



Expert Guide

Step by step guide to feline blood collection

As the UK's trusted pet blood banking charity, we provide quick access to high quality products as well as expert advice and guidance when you need it most.

We hope this guide is useful.
If you have any further queries, please contact our team.



01509 232 222



[petbloodbankuk.org](https://www.petbloodbankuk.org)

Contents

Personnel and equipment	4	Post blood collection: the blood	13
Donor selection	5	Sealing the line	14
Screening	6	Post blood collection: the donor	15
Sedation	7	Additional notes	16
Blood draw volumes	8	Single bag small animal blood collection system	17
Preparation of the collection system	9	Alternative anticoagulants	18
Alternate collection system 1	10		
Preparation of the donor	11		
Blood collection	12		

Personnel and equipment

Attire

- Clean scrub top or laboratory coat
- Examination gloves x 2 pairs

Persons required

- Phlebotomist
- Handler to hold the cat
- An extra assistant to aspirate the blood

Equipment required

- Quiet, cat-friendly clippers
- Local anaesthetic cream
- Diluted chlorhexidine scrub solution (or equivalent) and sterile swabs
- Surgical spirit or equivalent
- Small Animal Single Bag Syringe Collection System
- 250ml or 450ml blood collection bag to use as a source of CPDA-1/CPD
- Sterile 10ml syringe and needle to withdraw anticoagulant
- Set of artery forceps
- Plastic or guarded haemostat (protective cover over haemostat teeth)
- Line strippers and line sealing apparatus (see slide 13 and 14)
- MFT: iv catheter for cephalic vein, 100ml isotonic crystalloid and fluid administration set
- Sedation drugs (if required): see slide 7
- Flow by oxygen
- Eye lubricant

Donor selection

- Healthy cat (preferably relaxed and friendly whilst in a veterinary clinic)
- 1-8 years old
- Fully vaccinated and current, preferably neutered
- Preferably 5kg, but a minimum of 4kg is acceptable. No more than 18% (12ml/kg) blood volume should be collected. Cats must have a body condition score between 4/9 – 6/9
- Regularly receives prophylactic parasite treatments
- Preferably indoor only (but not essential)
- Born and lived in the UK its entire life. If living with other cats, they should also have been born and have stayed in the UK all their life or had screening for infectious diseases carried out.

Before taking any blood samples or placing an intravenous catheter, clip and apply local anaesthetic to a jugular and a cephalic vein. Place a protective dressing over the cephalic vein to prevent ingestion. Leave for 60 minutes

Screening

- Veterinary surgeon to perform a full physical health check.
- We recommend that all cats undergo an echocardiogram to rule out the presence of occult cardiac disease.
- Perform a full haematology and biochemistry analysis or as a minimum run a Packed Cell Volume/Total Solids - minimum PCV of 30% is required.
- Perform an infectious disease screen – minimum of FeLV/FIV. These must be repeated prior to every donation for outdoor cats. If time permits, we also recommend testing for mycoplasma haemofelis.
- Perform blood typing (blood typing kits are available from Pet Blood Bank).

Sedation

- Conscious blood collection is preferred and possible with some cats. Sedation should be considered for donors that are likely to become stressed during the process. After placement of an intravenous catheter, the sedation can be given intravenously. Alternatively, sedation can be administered by intramuscular injection and then the intravenous catheter placed. Use of local anaesthetic at the catheter and collection site 45-60 minutes before venipuncture is recommended, if time allows.
- Suggested iv protocol (30 minutes of sedation). Protocol supplied by *Jacques Ferreira BSc.BVSc.MSc.MMEDVET(anaes).DipECVAA.MRCVS. European and RCVS Specialist in Veterinary Anaesthesia and Analgesia*
 - Medetomidine: 0.015mg/kg – 0.02mg/kg
 - Butorphanol: 0.3mg/kg
 - Midazolam: 0.2mg/kg (off-license in cats, used under veterinary cascade)
- Repeat doses of medetomidine can be administered if required, but this protocol provides 30 minutes of sedation and should allow for blood collection to take place. Atipamezole may be given to reverse the medetomidine before 30 minutes and is usually not required after this time. We advise that the benzodiazepine reversal agent Flumazenil is available for administration in the practice when using the above protocol. Alternative sedation protocols are published for use in feline blood collection and the decision on which sedation protocol to use lies with the case clinician.

Blood draw volumes

- Calculate amount of blood to be drawn from the donor. Based on a 5kg cat:
 - 10% donation would be 33ml (approx. 7ml/kg)
 - 15% donation would be 50ml (approx. 10ml/kg)
 - 18% maximum donation would be 60ml (approx. 12ml/kg)
- The volume of blood drawn should never exceed 18% of the total blood volume.
- A ratio of 1ml citrate-based anticoagulant to 7ml whole blood is required (8.5ml anticoagulant in a 60ml syringe to collect 51.5ml whole blood)

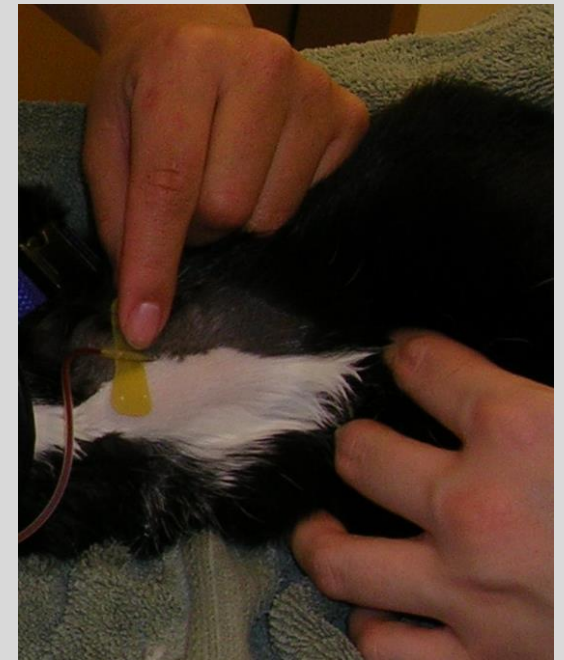


Fig. 1

Preparation of the collection system

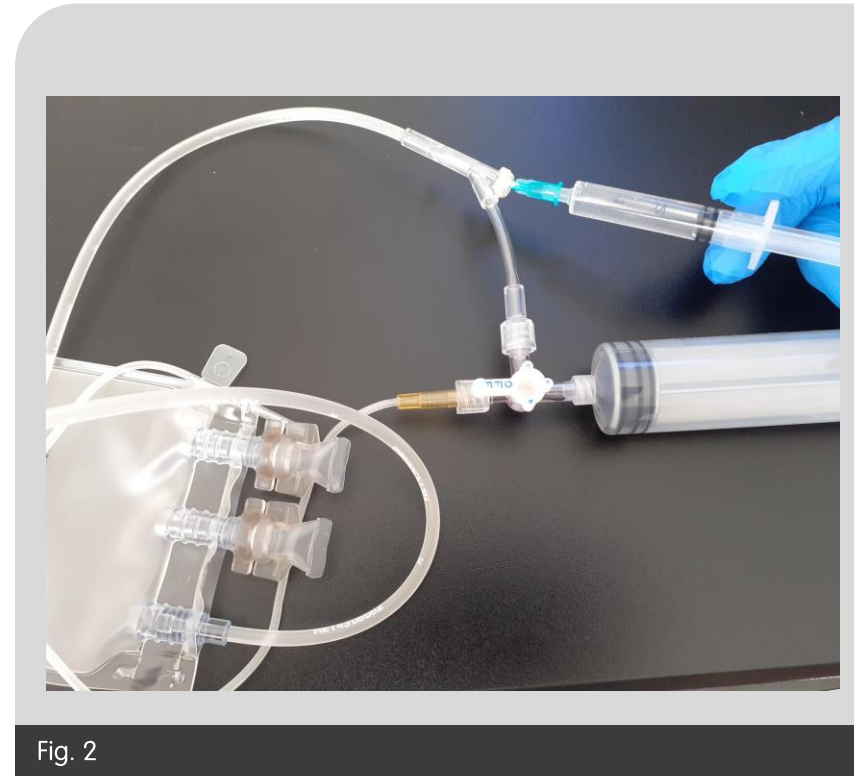
Drawing up the anticoagulant

- Wash hands thoroughly and don clean examination gloves.
- Open the sterile CPDA-1/CPD canine collection system and the small animal single bag syringe collection system packing.
- Use the 10ml syringe and 20g needle to aseptically draw up the required amount of anticoagulant from one of the ports on the canine collection system bag
- The canine collection system bag cannot now be used for blood collection as it has been breached and should be discarded unless further anticoagulant is needed

Preparation of the collection system

Priming the collection system

- Place the haemostat on the collection line half way between the syringe and the bag.
- Position the three way tap so it is OFF to the blood bag and open between the butterfly needle and the syringe
- Aseptically add the required volume of anticoagulant to the collection line via the injection port and aspirate it all into the syringe (Fig 2).
- Prime the butterfly needle to the tip of the needle with the anticoagulant
- To watch a video demonstration click this link <https://vimeo.com/689656880/710a68430a>



Preparation of the donor

- Take the donor to the quiet collection area and make them comfortable.
- Administer the intravenous sedation via a cephalic catheter, if being used, and wait for the cat to be suitably relaxed.
- Lubricate the eyes if sedated.
- Gently restrain the cat in sternal recumbency, with the neck extended. Minimal restraint is recommended for cats donating conscious. Lateral recumbency is also fine for sedated cats.
- Disinfect the venipuncture site
- Provide flow-by oxygen to sedated cats.

Blood collection

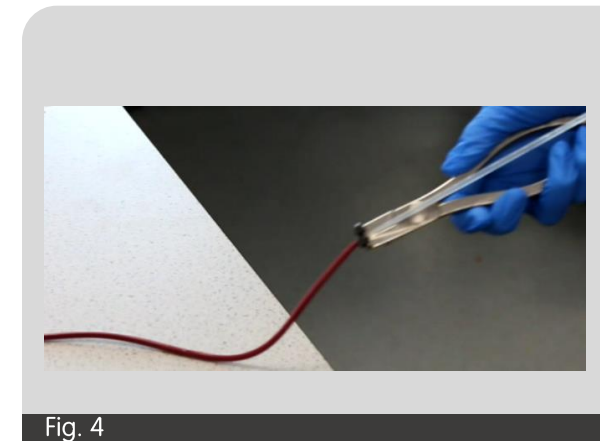
- Change examination gloves for a clean pair.
- The phlebotomist should hold off the jugular vein at the thoracic inlet to allow filling of the vein.
- Once confident of the jugular position, insert the butterfly catheter, bevel upwards and have the assistant remove the haemostat from the tubing. Ensure the tip of the catheter will sit caudal to the junction of the jugular and linguofacial veins.
- Have the third staff member gently aspirate blood. Excessive aspiration pressures can collapse the vein and stop flow. Blood should flow freely into the syringe at a rate of 5ml/minute or greater. Rock the syringe throughout to mix the anticoagulant and incoming blood. Maintain pressure at the thoracic inlet during collection.
- Stop aspirating and raising once the desired volume has been achieved and turn the three-way tap OFF to the butterfly catheter (Fig 3).



Fig. 3

Post blood collection: the blood

- Remove the butterfly catheter from the vein and carefully replace the cap whilst applying firm digital pressure with a sterile swab to the venipuncture site for a minimum of 5 minutes. Continue to observe the site for haematoma formation and if observed a neck dressing should be applied.
- Transfer the blood slowly from the syringe into the blood bag (unless blood is being administered by the syringe)
- Strip the whole blood remaining in the line (Fig 4) into the bag and do not allow the blood to refill the line.
- Place a permanent seal on the line as close as possible to the collection bag (see page 14).
- Label the blood bag as Feline Whole Blood, and include the volume, blood type, collection date and time, phlebotomist's initials, the donor ID and the expiry date (see page 16).



Sealing the Line

Seal with a single Maco-P Clamp
(Fig 5)



Fig. 5

Seal with two Metal Clamps (Fig 6)



Fig. 6

Apply a single heat seal (Fig 7)



Fig. 7

Post blood collection: the donor

- Monitor the cat's vital signs closely for any sign of hypotension whilst allowing them to recover in a quiet and warm area.
- Post-donation IVFT is required for donations of 10ml/kg or more. Administer the warmed isotonic crystalloid immediately after donation via the intravenous catheter at a dose of double the volume of blood collected, given over 60-120 minutes. Do not exceed the recommended dose without careful evaluation of the donor, as volume overload may occur.
 - Example: a 5kg cat donating 15% total blood volume (50ml) would need 100mls of IVFT over 1-2 hours. This could be given as either 100ml/hr for 1 hour or 50ml/hr for 2 hours.
- Once fully awake, a light meal and water can be offered.
- Outdoor cats should be kept indoors overnight following donation and owners should be informed to return their cat immediately to the veterinary practice if concerned.

Additional notes

- Ideally, blood should be collected using a single 'stick' technique. Reposition within the tissues if the jugular vein is missed on the first attempt. Use a new (anticoagulant primed) butterfly catheter if the catheter is removed at any point.
- The anticoagulant ratios are usually safe providing the volume of blood drawn into the syringe is within 10% (over or under) of the calculated volume.
- CPD blood collection bags, once breached to remove anticoagulant must be discarded once the collection is over, if not being used to hold and deliver the collected blood.
- The whole blood can be stored in the bag at 2 – 6 °C for a period of 21 days if CPD or CPDA-1 was the anticoagulant used and the collection was performed in a sterile manner.
- Always check the unit prior to administration if it has been stored and do not administer if there is a concern about the colour of the unit, if the unit appears cloudy or if there are contaminants present or signs of haemolysis.

Single bag small animal blood collection system

A short video on how to use this collection system (Fig 8) can be viewed using this link :

<https://vimeo.com/693583490/f60f7a0564>

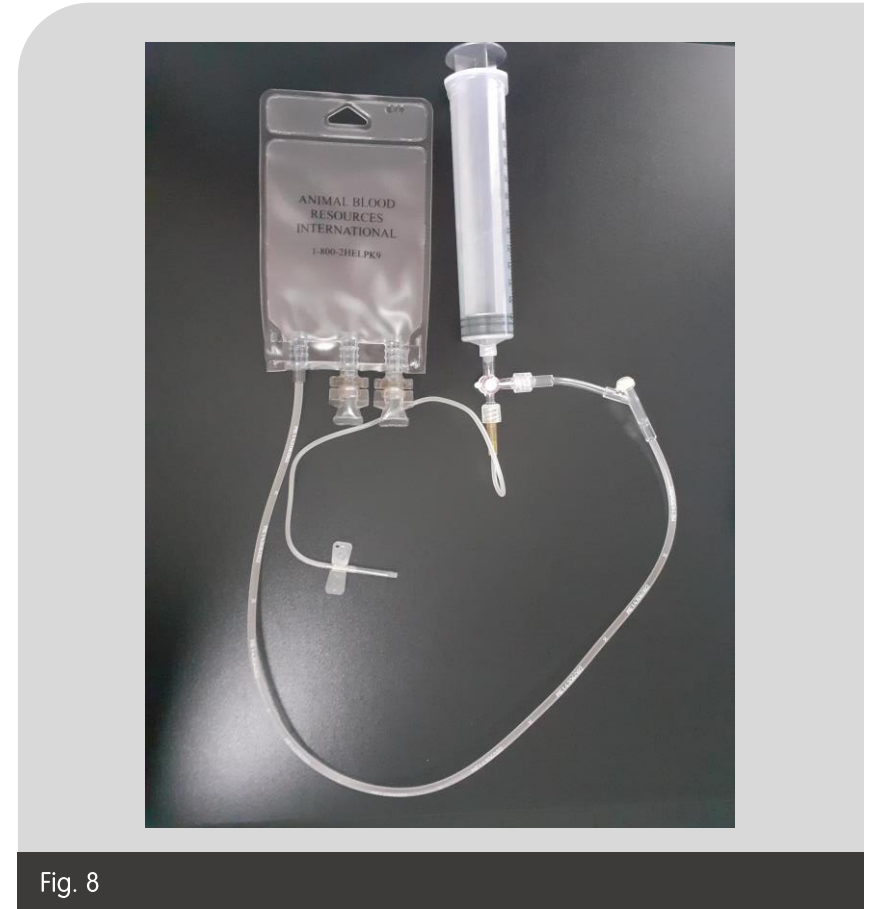


Fig. 8

Alternative anticoagulants

If using an alternative anticoagulant to CPDA-1/CPD, please see the *BSAVA Manual of Canine and Feline Haematology and Transfusion Medicine First Edition (2000)*, page 276, Fig 15.8, 'Anticoagulant-preservative solutions for blood collection in the dog and cat' for information on dose rates.

**Thank you for using this guide.
We hope you found it useful.**

To make transfusion medicine as easy for you as possible, we also provide:

- Blood deliveries around the clock
- Quality tested products that reduce the risk of complications
- Advice on cross matching and selecting blood products
- Administrative equipment

For more information about our blood products,
or to get further advice, please contact us



01509 232 222



petbloodbankuk.org

