Pre-Surgical Autologous Blood Donation

Pre-surgical autologous blood donation (PAD) has lost favor due to its high cost, high wastage, and increased safety of allogeneic (volunteer) blood. Recommendations for use of PAD generally include those patients where there is limited availability of compatible blood (e.g., patient with multiple red cell alloantibodies) or when sufficient time after collection allows for regeneration of red blood cells (RBC) and significant blood loss is anticipated from the surgical procedure. When determining if PAD is appropriate for a patient, the following must be considered:

- Type of procedure and surgery date
- Anticipated blood loss
- Overall health of the patient
- Current hemoglobin and hematocrit

There are risks and benefits to PAD that must be part of the decision for this type of donation. For patients donating 1 to 2 units of blood pre-operatively, studies have shown that they are at a higher risk of receiving any transfusion in addition to being at risk for the development of pre-operative anemia. Planning the donation as early as possible, donating the minimal amount, and evaluating for and prescribing iron replacement therapy with or without erythropoietin prior to donation are important strategies for avoiding allogeneic transfusions.

A unit of PAD red cells can be given to another patient if not needed by the person who donated the unit.

**FALSE:** Autologous blood CANNOT be “crossed over” to the general volunteer blood inventory since collection standards for autologous donors are less stringent than for volunteer allogeneic donors.

Approximately 40-50% of all pre-surgical autologous units collected are discarded.

**TRUE:** Nationally as well as within our community, approximately 40-50% of all autologous units are discarded.

Pre-surgical autologous donation can lead to preoperative anemia which poses additional risks for the patient.

**TRUE:** Each unit of blood donated decreases a person’s hemoglobin by approximately 1 g/dL. Without sufficient time between the end of the donation and surgery date (at least 4-6 weeks) and iron replacement, the patient is at risk for preoperative anemia which has been shown to be associated with increased infection, increased length of stay and increased mortality. Preoperative anemia is one of the most important risk factors for perioperative blood transfusion.

For people with multiple RBC antibodies, pre-surgical blood donation may be a good option.

**TRUE:** For certain patients who have multiple RBC antibodies, availability of compatible allogeneic blood may be limited. If these patients do not have any pre-existing anemia or underlying medical conditions that preclude them from donating and there is adequate planning, pre-surgical donation may be a viable option.
A unit of PAD costs more than an allogeneic unit of RBCs.

**TRUE:** PAD requires additional processing, handling and labeling to ensure that the donated unit is at the designated hospital prior to the scheduled surgery. A PAD unit costs approximately 1.5 to 2 times more than an allogeneic RBC unit. The hospital and, in some situations the patient, is charged even if the PAD unit is not transfused.

The indication for transfusion of an autologous unit should be the same as for an allogeneic unit.

**TRUE:** A perceived increased safety of the autologous unit should not lower one’s threshold for indication for transfusion. Regardless if the patient has autologous units or not, the patient’s clinical symptoms should determine if a transfusion is needed. Laboratory values alone should not trigger an order for a transfusion.

Pre-surgical autologous blood donation is risk-free.

**FALSE:** Though autologous blood does not pose the same risk for viral disease transmission (e.g. HIV, Hepatitis) as allogeneic blood (see Table below), PAD cannot be considered risk-free. Such adverse events as bacterial contamination, circulatory overload and wrong blood transfusion have occurred with autologous donated blood. In addition, approximately 1 in every 150 autologous units donated is not available when needed due to either loss during processing or delay in delivery to the hospital.

### Risk of Adverse Events with Allogeneic Blood Transfusion (per unit transfused)

<table>
<thead>
<tr>
<th>Event Type</th>
<th>Rate per 100,000 Units Transfused</th>
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</thead>
<tbody>
<tr>
<td>Febrile/Allergic Reactions</td>
<td>1:100-500</td>
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<tr>
<td>Delayed Hemolytic Reaction</td>
<td>1:1,000</td>
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<tr>
<td>TRALI</td>
<td>1:5,000-10,000</td>
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<tr>
<td>Acute Hemolytic Reaction</td>
<td>1:25,000</td>
</tr>
<tr>
<td>Fatal AHTR</td>
<td>1:800,000</td>
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<tr>
<td>Serious Septic Reaction (platelets)</td>
<td>1:70,000-100,000</td>
</tr>
<tr>
<td>HBV (Hepatitis B)</td>
<td>1:220,000</td>
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<tr>
<td>HCV (Hepatitis C)/HIV</td>
<td>1:2,000,000</td>
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<tr>
<td>ABO Incompatible Transfusion</td>
<td>1:40,000</td>
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<tr>
<td>Transfusion-Associated Circulatory Overload (TACO)</td>
<td>1:40,000</td>
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References: