AUTOLOGOUS & DIRECTED DONATIONS

Background
- In the wake of the HIV epidemic, the Paul Gann Blood Safety Act requires that physicians in California offer their patients the options of autologous and/or directed donations, whenever possible.
- Order of transfusion: Autologous units (1st), directed donor units (2nd), general inventory (3rd)

AUTOLOGOUS DONATIONS
1. Less stringent donor screening criteria than for allogeneic donors

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Allogeneic</th>
<th>Autologous</th>
</tr>
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<tbody>
<tr>
<td>Donation Interval for WB</td>
<td>8 weeks</td>
<td>72 hours</td>
</tr>
<tr>
<td>Hgb/Hct</td>
<td>&gt; 12.5g/dl or 38%</td>
<td>&gt;11 g/dl or 33%</td>
</tr>
<tr>
<td>Weight</td>
<td>&gt; 110 lbs (50 kg)</td>
<td>None (UCLA: &gt;80lbs)</td>
</tr>
<tr>
<td>Age</td>
<td>&gt; 17 years</td>
<td>None</td>
</tr>
<tr>
<td>Infectious disease screening</td>
<td>Required</td>
<td>Not required unless shipped</td>
</tr>
<tr>
<td>History of disease or positive test</td>
<td>Never accepted</td>
<td>May be accepted</td>
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</table>

2. In addition, autologous donors are screened with a much shorter questionnaire.
   - Questions are directed at patient/donor’s health status, rather than potential risks for transfusion transmitted diseases. Therefore, Autologous units are NEVER crossed over into regular inventory if they are not used by the donor/patient.

3. Other Requirements for autologous donation
   - Requires physician order
   - Last unit to be collected at least 72hrs before time of intended transfusion to allow processing and appropriate clerical work
   - Contraindications for autologous donations
     - Patient has a condition predisposing to bacteremia: e.g. recent extensive dental surgery, open wound with signs of infection, G-tube
     - Patient has a severe cardiovascular/pulmonary condition, thus tolerates blood loss poorly: e.g. severe CAD, aortic stenosis, MI within the last 6 months.

4. Risks of autologous donations
   - Donor reactions (vasovagal, hypovolemia, hyperventilation etc): rate may be 12x as high as in healthy, volunteer allogeneic donors according to one study by the American Red Cross.
   - Mistransfusion: Rates of clerical and administrative errors comparable to allogeneic units according to CAP, 92 studies (1% error rate)
   - Bacterial contamination
   - Questionable cost-effectiveness in many settings: e.g. elective hip surgery
     - National wastage rate around 50%
     - Added costs of special labeling and handling
   - Iatrogenic anemia: modeling shows that in many settings, allogeneic units are not avoided – but simply given at an earlier time, which negates the purpose of autologous donation
5. Other Forms of Autologous Blood Collection
   • **Isovolemic (“normovolemic”) hemodilution**
     o Removal of one or more units of blood immediately before surgery
     o Volume replacement with saline
     o Blood loss during surgery is associated with less RBC loss
     o Reinfusion of blood near the end of surgery
     o Shelf-life: 8 hours at room temperature from the start of collection
     o Advantages:
       ▪ Better monitoring of patient that autologous blood donation
       ▪ Reduced RBC loss
       ▪ Coagulation factor and platelet replacement (room temperature storage and short shelf-life)
       ▪ Option for Jehovah Witness patients, who usually decline transfusions as blood remain in circuit /in contact with the patient
   • **Intraoperative blood salvage**
     o Semiautomated process, usually involves processing and washing shed blood
     o Shelf-life: 4 hours at room temperature from the end of collection
     o Contraindications
       ▪ Bacterial contamination of surgical field
       ▪ Malignant cell contamination of surgical field
   • **Post-operative blood salvage**
     o Blood reinfused from operative drains
     o Shelf-life: 6 hours at room temperature from the start of collection
DIRECTED DONATION

1. Donor must pass all requirements as when donating allogeneic blood as a regular donor

2. Frequent directed donor (aka repeat directed donor) programs
   - Goal/Advantage: reduction of donor exposure in transfused patient
   - Donor may donate more frequently than non-directed donor with approval of medical director

3. Donor may be patient’s friends, family members or totally unrelated, but chosen due to medical considerations.
   - Medical indications for directed donation:
     - Donor has rare RBC phenotype, match for recipient who requires phenotype matched unit
     - Donor lacks the high frequency antigen to which the recipient has developed an alloantibody
     - Donor is an HLA match for patient, who has formed anti-HLA antibodies and thus is refractory to non-matched platelets
     - Donor platelet units provide good response to patient (HLA antigen negative)
   - Granulocyte donations

4. Crossing directed donor units into the general inventory, can be done when:
   - If donor found to be not ABO compatible with intended recipient (for RBC, plasma, granulocyte products)
   - Product has not been used by the intended recipient, and the expiration date is approaching. The timing to crossover the product in relation to expiration date varies with institution, product type and the patient’s likelihood of needing the unit(s)
     - UCLA Policy
       - RBC directed donor units are released 5 days prior to expiration or upon discharge of patient from hospital given no need for outpatient transfusions
       - Platelet directed donor units are released at 12 noon on day of expiration after call to floor or upon patient discharge from hospital given no need for outpatient transfusions