What size needle should be used for transfusing blood products?

Using the proper needle size for blood transfusion supports transfusion safety and effectiveness, as well as patient comfort. But confusion often occurs among nursing staff on what size needle to use. A common misperception is that smaller-bore needles result in slower infusion and red cell hemolysis.¹

Studies have examined the effect of various needle gauges (21, 23, 25, and 27) when used to infuse blood via an infusion pump. No significant hemolysis was detected even at the highest speed (100 mL/hr) and smallest needle gauge.² Another study³ showed similar results when 4 different intravenous catheter sizes (18-, 20-, 22-, and 24-gauge) were used to infuse blood with an infusion pump at rates of 100, 125, 150, and 999 mL/hr. The force applied to the blood products, rather than the gauge of the needle, is the main determinant of whether hemolysis occurs during red cell transfusion.¹³

Needle size recommendations depend on the size and integrity of a patient’s veins. The following is a quick guide for administering blood to patients: ⁴

- For adults, insert a 22-14 gauge catheter based on the rate of the transfusion
  - An 18 to 20-gauge needle provides an optimal rate of blood flow and minimal patient discomfort
- For older adults or those with fragile veins and skin, use a 22-24-gauge catheter
- For pediatrics, 22- or 24-gauge catheter is recommended
- When using a smaller catheter, infuse blood components slowly (over the course of two to three hours)
- A central venous catheter is an acceptable option for blood transfusion

Implications for Practice:

- Transfusionist assessment should guide the choice of needle gauge
- Avoid applying pressure to the blood bag during non-urgent red cell transfusion
- Smaller gauge needles can be used for transfusing red cells and can lead to improved patient comfort and satisfaction

References:

Tips for Transfusionists: Needle Gauge for Transfusion

<table>
<thead>
<tr>
<th>Gauge</th>
<th>Hub Color</th>
<th>Recommended Use</th>
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<tbody>
<tr>
<td>24G</td>
<td>Yellow</td>
<td>Elderly, pediatric patients</td>
</tr>
<tr>
<td>22G</td>
<td>Blue</td>
<td>Patients with small veins, pediatric patients; could be used for blood transfusion-need to slow rate</td>
</tr>
<tr>
<td>20G</td>
<td>Pink</td>
<td>General purpose: medications, hydration, blood transfusion</td>
</tr>
<tr>
<td>18G</td>
<td>Green</td>
<td>Large volume infusions including blood transfusion</td>
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<tr>
<td>16G or 14G</td>
<td>Gray</td>
<td>Orange</td>
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