

**FOLLOW THE INSTRUCTIONS OVERLEAF TO IMPROVE THE QUALITY OF BLOOD CULTURE INVESTIGATIONS AND REDUCE THE RISK OF BLOOD SAMPLE CONTAMINATION**

**For any advice call:**

**Microbiology on ext. 33559 and out-of-hours via the hospital switchboard.**

The culture of micro-organisms from blood provides laboratory confirmation of clinical bacteraemia, which can be used to inform clinical management of the patient. Blood cultures are taken;

- **for the correct indications**
- **at the correct time** (i.e. not part of resuscitation or emergency callout procedures)
- **using correct technique** to prevent contamination of sample and minimize the risk to patients and staff.

**Correct Indications**

**Only take blood for culture when there is a clinical need to do so and not as routine.**

There are many signs and symptoms in a patient which may suggest bacteraemia and clinical judgement is required, but the following indicators (which may be subtle in the very young, the elderly, and those on steroids or immunocompromised) should be taken into account when assessing a patient for signs of bacteraemia or sepsis:

- core temperature out of normal range; usually <36 C or >38 C ?
- focal signs of infection
- abnormal heart rate (>90), blood pressure (low or raised) or respiratory rate (>20)
- chills or rigors
- raised or very low white blood cell count (<4 or >12)
- new or worsening confusion
- Severe Inflammatory Response Syndrome (**SIRS** criteria) (2 or more criteria met)

**PLEASE NOTE:** signs of sepsis may be minimal or absent in the very young, the elderly or immunocompromised (neutropenic)

**Correct time**

Blood cultures should be taken:

- as soon as possible after the onset of chills; pyrexia; clinical suspicion of sepsis.
- before the administration of antibiotics. If a patient is on antibiotics, blood cultures still be taken but the chance of detection may be decreased.

**Correct technique**

**Always make a fresh stab**

- Identify a suitable site before disinfecting the skin.
- Two consecutive sets of cultures (time interval not critical) should be taken to assist in determining the clinical significance of certain organisms.
- **Only in an emergency situation when venous access is difficult to obtain, can blood cultures be taken from a newly inserted peripheral cannula.** As soon as possible a second set of blood cultures should be collected from a separate peripheral stab.
- In patients with suspected bacteraemia, **do not** use existing peripheral lines/cannulae or sites immediately proximal (above) peripheral lines.
- If a central line is present, blood **may** be taken from this **and** from a separate peripheral site when investigating potential infection related to the central line; the peripheral vein sample should be collected first.
- In suspected Infective Endocarditis a minimum of 3 sets if valve native (up to 6 sets if prosthetic) over 24 hours or over 1 hour in an emergency is required from different stabs.
- Avoid femoral vein puncture because of the difficulty in adequate skin cleansing and disinfection.

**Initial Preparation**

1. Gather equipment
2. Hand Hygiene Moment No 1 – Wash hands
3. Explain the procedure to the patient
4. Prepare a Clean dry surface
5. Put on disposable plastic apron
6. Prepare the sterile field

## MICROBIOLOGY DEPARTMENT BLOOD CULTURE RECOMMENDED BEST PRACTICE GUIDANCE

### Bottle Preparation

7. Inspect each blood culture bottle before use to ensure integrity of bottle: expiry date and any obvious damage.
8. Remove protective flip top to expose the septum.
9. The septum is not sterile and must be disinfected. Cleanse the septum with 70% alcohol wipe and allow to air dry.
10. The bottle has been pre-marked with 5ml increments. Mark the desired fill volume level on the bottle. Recommended blood to broth ratio is 1:5 to 1:10. As the volume of blood drawn is increased, the yield of positive cultures increases. Optimally, 20ml of blood should be drawn from adults (10ml per bottle) and 2ml from paediatric patients. Do not overfill the bottles, as this may cause false positive readings.



**ADULT: 8-10ml blood/bottle**



**PAEDIATRIC: 1-3ml blood/bottle**

### Patient Preparation:

11. Hand Hygiene moment No 2 – Alcohol based hand rub or Wash hands
12. Apply Tourniquet and Palpate vein.
13. Clean the skin with the appropriate 2% chlorhexadine + 70% isopropyl alcohol (chloraprep FREPP 1.5), and allow to air dry for 30 seconds to completely kill skin bacteria.
14. Put on non-sterile gloves.
15. Attach a 20ml syringe to a winged/butterfly/green 18G needle, or use the Push Button Blood Collection set, avoid touching critical parts.
16. **DO NOT** re-palpate the vein after cleaning the skin. Insert needle and draw appropriate volume.
17. Inject aerobic/paediatric blood culture bottle first with appropriate volume, followed by anaerobic bottle for adults.
18. Any other required samples **MUST** be taken after the Blood Culture.

**PLEASE NOTE:** To prevent over inoculation, monitor the blood volume intake into the culture bottle, using the 5ml incremental markings on the bottle label.

19. Collect the sample then release the tourniquet and apply pressure to achieve haemostasis.
20. Discard sharps into a sharps container at the point of use.
21. Cover the puncture site with the dressing.
22. Remove gloves and apron and dispose.
23. Perform hand hygiene – Alcohol based hand rub or Wash hands.
24. Label bottles with patient sticker containing CHI no – **DO NOT** cover bar codes, or remove them.
25. Complete a Microbiology request on Order Comms, including relevant clinical details, and any antibiotics patient has been on or is on currently.
26. After blood cultures have been taken, the procedure should be clearly documented in the patient's medical notes to aid subsequent interpretation of positive results. The date, time and site(s) of venepuncture along with the indication for the blood culture being taken should be recorded as well as a record of who has taken the culture. If taken via a CVC, then the lumen colour **MUST** be noted when ordering test.
27. **IMMEDIATELY** send bottles to Laboratory Specimen Reception using Pod System.
28. In the event of a pod system failure, send bottles promptly to the Laboratory Specimen Reception.

### Microbiology Laboratory:

Blood cultures are routinely incubated for 5 days (7 days in cases of Endocarditis). Positive results will be communicated directly between the Biomedical Scientist/Microbiologists and the clinical team responsible for the patient as soon as the result becomes available. Once the culture flags positive, a Gram stain result will be available with a provisional result if possible. A confirmed isolate identification and sensitivities will usually be available 24 hours later but in some instances this may take longer. An interim Negative result after 48 hours will be made available on the webpage and final Negative culture results will be available at 5 days.