
Lab Dept: Transfusion Services

Test Name: GRANULOCYTE TRANSFUSION

General Information

Lab Order Codes: TYAS - patients >4 months old
UXM - patients <4 months old. (Must have a Newborn Workup or Type and Screen during current admission.)
BBAD - additional units onto a Crossmatch or Type and Screen

Synonyms: Neutrophil Transfusion; Leukocyte Concentrate; Leukocytes Transfusion; White Cells Transfusion; Buffy Coat Transfusion; Granulocyte Pheresis; Leukapheresis; Granulocyte-Platelet Pheresis

CPT Codes: P9050 – Granulocyte pheresis, each unit

Test Includes: Preparations of granulocytes (neutrophils) by apheresis contain about $0.5\text{-}2 \times 10^{10}$ granulocytes, $4\text{-}7 \times 10^{11}$ platelets and 25-50 ml red blood cells suspended in 200-500mL of plasma. Buffy coats are prepared from whole blood donations, less than 4 hours old. ABO and Rh type, antibody screen, antibody identification if indicated and crossmatch are required.

Logistics

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

Temporary therapy for severely neutropenic patients, especially newborns, with infection and who are non-responsive to antibiotic therapy. Criteria for neutrophil transfusion: Absolute neutrophil count of $500/\text{mm}^3$ or less; sepsis or severe local infection; infection caused by gram-negative organism or suspicion of gram-negative infection, in patient with profound neutropenia not responding to at least 3 days of conventional therapy. Use in gram-positive and fungal infections has not been well studied. Neutrophil transfusion is never the sole form of therapy. Do not use prophylactically.

Lab Testing Sections: Transfusion Service

Phone Numbers: MIN Lab: 612-813-6824

STP Lab: 651-220-6558

Test Availability: Limited availability. Not routinely collected. Must be prescheduled with the Transfusion Service.

Turnaround Time:	12 - 24 hours
Standard Dose/Volume:	10 mL/kg/daily
Rate of Infusion:	One unit over 2 – 4 hours
Administration:	Give granulocytes through a standard 150 – 260 micron filter. During infusion, monitor patient carefully for reactions. Administer granulocytes as soon as possible after collection.
Crossmatch:	Must be ABO compatible. Crossmatch required on patients >4 months old.
Irradiation:	All granulocytes must be irradiated
Expiration:	Granulocyte storage should be at 20°C to 24°C, without agitation, for a maximum of 24 hours.
Order Instructions:	Specify time and date needed. All granulocyte products must be irradiated prior to issue. Specify if required to be CMV negative.

Specimen

Specimen Type:	Whole blood
Container:	Lavender top (EDTA) tube Alternate: Red top tubes will be accepted, but will delay specimen processing to allow for clotting. (SST tubes are Not acceptable.)
Draw Volume:	Refer to Pretransfusion Testing Requirements .
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, either through the HIS or general requisition 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:

The patient must have a Medical Records band for checking against the component Unit Tag and the Transfusion Request Order Form 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.

Interpretive**Limitations:**

Transfusions are administered at a slower rate than red blood cells to prevent reactions.

Expensive. HLA selection may be indicated for alloimmunized recipients. High incidence of febrile and other reactions, which are not necessarily cause for stopping the transfusion. Neutrophil transfusions are seldom used now in adults.

Methodology:

Cytapheresis, using hydroxyethyl starch with steroid premedication of donor

Contraindications:

Not indicated for infections that can be managed successfully with antibiotics. Stop infusion of neutrophils in the presence of pulmonary distress and give hydrocortisone. Given with amphotericin B, there may be a risk of severe pulmonary reaction. The minimal dose for an adult patient is 10^{10} neutrophils/transfusion. Fewer neutrophils per transfusion may not achieve the intended effect.

Risks include:

- Chills, fever, allergic reactions, including urticaria
- Immunization to HLA antigens
- Risk of disease transmission (Hepatitis B, C and HIV)
- Since red cells are present in granulocyte units, immunization and hemolysis can occur.

References:

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