

# Feline Donor Protocol

## Feline Blood Groups

Three feline blood groups have been described:

- A
- B
- AB

The vast majority of cats have naturally occurring alloantibodies against other feline blood antigens. Therefore, all potential recipients should be cross matched prior to transfusion to avoid a potentially lethal acute hemolytic transfusion reaction.

## Donor Criteria

- Comfortable with handling
- Weigh at least 4.5 kg (10 lb) **lean body weight**
- 1 - 8 yr. of age
- Healthy and not receiving any medications other than flea, heartworm, and tick preventatives
- Current vaccination status (titre testing is an acceptable substitute)
- Test negative for FeLV and FIV, as well as *Mycoplasma haemofelis* (formerly *Haemobartonella felis*); other cats in the same household must also have tested negative for the aforementioned diseases
- Live strictly indoors with no exposure to cats outside of housemates (who must also live indoors)
- Hematocrit 0.35 L/L (35%) or greater
- No history of a previous transfusion or pregnancy

## Donation Considerations

Care should be taken to make the donation experience as stress-free as possible. This may include: providing the donor with a blanket from home, housing the donor in a quiet area of the hospital, and/or utilizing pheromone sprays or diffusers in areas of the hospital the donor will be visiting to make their hospital stay as pleasant as possible. Additionally, alerting your team members that a feline collection is underway so they can assist you by



minimizing traffic in the area and keeping the noise level to a minimum, will not only improve the donor experience but your chances of a successful collection as well.

It is rare for cats to donate blood without sedation. Whenever possible, avoid hypotensive drug combinations when formulating the Donor Sedation Protocol (suggestion can be found below under *Sedation/Anaesthesia*).

Donors who do not tolerate handling or respond poorly to the sedation protocol utilized may require general anesthesia. Establishing a secure airway, closely monitoring vital signs, and maintaining anesthesia at the lowest effective vaporizer setting are all strongly encouraged if general anesthesia is required.

The standard donation volume is 11 mL/kg per cat. This represents 20-25% of the total feline blood volume. When combined with the need for sedation (+/- general anesthesia), this may account for reported hypotension-related adverse events, tachycardia and weak pulses in cats following donation. Tailored anesthesia, fluid support, and close donor monitoring can all help improve donor safety.

An acceptable fluid therapy protocol is to infuse 10 mL/kg of an isotonic crystalloid over 30 minutes to 2 hours starting immediately after the donation has completed.

## Supplies

\*asterisk indicates item is available for purchase through CABB

- [Feline blood typing kit\\*](#)
- [Feline crossmatch kit\\*](#)
- Choose collection system:

Dry Blood collection bag\*, 450 mL blood collection bag (source of CPDA-1/CPD)\*, 3-way stopcock, 21-gauge or 19-gauge butterfly needle set, 1 x 60 mL or 2 x 30 mL syringes

**OR:**

[Feline blood collection kit\\*](#)

- Clippers
- 4% Chlorhexidine solution and gauze squares to sterilely prepare donation site
- Gauze squares and 2" conforming bandage (i.e. vet wrap) for neck bandage post donation
- Scissors



- Sterile gloves x 2
- Supplies for IV catheter placement and fluid administration
- Monitoring equipment
- Ocular lubricant
- Supplies for general anesthesia (if required)

## Procedure

Please Note: Presently, there are no closed-system collection kits being manufactured for feline blood donation. All currently available systems are modifications of an open system. As such, the CABB does not endorse storing blood for >24 hrs after collection. Hospitals wishing to store feline blood are encouraged to read the current literature and implement collection and storage practices aimed to best serve themselves and their patient populations.

Standard donation volume is 53 mL donor blood + 7 mL anticoagulant, for a total collected volume of 60 mL. Take a moment to perform the following calculations:

Calculate **MAXIMUM** donation volume (the maximum volume a donor can safely donate)

**Donor weight (kg) X 11mL/kg = Donation Volume (mL)**

Calculate the required amount of anticoagulant

**Donation volume (mL) ÷ 7 = (round off) mL**

Calculate the desired volume of whole blood for the intended recipient

**Transfusion volume (mL) = desired PCV increase (%) x 2 x lean body weight (kg)**

\*note that the desired PCV increase is generally  $\leq 10\%$

## Sedation/Anesthesia

- If no concerns have been identified following a thorough physical exam, the anticipated IV catheter placement and jugular venipuncture sites can be shaved and a eutectic mixture local anaesthetic cream (EMLA™) applied, to provide additional donor comfort. The cream should be covered with an occlusive bandage and contact maintained for 30 minutes after application for maximum efficacy.<sup>3,4,5</sup>
- Prepare and gather all necessary equipment in case general anesthesia is required.  
**Note:** administration of flow-by oxygen is strongly encouraged for donors who do not require general anesthesia.



- Place an IV catheter. Consideration should be given to catheter gauge (maximum 22G), and vein choice, as repeated catheterizations for future donations could result in vessel scarring.
- Apply ocular lubricant
- Administer IV sedation
  - midazolam 0.3 mg/kg IV and butorphanol 0.2 mg/kg IV
  - alfaxalone 1 mg/kg IV to effect<sup>1</sup>
- Provide flow-by oxygen if sedation alone is adequate for collection
- If general anesthesia is required: repeat alfaxalone dose (1 mg/kg IV to effect), intubate, and maintain with gas inhalant
- Monitor vitals continuously, including Doppler blood pressure measurements

## Collection

- Thoroughly wash hands and don sterile gloves.
- Connect the 60 mL syringe and butterfly catheter to the 3-way stopcock, leaving the lateral port of the 3-way stopcock free and the stopcock turned off to the butterfly catheter.
- After swabbing the port of the anticoagulant bag with alcohol, use the 10 mL syringe and 20-gauge needle to draw up the required amount of CPDA-1/CPD based on your calculations.
- Remove the needle and connect the syringe to the lateral port of the 3-way stopcock.
- Aspirate the required amount of CPDA-1/CPD from the 10 mL syringe into the 60 mL syringe via the 3-way stopcock.
- Turn off the stopcock to the lateral port, remove the 10 mL syringe, and cap the port.
- Prime the butterfly catheter with CPDA-1/CPD and then place the guarded hemostat onto the catheter tubing.

**Note:** at no time should outside air be allowed to enter the collection system.

- Bring the donor to the collection area and comfortably apply a towel wrap (“purrito”).
- Administer the IV sedation as described above in *Sedation/Anaesthesia*
- If the donor is under general anaesthesia: position the cat in lateral recumbency and gently pull the forelegs back towards the tail at a 40 degree angle to the body, exposing the jugular furrow. For a calm, lightly sedated cat: sternal recumbency can be utilized.
- Clip an area 2” x 2” over the mid-jugular region to visualize the vein, if not previously shaved for application of eutectic mixture local anaesthetic cream (EMLA™).



- Surgically prepare the collection region using a 4% chlorhexidine solution and gauze squares, allowing a minimum contact time of 2 minutes prior to collection.<sup>2</sup> Sterile water can be used to remove any residual soap.
- Exchange sterile gloves for a new pair.
- Instruct the assistant to hold off the jugular vein at the thoracic inlet to allow filling of the vein.
- Perform venipuncture by inserting the butterfly needle, bevel up, into the jugular vein. It is possible to insert the needle toward the head or toward the thoracic inlet. If inserting toward the head, ensure the tip of the needle will rest caudal to the junction of the jugular and linguofacial veins once placed.
- A flash of blood may not always be evident upon entry into the jugular vessel. Needle placement can be confirmed by lightly pulling on the plunger of the 60 mL syringe.
- Once placement has been confirmed, continue gentle aspiration of blood into the 60 mL syringe to create a vacuum, taking care not to aspirate too aggressively as excess pressure can collapse the vein and stop the blood flow. Blood should flow freely into the syringe at a rate of 5 mL/minute or greater.
- Monitor blood pressure closely during this time and adjust the rate of collection accordingly.
- Carefully mix the incoming blood and anticoagulant in the syringe with a constant rocking motion during the blood draw.
- Continue collection until desired volume of blood is obtained.
- Turn the 3-way stopcock off to the donor, release the vein, remove the needle and replace the cap.
- The butterfly needle and tubing can be removed from the 3-way stopcock and a Hemonate filter attached to the syringe to administer the blood directly from the collection syringe **OR** administer using a standard filtered blood administration set using the port of the collection bag included in the [Feline blood collection kit](#).
- Have the assistant apply direct pressure to the venipuncture site with 2 or 3 small gauze squares for 2 minutes. Then lightly wrap the donor's neck with conforming bandage (e.g., Vetrap) over the gauze squares and leave in place for 30-60 minutes before removing. Care should be taken to not place the bandage too tightly around the donor's neck.
- Initiate IV fluid therapy.
- Reapply ocular lubricant.
- Return the donor to their housing and continue to monitor vital signs, including: temperature, respiratory rate, heart rate, mucous membrane colour, and blood pressure continuously until the donor is extubated and in sternal recumbency. Continue monitoring every 5 mins for the first 30 mins post extubation. Frequency can be decreased to every 15 mins thereafter until the donor is alert, normothermic, and ambulatory, if no concerns have been identified in the initial recovery period.



- Food, water, and a litter box can be offered when the donor is alert and ambulatory.
- Remove the IV catheter once the donor has received the desired volume of fluids and vital signs are normal and stable.
- Donors can be discharged into the care of their owner once fully recovered and deemed appropriate by the attending DVM. Owners may elect to leave their cats and return when ready for discharge.
- Be sure to note donor response to the sedation protocol, any donation concerns, and other suggestions in the donor's file for future reference.

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#### **References:**

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