Administration of Blood During Hemodialysis in the Acute Setting

Purpose: Establish a Best Practice Standard/Resource.

What Does the Evidence Say?

• Risks from blood transfusions are well documented (Ashton, 2014; Sharma, Sharma, & Tyler, 2011; Tanhehco & Berns, 2012).

• Development of evidence-based standard procedures can improve patient outcomes (Ashton, 2014; Sharma et al., 2011; Tanhehco & Berns, 2012).

• The administration of blood products during hemodialysis offers the benefit of concurrent fluid removal (ultrafiltration) and electrolyte correction (Ashton, 2014; Sharma et al., 2011; Tanhehco & Berns, 2012).

• Rapid blood transfusion delivery rates necessary due to limited treatment time, combined with the need to determine ultrafiltration goal adjustments, establish the need for separate standards for administration of blood during hemodialysis (Ashton, 2014; Sharma et al., 2011).

• Individuals at higher risk for developing transfusion-associated circulatory overload (TACO) include infants, patients who are older, and those with cardiopulmonary compromise, chronic anemia, and renal failure (Sharma et al., 2011).

• Rapid blood transfusion delivery rates may increase both the risk of developing a transfusion reaction or transfusion-associated circulatory overload (Ashton, 2014; Sharma et al., 2011).

• Studies show there is a strong link between iron overload in patients receiving hemodialysis and the use of blood transfusions and IV iron during the same treatment. (Rostoker, Vaziri & Fishbane 2016).

Change in Practice

Evidence-based standard procedures for blood administration during hemodialysis are now available for developing or updating existing policies, and are as follows (Ashton, 2014).

• Standard hospital policies and procedures should be followed for: requesting blood from blood bank; initiating a transfusion or returning blood to the blood bank within 30 minutes of issue; confirming orders and consent; vital sign schedules; checking patient history for previous transfusion reaction; two patient identifiers; two nurse verification at bedside, test doses; and blood bank policies pertaining to transfusion reactions. (Carson et al., 2012).

• Blood will be transfused into the pre-pump bloodline chamber. If available, it is preferable to use a volumetric pump for the test dose to prevent free-flow of blood. The infusion rate will be set, manually or via pump, in a range of 60-180mL/hour in order to deliver 15-45 mL over 15 minutes. An RN will continuously observe the patient (Ashton, 2014).

• Ultrafiltration of blood administration volume (i.e., mLUF=mL of blood product) may be either concurrent with administration or throughout the length of treatment. In the case of profound hypotension or exsanguination, blood can be given free-flow without ultrafiltration of the blood administration volume (Ashton, 2014; Tanhehco & Berns, 2012).
Change in Practice (continued)

• After a test dose is complete and tolerated without reaction, blood may be given rapidly. The total volume of the blood product may be given within 20 minutes, if needed, on an emergent basis. Otherwise, blood can be administered over 30-60 minutes as tolerated. The RN should assess the patient for risk of developing transfusion-associated circulatory overload (TACO). For those patients at high risk, communicate with nephrologist/prescriber for alternative administration times (Ashton, 2014; Tanhehco & Berns, 2012).

• Observe the patient closely for transfusion related acute lung injury (TRALI) which can be induced by even small amounts of plasma in packed red blood cells. Symptoms may develop during infusion, but typically begin 1-2 hours after administration and are fully manifested within 1-6 hours. Symptoms may include dyspnea, hypotension, and fever. (Shaz, Stowell, & Hillyer, 2011; Toy & Lowell, 2007).

• Policies and procedures should be reviewed annually to ensure that they are still relevant and based on current evidence and best practice recommendations.

• Blood administration requiring in vivo crossmatching should not be given during hemodialysis due to the time constraints necessary for the frequent blood sampling and laboratory testing required throughout the transfusion (Armstrong, Wilkinson, & Smart, 2008, Walford & Taylor, 1964).

• The administration of iron should be held whenever blood is administered during hemodialysis to reduce the risk of causing iron overload (Rostoker Vazri, and Fishbane, 2016, American Red Cross, 2016).

References


