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170µm In-Line Cital-Flow Blood Filter: First Time Clinical Use
Stephen Cital RVT, RLAT, SRA, VTS-LAM

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There has been a large discussion on the topic of delivery techniques used for veterinary blood transfusions. Traditional peristaltic pumps create cellular trauma which may lead to either erythrocyte lysis and/or pre-mature RBC destruction. This cellular trauma may exacerbate this complication with the presence of cells already at risk from storage lesions. One canine study observed a 100% survival of RBCs for transfusions performed by gravity delivery (no pump) and a 50% RBC survival with a volumetric pump (a typical peristaltic IV pump). Canine blood transfusions using a syringe pump were mostly undetectable at 24 hours post transfusion and completely undetectable after 24 hours. A notable variable to the RBC survival rate may have been the use of an 18µm pore size filter instead of a 170–260µm administration set and a relatively high rate. Canine RBCs have an average diameter of 7µm vs feline RBC diameter at 5.5–6.3µm. Differing RBC size potentially leads to increased physical trauma to canine RBCs passing through micro-aggregate filters.

Feline studies with biotinylated feline PRBCs with transfusions administered through an 18µm micro-aggregate filter with a syringe pump and gravity technique showed no significant difference in survival time up to 42 days post-transfusion.

Interpretation of the results suggest that gravity delivery is the best method for canine RBC transfusions utilizing a 170-260µm pore filter and a syringe pump with a micro-aggregate filter is the most logical choice for feline RBC transfusions (Yagi & Holowaychuck, 2017).

The Cital-Flow is also more economical. Hemo-Nate® filters are recommended to be replaced after the administration of 50mL of blood, whereas large pore filters, like the Cital-Flow, do not have this limitation. This ability reduces the risk of environmental blood contamination as well.

Case study: An adult female Corgi presented for a RBC destructive immune disorder requiring a blood transfusion. Corgi's have notoriously short legs making even routine IV fluid administration challenging if the patient has their legs bent. Because of this, utilizing the gravity delivery technique for her blood transfusion would be even more complicated and impractical. With the Cital-Flow the patient could safely and effectively receive her transfusion using the gentle force of the syringe pump through the clinically proven, RBC protective, large pore (170um) filter.

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For Small Volumes (<50ml or less)

1. Draw up blood product in syringe using aseptic technique.

2. Attach syringe to female adapter on the Cital-Flow.

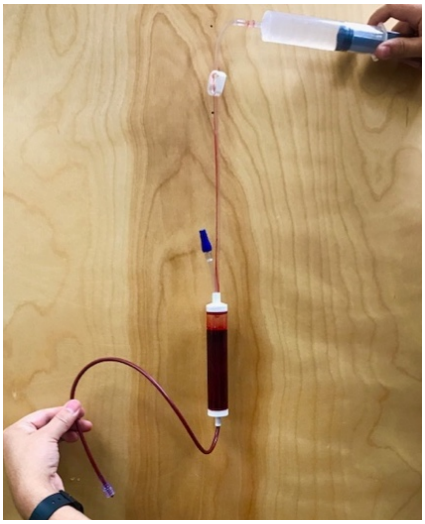
3. Hold the Cital-Flow drip chamber above the syringe in an inverted fashion. Fill the chamber until it is half full of the blood product or a volume not to exceed 40ml (*Figure 1*)

Note: If the entire volume of blood product is within the chamber, use the clamp to switch to a syringe with 0.9% Sodium Chloride of the volume to be delivered to the patient. Release the clamp and allow the blood product to prime the tubing that will be attached to patient by advancing the flush syringe plunger. You may choose to add an extension set.

4. Place the syringe in a syringe pump and set rate.

5. Monitor the patient closely during the transfusion for reactions and ensure the product is being delivered to the patient.

6. Use a syringe of 0.9% Sodium Chloride to flush remaining product into the patient (*Figure 2*). Dispose of filter when done.



For Larger Volumes (>50ml-250ml)

Repeat steps 1-6, except use the clamp without inverting the chamber between syringes of blood. **Syringes of blood should be kept in the refrigerator to prevent bacterial growth

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