

IVAS Part 4 Venepuncture

Key Points

- Venepuncture is the practice of using a needle or other system to withdraw blood from a vein in order to sample it for biochemical testing. This includes blood culturing, taking blood samples from a vascular access device or routine samples using a needle and vacutainer system.

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Abbreviations

ACF	Antecubital Fossa
ANTT	Aseptic Non-Touch Technique
COPD	Chronic Obstructive Pulmonary Disease
CRBSI	Catheter Related Blood Stream Infection
CVC	Central Venous Catheter
ECG	Electrocardiogram
GI	Gastrointestinal
IV	Intravenous
IVAS	Intravenous and Vascular Access Services
LocSSIP	Local Safety Standards
MC&S	Microscopic Culture and Sensitivity
NICE	National Institute for Health and Care Excellence
NIVAS	National Infusion and Vascular Access Society
NST	Nutritional Support Team
OPAT	Outpatient Parenteral Antibiotic Therapy
PICC	Peripherally Inserted Central Catheter
PN	Parenteral Nutrition
PSA	Procedural Sedation and Analgesia
PVC	Peripheral Venous Catheter
RIVC	Renal IV Catheter
SPN	Supplemental Nutrition
STA-CVC	Short Term Acute Central Venous Catheter
TCCVC	Tunnelled Cuffed Central Venous Catheter
TIIP	Totally implanted Intravenous Port
TPN	Total Parenteral Nutrition
VA	Vascular Access
VAD	Vascular Access Device
VasCath	Vascular Catheter

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1. VENEPUNCTURE

1. Venepuncture is undertaken following a competency assessment. Band 2 care assistants and above can undertake venepuncture following attendance of the appropriate study day.
2. The process of taking a blood sample is set out in the venepuncture competency document and should be followed by all staff.
3. The order for taking a blood sample is requested via the Epic electronic patient record system. Blood bottles should be labelled with the patients details at the bed side following a 4-point check.
4. Skin should be decontaminated using an alcohol swab prior to taking the blood sample except for taking a blood culture sample which requires a chlorhexidine/alcohol swab as set out in the practice instructions in section 7.
5. Patients should give informed consent prior to taking a blood sample. This should be documented in the patient's electronic record.
6. The phlebotomy department follow a local policy for their practice which includes the same safety points in this guideline.
7. A sharp safe closed system should be used throughout the trust to take blood samples. Needle and vacutainer sets should be avoided as they pose a risk to the operator and vessel health of the patient.
8. Because taking a blood sample involves the risk of contact with the patients' bodily fluids the practitioner should not only wash their hands prior to the procedure, they should also wear clean gloves to protect themselves.
9. A closed system such as the one shown here allows a flash back of blood to be seen in the needle chamber. Blue and green needles are available in each clinical area.

The blue needle is the smaller size.



2. ORDER OF DRAW BLOOD BOTTLES

Recommended order of draw, blood cultures should always be taken first.

Bottle	Tests
1 st Blue	Haematology: Clotting studies, INR, APTT, and Thrombophilia Screen.
2 nd Red	Haematology: Cold Agglutinins. Microbiology: Antibiotic assays, viral and bacterial Abs, Hepatitis. Immunology: ANA, ANCA, Thyroid, Coeliac.
3 rd Gold	Haematology: B12. Biochemistry: U/E, Creatinine, Ck, Amylase, Iron, Ferritin. Profiles: Renal, Liver, Bone. Thyroid, Cardiac, Lipid.
4 th Green	Biochemistry: Ammonia, Lactate, Renin, Troponin I
5 th Purple	Haematology: FBC, Red Cell Folate, Biochemistry: HbA1c, Troponin T
6 th Pink	Blood Transfusion Only: Blood group, antibody screen and cross match
7 th Grey	Biochemistry: Glucose

3. BLOOD CULTURES

Clinical Guidelines taken from the FHFT Infection Prevention and Control Manual

Implementation of these recommendations will reduce the incidence of sample contamination and “false positive” readings when taking blood cultures.

Blood cultures should only be taken:

- For the correct indication
- Using the correct technique

4. WHEN TO TAKE BLOOD CULTURES

Blood cultures must only be taken when there is a clinical need to do so; the Sepsis pathway should be adhered to and the guidance of the infection prevention and control policy followed.

Blood cultures should only be collected by members of staff who have been trained in the collection procedure and whose competence in blood culture collection has been assessed.

Clinical signs of bacteraemia or sepsis.

The following indicators should be considered when assessing a patient for signs of bacteraemia or sepsis:

1. Core temperature out of normal range
2. Focal signs of infection
3. Abnormal heart rate, blood pressure or respiratory rate
4. Chills or rigors

5. Abnormal white blood cell count
6. New or worsening confusion

- Blood cultures should be taken after identification of possible sepsis (using indicators listed above) and before the administration of antibiotics.
- Don't delay taking blood culture if the patient illness too severe to do so safely.
- Ensure tourniquet is not applied for an extended length of time, as this could result in circulatory impairment.

5. WHO CAN TAKE A BLOOD CULTURE

1. Anyone who is competent to undertake venepuncture and has additionally passed the blood culture taking competency can undertake Blood culture collection.
2. All band 4 and above can undertake the competency and be assessed as competent.
3. Other staff who are venepuncture competent can undertake the blood culture taking competency at their matron's discretion in agreement with the IVAS Lead.

6. DOCUMENTATION

The date, time, site and indications for blood cultures must be documented in the patient's Epic electronic record and on the microbiology Blood Culture-specific request order on Epic. If a blood culture has not been taken using the techniques for Blood culture collection below (section 7), the reason for deviation from guidance must be documented on the request form and in the patient's medical notes.

7. OBTAINING THE BLOOD CULTURE SAMPLE

1. Do not use a peripheral cannula or sites immediately above peripheral cannulas in situ; use a fresh stab wherever possible.
2. In patients with a suspected bacteraemia, it is recommended that **two** sets of cultures be taken at separate times and from separate sites.
3. If a central line is present, blood may be taken via the line after blood has been taken from a peripheral site (please document the colour of the lumen sampled and ensure that the access port has been disinfected with a 2% chlorhexidine in 70% isopropyl alcohol swab and allow to dry); and from a separate site (peripheral). Use bottle graduation lines to ensure that the same amount of blood is inoculated into each bottle for both the peripheral and central line samples.
4. Ensure that the bottles are appropriately labelled (to denote which came from the central line and which from the peripheral site).
5. Blood culture samples should be taken to pathology immediately after they are taken to obtain the most accurate results
6. Femoral vein puncture should be avoided (as skin cleansing and disinfection is difficult in this area).

Obtaining blood culture samples from patients can sometimes be difficult. If the patient is known to have difficult IV access the difficult IV access pathway should be followed. Multiple attempts and IV access can cause trauma to the patient and lead to false positive blood cultures or increased risk of blood stream infection. This is especially

relevant to paediatric and neonatal blood culture taking. For the paediatric patient extra care should be taken to maintain ANTT and not contaminate any key parts, this is because it is not always possible to use a closed system to obtain the blood sample and the blood culture can be contaminated in this process. Further information can be found in part one of these IVAS guidelines.

Blood culture collection

Using Aseptic Non Touch Technique (ANTT)

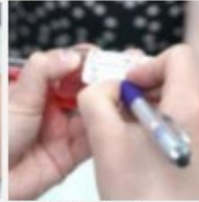


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USE A BLOOD CULTURE COLLECTION PACK

DO NOT TAKE BLOOD CULTURES FROM A PERIPHERAL CANNULA

*This contributes to contaminants and may delay appropriate treatment with serious consequences

				
Wash hands, gain patient consent.	Clean tray and allow to dry, creating a general aseptic field.	Collect equipment, blood culture pack, gloves, apron, sharps bin and blood culture bottles.	Don apron and clean hands with alcohol hand rub.	Open pack and prepare equipment using non-touch technique (ANTT). Clean hands.
				
Remove bottle caps and clean tops with state clean with 2% chlorhexidine in 70% alcohol clinnell wipes for 15 seconds, allow to dry.	Apply tourniquet and assess vein	Clean hands with alcohol gel	Don sterile gloves	Clean skin using 1ml Chloraprep applicator 2% chlorhexidine in 70% alcohol for 30 secs, allow to dry
				
Puncture vein with a safety butterfly only, using NTT to protect the Key-Part and Key-Site.	Keeping bottles up-right (to prevent back-flow of culture fluid) fill the aerobic then the anaerobic bottle with 8-10mls of blood. Release tourniquet.	Withdraw needle and activate safety feature, put into sharps bin. Invert bottles.	Apply sterile gauze from pack and apply pressure. Remove PPE, clean hands and dispose of all waste safely.	Label blood culture bottles and forms whilst at the patient's side with ICE sticker and indicate where the sample was taken from

Blood Culture Collection pack order code is **K61913/PSP/P1**

For clinical support contact the **Vascular Access Team**

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8. VACUETTE VENEPUNCTURE BLOOD COLLECTION SYSTEM



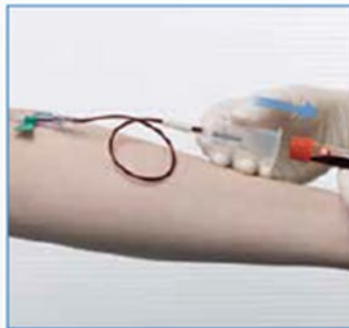
1 Remove protective cap



2 Venipuncture



3 Insert the tube



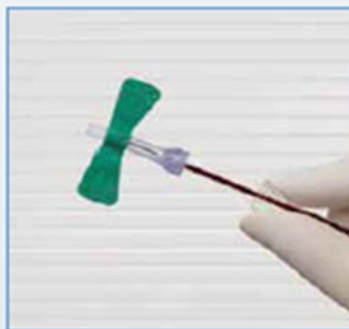
4 Remove the last tube



5 Activate the safety mechanism (by pressing down and pulling back the lighter coloured area)



6 Audible click indicates activation



7 Activated SAFETY Blood Collection Set



8 Disposal

9. OBTAINING A BLOOD SAMPLE FROM A PERIPHERAL CANNULA

1. Blood culture samples cannot be taken from a peripheral cannula
2. Normal blood samples can be taken from a newly inserted peripheral cannula, once only, using the follow vacutainer technique.



COLLECT

- > Clamp extension tube and remove vent plug.
- > Attach syringe or the BD Vacutainer® Luer Lok™ Access Device (LLAD). (fig. 1)
- > Unclamp extension tube and collect blood.
- > Clamp extension tube and remove syringe or LLAD.



FLUSH

- > Attach flush syringe.
- > Unclamp extension tube and flush. (fig. 2)



CONNECT

- > Clamp extension tube and remove flush syringe. (fig. 3)
- > Attach BD Q-Syte™ Luer Access Split Septum device.



FLUSH

- > Unclamp extension and flush through the other BD Q-Syte device. (fig. 4)
- > Clamp before disconnecting from the BD Q-Syte device, if the catheter system is not attached to an infusion set.

Consult product insert for complete instructions, warnings and cautions.

10. TAKING BLOOD FROM CENTRAL VENOUS CATHETERS USING VACUTAINER SYSTEM

If IV catheter sepsis is suspected, a set of blood cultures will be required to be taken from each lumen of the CVC and a peripheral set taken.

It is recommended that blood specimens are taken from a CVC with the vacutainer system and that a closed needle free connector is in situ.

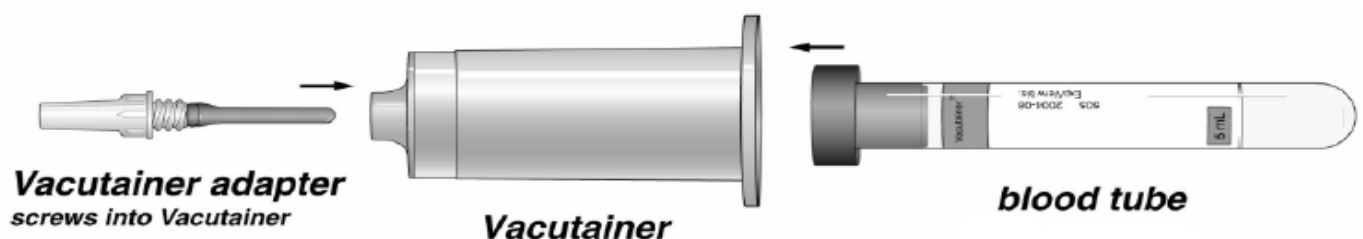
The use of vacutainer system may not be appropriate in paediatrics or adults with small, frail veins.

Requirements

1. Non-sterile gloves
2. Blood tubes and /or blood culture bottles for required tests (x1 spare 10ml tube)
3. Alcohol impregnated swab
4. Syringes x2 (10 ml)
5. Vacutainer needle holder
6. **Blue** Vacutainer (with needle and connector end)
7. Interlink bare cannula x 3 (when Interlink product in use)
8. 10mls of Sodium Chloride 0.9% w/v
9. Request form with patient details.



Needle free vacutainer set.



Procedure	Rationale
1. Check patient details against blood order on Epic and wrist band Can correctly identify the patient by checking all 4 points of patient ID (first name, surname, DOB and MRN), using open questioning where appropriate and obtains verbal consent.	To confirm patient details This is essential for blood transfusion blood samples,
2. Assemble relevant blood specimen tubes as requested on the request form and all relevant equipment.	
3. Wash hands	To minimise the risk of cross infection.
4. Draw up 10mls of Sodium Chloride 0.9% w/v (attach bare cannula if using Interlink).	
5. Draw up 10mls of Sodium Chloride 0.9% w/v (attach bare cannula if using Interlink).	
6. Assemble vacutainer device (attach bare cannula if using Interlink).	This device minimises the risk of needle stick injuries.
7. If CVC in use device close clamp on CVC and switch off infusion.	
8. Put on non-sterile gloves.	To protect the healthcare worker from body fluid contamination.

9. Holding CVC near the end wipe around the end of the closed luer lock connector with alcohol impregnated swab, allow to dry fully (minimum of 30 seconds).	To facilitate optimum disinfection of the connector.
10. Ensure clamp on CVC lumen is closed. Insert needle-less end of blue vacutainer into the closed luer lock connector.	
11. Attach spare blood tube, open clamp on lumen, and withdraw 5mls of blood, close clamp, and discard initial blood sample.	To ensure blood specimen is not contaminated.
12. Take the other blood samples closing the clamp between each tube. (Start with plain tubes and then additive tubes inverting gently)	This ensures that plain tubes are not contaminated by additives from other tubes.
13. Close CVC clamp and remove vacutainer device/syringe and discard in sharps container.	
14. Attach syringe containing Sodium Chloride 0.9% w/v to closed luer lock connector, open CVC clamp, and flush using push pause technique. Close clamp and remove syringe.	This causes more turbulence in the line and is more effective in flushing the line and maintaining patency.
15. Ensure blood tubes are correctly identified with patient details (addressogram labels are not acceptable). Forward specimens to laboratory with completed request form.	Ensure patient safety.

11. DISCARD VOLUMES PER LUMEN

The following volumes of blood should be discharged before the blood sample is taken for processing.

- Skin tunnelled central venous catheter 3ml
- Implantable port 3ml
- Peripherally inserted central catheter 2ml

12. BLOOD SAMPLING FOR BLOOD TRANSFUSIONS AND TPN

- It is compulsory to correctly identify the patient by checking all 4 points of patient ID (first name, surname, DOB and MRN), using open questioning where appropriate and obtains verbal consent.
- For transfusion samples, hand label the sample tube and places the Epic request (sticky label) in the sample bag.

For TPN blood sampling always use the VAD lumen that is not connected to the TPN. Stop the TPN infusion and wait 5 mins, then draw off up to 5mls of blood and discard before taking the blood samples. Where possible blood samples should be taken during the TPN rest period.

13. ASEPTIC NON-TOUCH TECHNIQUE

ANTT
Aseptic Non Touch Technique



Preparation:
Consent patient, assess veins visually and patient or nurse cleans arm.

Blood Culture Collection Procedure (peripheral vein)

Preparation zone

1



With clean hands
clean tray with detergent wipe; rinse residue & dry thoroughly (trays must be stored clean & dry)

2



Gather equipment
& place around tray

3



Clean hands
with hand rub or soap & water

4



Prepare equipment
using Non Touch Technique

Patient zone

Patient zone

5



Clean hands
with hand rub or soap & water

6



Scrub bottle ports
for 15 secs with a 2% chlorhexidine/ 70% alcohol wipe (Sanicloth) or alcohol steret

7



Position arm
on drape and pillow.

8



Apply disposable tourniquet,
identify a vein, relax tourniquet

9



Clean hands
with hand rub or soap & water

10



Re-tighten tourniquet

12



Apply non-sterile gloves

13



Clean skin - 2% chlorhexidine/70% alcohol
applicator (Chloraprep), back & forth & left to right strokes for 30 seconds. Allow to dry.

Decontamination zone

Decontamination zone

14



Puncture vein
(DO NOT RE-PALPATE)
Draw blood

15



Inoculate blood
to bottles using NTT.
Release tourniquet

16



Apply a sterile dressing

17



Dispose of sharps

Decontamination zone

Decontamination zone

18



Clean tray
according to local policy (see step 1)

19



Dispose of gloves

20



Clean hands
with hand rub or soap & water

Decontamination zone

Full version control record

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Guidelines Lead(s):	Andrew Barton – IV therapy and Vascular Access Organisational Lead
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This guideline has been registered with the Trust. However, clinical guidelines are guidelines only. The interpretation and application of clinical guidelines will remain the responsibility of the individual clinician. If in doubt, contact a senior colleague or expert. Caution is advised when using guidelines after the review date.

This guideline is for use in Frimley Health NHS Foundation Trust hospitals only. Any use outside this location will not be supported by the Trust and will be at the risk of the individual using it.

Version History

Version	Date	Guideline Lead(s)	Status	Comment
2	1/1/18	Advanced Nurse Practitioner Vascular Access	Final	
3	05.11.2019	Andrew Barton	Final	Ratified at NMB
4.0	March 2025	Andrew Barton	Final	Scheduled review

Related Documents

Document Type	Document Name
Guideline	Part 1 Introduction and Fundamental Principles of Practice
Guideline	Part 2 Vascular access LocSSIP
Guideline	Part 3 Peripheral Cannulation
Guideline	Part 5 Midline IV Catheters
Guideline	Part 6 PICCs
Guideline	Part 7 Short Term Non-Tunnelled CVCs
Guideline	Part 8 Implanted Ports and Tunnelled Cuffed CVCs
Guideline	Part 9 Arterial Catheters and Blood Sampling
Guideline	Part 10 Administration of Injectable Medicines
Guideline	Part 11 Infiltration and Extravasation
Guideline	Part 12 Long-term CVC Complications
Guideline	Procedural Sedation and Analgesia
Guideline	FHFT IPC Manual
Guideline	RCN Infusion Standards
Guideline	INS Infusion Standards
Guidance	Epic