2024 ARL: Blood/Blood Component Utilization and Administration

Accommodation Note/Regional Disclaimer Awareness

If you need an accommodation to complete this education, please inform your leader. In partnership with Human Resources (HR), they will provide you with a reasonable accommodation to complete the course.

Description

The goal of this lesson is to provide safety and procedural information to teammates who administer and monitor blood product infusions.

You are taking this course to meet OSHA Regulation 29 CFR 1910.1030.

Objectives

When finished with this course, you should be able to:

- Describe how to administer blood and blood components safely
- Describe how to verify the right blood product for the right patient
- Describe how to monitor patients who receive blood or blood component transfusions
- Identify transfusion reactions and how to treat them

BLOOD/BLOOD COMPONENT UTILIZATION AND ADMINISTRATION

Navigation Instructions

1. In order to move from one lesson to the next, scroll down using your mouse or touchscreen.

2. **In order to successfully complete this course, you will need to view each module, complete each activity and reach the Conclusion.**

3. If you need to exit the course, you can select the **"Save and Close"** button on the upper right hand corner. You will resume where you left off upon your return.

If at any point you are redirected to another section within the course, you can return to the lesson you left off on by using the menu to the left.

Selecting Links in this Course

This course opens in a new browser window (similar to a pop-up window). If you select a link at any point in this course, the link will open as a new tab in your main browser window (not this one).

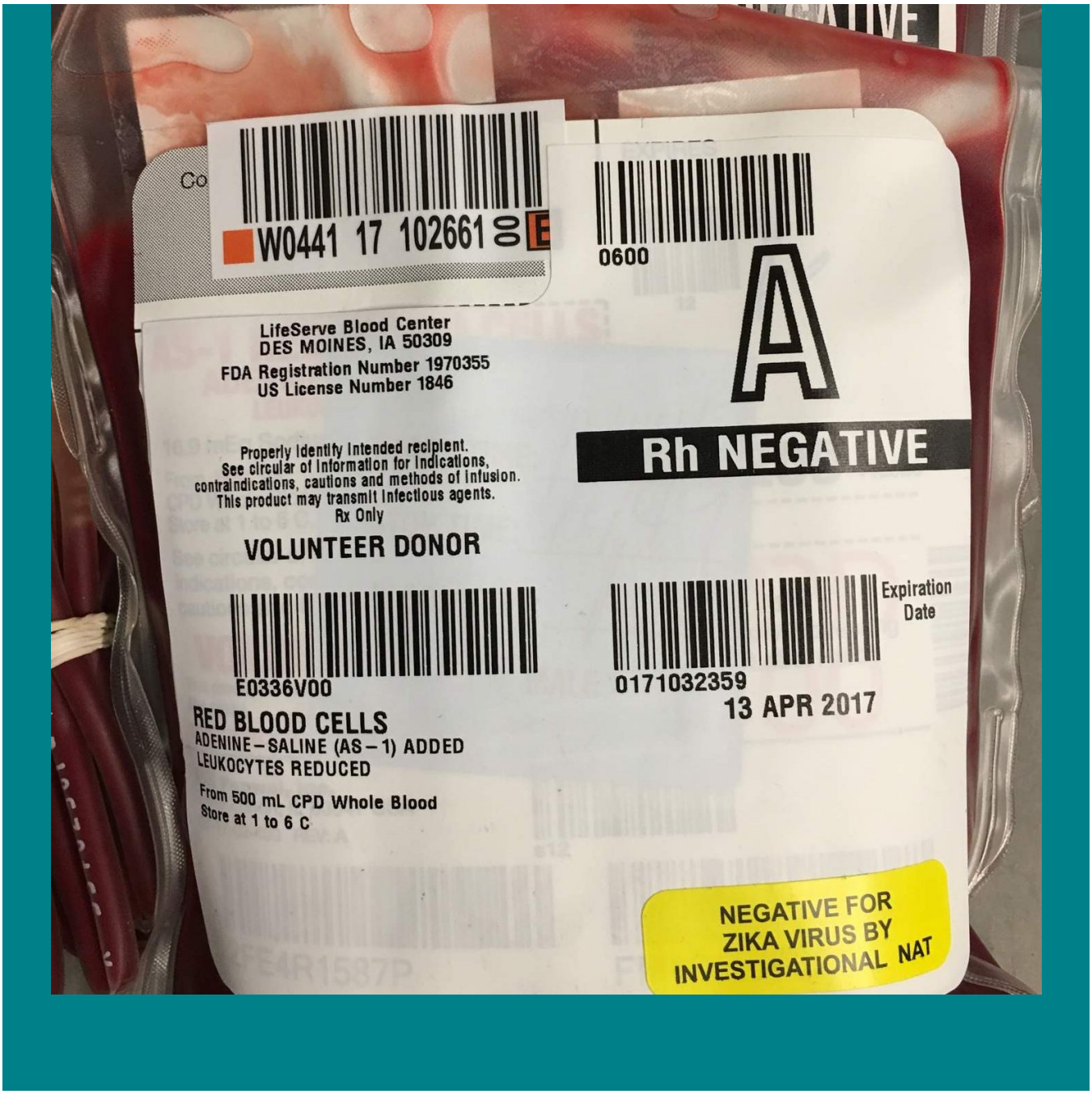
Be sure to return to this course to continue onto the Conclusion lesson to be marked complete in CORE Connect. You can navigate back to this course by using your mouse to open this window or your keyboard (ALT+TAB).

CONTINUE

Blood/Blood Component Utilization and Administration

Types of Blood Components

Select each tab (+) in the next activity to learn about the different types of blood components.



Leukoreduced Packed Red Blood Cells (LRPC)

- The only blood product that is routinely cross-matched
- Considered to be CMV-Safe
- Used to replace loss of Red Blood Cells (RBC), Hemoglobin

Platelets

- Are either a pooled or single donor apheresis product
- Do not need to be ABO compatible
- Must be stored at room temperature
- Are used to replace platelets

Plasma

- Must be ABO compatible, Rh is not necessary
- Requires approximately 30 minutes to thaw plasma
- Is used to replace coagulation factors

Cryoprecipitate

- Pooled cryoprecipitate expires four hours after pooling
- Pre-pooled cryoprecipitate expires six hours after thawing
- Cryo takes 30 minutes to thaw and cannot be refrozen
- Must be transported at room temperature
- Must be transfused as soon as it reaches the patient's location
- Is primarily used to replace fibrinogen

Whole Blood (Greater Charlotte and Navicent only)

- Includes red cells, plasma and platelets
- For trauma patients only
- Units are type O
- Type O plasma is incompatible with type A, B and AB patients. The number of units that can be transfused to a patient is limited for this reason.

At Floyd & Navicent: Liquid plasma has acceptable factor levels, with the exception of Factor V & Factor VIII, and is used in emergency situations to avoid delays associated with thawing.

Importance of Proper Utilization of Blood Components

Proper utilization of blood components is important because:

1. A transfusion is a live tissue transplant. Each transfusion increases the risk of:
   - Complications and harm
   - Patient's morbidity

- Patient's mortality
- Longer length of stay

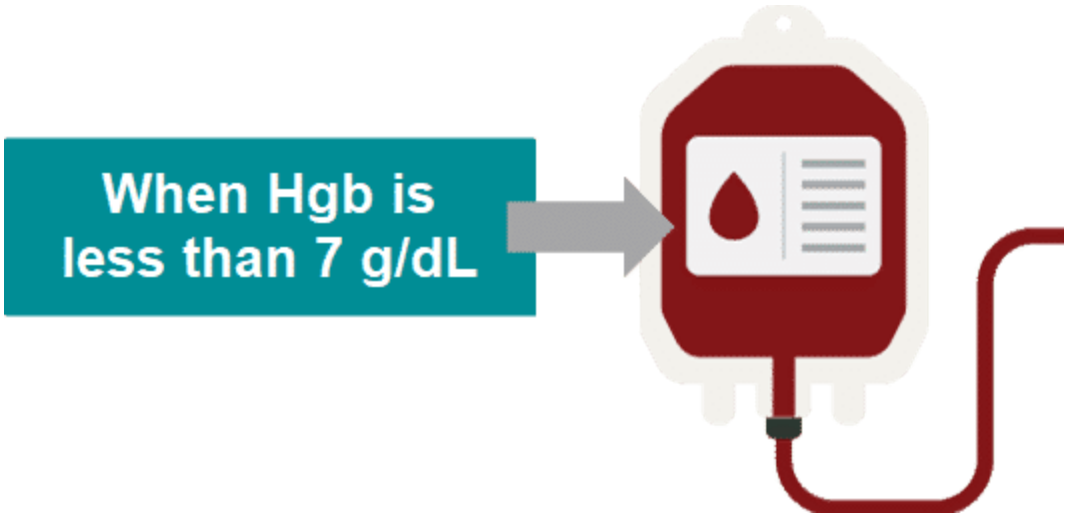
2 Blood products are a limited resource.

3 According to the Joint Commission Journal on Quality and Patient Safety (2017), 50 percent or more of RBC transfusions may be unnecessary.

Safe Administration of Blood and Blood Components

When to Administer a Transfusion

There are transfusion guidelines available across the Southeast Region on PolicyTech. For example, only transfuse with red blood cells when the patient's hemoglobin (Hgb) is less than 7g/dL and if the patient is symptomatic (chest pain, shortness of breath, weak, pale, fatigue, etc.). Reference the transfusion guidelines in PolicyTech for more information.



MTP vs Emergency Release

Select each card to learn more.

Massive Transfusion Protocol	Transfusion of red blood cells, plasma, and platelets in a fixed ratio, typically 1:1:1, in response to hemorrhage. Blood products in an MTP are usually uncrossmatched, but they can be type-specific if there is an active Type & Screen on file.
Emergency Release	Uncrossmatched blood product that is issued in an emergency when the physician deems the situation urgent enough to require products before testing can be completed.

Nursing's Role in Blood Management

- Recognize the lab values that are associated with the transfusion of each blood product type.
- Respectfully question orders that do not correspond with guidelines.
- Minimize blood loss/phlebotomy.
- Educate patient and families about why we do not transfuse when hemoglobin is more than 7g/dL for many patients.
- Identify risk factors of bleeding to ensure appropriate processes are in place to minimize blood loss. Report signs of bleeding immediately to provider.
- Educate patient about healthy lifestyle behaviors that can prevent anemia.
- Advocate for patients to reduce or avoid transfusion exposure.

Prior to Administering Blood Component

Take the following steps prior to administering blood components.

Step 1

Confirm the Blood/ Blood Component Order

- ONLY the provider should be placing blood product administration orders in Encompass. The only exception is during an emergency in which a provider is unable to place order.
- Confirm the order to transfuse specific product(s) and date and time transfusion is to occur.
- Confirm a current Type & Screen has been collected within 3 days:
    - **Greater Charlotte**: Surgery patients who have their blood collected prior to surgery are extended 3 days past the day of surgery up to 17 days from the date of draw.
    - **Atrium Health Floyd & Navicent**: Specimens collected on Pre-admit surgical patients are acceptable for use up to 30 days from the date of draw. Crossmatched blood is held for 24 hours post-surgery.
    - Verify that the patient has not been transfused or pregnant in 3 months.
- Otherwise:
    - **Atrium Health Greater Charlotte & Floyd**: Repeat crossmatch at receiving facility if patient is a transfer.
    - **Atrium Health Navicent**: Repeat requested testing at receiving facility if indicated.

Step 2

Ensure that the Consent Process has taken place.

A single consent is required per blood component/series of blood components per hospital encounter. A provider obtains consent by having the conversation with the patient. The nurse can be witness to the patient signing the form.

Surgical consent includes:

- Blood component administration:
    - Valid for surgical procedure and immediate postop period
    - Should not exceed two hours unless otherwise specified by department policy

Navicent Market requires a separate surgery and blood consent.

If the patient has any questions regarding the procedure, notify the provider or responsible party.

Step 3

Draw and Label Specimens

Depending on your facility, place an electronically printed label on blood bank specimens in front of the patient:

- Upon scanning both the patient's armband and the specimen label, the electronic PPID system must indicate all patient identifiers match.
- Specimens must be placed in **Pink** (Greater Charlotte or Navicent)/**Purple** (Floyd) top tube.
    - Adult patients - 6 mL tube
    - Pediatric patients - 3 mL tube
- Bullets are not acceptable for Blood Bank testing.

Step 4

Prepare Supplies for Blood Product Administration

Blood products are administered using standard blood administration sets with 170- to 260- micron filters. All products are given using an infusion pump. Exceptions are in emergency situations and OR/procedural areas where blood products may be infused via gravity, pressure bags, or rapid infusers.

Supplies needed include:

- Normal Saline
- A working computer/scanner to verify patient/product information. If a scanner is unavailable, another licensed transfusionist should be used to verify the patient/product information.

Step 5

Check Patency of IV Catheter

Check patency of IV catheter selected for transfusion with 5-10 cc of normal saline flush. If the rate slows appreciably during transfusion, investigate immediately.

Consider measures that may enhance blood flow:

- Repositioning the patient's arm
- Changing to a larger gauge IV catheter
- Changing the filter and tubing

Step 6

Check to see if Blood Component is Ready

To obtain blood or blood component:

- Determine if blood component is ready for release. There is a blood drop notification that appears on the patient's storyboard when blood products have been allocated to the patient by the Blood Bank, which indicates that the blood product is ready for pickup. If you hover over the blood drop, you can see how many products are ready.
- In the event of downtime call the Lab/Blood Bank for verification.

Step 7

Print/Complete Blood Product Release Form

- Present or tube (when applicable) the Blood Product Release Form to the Blood Bank.
- Include the tube station number if the tube system approved for delivery by Blood Bank at your facility.

Step 8

Take Patient's Vital Signs

- Vital signs include T, P, R, BP (and oxygen saturation if indicated).
- Baseline vital signs are obtained within 30 minutes prior to starting the transfusion.

Step 9

Infuse Only Normal Saline

All Regions:

- Medications should never be mixed with blood products.
- Other IV solutions aren't compatible with blood products and should also be avoided.
- Follow facility policy.

Greater Charlotte Only:

- If you're using a Y-type set, prime the tubing with normal saline solution.
- If using a straight set, prime the administration set tubing with the prescribed blood product.

Navicent Only:

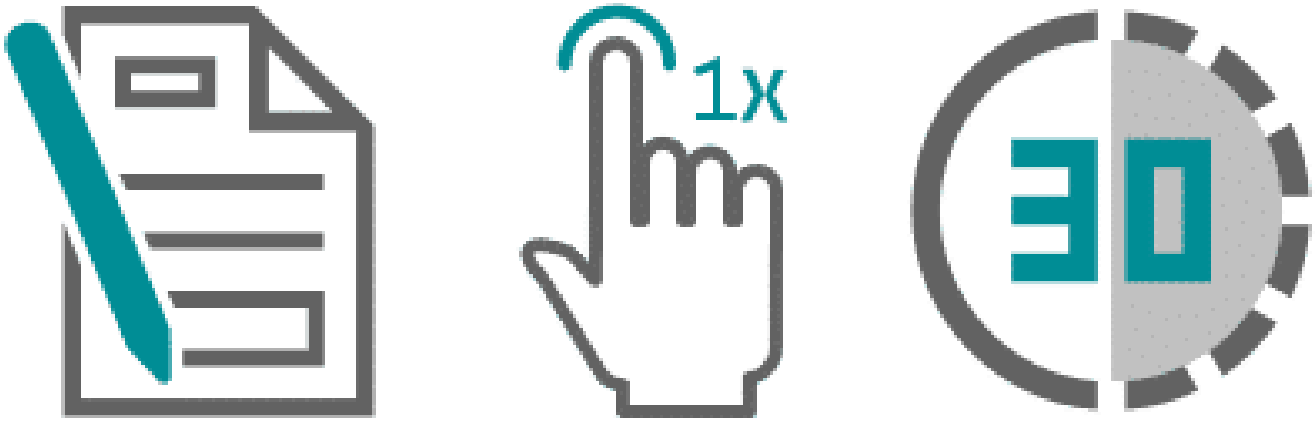
- Priming of tubing for blood product administration may be performed using either normal saline (0.9% sodium chloride) or the blood product being transfused.

Floyd Only:

- Begin normal saline drip at 50ml/hr with a primary IV Plumset. Spike the blood with straight blood set, then piggyback into distal injection port of flowing normal saline drip.

Picking Up Blood From Blood Bank

Any trained personnel can pick up blood products from the blood bank by following these procedures:

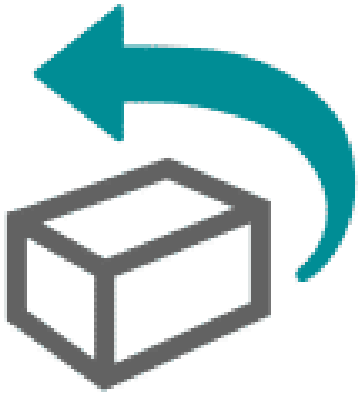


Print a blood release form and send or deliver to the blood bank each time blood component is requested.

Transport only ONE blood component for ONE patient at a time.

(Exception: when using a validated Blood Bank cooler)

Begin transfusion within 30 minutes of release from blood bank.



Return blood component to lab immediately when:

- Integrity or appearance of blood component is in question
- Transfusion is delayed

DO NOT store blood components anywhere on unit.

Verifying Blood Product

Verification Procedure

Before spiking the bag of blood, verify the following:

- Patient’s record for transfusion order
- Consent has been obtained
- Blood component matches order
- Blood component compatible with patient type on record
- The patient's armband matches the product tag

Perform all patient and product verification prior to spiking the blood component. Do NOT spike the blood component while hanging on the pole (increased risk of puncturing the bag and creating a hole).

Perform positive identification using scanner technology. If a scanner is not available, read aloud the details of the blood tag to a second verifying clinician to compare identification with the patient’s bracelet. Both verifiers document on blood tag, and then follow process to ensure document gets put into patient's chart.

- **Ensure blood tag stays on blood component until it has infused.**
- DO NOT ADMINISTER the blood if any discrepancy is noted. Instead, call or return the blood to the blood bank.

Educate the Patient/Family

- Instruct the patient to report any signs/symptoms of reaction during and after infusion.
- Document the education in EHR.

Infusion Rates/Duration

Administer blood according to the infusion rate ordered by the provider. Providers may specify a rate based on the patient's condition.

- Infuse blood components within four hours from start of infusion.
- Follow your order for how fast to start the transfusion. For adult patients, the order typically says to start at 100 mL/hr. Follow your facility's policy. Transfusion rates for pediatric patients will vary.

- Monitor for a transfusion reaction. If no reaction, increase infusion rate to the rate ordered by the provider.

Monitor the Patient

A patient has an increased risk for reaction in the first 15 minutes of transfusion. Monitor as required by the patient's clinical status. Monitor the patient's blood pressure, temperature, pulse and respiratory rate before, during and after the transfusion.

Monitoring guidance varies for pediatric patients. Please follow guidance for your facility.

Before Transfusion

Monitor vital signs within 30 minutes prior to transfusion start.

During Transfusion

Stay with patient for the first 15 minutes. Watch for any reaction. Monitor vital signs 15 minutes after starting transfusion.

Post-Transfusion

Monitor vital signs within 60 minutes after transfusion is complete.

Transfusion Reactions

Monitor for Transfusion Reactions

Stay with the patient for the first 15 minutes of a transfusion to watch for a reaction.

Signs and Symptoms of a Transfusion Reaction	Educate the patient on each of these signs and symptoms. Obtain patient's vital signs if any sign or symptom presents: • Chills • Rigor • Dyspnea • Hypotension • Fever/Increased temperature • Abnormal/Unexpected bleeding • Urticaria (hives)/Itching • Hemoglobinuria (dark or red urine)

	• Nausea/Vomiting • Pain (especially at the IV Site, back or chest • Jaundice
Monitor Vital Signs for Changes	Take the patient's vital signs 30 minutes prior to the start of the transfusion to establish a baseline. Then, monitor vital signs during and after transfusion for the following changes: • **Respiratory Rate** – Significant increase or decrease from baseline • **Blood Pressure** – Systolic or Diastolic increase or decrease of greater than 30mmHg from baseline • **Temperature** – Equal to or greater than 1.8ºF above baseline (up to four hours after transfusion ends) • **Heart Rate** – Equal to or greater than 40 beats per minute over baseline • **Oxygen** – If indicated, oxygen saturation less than 90%
Types of Reactions	• **Allergic:** ◦ Occurs during or within 4 hours of cessation of transfusion ◦ Conjunctival edema; edema of lips, tongue and uvula; erythema and

edema of the periorbital area; generalized flushing; hypotension; localized angioedema; maculopapular rash; pruritis (itching); respiratory distress, bronchospasm; urticaria (hives)

- Severe/anaphylactic
- Involves respiratory and/or cardiovascular systems in addition to mucocutaneous symptoms
- Airway symptoms: laryngeal (tightness in throat, dysphagia, dysphonia, hoarseness, stridor)
- Pulmonary (dyspnea, cough, wheezing, bronchospasm, hypoxemia)
- Hypotension, hypotonia and syncope

- **Transfusion Associated Circulatory Overload (TACO):**
  - Occurs within 12 hours of cessation of transfusion
  - Evidence of acute or worsening respiratory distress (dyspnea, tachypnea, cyanosis and decreased oxygen saturation)
  - Acute or worsening pulmonary edema (crackles on lung auscultation, orthopnea, cough, third heart sound, pinkish frothy sputum)

- Cardiovascular changes (elevated central venous pressure, tachycardia, hypertension, widened pulse pressure, jugular venous distension, peripheral edema)
- Evidence of fluid overload

- **Febrile, Non-Hemolytic:**
  - Occurs during or within 4 hours of cessation of transfusion
  - Fever (greater than or equal to 38° C/100.4° F oral) AND temperature increase of at least 1° C/1.8 °F from pre-transfusion value
  - Chills/rigors

- **Transfusion-Related Acute Lung Injury (TRALI)**
  - New onset Acute Lung Injury within six hours of cessation of transfusion
  - Hypoxemia defined by
  - PaO2/FiO2 less than or equal to 300 mm Hg
  - Oxygen saturation less than 90% on room air

- **Hemolytic**
  - **Acute:** Back/flank pain, chills/rigors, disseminated intravascular coagulation (DIC), epistaxis, fever,

hematuria (gross visual hemolysis, hypotension, oliguria/anuria, pain and/or oozing at IV site, renal failure

- **Delayed:** Patient may develop symptoms between 24 hours and 28 after cessation of transfusion, new antibody, positive direct antiglobulin test (DAT), decreased hemoglobin, jaundice, symptoms may be similar to an acute hemolytic transfusion reaction but milder

- **Bacterial Contamination**
  - Severe chills/rigors
  - High fever
  - Dry flushing
  - Nausea
  - Vomiting
  - Hemoglobinemia
  - Bleeding
  - Sudden severe hypotension

What To Do if You Suspect a Reaction

If you suspect a blood/blood component transfusion:

1.

Stop Blood Product immediately.

2.

Disconnect the blood administration set.

3.

Flush and maintain patency of IV line using normal saline.

4.

Notify the physician and the blood bank.

5.

Obtain MD order for a Transfusion Reaction.

6.

Document signs and symptoms of reaction and actions taken.

7.

Compare patient and blood bank identification for discrepancies.

8.

Complete and return the Blood Transfusion Reaction form along with donor bag and IV tubing to blood bank. Follow instructions on form regarding post-transfusion specimens.

Transfusion Discharge Instructions

When discharging a patient who has had a transfusion:

transfusion reactions.

Remind patient th
delayed reactions can
occur up to **21 days** after a
transfusion.

Post-test for Blood/Blood Component Utilization and Administration

Click Here for the Blood Administration Test