

Disease Process	Whole Blood	Packed Red Blood Cells	Platelet Concentrate	Fresh Frozen Plasma	Frozen Plasma or Cryo-Supernatant	Cryo-Precipitate	Colloid / Other Resuscitation Fluids
Regenerative anaemia	■	★					
Non regenerative anaemia	■	★					
Pancytopenia	Fresh		★				
Anaemia with hypoproteinaemia	■	★		■	■		■
Anaemia with hypovolaemia	■	★			■		■
Anaemia with coagulopathy	■	★		★	■	■	
Von Willebrand factor deficiency (vWD) (Pre-surgery or as treatment for bleeding issue)				■		★	
Hypoproteinaemia See Guideline Albumin Equation below				■	★		■
Low immunoglobulin (Ig)				■	★		
Haemophilia A Factor VIII (Pre-treatment or as treatment for bleeding issue)				■		★	
Haemophilia B Factor IX (Pre-treatment or as treatment for bleeding issue)				■	★		
DIC	■	■		■	■		
Pancreatitis				■	■		■
Liver disease with coagulopathy				■	■		
Liver disease with anaemia	■	■		■	■		
Thrombocytopenia	Fresh		★				
Thrombocytopathia	Fresh		★				
Neonatal isoerythrolysis		★					
Rodenticide toxicity coagulopathy (Need to replace factors II, VII, IX and X)				■	★		

■ Indicates suitable blood products that can be utilised in treating the disease process ★ Designates the superior product or combination of products of choice when more than one suitable product can be utilised

Data was provided by Dr Anne Hale

COMPONENT: Storage instructions & shelf life	Indications for use	Action	Not indicated for	Hazards	Dosage and Administration <i>Use an in line blood filter (170-260 microns) with all products</i>
<b>Whole Blood (Fresh)</b> , collected in CPD or CPDA Room temperature - after 24 hours store 2-6°C < 21 days as Whole Blood (Stored) Transfuse < 24 hours to have any viable platelets and full coagulation factors 1 unit approx. volume = 450ml Average PCV 45% unless measured	Symptomatic anaemia (blood loss) Platelet deficiency: Fresh Whole Blood is unlikely to have a significant therapeutic effect in a severely thrombocytopenic patient (GUIDELINE: 10ml/kg of fresh whole blood raises the PLT count by 10 x 10 <sup>9</sup> /l)	Restores O <sub>2</sub> carrying capacity and blood volume, if used within 24 hours of collection, supplies all coagulation factors and some viable platelets	Pharmaceutically treatable anaemias (i.e. those that will respond to specific non-transfusion therapy) because of risks associated with transfusions	Immunologic transfusion reactions (e.g. Alloantibody reactions, allergic reactions) Non - Immunologic transfusion reactions (e.g. anticoagulant and toxin accumulation in products associated with storing blood products, circulatory overload, infectious disease transmission)	Calculate dose and administer each unit < 4 hours. As a general estimate, 2ml/kg of Whole Blood will raise PCV by 1% or the haemoglobin by 0.3g/dl. Rate of Administration: Start transfusion at a rate of 0.5-1ml/kg/hr for the first 15-30 minutes, then according to patients' fluid status, if hypovolaemic, at rates up to shock doses (as fast as blood is being lost), if euvoalaemic 5-10ml/kg/hr, if compromised circulation (cardiovascular compromise/renal failure) 1-2ml/kg/hr.
<b>Packed Red Blood Cells (PRBC)</b> in SAG-M nutrient solution 2-6°C 42 days from date of collection 1 unit approx. volume = 250ml Average PCV 62% unless measured	Symptomatic anaemia in presence of euvoalaemia without clotting factor deficits	Restores O <sub>2</sub> carrying capacity	Pharmaceutically treatable anaemias (i.e. those that will respond to specific non-transfusion therapy) because of risks associated with transfusions. Clotting factor and platelet deficits	As Whole Blood Ammonia levels can increase in stored red cell products. These should be used with caution in dogs with known liver disease	Calculate dose and administer each unit < 4 hours. As a general estimate, 1ml/kg of Packed Red Blood Cells will raise PCV by 1% or the haemoglobin by 0.3g/dl. Rate of Administration: as Whole Blood above.
<b>Platelet Concentrate (PC)</b> in fresh plasma and CPD Room temperature 20-24°C 5 days from date of collection 1 unit approx. volume = 65ml	Management of clinically relevant haemorrhage related to conditions that cause thrombocytopenia or thrombopathy	Short term reduction in bleeding in the actively haemorrhaging dog	Will not increase circulating platelet count in immune mediated thrombocytopenia where platelet destruction is accelerated	As Whole Blood	Calculate dose and administer each unit < 2 hours. Standard dose is 1 unit/10kg. Rate of Administration: 0.5-1ml/kg/hr for the first 15-30 minutes. Can be administered within 30 minutes to 1 hour to stop life threatening haemorrhage following the initial slow infusion.
<b>Fresh Frozen Plasma (FFP)</b> < -18°C 1 year from date of collection Becomes FP after 1 year and will store for a further 4 years 1 unit approx. volume = 200ml	All coagulopathies Immunoglobulin (Ig) transfer (i.e. passive immunity) Pretreatment of vWD and haemophilia A patients before invasive procedures Can be considered for volume resuscitation in acute trauma	Source of all clotting factors, immunoglobulins, albumin, lipids and electrolytes	Volume replacement alone Does not contain viable platelets. Sole therapy for hypoalbuminaemia in the absence of coagulopathy	Immunologic transfusion reactions (e.g. allergic reactions) Non - Immunologic transfusion reactions (e.g. circulatory overload, infectious disease transmission)	Calculate dose and administer each unit < 4 hours. Standard dose: 10-30ml/kg to effect. Severe coagulopathies require the higher end of the dose range. For the management of hypoalbuminaemia, FFP should be administered as a constant rate infusion. Higher rates of infusion are typically associated with greater increase in albumin. Dogs receiving this for hypoalbuminaemia should be monitored carefully for signs of volume overload. Rate of Administration: as Whole Blood above.
<b>Frozen Plasma (FP)</b> < -18°C 5 years from date of collection 1 unit approx. volume = 200ml	Deficit in non-labile vitamin K dependent clotting factors (II, VII, IX, X), Ig transfer Can be considered for volume resuscitation in acute trauma	Source of non-labile clotting factors (II, VII, IX, X), immunoglobulins and albumin, lipids and electrolytes	Volume replacement alone Does not contain viable platelets. Sole therapy for hypoalbuminaemia in the absence of coagulopathy	As Fresh Frozen Plasma	Calculate dose and administer each unit < 4 hours. Standard dose: 10-30ml/kg to effect. For the management of hypoalbuminaemia, FP should be administered as a constant rate infusion. Higher rates of infusion are typically associated with greater increase in albumin. Dogs receiving this for hypoalbuminaemia should be monitored carefully for signs of volume overload. Rate of Administration: as Whole Blood above.
<b>Cryo-Precipitate (Cryo-P)</b> < -18°C 1 year from date of collection 1 unit approx. volume = 60ml	Pre-treatment for vWD or haemophilia A before invasive procedures or treatment of active bleeding in these dogs	Source of factor VIII, fibrinogen, vWF	Coagulopathies involving non-labile clotting factors (II, VII, IX, X). As a source of albumin or immunoglobulin	As Fresh Frozen Plasma	Calculate dose and administer each unit < 4 hours. Standard dose is 1 unit/10kg. Additional amounts may be required for actively bleeding haemophiliacs/vWD. If used as a pre-treatment of coagulopathy before surgery, the dose should be given within 4 hours of the event. Rate of Administration: as Whole Blood above.
<b>Cryo-Supernatant (Cryo-S)</b> < -18°C 1 year from date of collection 1 unit approx. volume = 140ml	Vitamin K dependent coagulopathy, Ig transfer Can be considered for volume resuscitation in acute trauma	Source of non-labile clotting factors (II, VII, IX, X), immunoglobulins and albumin, lipids and electrolytes. The concentration of albumin in Cryo-S is slightly higher than in Fresh Frozen Plasma.	As Frozen Plasma	As Frozen Plasma	As Frozen Plasma

**GUIDELINE RED CELL EQUATION:** Volume of donor blood to be transfused = recipient weight (kg) x 90 (dogs) x (recipient desired PCV - current PCV/PCV of anticoagulated donor blood)

**GUIDELINE ALBUMIN EQUATION:** Albumin deficit (g) = [desired alb (g/L) - current alb (g/L)] x BW(kg) x 0.3. Albumin level in donor plasma averages 25g/L.