

Tips for the Transfusionist Part 1 – Needle Gauge for Transfusion

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.^{1,3}

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:

1. Flynn Makic MB, Martin SA, Burns S, Philbrick D, Rauen C. Putting evidence into nursing practice: four traditional practices not supported by the evidence. *Critical Care Nurse* 2013;33(2):28-44.
2. Herrera AJ and Corless J. Blood transfusions: effect of speed of infusion and of needle gauge on hemolysis. *J Pediatrics*. 1981; 99(5):757-758.
3. Acquillo G. Blood transfusion flow rate. *J Assoc Vasc Access*. 2007;124(4):225-226.
4. Fung MK, chief editor. *Technical Manual*, 18th ed. AABB, Bethesda, MD. 2014.

Gauge	Hub Color	Recommended Use
24G	Yellow	Elderly, pediatric patients
22G	Blue	Patients with small veins, pediatric patients; could be used for blood transfusion-need to slow rate
20G	Pink	General purpose: medications, hydration, blood transfusion
18G	Green	Large volume infusions including blood transfusion
16G or 14G	Gray Orange	Trauma, surgery, need for rapid volume infusion

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