tourniquet
- Non sterile gloves
- Sharps tray with bin
- Waterproof dressing
- Additional equipment for:

- Method A: winged blood collection set with luer adaptor (BD Vacutainer Safety-Lok blood collection set with pre-attached holder)
- Method B: needle and syringe (and a BD Blood Transfer Device)

2.2 Preparation of Blood Culture Bottles

- Mark the desired fill line on the side of the bottle aided by the graduation marks on the label. Aim to collect **5 mL blood**.
- The top of the bottle will be clean but not sterile.
- Remove the flip-off cap from the bottle.
- Disinfect the top of the culture bottle with a 2% chlorhexidine in 70% isopropyl alcohol impregnated swab.
- Allow the alcohol to fully evaporate before proceeding with bottle inoculation. It is the drying of the alcohol which disinfects the cap.

2.3 Skin Preparation

- Perform hand hygiene (alcohol hand rub or wash hands with soap and water).
- Clean any visibly soiled skin on the patient with soap and water then dry.
- Apply a tourniquet and palpate to identify swollen vein.
- Clean the skin with a 2% chlorhexidine gluconate in 70% isopropyl alcohol swab, for 30 seconds, and allow it to dry thoroughly (~30 sec).
- Do not to palpate the site once it has been disinfected.

2.4 Sample Collection

See Appendices.

2.5 Labelling of Bottles

- Label the bottle with appropriate patient information, after filling.
- Ensure that barcodes on the bottles are not covered by additional labels and that any tear-off barcode labels are not removed, as these are required by the laboratory.

2.6 Blood Culture Requests

- Each mycobacterial blood culture should be requested as single test. Include clinical details and other relevant information in the request.
- This request should be made using electronic requesting system where possible (Blood Culture – Mycobacteria). The item can be requested multiple times i.e. can request 3 x blood culture

bottles at same time for investigation of mycobacterium chimaera. Note: If requesting multiple tests, each sample must be taken on a separate day.

- Send blood cultures to the Pathology Lab without delay following the transport instructions received with bottles.

2.7 Blood Culture Results

- Mycobacterial blood cultures are sent to a Reference Laboratory for processing.
- When a mycobacterial culture becomes "positive", the Ref Lab will telephone the microbiology lab and a microbiology consultant will telephone the patient's doctor to discuss management.
- A final culture result is issued after seven weeks.
- It is **NOT** necessary to phone the laboratory to chase these results

3 References

- Department of Health High Impact Interventions; July 2010. Taking blood cultures, a summary of best practice. http://webarchive.nationalarchives.gov.uk/+/www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_078134
- Public Health England; Feb 2017. Mycobacterium chimaera infections associated with cardiopulmonary bypass: Clinical guidance for secondary care. https://www.gov.uk/government/publications/mycobacterium-chimaera-infections-guidance-for-secondary-care

4 Appendices

- Appendix A: Guidance for Sample Collection of Peripheral Blood Cultures
  - Method A: winged blood collection method
  - Method B: needle and syringe method
- Appendix B: Equipment used for peripheral and central venous access device (CVAD) blood culture collection

Appendix A

Guidance for Sample Collection of Peripheral Blood Cultures

Blood collection for peripheral blood cultures using the winged method (Method A) is better and safer than using a needle and syringe (Method B). There is less chance of contaminating the blood cultures and less risk of a needle stick injury.

Method A: Winged Blood Collection Method (STRONGLY RECOMMENDED)

1. Prepare culture bottles and patient's skin as described in sections 2.2 and 2.3
2. Perform hand hygiene. Wear non-sterile gloves.
3. Use a winged blood collection set (BD Vacutainer Safety-Lok blood collection set with pre-attached holder).
4. Insert needle into prepared site. Do not palpate again after cleaning.
5. Place the holder over the upright BD Myco/F Lytic blood culture bottle and pierce septum. Hold bottle upright and use bottle graduation lines to accurately gauge sample volume and collect sample.
6. If blood is being collected for other tests, always collect the blood cultures first.
7. Release tourniquet.
8. Only apply pressure for venestasis after the needle has been removed from the patient.
9. Cover the site with an appropriate sterile dressing.
10. Discard winged blood collection set into a sharps container.
11. Remove gloves and perform hand hygiene
12. Document date, reason for sample, site of venepuncture, operator undertaking procedure and if procedure was high risk with signature.

See "BD Poster" below (NB. this was produced for two "ordinary" blood culture bottles) and Appendix B for pictures of the equipment used.

NHS
Musgrove Park Hospital

Blood Culture - Direct Draw
using BD Bactec® Blood Culture Bottles

1

Collect two sets of cultures from different sites. Thoroughly clean venepuncture site using 2% chlorhexidine in 70% alcohol wipe and allow to air dry. Do not re-palpate site after cleansing the skin.

2

Disinfect top of each bottle with 2% chlorhexidine in 70% alcohol wipes and allow to air dry. Remove flip cap and sterilise rubber vial top. Mark vial at desired level using label scale as a guide.

3

Use a BD Vacutainer® Safety-Lok™ blood collection set with pre-attached holder.

4

Perform venepuncture by holding the body or wings with thumb and index finger.

5

Press holder down over aerobic blood culture bottle. Hold the bottle upright avoiding reflux into the patient. Once blood flow is achieved release tourniquet.

6

Once filled, repeat for anaerobic blood culture bottle. If blood is required fill blood collection tubes.

7

When sampling is complete, withdraw the needle from the vein. To activate the safety mechanism, slide the yellow shield over the needle until a "click" is heard.

8

Discard BD Vacutainer® Safety-Lok™ blood collection set and holder directly into the sharps bin. Immediately send to the lab.

Proceed to take regular blood tests with this device following culture procedure.

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Method B: Needle and Syringe Method

1. Prepare blood culture bottles and patient's skin as described in sections 2.2 and 2.3
2. Perform hand hygiene. Wear non-sterile gloves.
3. Insert needle. Do not palpate again after cleaning.
4. Collect sample and release tourniquet.
5. Only apply pressure for venestasis after the needle has been removed from the patient.
6. Cover the puncture site with an appropriate dressing.
7. Disconnect the blood-filled syringe from the needle.
8. Discard needle in a sharps container.
9. Attach a BD Blood Transfer Device to the syringe.
10. Insert a BD Myco/F Lytic blood culture bottle into the Blood Transfer Device. Keep upright.
11. Allow the blood to transfer from the syringe to the bottle using the bottle's vacuum. Do not depress the plunger of the syringe.
12. If blood is being collected for other tests, always inoculate the blood culture bottles first.
13. Discard syringe and Blood Transfer Device in a sharps container.
14. Remove gloves and perform hand hygiene.
15. Document date, reason for sample, site of venepuncture, operator undertaking procedure and if procedure was high risk with signature.

Appendix B

Equipment used for peripheral Mycobacterial blood culture collection.

BD *BACTEC* MYCO/F LYTIC bottles

BD Vacutainer Safety-Lok blood collection set with pre-attached holder

BD Vacutainer® Blood Transfer Device