Dorset County Hospital NHS Foundation Trust

POLICY FOR TAKING BLOOD CULTURES (ADULTS)

Policy Title	Policy for Taking Blood Cultures (Adults)		
Policy Number	**0798**	**Policy Version Number**	**8**
Applicable to	All employees of Dorset County Hospital NHS Foundation Trust.		
Aim of Policy	Correct sampling will improve the quality and clinical value of the blood culture investigation and reduce the incidence of sample contamination and 'false positive' readings.		
Next Review Date	**01 October 2026**		
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Expert Group	Infection Prevention & Control Committee		
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Contents

1. INTRODUCTION

1.1 This policy has been developed to reflect the Department of Health (DoH) recommendations to inform staff of the actions they must take to minimize the risk of contamination of blood cultures.

1.2 Trust staff undertaking this procedure must be competent in venepuncture.

2. AIMS OF THE POLICY

2.1 Blood culture to detect bacteraemia is an important investigation with major implications for the timely diagnosis and treatment of patients with infection and the selection of appropriate treatment.

2.2 Correct sampling will improve the quality and clinical value of the blood culture investigation and reduce the incidence of sample contamination and 'false positive' readings.

2.3 A 'false positive' result is defined as a growth of bacteria in the blood culture that were not present in the patient's blood stream and were introduced during the sample collection.

2.4 Contaminations can come from a number of sources:

- The patient's own skin.
- The equipment used.
- The practitioner.

2.5 Optimal timing and volume of blood culture collection will reduce the incidence of 'false negative' blood cultures. False negatives can occur if bacterial growth is not detected due to inadequate sample volume, or if blood cultures are taken after antibiotics have already been started.

3. RESPONSIBILITIES

3.1 Line Managers

Managers are responsible for ensuring their staff have the knowledge, skills and competence to perform their duties. It is therefore important that staff undertaking blood culture sampling receive appropriate education and assessment to establish competence.

3.2 Clinical staff

Clinical staff are responsible for maintaining their knowledge and competence. **Blood cultures should only be collected by members of staff who have been trained in the collection procedure and whose competence has been assessed**. Training can be accessed via the Trust education department.

3.3 Asepsis

The principles of asepsis must be maintained throughout the procedure to prevent contamination of blood samples. Please refer to the Trust's Aseptic Technique Guideline available on SharePoint.

3.4 Standard Precautions

To prevent staff exposure to blood and body fluids application of standard precautions must be maintained. Please refer to the Trust's Infection Control and Prevention Guideline available on SharePoint.

4. PROCEDURE

4.1 Rationale for blood culture sampling

Blood cultures should only be taken when there is a clinical indication. Link to sepsis policy (Ref 1456).
Blood cultures are taken to identify patients with bacteraemia. Sampling of blood cultures allows identification of bacteria involved and their sensitivity to antibiotics.

4.2 Indications for sampling

There are many and varying degrees of clinical signs and symptoms which may suggest bacteraemia and clinical judgment is required. Please refer to the Sepsis Screening documentation for your client group (Adult, Maternal, Paediatric). Link to sepsis policy (Ref 1456).

Although fever is often used as an indication for blood culture collection, not all septic or bacteraemic patients result in a fever response, and the yield is not significantly enhanced during a temperature spike. Therefore, blood culture collection should **not** be delayed or omitted due to absence of fever.

4.3 When to take samples

Blood cultures should be taken immediately after the identification of possible sepsis. They should be taken **before** giving the first dose of antibiotics wherever possible, although the antibiotics should not be delayed in a septic patient if it is difficult to obtain blood cultures.

If the patient is already on antibiotics when a possible septic deterioration occurs, blood cultures should still be collected and are of value, for example, they may detect organisms that are not covered by the current antibiotics.

If the patient has a prosthetic heart valve, at least **2 sets** should be collected from separate sites prior to starting antibiotics. If infective endocarditis is suspected clinically in any patient, **3 sets** should be sent prior to starting antibiotics. These can be collected from separate sites over 30 – 60 mins if the patient is septic but can be collected over 24h or longer if the patient is stable and not acutely unwell.

All blood cultures should be documented in the patient's notes including the date, time, site and indications for sampling.

ICE should be used where available to generate the request. Where not available a microbiology form must be used.

4.4 Procedure for taking blood cultures

Blood cultures should be taken from a fresh site using the culture kit provided by the Trust.

There are 2 approved methods of blood culture sampling collection at Dorset County Hospital. The use of the BD Vacutainer Method Kit provided by the Trust reduces the risk of both needle stick injury and contamination of sample. However, there are occasions when patients with poor veins may be difficult to bleed, whereby the preferred method would be to use a syringe and needle or butterfly.

Collection of blood cultures via an intravenous cannula is NOT the recommended method. However, if this method is used it should only be from a cannula that has been freshly inserted and a second specimen should be obtained from a peripheral site.

It is important that the bottle being inoculated is held at a position below the patient's arm with the bottle in an upright position (stopper uppermost). This will prevent any potential back flow of media from the blood culture bottle. See Policy 1408.

If a central line is present a further sample should be taken from the line. **DO NOT** discard the contents of the line. Use a Vacutainer Leur Adaptor and Tube holder following decontamination of the bung and proceed with sample collection using aerobic bottle first (adults). This should only be performed by appropriately trained staff.

Avoid femoral vein punctures due to the difficulty in adequate skin cleansing and decontamination.

4.5 Volume of blood

The volume of blood cultured is the most critical factor in the detection of bloodstream infection. **The optimal volume of blood in adults is 8-10 mL per blood culture bottle and 0.5 – 5mL in paediatrics. Please refer to the bottles in your area.**

The volume of blood cultured is key to the detection of BSI**.** There is a direct relationship between blood volume and yield, with approximately a 3% increase in yield per mL of blood cultured[1].

The sets should provide a volume of 40-60mL (20-30mL per set).

4.6 Equipment required

BD Vacutainer Kit METHOD	NEEDLE AND SYRINGE METHOD
Gloves (clean as skin will not be palpated following disinfection, sterile gloves not necessary)	Gloves (clean as skin will not be palpated following disinfection)
Sharps bin	Sharps bin
Culture bottle kit Containing : *Appropriate Blood Culture Bottles (2 for adults and 1 for paediatrics)* *2% Chlorhexidine in 70% Alcohol PDI Wipe X 3* *Safety Push Button Winged blood collection set with holder* *Disposable tourniquet*	Blood Culture bottles 1 needle (23 gauge) 20ml syringe or appropriate size syringe for the blood tests required 2% Chlorhexidine in 70% Alcohol x3 Wipe Disposable tourniquet
Dressing	Dressing

4.7 Taking the cultures

- Wash hands with soap and water as per Trust policy
- Clean visibly soiled skin on the patient with soap and water and dry.
- Apply alcohol gel then don clean gloves.
- Place single patient use tourniquet on limb and palpate to identify vein.
- Swab using a 2% Chlorhexidine in 70% Alcohol Wipe **AND ALLOW THE SITE TO DRY NATURALLY.**
- **DO NOT PALPATE THE VEIN AFTER CLEANSING THE SKIN.**
- **Ensure an aseptic non-touch technique is used (ANTT).**

BD Vacutainer Kit METHOD	NEEDLE AND SYRINGE METHOD
Disinfect the top of each blood culture bottles using a separate 2% Chlorhexidine in 70% alcohol Wipe per bottle and allow to dry naturally.	Disinfect the top of each blood culture bottles using a separate 2% Chlorhexidine in 70% alcohol Wipe per bottle and allow to dry naturally.
Attach the BD Vacutainer Push Button Needle to the tube holder if not already done and collect samples directly into culture bottles using the graduation lines on the bottles to gauge the volume collected. **Aerobic bottle must be used first.**	Perform venepuncture to collect sample using a 20mL syringe (Adult) or 5 – 10 mL (Paediatric). (If blood is being collected for other tests always inoculate the blood culture bottles first). Inoculate blood into culture bottles. To reduce the risk of needle stick injury –

Further blood samples may be taken following blood culture using the same kit.	• **Do not change needle between sample collection and inoculation**. • **Inoculate anaerobic bottle first.**
Label bottles with patient details including date, and TIME of collection. **Never cover the bar codes with labels** **Do not remove barcodes.** Insert name of person taking the sample on the microbiology form.	
Record the procedure in the patient's notes with indication for culture, site blood cultures taken from, when blood cultures taken, by whom and why the blood cultures have been taken	
Blood Cultures Bottles may be sent via the POD System and must be in the laboratories within 4 hours of collection	

5. REFERENCES

SEPSIS KILLS Program Adult Blood Culture Guidance Version 2.0 August 2021

BESTBITS Blood Cultures from peripheral IV Cannula versus dedicated venepuncture 29/04/2020.

Public Health England, UK Standards for Microbiology Investigation B37 Investigation of blood cultures (for organisms other than Mycobacterium) updated September 2018 https://www.gov.uk/government/publications/smi-b-37- investigation-of-blood-cultures-for-organisms-other-than-mycobacterium-species

NHS England, 2022, Improving the blood culture pathway – Executive summary, A national review of blood culture pathway processes to support better antimicrobial stewardship and improved patient safety, Version 1 , 29th June 2022.