CRYO PRECI PITATE -

Description

CP contains cold insoluble proteins, formed when FFP is slowly thawed and spun and the supernatant removed

Contents

Concentrated source of von Willebrand factor, fibrinogen, Factor VIII and fibronectin and small amount of other proteins.
It contains approximately 50% Factor VIII, 20% fibrinogen and some Factor XIII, vWF and VIIIc.

Indications

Administration of this product is a temporary means of support and not intended to permanently alleviate clinical signs of coagulopathies or von Willebrand's crisis.
Allows for the replenishing of the necessary clotting factors without transfusing large amounts of whole blood or plasma

- Von Willebrand's disease (treatment or prevention);
- Hemophilia A (factor VIII deficiency);
    - Preferred treatment for prophylactic or active bleeding in dogs with hemophilia A or vWD
- Shock and dehydration associated with burns and sepsis (due to the high concentration of fibronectin);
- DIC - clotting factors consumption and fibrinogen deficiency;
- Treatment of lymphoid leukemias (antineoplastic effect)
    - Described for FeLV as well as lymphoma
- Pre-treatment for vWD or haemophilia A before invasive procedures or treatment of active bleeding in these dogs
- Source of factor VIII, fibrinogen, vWF
- Active haemorrhage from specific deficiency in vWF and VIII
    - or prophylaxis for invasive procedures with animals deficient in these factors
- Replacement of unstable clotting factors FVIII, FVIIIc following massive transfusion with resulting dilution of coagulation factors
- Dysfibrinogenemia
- Hypofibrinogenemia
- **Topical haemostatic in surgery or dental procedures.**

Contraindications

- Coagulopathies involving non-labile clotting factors (II, VII, IX, X)
- As a source of albumin or Immunoglobulin
- A history of anaphylaxis to plasma containing products is a contraindication for use. If necessary, minor crossmatch should be performed to support compatibility.

Side Effects and Hazards

- As for Fresh Frozen Plasma
- Reactions may include:
    - Nausea, peripheral vasodilation and urticaria.
- Anaphylactic/oid reactions are extremely rare.
    - Can be mild or life threatening. Onset is rapid, occurring 1-45 minutes from the start of the transfusion.
- Blood typing is not required prior to administration (as said not to contain any DEA agglutins)
    - If multiple plasma transfusions have been done, a minor crossmatch is recommended otherwise it is not mandatory
- As with all blood products and components there is a risk of infectious disease.
- Despite blood typing, the animal may experience adverse reactions or volume overload. Be aware and monitor the animal regularly.

Precautions

- 1 year shelf life ideally -30°C to -70°C but can be kept at normal freezer temperatures as well (-18°C)
- Do not re-freeze an unopened thawed unit.
- Always use a filter set
- Discard any unused portion
- Never mix IV medications, colloids, Ringer's lactate even if they are in different limbs.
- Cryoprecipitate is stable for 1 year from the date of collection of WB
    - Follow label instruction and keep in frost free freezer at <-18°C
- Use the unit within 2 hours after opening.
- Ideally, flush the catheters with NaCl solution before and after the transfusion.
- Gently stir the contents of each bag of CP before starting the transfusion.
- Dispose of any bag that is damaged, has perforations or with visible clots
- Defrost the unit within a protective plastic bag in a water bath at 30-35^{0}C for 20-30 minutes and stir occasionally;
- NEVER use a microwave
- Infusion pumps can be used

Administration

- Canine cryoprecipitate is recommended for intravascular administration
    - Always use a filter
    - In animals with circulatory impairment or very young animals, the intramedullary route can be used
- Topical application is recommended to control bleeding during surgery or dental procedures
    - The cryoprecipitate should be transferred by syringe and applied directly to the site of hemorrhage.

- If this product is given as a pretreatment for coagulopathy before surgery, it should be given within 2-4 hours of the event. This dose may be repeated every thirty minutes during highly invasive surgical techniques to maintain normal coagulation.
- Several units may be pooled, filtered into a syringe, and given bolus
- Recommended filter is 80 μm.
- Transfusion should be < 4 hours

Dosage

There is no specific dosage reported. Accepted dose rate is:

- 1 unit/10-12 kg BW
- Standard dose 1-2ml/kg.
    - Additional amounts may be required for actively bleeding haemophiliacs/vWD
    - May be repeated every 12 hours
- Transfuse 4 ml/kg (up to 5 ml/kg, in severe cases), SID or BID, depending on the etiology and coagulation time.

Guideline:

- The following calculations can be used for determining the dosage of cryoprecipitate for both Hemophilia A and von Willebrand's patients.
    - The calculations assume that the patient has a normal body weight. In dealing with the obese patient, the calculation must be made using the estimated normal weight for the patient's body structure.

      Weight (kg) X 70 ml/kg = Blood volume (ml)

      Blood volume (ml) X (1 – PCV) = Plasma volume (ml)

  Plasma volume (ml) X (desired factor VIII level – current factor VIII level) = Units (IU) of factor VIII needed

  Units (IU) of FVIII needed ÷ 80 + Number of Cryoprecipitate bags needed.

  Example: 20 kg dog, PCV is 40% (0.40 L/L), APTT level is 2% (0.2 IU/ml)
  20 X 70 ml/kg = 1400 ml blood volume
  1400 X (1 – 0.40) = 840 ml plasma volume
  840 X (0.4 – 0.2) = 168 IU of FVIII needed (assuming desired level is 40% of normal)
  168 ÷ 80 = 2.1 bags of cryoprecipitate needed

More specifics:

- The usual dose of Factor VIII necessary to control Hemophilia A or von Willebrand's is 20-50 IU/kg initially, and then 20-30 IU/kg every 12 hours thereafter until bleeding is under control.
- Although the half-life of Factor VIII is usually 12 hours, the half-life of initially circulating factor VIII is only 4 hours because of equilibration with extravascular space. A second infusion may be required within 8 hours. One IU of factor VIII per kg of body weight will usually raise the factor VIII level by 2% (or 0.2 IU/ml). Levels of 40-50% (of normal) are usually adequate to control bleeding. APTT levels can be used as a rough guide to factor VIII activity if a specific factor assay is unavailable.
- The concentration of von Willebrand's factor closely mirrors that of factor VIII. Treatment efficacy can be assessed by normalization of the patient's bleeding time. *In certain circumstance, Desmopressin may reduce or eliminate the need for cryoprecipitate when treating a von Willebrand's patient.*

Infusion Rates

- Initial rate: 0.25 ml/kg/h for 15-30 minutes to monitor for transfusion reactions
- After that: 2-5 ml/kg/h due to the viscous nature of the product
    - Small amounts of NaCl may be used to facilitate transfusion