
BLOOD/BLOOD COMPONENT TRANSFUSIONS

PURPOSE:

To replace clotting factors, granulocytes and platelets.
To improve oxygen-carrying capacity of the circulatory system.

POLICY:

1. Informed Consent

- A. An informed consent (SN 1012) shall be completed prior to administration of Blood/Blood Components. Outpatient informed consent is valid for only 30 days, while inpatient informed consent is valid for the duration of the current hospital admission.
- B. The patient may choose not to consent to the transfusion of blood/blood products. The Refusal to Consent to Blood Transfusion (SN 6369) shall be completed for patients who refuse transfusion. Forms are available on the unit.

(See Hospital Policy:5.16.1, Informed Consents)

2. Physician's Order

The route of administration for blood products is intravenous. A physician's order shall be written for all transfusions of blood/blood components specifying:

- A. type of component: red blood cells, apheresis platelets, fresh frozen plasma and cryoprecipitate
- B. Number of units to be administered
- C. rate of administration
- D. warming of blood/blood components
- E. special need requests such as irradiation, CMV negative and Sickle negative
- F. premedications as designated by physicians

3. Labeling Specimens

- A. Blood specimens submitted to the Blood Bank for possible red cell transfusions for type and crossmatch, or type and screen **shall be labeled at the bedside** by the Phlebotomist or nurse with a Typenex Blood Recipient Band. Prior to specimen collection the patient shall be asked to verify his/her name and medical record number or date of birth.

Exception: NICU follows their unit specific policy

- B. Non-red cell products (platelets, fresh frozen plasma and cryoprecipitate) may be dispensed according to current blood typing results on the patient and do not require the use of the Typenex System.

*(Refer to Nursing Policy, B-12, Typenex Blood-Recipient Identification Bands)
(Clinical Lab Manual: Policy 7.2, Blood Collection Technique by Venipuncture)*

4. **Type and Screen or Type and Crossmatch**

Type and Screen or Type and Crossmatch shall be ordered in the computer.

- A. Blood specimens submitted to the Blood Bank for a **Type and Screen** are processed as such with no units set aside for the patient. The nursing unit and/or ordering physician shall be responsible for notifying the Blood Bank if units are needed for transfusion. If the antibody screen is positive, two (2) units of RBC will automatically be set up by the Blood Bank for the patient.
- B. The blood specimen used for **Type and Crossmatch** shall be obtained from the patient within 48 hours of the scheduled transfusion. **Type and Crossmatch** or compatibility testing shall be done only for red blood cell transfusion. Other blood components (apheresis platelets, fresh frozen plasma or cryoprecipitate) will not require a type and crossmatch.
- C. If the patient has no historical ABO/Rh on file, the Blood Bank will call for an additional pink top plain labeled specimen to be drawn. This specimen CAN NOT be obtained at the time of the original draw. The purpose of this second tube is for verification of the ABO/Rh on the original specimen.

5. **Blood Order Form**

When blood/blood components are needed, a completed Blood Component Order Form (both pages) (SN 1111) noting the resident, attending physician, reason for transfusion, date and time, special need requests (i.e. irradiated, CMV negative or Sickle negative, etc.) and location/service shall be submitted to the Blood Bank for each unit of Blood/Blood components.

Note: For Sickle Cell patients, enter the information in the comment field when the request is sent and call the Blood Bank.

For example: 2 units Red Blood Cells (RBCs) - 2 sheets
1 unit Fresh Frozen Plasma (FFP) - 1 sheet

6. Transfusion Record

Upon receipt of the Blood Component Order Form, the Blood Bank shall dispense the Blood/Blood Component along with a Transfusion Record (SN 1236). The Transfusion Record shall be returned to the nursing unit with the blood/blood component and utilized for documentation of bedside verification, and/or other data as indicated on the form.

7. Verification Prior to Transfusion

A. Red blood cells, apheresis platelets, fresh frozen plasma, and cryoprecipitate shall be verified in the patient's presence, at the bedside, prior to transfusing by the RN and another licensed person (nursing/medical personnel).

Note: When completing the 2nd nurse verification process, do not stop or interrupt the process at any point once started (i.e., take a phone call, etc).

B. The unit to be transfused shall be compared with the Transfusion Record for a complete match, including patient identification using two identifiers, patient compatibility for red cells, and expiration date of unit.

C. For transfusions of red blood cells Typenex code numbers on the Transfusion Record shall be matched with the patient's Typenex arm band and code numbers. Additionally, the unit label shall be matched with the unit number on the primary Unit Tag prior to spiking blood/blood component.

Note: The blood/blood component shall not be spiked until the verification process has been completed and deemed accurate.

D. The verifying nursing/medical personnel shall sign their full signature on the Transfusion Record in the space provided.

Note: The Transfusion Record shall not be signed until after the verification process has been completed and deemed accurate.

8. Transfusion Time and Blood Storage

A. Blood/blood components obtained from the Blood Bank shall be completely transfused within four hours of issue (blood/blood components returned to the Blood Bank within 30 minutes of dispensation shall be returned to inventory.)

- B. Patients shall not have simultaneously infused blood products unless hemodynamically unstable or active resuscitation for multiple trauma. Patients receiving simultaneous units shall be in a continuously monitored setting.
- C. If a unit of blood/blood component is to be infused over a period of time greater than four (4) hours (the transfusion time starts when the unit is issued from the Blood Bank), the nursing unit shall inform the Blood Bank so the volume can be divided into two (2) separate units to prevent the possibility of bacterial proliferation. The second half of the unit will be released by the Blood Bank only upon completion of the transfusion of the first half.
- D. **Do not store blood in unit refrigerator.**
The only controlled refrigerators in this hospital for blood storage are located in the Blood Bank, Trauma Lab and the 3rd floor Operating Room. The Blood Bank refrigerator in O.R. 3rd floor is under the jurisdiction and control of the Medical Director of the Blood Bank. No other refrigerators in the hospital shall be utilized for storage of blood.

9. Using the Appropriate Filter

An appropriate filter shall be used when infusing blood/blood components:

- A. The IV blood administration tubing has a 180 micron filter that can be utilized with red blood cells and pheresis platelets, the tubing must be changed every 4 hours. However, if three or more units are to be infused, a microaggregate filter (20-40 microns) shall be used.
- B. A component filter (170-260 microns) is required for:
 - 1. Fresh Frozen Plasma
 - 2. Cryoprecipitate (80 micron filter can also be used)
 - 3. Neonates and small children not receiving more than one unit of RBC's in a 24-hour period.
 - 4. A special syringe with an in-line microaggregate filter is used for intrauterine transfusions.
- C. All apheresis platelets and red blood cells are now leukocyte reduced, therefore, **no longer require a leukocyte reduction filter.**
- D. Granulocytes must be transfused with a standard blood filter (170-260 microns).

10. Using Appropriate Warming Devices

An FDA approved blood warming device shall be used to warm blood/blood components:

- A. When blood/blood components need to be transfused at rapid rates >100 ml/minute (such as massive transfusions in the Operating Room or Trauma setting), manufacturer's instructions and specifications for their use shall be strictly followed.
- B. Warming devices shall be used when administering any amount of blood product where a temperature decrease may allow the patient to become hypothermic. (i.e. a trauma patient receiving 4 or more units in 1 hour, a 5y/o patient with a current temp of 98.1 receiving 2 units in 1 hour, a 90 y/o patient with a temp of 97.5 receiving any units).
- C. Each blood warmer shall be validated and monitored by the Biomedical Engineering Department in accordance with the manufacturer's specifications.
- D. Blood warming devices must not raise the temperature of blood to a level that causes hemolysis (manufacturer's instructions and specifications shall be strictly followed).

11. **Infusion Pump**

An infusion pump may be used to transfuse blood/blood components at a controlled rate for very slow rates of transfusion, usually used for neonatal, pediatric and selected adult patients. Some devices can be used with the standard blood administration sets but most will require special infusion tubing supplied by the manufacturers.

12. **Priming and Flushing the Tubing**

Normal Saline IV solution shall only be used for priming blood administration tubing and flushing before and after blood/blood component administration. **No other IV fluids including any medications shall be administered or infused with any blood component.**

13. **Changing the Filter and Tubing**

The blood administration **tubing and filter shall be changed every four (4) hours.** Both the filter and tubing shall be changed at the same time when it is necessary to replace the filter, usually after 3 units of blood/blood products have been continuously infused. When the transfusion has been completed, the blood tubing shall be discontinued and/or replaced with regular IV tubing if other IV fluids are to follow.

14. **Emergency Situations**

In emergency situations, blood/blood components may be infused prior to a completed cross match provided:

- A. A **Blood Waiver Card** is completed and signed by the ordering physician. A blood specimen shall be submitted to the Blood Bank at that time with the Blood Waiver Card. Blood Waiver Cards can be obtained from the Blood Bank or CMS (order number LSUHSC - 5036 PR).
- B. The patient is in EMS with Trauma Stat Protocol.

15. Recording Vital Signs

For **each unit** of red blood cells, apheresis platelets, fresh frozen plasma, and cryoprecipitate to be administered, **vital signs (blood pressure, pulse, and temperature)** shall be obtained and documented on the Transfusion Record:

1. **prior** to transfusion,
2. **fifteen minutes after initiation** of the transfusion, and
3. **upon completion** of the transfusion(s).

16. Transfusion Reaction

A. The patient shall be closely observed and assessed for a possible transfusion reaction, especially **during the first 15 minutes** of blood/blood component administration with appropriate documentation recorded on the chart. A transfusion reaction may occur either during or within several hours following the blood transfusion. This includes, but is not limited to, any of the following:

1. **Fever or any rise in temperature of 1°C or 2°F from baseline temperature as recorded in the Transfusion Record**
2. **Chills**
3. **Back pain**
4. **Dyspnea, including wheezing**
5. **Hypotension or Hypertension**
6. **Hemoglobinuria**
7. **Bleeding**
8. **Pain at infusion site**
9. **Hives, urticaria, or itching. This is an allergic reaction. Notify the physician immediately so medications (i.e. diphenhydramine) can be administered.**

B. In the event of a suspected transfusion reaction, **the transfusion shall be stopped immediately** and the **responsible physician and blood bank notified.** If it has been determined that a reaction has occurred, the following steps shall be taken:

1. **STOP** the transfusion and maintain IV access.
2. **RECHECK** all blood labels and patient identification.
3. **DRAW** blood samples in 1 red and 1 pink top tube.

4. **DRAW** blood cultures in all cases of febrile reactions.
 5. **COMPLETE** appropriate Blood Transfusion Reaction Form (obtained from Blood Bank).
 6. **SUBMIT** all paperwork with blood specimen, blood bags, and transfusion set to the Blood Bank.
- C. A transfusion reaction work-up shall be performed by the Blood Bank. **No additional** blood/blood components shall be dispensed prior to completion of work-up unless a **Blood Waiver Card** is completed and signed by the physician.

17. Documentation

The type of blood/blood component, unit number, volume, starting solution and time of administration shall be documented on the 24 Hours Nurses Notes or Unit Specific Flowsheet. On the **Transfusion Record** document the date and time of administration and discontinuation, vital signs at initiation of transfusion, 15 minutes after initiation, and post-transfusion, and amount given.

18. Administering Medications with Blood Infusion

No medications shall be administered simultaneously with blood/blood components via the **same IV line.**

Note: Although the Multi-Lumen Central Venous Catheter (CVC) is one line, the different ports may be utilized to infuse blood, medications, TPN, etc at the same time.

The **distal port of the Multi-Lumen (CVC)** should be utilized to administer blood/blood components while the middle and proximal ports can be utilized to administer IVPBs, TPN, etc.

19. Transfusion Record Copies

The yellow copy of the **Transfusion Record** shall be returned to the Blood Bank following complete and uneventful transfusion, and the white (top) copy placed in the space provided in the medical record.

RESPONSIBLE PARTY	ACTION
MD, RN	1. Obtains informed consent for Blood/Blood Components.
MD	2. Writes order specifying: <ol style="list-style-type: none"> a. type of blood component b. number of units to be administered. c. rate of administration of blood component

RESPONSIBLE PARTY	ACTION
	<ul style="list-style-type: none"> d. route of administration e. special needs requests (i.e. irradiated, CMV negative, Sickle negative) f. warming of blood/blood component g. premedications
RN, RN Applicant, LPN	3. Verifies physician's order and that Informed Consent has been completed and signed.
RN, RN Applicant LPN, AC	4. Orders blood/blood components via computer including: type of blood component, number of units requested and writes control # on MD order. Enters special need requests under comments.
RN, RN Applicant, LPN	5. Explains procedure to the patient and establishes patent IV utilizing the largest bore IV angiocath for patient comfort and flow of blood components. Utilizes distal port in Multi-Lumen catheters.
RN, RN Applicant LPN, Phlebotomist	<p>6. Prior to specimen collection the patient shall be asked to verify his/her name and medical record number or date of birth. Obtains blood specimen. <u>One (1) pink top (as full as possible) will be submitted to the Blood Bank.</u></p> <p>7. For possible red blood cell transfusions, labels blood specimen with Typenex Blood Recipient Band code numbers at the <u>bedside and places Typenex arm band on the patient.</u> Sends labeled blood specimen to the Blood Bank.</p> <p>Note: For non-red cell transfusions, (platelets, fresh frozen plasma, and cryo precipitate, etc.) labels blood tube as for any blood-test. Use of the Typenex system is not required. If the patient has no historical ABO/Rh on file, the Blood Bank will call for an additional pink top plain labeled specimen to be drawn. This specimen CAN NOT be obtained at the time of the original draw. The purpose of this second tube is for verification of the ABO/Rh on the original specimen.</p>
RN, RN Applicant, LPN	<p>8. <div style="border: 1px solid black; padding: 5px; display: inline-block;">Obtains baseline vital signs. (Pre-Transfusion)</div></p> <p>Submits completed Blood Order Form for ordered blood component to the Blood Bank noting any special need request (irradiated, CMV negative, Sickle negative).</p>

RESPONSIBLE PARTY	ACTION
Nursing Staff	9. Verifies blood/blood component with Blood Bank personnel.
Blood Bank	10. Dispenses Blood/Blood component along with Transfusion Record .
RN, RN Applicant	11. Assembles transfusion equipment. 12. Verifies order for blood/blood component. 13. Explains procedure to the patient. 14. Administers premedications ordered by the physician. 15. Primes transfusion tubing and filter with normal saline. <i>Note: The blood product shall not be spiked until <u>after</u> the verification process has been completed and deemed accurate.</i>
RN or RN Applicant and Licensed Witness	16. Verifies <u>in the patient's presence (with another licensed nurse/physician)</u> that: <ul style="list-style-type: none"> a. The patient's name and hospital numbers are identical on the unit compatibility label, Typenex band and Transfusion Record. (Typenex Recipient Identification Band System is only necessary for red blood cell transfusion). Exception: NICU follows unit specific policy b. The component unit number and the blood type on the Transfusion Record, are identical to the blood type and the unit number on the blood component.
RN or RN Applicant and Licensed Witness	c. The Blood Component Unit is normal in appearance and has not expired. <i>Rationale: Life threatening hemolytic transfusion reactions are almost always due to ABO mismatches attributed to an identification error that results in the recipient receiving the wrong blood.</i>

RESPONSIBLE PARTY	ACTION
	<p><i>Note:</i> When completing the 2nd nurse verification process, do not stop or interrupt the process at any point once started (i.e., to take a phone call, etc.).</p>
RN, RN Applicant	<p>17. Signs Transfusion Record (along with the verifying nursing/medical personnel) with full signatures in the space provided for verification.</p> <p><i>Note:</i> The <i>Transfusion Record</i> shall not be signed until after the verification process has been completed and deemed accurate.</p> <p>18. Washes hands with antimicrobial soap and dons gloves.</p> <p>19. Obtains vital signs before transfusion. Initiates blood/blood component transfusion. Infuse slowly (15-20 drops/minute) for 15 minutes.</p> <p>20. Assesses patient and observes patient closely for the first fifteen minutes.</p> <p><i>Rationale:</i> Transfusion reactions usually occur in this period.</p>
RN, RN Applicant LPN	<p>21.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p>Obtains vital signs 15 minutes after initiation of transfusion.</p> </div> <p>BMT shall follow the Unit Specific Policy.</p>
RN, RN Applicant	<p>22. Increases flow to ordered rate if no signs/symptoms transfusion reaction develop. Does not allow blood to infuse for longer than (4) hours (the four hours start at the time the blood is issued from the Blood Bank).</p> <p><i>Rationale:</i> Allowing blood to infuse for greater than four hours increases the danger of bacterial proliferation and red cell hemolysis.</p>
RN, RN Applicant	<p>23. Assesses patient frequently during transfusion. Observes patient for: continuous blood flow, IV site patency, and signs and symptoms of transfusion reaction. Onset symptoms may be mild (vague uneasiness, aching back or "red" urine). Urticaria may develop and should be treated as an allergic reaction.</p> <p>24. If a reaction is suspected, stops the transfusion immediately and notifies the patient's physician and Blood Bank. Draw blood samples in 1 red and 1 pink top tube. Draw blood cultures in all</p>

RESPONSIBLE PARTY	ACTION
	<p>cases of febrile reactions.</p> <p>25. Flushes tubing with normal saline at completion of transfusion.</p> <p>26. Discontinues blood/blood component tubing and filter following completion of the transfusion and/or replaces with regular intravenous tubing when other fluids are to follow the transfusion.</p> <p>27. Resumes prescribed IV therapy if indicated.</p>
RN, RN Applicant LPN, NA, Medical Assistant	<p>28. Obtains post-transfusion vital signs.</p>
RN, RN Applicant, LPN	<p>29. Disposes of blood tubing, filter and empty blood bag in contaminated box.</p>
RN, RN Applicant	<p>30. Documents on 24 Hour Nurses Notes or Unit Specific Flowsheet:</p> <ul style="list-style-type: none"> a. type of product administered b. volume c. unit number d. ABO group and Rh type e. starter solution <p>31. Documents in 24 Hour Nurses Record:</p> <ul style="list-style-type: none"> a. IV site location, condition, and catheter gauge size, if known. b. Patient's tolerance to procedure. c. Untoward reactions and/or interventions as appropriate.
RN, RN Applicant	<p>32. Documents on Transfusion Record:</p> <ul style="list-style-type: none"> a. date and time of administration and discontinuation. b. vital signs obtained prior to initiation of transfusion, 15 minutes after initiation, and post transfusion. c. amount given.
RN, RN Applicant, LPN, AC	<p>33. Places white copy of completed Transfusion Record in appropriate area on patient's chart.</p>

RESPONSIBLE PARTY	ACTION
	34. Routes yellow copy of Transfusion Record back to the Blood Bank.

REFERENCES:

Lab Policy and Information Manual: Section B Blood Bank Test Information Lab Man 7.2,
Lab Policy and Information Manual: 7.2 Blood Collection Technique by Venous Puncture
Hospital Policy: 5.16.1, Informed Consents
Nursing Policy: B-12, Typenex Blood Recipient Identification Bands

Technical Manual, (2011) 17th Edition. American Association of Blood Banks: Bethesda, MD.

Circular of Information for the Use of Human Blood and Blood components, (2009) Revised Pamphlet. American Association of Blood Banks, American Red Cross, America's Blood Centers Washington DC.

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