

## Blood Culture Policy for Neonatal Unit Patients

### Summary of Guideline

Only doctors and nurses who have been formally assessed as being competent in aseptic technique can take blood cultures (including locum/agency staff)  
Clear indications for blood culture collection must be present and documented  
Procedure only to be carried out as documented in guideline

### 1. INTRODUCTION

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

### 2. PURPOSE

This policy aims to promote good practice in the collection of blood for culture and thus reduce the number of false positive results. False positive results lead to complications in patient safety, quality of care and associated increased cost of care

Early positive results provide information on which appropriate treatment can commence. These recommendations aim to ensure that blood cultures are taken:

- for the correct indications
- at the correct time
- using correct technique in order to prevent contamination of the sample and minimise risk to patients and staff

### 3. TAKING A BLOOD CULTURE

**Indications for taking blood cultures in Neonates are described in the guidelines for sepsis available on the intranet. The “Broken Needle Technique” (breaking the needle hub to obtain blood) poses an additional risk of injury to the child / user and must NOT be used.**

Sepsis in the neonate may not be clinically apparent and a low index of suspicion is required in the absence of clinical signs.

#### Early Onset Sepsis

Detection of micro-organisms by culture of blood is essential in the diagnosis of early-onset sepsis transmitted from mother to baby, therefore may be indicated following birth when the baby appears well in the presence of maternal or neonatal risk factors. Some examples include:

- Prolonged rupture of the membranes (>24 hours)
- Suspected chorioamnionitis
- Raised maternal CRP
- Persistent maternal fever >38°C
- Maternal Group B Streptococcal infection on HVS / urine culture in this pregnancy
- Proven Group B Streptococcal infection in a previous sibling
- Prematurity
- Any other concerns about possible sepsis

## Late Onset Sepsis

Blood cultures are also important in evaluating suspected late onset sepsis – the clinical signs of which may differ from that in older children and are described below.

Blood culture may detect bacteraemia associated with primary infections as well as those associated with indwelling prosthetic materials such as umbilical and long lines. Accurate positive results provide valuable information to guide optimal antibiotic therapy early on which can improve outcome from these conditions. Blood for culture should be taken before antibiotics are started.

Contaminated blood cultures can cause considerable diagnostic confusion and lead to unnecessary or sub-optimal antimicrobial therapy. It may be prevented by careful collection of the blood using an aseptic non-touch technique.

However caution must be exercised, as the presence of coagulase negative staphylococci in blood cultures may be pathogenic and not contamination.

Note that pyrexia in the neonate is an unreliable sign to indicate sepsis the blood culture should not be deferred until a pyrexial episode.

Blood cultures should be taken when there are risk factors for sepsis as described above, or to check clearance of a known bacteraemia or fungaemia, or a clinical need to do so in response to any clinical signs suggestive of sepsis and a deteriorating clinical picture including:

Abnormalities in:

- Heart rate, respiratory rate
- Core temperature, increased toe-core gap between central and peripheral temperature, temperature instability
- Perfusion
- Rise in leucocyte count or CRP
- Clinical instability or deterioration
- Abnormal blood sugar levels

Cases should be discussed with the registrar especially where uncertainty exists about whether to take a blood culture. Blood cultures should never be taken as routine or because a sample was easily obtained(!), but **have a low index of suspicion for the presence of sepsis.**

All blood cultures should be documented in the patient's notes, dated and timed.

**Single sample blood cultures are normally all that is required**

## 4. COMPETENCE IN ASEPTIC TECHNIQUE

Blood cultures should only be collected by members of staff whose competence in aseptic technique has been assessed. For junior doctors, this involves brief training of theory followed by direct observation to ensure competence.

For the Neonatal Unit, the designated leads for aseptic technique are:

- Dr. Yinka Ejiwumni
- Sr. Vanessa Sturt

However any senior nursing staff, or registrar who has been trained, can make a formal assessment of another doctor for aseptic technique.

**Locum doctors** are not exempt from this process, and will be expected to read the theory of aseptic technique at the Trust and be observed for technique, usually by the senior nurse in charge or one of the leads for aseptic technique.

Rarely blood cultures are taken from indwelling umbilical lines. This should be carried out only after discussion with the attending consultant and under strict asepsis conditions.

Doctors should be ready to accept advice on infection control technique from phlebotomy and nursing colleagues.

## 5. PROCEDURE

### 1. PREPARE KIT FIRST

- Wash and dry hands
- Prepare the blood culture bottle – use one paediatric bottle only.
- The top of the bottle will be clean but not sterile. Remove the flip-off cap from the bottle and disinfect the top of the culture bottle with a 70% isopropyl alcohol impregnated swab. It is the drying of the alcohol which disinfects the cap. Leave for at least 30 seconds.

### 2. SAMPLE COLLECTION

**Volume of blood is the most critical factor in the detection of blood stream infection. For neonates 0.5mls of blood is recommended as a minimum.**

#### **CANNULA HUB METHOD:**

The use of a closed needle and syringe technique for blood culture collection in neonates is not normally practical due to the small size and scarcity of available veins.

As peripheral cannulation is usually indicated at the same time as the taking of a blood culture it is acceptable to take the sample from the cannula hub. Even if a further cannula is not required you should insert a cannula for blood culture collection and then remove it after the procedure. The first blood out of the hub should be used for culture, not other blood tests. No other method of blood culture taking should be routinely used.

- Wash and dry your hands again or use alcohol hand rub and apply clean examination gloves (sterile gloves are not necessary)
- Clean site with a 70% isopropyl alcohol/2% chlorhexidine cleanser and allow the skin to dry.
- **Do not palpate the site of insertion after it has been cleaned.**
- Insert the cannula into the vein.
- Using a 2ml syringe and a 28G (green) needle aspirate 0.5mls of blood from the cannula hub.
- Immediately and without changing or contaminating the needle insert it into the top of the blood culture bottle and allow the blood to flow into the bottle via the vacuum.
- After collecting other required samples secure the cannula according to the recommended technique or remove it if not required.

- Dispose of sharps in a sharps container.
- Wash hands after removing gloves.

#### **Taking blood through IV lines/central lines:**

**In children in whom line sepsis is suspected, blood for culture should be taken from a peripheral vein cannulation, not from the central line. In some cases an additional culture may be taken from a peripheral or central arterial line. In this situation discuss the procedure with the Registrar/Consultant but careful attention to cleansing and asepsis are critical.**

#### **6. LABELLING OF BOTTLES**

- Clearly label the bottle with appropriate patient information after the blood has been taken and prior to leaving the patient's bedside.
- Ensure that barcodes on the bottle are not covered by additional labels and that any tear-off barcode labels are not removed.

#### **7. TRANSPORTATION TO THE LABORATORY**

- Send the inoculated bottle to the laboratory immediately or arrange to have them placed in the 37°C incubator outside Pathology. The bottle must not be refrigerated. Plastic bottles can be sent via the POD system for transporting blood cultures to the laboratory.
- Include information on recent/proposed antimicrobial therapy and all relevant clinical details on the Pathology Blood Culture Request Form included.

#### **8. BLOOD CULTURE RESULTS**

All significant positive blood culture results will be telephoned as soon as they are available. For neonates, the presence of coagulase negative staphylococci does not always represent contamination and should be reported.

It is **NOT** necessary to phone the Laboratory to request blood culture results.

#### **9. DISSEMINATION AND IMPLEMENTATION**

The policy has been written by the Neonatal and Infection Control Team, and noted by the Control of Infection Committee. The policy will be available on TrustNet.

#### **10. PROCESS FOR MONITORING COMPLIANCE WITH THE EFFECTIVENESS OF POLICIES**

All doctors shall have their asepsis competency assessed by designated members of the Neonatal Unit team upon joining the Department.

#### **11. EQUALITY IMPACT ASSESSMENT**

The Trust has a statutory duty to carry out an Equality Impact Assessment (EIA) and an overarching assessment has been undertaken for all infection control policies.

## 12. ARCHIVING ARRANGEMENTS

This is a Trust-wide document and archiving arrangements are managed by the Quality Dept. who can be contacted to request master/archived copies.

## 13. REFERENCES

[Department of Health High Impact Interventions; July 2010. Taking blood cultures, a summary of best practice](#)

## 14. AUTHORS

Dr Jo Morris, Neonatal SpR, August 2010  
Dr. Peter Reynolds, Neonatal Consultant, Sept 2010  
Dr. Angela Shaw, Infection Control, Sept 2010  
Sr. Morag Farish, Infection Control, Sept 2010

<b>In consultation with:</b>	Infection Control Team
<b>Ratified by:</b>	Childrens' Clinical Governance Group
<b>Date ratified:</b>	Ratified by Chair, Childrens' Clinical Governance Group
<b>Review date:</b>	September 2013
<b>Target audience:</b>	Paediatric Doctors who take blood cultures
<b>Impact Assessment carried out by:</b>	Infection Control Team
<b>Comments on this document to:</b>	Neonatal Consultants / Infection Control Team

**Reviewed Nov 2013, minor changes, next review November 2016**  
**Checked with reference update 2018 Dr Anne Beh**  
**Next review May 2023**