
Lab Dept: **Transfusion Services**

Test Name: **RED BLOOD CELL TRANSFUSIONS**

General Information

Lab Order Codes: TRCG: Patients >4 months old (Must have a Type and Screen every 3 days and with each admission. Compatibility testing performed as required.)

UXM: Patients <4 months old. (Must have a Newborn Type and Screen or Type and Screen during current admission.)

Synonyms: Red Blood Cell Transfusions; Leukocyte Reduced Red Blood Cells; Red Blood Cells; Packed Cells; LRC Washed Red Blood Cells; WLRC, Frozen Red Blood Cells; Deglycerolized Red Cells; FZ; RBCTransfuse; PRBC Transfuse; Transfuse Blood; Transfuse Buffy Coat; Tranfuse Deglyced Packed Cells; Transfuse Granulocyte Pheresis

CPT Codes: 86923 – Computer (electronic) crossmatch (as appropriate)
86920 – Crossmatch, immediate spin (as appropriate)
86922 – Crossmatch, AHG (as appropriate)
P9016 - Leukocyte Reduced Red Blood Cells; Washed Leukocyte Reduced Red Blood cells (as appropriate)
P9039 - Frozen Red Blood Cells (as appropriate)
P9140 – Leukocyte Reduced Red Blood Cells, Irradiated

Test Includes: ABO and Rh type, antibody screen will be done as part of Type and Screen (TYAS). Compatibility testing done for red cell product transfusion requests for patients >4 months old.

A unit of leukocyte reduced red blood cells has a volume of 300-350 mL. Red cells have a hematocrit of approximately 55% to 70% and contain the same mass of red cells, as does a unit of whole blood, approximately 200 mL. The expiration date with CPDA-1 anticoagulant is 35 days after the date of collection, when stored continuously between 1°C to 6°C until transfused. CPDA-1 red blood cells have a hematocrit of 65-70%. With additional adenine supplementation after removal of plasma, AS-1/AS-3 red blood cells have a hematocrit of 55% to 60% and a storage period of 42 days at 1°C to 6°C.

Washed and Frozen (deglycerolized) red blood cells must be infused within 24 hours of preparation or discarded.

Storage intervals are those approved by the FDA.

Refer to [Blood Component General Information](#) for greater detail.

Logistics

Test Indications: Refer to [Guidelines for the Transfusion of Blood Components](#).

Frozen red cells are useful particularly for patients with very rare red cell types and antibodies to high frequency antigens or combinations of antigens. Also long-term storage of autologous red cells.

Washed Red Blood Cells are useful also for patients who have severe allergic reaction to conventional transfusion. Prevention of transfusion reaction to plasma proteins, especially IgA, in patients with IgA immunoglobulin deficiency.

Lab Testing Sections: Transfusion Services

Phone Numbers: MIN Lab: 612-813-6824
STP Lab: 651-220-6558

Test Availability: Daily, 24 hours

Turnaround Time: Red blood cells can be ready for transfusion within 45 - 60 minutes from the time the Blood Bank gets the Type and Screen sample, if blood of the appropriate type is on hand. **STAT** 45 minutes. Presence of unexpected antibodies may require hours to a day or two for identification. Additional time should be allowed for patients known to be sensitized to red cell antigens.

Also dependent on the provider special instructions and amount requested.

Washed Red Blood Cells (WLRC) or Frozen Red Blood Cells (FZ) preparation takes approximately 3 to 4 hours.

Special Instructions: Crossmatched blood may be held for three days and then is released automatically. Infants <4 months of age do not require crossmatching.

A new patient specimen is required every three calendar days.

Specify type of blood products: Leukocyte reduced red cells (RBC), granulocytes (GPH): number of units, time and date needed, special instructions, and indications for transfusion. Refer to [Guidelines for the Transfusion of Blood Components](#).

Standard Dose/Volume:	Patient Weight:	Std Dose:
	<20 kg	10 – 20
	20 – 40 kg	1 unit
	>40 kg	2 units

Rate of Infusion: 2 – 5 mL/kg/hour, <4 hours

Administration:	<p>Give red cells through a standard 150 - 260 micron filter. Transfusion and tubing volumes ≤60 mL will be issued in pre-filtered syringes. Transfusions should not exceed 4 hours duration; 2 hours or less per unit is preferable. Do not add or transfuse with lactated Ringer's solution, 5% aqueous dextrose, 5% dextrose in saline or other calcium-containing, hypotonic, or glucose-containing fluids through the same tubing because clumping, hemolysis, or clotting may occur. Drugs or medications may not be added to blood or blood components.</p> <p>Store in Blood Bank monitored refrigerator only until issue. When it is not possible to transfuse immediately after issue, return blood to Blood Bank within approximately 20 minutes. Otherwise, blood that has been out of monitored refrigeration must be discarded. Appropriate refrigeration specified conditions include temperature recorders and audible signals. These conditions are regularly intensely inspected by regulatory agencies.</p> <p><i>Under NO circumstances is blood to be placed in a refrigerator not under the Transfusion Service control.</i></p>
Crossmatch:	<p>Recipients of red cells must be tested for their ABO and Rh type, antibody screen, and antibody identification if the screen is positive. Patient's >4 months of age require crossmatching of the donor unit.</p> <p>The hospital transfusion service holds crossmatched blood for 3 days after which they make it available for other patients.</p>
Irradiation:	Yes for specific patient populations
Order Instructions:	<p>Indicate Special Needs for the order: Irradiate, Washed, Frozen, Directed Donor or Autologous, Hgb S negative.</p> <p>Indicate volume in mL's or number of units needed; time and date needed; and indication for transfusion.</p>
Expiration:	<p>Aliquoted red cell transfusions must begin within 4 hours of preparation. Frozen and washed red blood cells must be transfused within 24 hours after thawing or must be discarded.</p>

Specimen

Specimen Type:	Whole blood. Refer to Type and Screen
Container:	<p>Lavender top (EDTA) tube</p> <p>Alternate: Red top tubes will be accepted, but will delay specimen processing to allow for clotting. (SST tubes are Not acceptable.)</p>
Draw Volume:	<p>2 - 5 mL blood</p> <p>Refer to Pretransfusion Testing Requirements.</p>

Collection:

Refer to [Collection of Patient Specimens](#).

All specimens submitted to the Transfusion Service must be appropriately labeled at bedside with the time and date of collection, and the signature of the individual collecting the specimen. A completed order must accompany each specimen. It is not always necessary to collect a new sample prior to the provision of blood for patients. Consult with the Transfusion Service prior to collecting additional samples if status unknown.

Patient Preparation:

Follow the usual transfusion identification procedures. The patient must have a Medical Records band for checking against the component Unit Tag and the Transfusion Order prior to administration.

If pretransfusion testing is required:

The patient must be positively identified when the specimen is collected.

The label on the blood specimen must correspond with the identification on the patient's Medical Records band (or ED ID) and on the physician's/practitioner's orders. The specimen must be timed, dated and signed by the phlebotomist at bedside

Sample Rejection:

Gross hemolysis, sample placed in a serum separator tube, specimen tube not properly labeled.

Interpretive**Reference Range:**

Compatible

Critical Values:

Incompatible

Automatic call-back: any delay

Limitations:

Does not assure normal red cell survival. Will not detect all incompatibilities. Will not prevent sensitization to red cell antigens.

Red cells prepared in an "open" system expire in 24 hours. Most RBC's, however, are prepared in closed systems with full dating. RBC's often have a slow flow rate, which can be speeded up by adding 50-100 mL of isotonic saline to the bag.

Frozen and Washed Red Blood Cells: About 10% to 15% of the original red cells are lost in processing; expensive - about two to three times the cost of a unit of conventional red blood cells; short dating after thawing - 24-hour shelf-life; not readily available; slow and complex. Because of these problems, lack of stat availability for emergencies.

Contraindications:

Refer to [Guidelines for the Transfusion of Blood Components](#).

References:

[Circular of Information for the Use of Human Blood and Blood Components \(current edition\)](#), AABB, American Red Cross, America's Blood Centers