Treating a von Willebrand's dog with DDAVP and Cryo

Cryoprecipitate should be given immediately before surgery at a dose of 1 unit / 10 kg bodyweight. The units should be pre-mixed with about 10ml of saline, pooled into a syringe and given bolus. Althought the half-life of vWF is usually 12 hours, the half-life of initially circulating vWF is only 4 hours because of equilibriation with extravascular space. A second transfusion may be required within 8 hours. One unit of cryo per 10 kg of body weight will usually raise the vWF level by 2% (or 0.2 IU/mL). Levels of 40-50% (of normal) are usually adequate to control bleeding. Normalization of the patient's bleed time or APTT levels can be used as a rough guide to vWF activity.

You may wish to consider the use of **DDAVP** (Desmopressin) prior to surgery. DDAVP is a vasopressin, which causes the endogenous release of vWF from the endothelial cells. The bleeding time can almost normalize for about 4-6 hours in a Type I von Willebrand's patient. The nasal spray preparation is the most cost effective and can be given subcutaneously 30 minutes before surgery at a dose of 1 microgram(µg)/kg diluted to a 1 mL volume with saline. Aqueous solutions specially prepared for pre-op delivery is also available. The dosage FOR HUMANS is 0.3-0.4 µg / kg. Repeat doses are not effective until the endothelial stores have been replaced. DDAVP may reduce or eliminate the need for cryoprecipitate or other blood products when treating a von Willebrand's patient. In these days of trying to reduce exposing patinets to blood products, DDAVP is commonly used, even in normal patients, to reduce bleeding during surgery. DDAVP is ineffective with Type II and Type III von Willebrands' as they lack endothelial vWF. Cryoprecipitate should be available in case of post-op bleeding or the dog is Type II or Type III/. Most breeds with von Willebrand's, including Dobermans, tend to be Type I. Fresh Frozen Plasma is not as effective as cryo due to the dilutional effect of all the plasma.

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 FVIII level – current FVIII level) = units (IU) of FVIII 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 of 40% of normal)

168 ÷ 80 = 2.1 bags of cryoprecipitate needed