**Blood component therapy and transfusions in the small animal patient**

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Critically ill or injured patients may present with anemia and require blood products. The clinician must choose the correct blood product and understand the decisions behind using certain blood products. At the end of this lecture, you should have a general understanding of:

1. The difference between autologous, allogenic, and xenotransfusion
2. Component therapy available in veterinary medicine and use of blood component in practice, especially hemorrhage
3. What criteria is used in deciding on administering a transfusion
4. Monitoring and complications associated with transfusion therapy

**What options are there for transfusions in dogs and cats?**

There are three categories for red blood cell transfusions: allogenic, autologous, or xenotransfusion. An allogenic transfusion uses blood from a separate donor from the same species that is given to the recipient of the same species. This is a common practice in veterinary medicine that utilizes a blood donor program or purchased blood products. Packed red blood cells (pRBCs) are more commonly used than stored or fresh whole blood for red cell transfusions. Allogenic products can be purchased for use or a hospital may develop a blood donor program for in-hospital use. An autologous transfusion is an autotransfusion. An autotransfusion can be easily performed with minimal complication. Xenotransfusion is transfusion of blood from one species to another. An example in veterinary medicine is the administration of canine pRBCs to a cat with B blood or blood in not readily available. A xenotransfusion can only be done one time per patient. Other blood components include frozen or fresh frozen plasma, cryoprecipitate, and platelets. Plasma is often used in patients with coagulopathies or severe hypoalbuminemia. Cryoprecipitate is used in patients with known or suspected von Willebrand's Disease. Platelet transfusions are not widely available or utilized in veterinary medicine. Platelet transfusion options include fresh whole blood, platelet rich plasma, or lyophilized platelets. It is not known that platelet transfusions are effective in patients with life threatening bleeding from immune mediated thrombocytopenia, as it has not been shown to minimize bleeding.

**What is a transfusion trigger? When should I transfuse a patient?**

This is the hemoglobin or hematocrit that defines when a patient would benefit from a red blood cell transfusion. This has not been defined in veterinary medicine. In human medicine, a clinician uses the cutoff of < 7 g/dl hemoglobin to administer a red blood cell transfusion. Transfusions are considered in patients that are clinical for their anemia (weakness, tachycardia,

weak pulses, tachypnea, prolonged CRT, pale gums). The decision to perform a blood transfusion depends on the benefits to increasing oxygen carrying capacity to the peripheral tissues, chronicity of signs, how aggressively the red blood cell count has changed, and clinical signs.

**References**:

Ng ZY, Stokes JE, Alvarez L et al. Cryopreserved platelet concentrate transfusions in 43 dogs: a retrospective study (2007-2013). J Vet emerg Crit Care 2016; 26(5): 720-728)