

Transfusion Service

Introduction

All blood products and blood components are supplied to UnityPoint Health-Meriter Hospital by the American Red Cross Blood Services. Pathology consultation is available regarding blood and/or components and dosages.

ABO and Rh₀(D)—specific type is used whenever possible for leuko-poor packed cell transfusions. ABO-compatible blood is used for all plasma and platelet components whenever possible.

For any orders involving HLA-matched components, the patient must have been HLA typed (sent to the American Red Cross) a minimum of 48 hours prior to intended infusion of the component. HLA typing is only required once.

Blood components that are thawed, pooled, washed, volume-reduced, or deglycerolized for a patient will be charged to the patient even if not transfused. The charge is done because these components may not be suitable for another patient. Examples include:

Autologous or directed donations	
Pooled cryoprecipitate	4-hour expiration
Thawed fresh frozen plasma	24-hour expiration
Thawed cryoprecipitate	6-hour expiration
Deglycerolized red cells	24-hour expiration
Washed red cells	24-hour expiration

All blood components must be completely infused within 4 hours of release from UnityPoint Health-Meriter Laboratories Blood Bank, or be infused within the expiration time.

Refer to UnityPoint Health -Meriter's Blood and Blood Products Transfusion Policy #123 for additional information located on MyMeriter.

Blood/Blood Products Requests and Turnaround Time Expectations

Requests from UnityPoint Health-Meriter Hospital are entered in the hospital computer system and print in the UnityPoint Health-Meriter Laboratories Blood Bank. For the comfort of the patient, it is important to coordinate collection for other tests with Blood Bank specimens.

Requests from outside facilities are received via faxing a requisition (608-417-6632) followed by a telephone call to the Blood Bank at 608-417-6064. The request must state the patient's demographics, product quantity, and any special needs (ie, CMV- negative, irradiated, etc.), when needed, physician name and facility information. Forms are available from UnityPoint Health-Meriter Laboratories for requesting blood products.

Request*	Turnaround Time (TAT)** (From receipt of sample in the Blood Bank)	Follow-up
Routine	Within 4-6 hours	<ul style="list-style-type: none">• Blood Bank will call when product is ready.• If patient has a positive antibody screen, it is impossible to give an estimated TAT. Blood Bank will contact the provider or provider representative with information.
STAT	Within 1 hour	
Emergency Release (Uncrossmatched)	15 minutes or less	

*Emergency and STAT requests have a higher priority than routine requests.

**The TAT for patient with special transfusion needs such as CMV-negative, irradiated, washed, or units that require special antigen typing require longer TAT since these products are specially ordered from the American Red Cross and require additional processing and transportation time.

Indications for Blood Products

Red Cell Transfusions:

1. **Blood loss** >20% total volume **or intra-operative loss** >500 to 1,000 mL.
2. **Hemoglobin** <7 g/dL or hematocrit <21%.
3. **Hemoglobin** <8 g/dL or hematocrit <24%, **and** elderly **or** disease **significantly** impairing tissue O₂ delivery (CAD, peripheral vascular disease, cerebrovascular disease, COPD).
4. **Hemoglobin** <10 g/dL or hematocrit <30%, **and** signs **or** symptoms of **significantly** impairing tissue O₂ delivery (angina, EKG changes, cardiac enzyme changes, pulse >100 beats/minutes with temperature <100° F, hypotension).
5. **Autologous** transfusion with hemoglobin <10g/dL or hematocrit <30% (if post-surgical).
6. Hypotension with systolic decrease \geq 25% **or** orthostatic decrease \geq 20 mm mercury.
7. Neonatal ventilator assistance **and/or** congenital heart disease with hemoglobin <13 g/dL or hematocrit <40%.
8. Hemoglobin <10 g/dL or hematocrit <30%, **and** placenta previa or abruption.

Note: Trauma Kits (Uncrossmatched Leuko-Poor Packed cells units of O negative) are IMMEDIATELY available in Blood Bank monitored refrigerators in Emergency Services and in Blood Bank for an ABSOLUTE Emergency.

Indications for Transfusion of Platelets:

1. Platelet count <10,000 per μ L in stable, non-bleeding patients (**NOT for** ITP, TTP, HUS).
2. Platelets <20,000 per μ L in unstable, non-bleeding patients.
3. Platelets <50,000 per μ L **and** actively bleeding **or** invasive procedure/surgery planned within 6 hours.
4. Platelets <100,000 per μ L **with** major neurosurgical **or** ophthalmic surgery, for up to 48 hours post-op **or** cardiopulmonary bypass.
5. Bleeding/oozing on cardiopulmonary bypass or during cardiothoracic surgery.
6. **Reversal of anti-platelet medicine** (Plavix **or** aspirin in past 7 days).
7. Platelets <20,000 in stable newborn.
8. Platelets <30,000 in premature newborns.

Note: 1. Platelet count can be checked 10 minutes to 1 hour after transfusion.

Indications for Fresh Frozen or Frozen within 24 hours or Thawed Plasma Transfusions:

1. PT \geq 1.6 times normal or INR >1.6 **and** bleeding **or** invasive procedure planned within 6 hours.
2. **Immediate reversal of warfarin effect** for emergency surgery **or** active bleeding.
3. Factor deficiency **if NO** concentrate available.
4. Treatment for **ITP** (idiopathic thrombocytopenic purpura).
5. Diffuse bleeding immediate post-cardiopulmonary bypass also requiring pRBCs.
6. Heparin resistance from cardiopulmonary bypass.
7. Sick newborn with evidence of bleeding.

*Suggested FFP DOSE:

- Warfarin reversal: 10 mL/kg
- Major bleeding: Adult: 10-20 mL/kg
- Thaw only 2 units at a time and recheck PT

*Consider Vitamin K, without FFP, if INR <9 without bleeding.

Note: Before FFP products are thawed the Blood Bank will contact the ordering facility or nursing unit to ensure the product will be transfused to avoid wastage. The average thawing time for a unit of FFP is 25 minutes.

Indications for Cryoprecipitate Transfusions:

1. Fibrinogen deficiency < 100 mg/dL.
2. Factor 8 or factor 13 or Von Willebrand factor deficiency.

*Suggested DOSE:

- Adult: 1 unit/10 kg body weight
- Product should be ordered in multiples of 5.

Transportation of Blood Products

Blood products are typically transported via a pneumatic tube system (within UnityPoint Health-Meriter) or special coolers provided by the Blood Bank. In emergency situations or pneumatic tube system failures, please refer to UnityPoint Health-Meriter's Blood and Blood Products Transfusion Policy #123 for additional information

Blood or Component Orders

- **Packed Cells:**

- All packed cell units are leuko-reduced.
- Testing includes ABO, Rh, Antibody screen, and Crossmatch. Additional testing is performed if antibody screen is positive.

- **Type and Screen:**

- Testing includes ABO, Rh, and Antibody screen. Additional testing is performed if antibody screen is positive.

- **Blood Type (required for Thawed Plasma, Platelets, and Cryoprecipitate transfusion) :**

- Testing includes ABO and Rh only.

- **Blood Bank Draw and Hold:**

- Specimen collected per UnityPoint Health-Meriter Laboratory protocol. No testing is performed without further orders.

Availability of Blood or Blood Components:

Cancellation of a specimen or crossmatched blood is determined by the patient's transfusion and pregnancy history, date specimen is collected, expiration of product, and intended use.

Specimens used for testing in the Blood Bank are <3 days old.

Autologous Red Cell units are held until the product expires or the patient is discharged.

Collection Procedure

Blood Bank Testing

The armband with the BB Identification Number (typically the MRN for in-patients) must be on the patient; it cannot be attached to a bed.

For UnityPoint Health-Meriter inpatients, the patient's armband with admission information can be used as the BB Identification source. For outpatients, or in computer downtime situations, Typenex armbands can be used in its place.

The customized Typenex BB armband is a two piece system consisting of a Key number card with a detachable arm band insert, multiple labels imprinted with the same alpha-numeric number, and a red plastic arm band. The patient must be willing to wear their appropriate armband at all times. If the armband is removed, a new armband must be placed on the patient and a new blood sample collected.

The Key number band system provides a continuous chain of protection for the patient by being used in the following ways:

UnityPoint Health-Meriter Inpatient collections:

- The BB Identification number is checked by the Blood Bank phlebotomy at the time the BB sample is collected. The patient's armband is scanned using LIS, and the LIS labels containing the Medical Record Number are compared to the patient's armband.
- The UnityPoint Health-Meriter Hospital band (or Typenex band) is attached to the patient and remains attached to the patient for the entire hospital admission.
- The UnityPoint Health-Meriter Medical Record Number is attached to or transcribed on all Blood Bank specimen tube labels at the patient's bedside and at the time of collection.
- The Patient's name, DOB, and Medical Record Number found on the specimen labels must be matched with the same information on the Patient's armband. **PLEASE NOTE: It is critical that this information, especially the Medical Record Number be matched up carefully between the**

Patient's armband and the specimen labels. The Medical Record Number or Typenex number is used as a unique identifier when preparing and issuing blood products to a patient, the number being verified is critical to patient safety.

- BB specimens are labeled with the Patient's complete first and last name, DOB, Medical Record Number, date of collection, and initials of the person collecting the specimen (If the phlebotomist is using LIS, the phlebotomist's initials are captured in LIS). If the patient's name is truncated on the LIS label due to length, the pathologists have given approval for the sample to be used.
- The specimen tubes are delivered to Blood Bank after they are received in the LIS by the Specimen Processing Department.
- Blood Bank uses the BB Identification Number as an identifying specimen number. The ID number is entered into the computer, placed on each blood product, appears on all transfusion requisition and downtime forms if applicable.
- Nursing or Physician staff members transfusing a blood product must verify the BB Identification number on the patient's armband before a blood product is released for transfusion. Once blood products are received on the nursing units, all information on the patient's armband, blood products, and requisitions must be verified by two individuals.
- If the LIS computer is down and EPIC is up, the phlebotomist will print an EPIC label at the Nursing unit and compare this label to the patient's UnityPoint Health-Meriter Hospital armband. Specimen will be label with the Patient's complete first and last name, DOB, Medical Record Number (**or Typenex as appropriate), date of collection, and initials of the person collecting the specimen. If the patient's name is truncated on this label due to length, the pathologists have "okayed" for the sample to be used.
- If LIS is down and Epic is down, the phlebotomist will need to make their own labels. Specimen will be labeled with the Patient's complete first and last name, DOB, Medical Record Number (**or Typenex as appropriate), date of collection, and initials of the person collecting the specimen.

** If EPIC is down and a UnityPoint Health-Meriter Hospital Number cannot be made, the phlebotomist will use a Typenex® band. Specimen will be label with the Patient's complete first and last name, DOB, Typenex® Number, date of collection, and initials of the person collecting the specimen.

Outpatient collections:

- The patient's identification must be verified before a Custom BB Identification band is placed on the patient. Once the BB Identification armband is on the patient, a blood sample can be collected.
- The customized BB armband attached to the patient must remain attached to the patient until the blood products assigned to the patient are used or the specimen is no longer appropriate for testing.
- BB specimens are labeled with the Patient's complete first and last name, DOB, date of collection, and initials of the person collecting the specimen (If the phlebotomist is using LIS, the phlebotomist's initials are captured in LIS).
- The specimen tubes are delivered to Blood Bank along with the paper requisition indicating the tests to be performed and the patient's transfusion/pregnancy history.
- Blood Bank uses the BB Identification Number as an identifying specimen number. The ID number is entered into the computer, placed on each blood product, appears on all transfusion requisition and downtime forms if applicable.
- Nursing or Physician staff members transfusing a blood product must verify the BB Identification number on the patient's armband before a blood product is released for transfusion. Once blood products are received on the nursing units /facility, all information on the patient's armband, blood products, and requisitions must be verified by two individuals.

Supplies:

Inpatient Draw	Outpatient Draw
1- 5 or 10 mL Plain, Red Top Tube	1- 5 or 10 mL Plain, Red Top Tube
1- 6 mL EDTA, Pink Top Tube <u>or</u> 1- 4 mL EDTA, Lavender Top Tube	1- 6 mL EDTA, Pink Top Tube <u>or</u> 1- 4 mL EDTA, Lavender Top Tube
Phlebotomy supplies	Blood Bank Key number card (Typenex™)
	Red plastic arm band (Typenex™)
	Phlebotomy supplies

UnityPoint Health-Meriter Hospital Procedure:

- Obtain necessary supplies: tubes (10 mL Red and 6 mL Pink EDTA tubes.), phlebotomy supplies.
- Identify patient:
 - Check patient's hospital ID bracelet. Correlate name and medical record number on the bracelet to that on the computer labels and request for the lab-work.
 - Have the patient spell their full legal last and first names (no nicknames allowed). Again, correlate this with the computer labels and request.
 - Ask the patient for their date of birth (DOB). Compare this to the demographic information listed on the LIS or downtime request.
 - Clarify any errors in spelling, MR#, or DOB with Admitting at (x 76020). Request that a corrected bracelet and/or chip be prepared or a missing bracelet is replaced. **Corrected armband must be on the patient before the BB specimen is obtained. If a sample must be obtained before a new armband can be made, use a Typenex® armband.**

NOTE: Nursing personnel (or physician) must identify any patient who is not wearing an ID bracelet and who cannot identify him or herself.
 - The individual, who performs the patient identification, collects the specimen or witnesses the collection, labels the Blood Bank specimen and bands the patient must legibility print his/her initials on the tube.
 - If patient is wearing a legible UnityPoint Health-Meriter Hospital armband: Identify patient as usual, then prepare tube labels using patient name, date of collection, date of birth, and UnityPoint Health-Meriter Medical Record Number. Compare the UnityPoint Health-Meriter Medical Record number on the LIS labels with the information on the patient's armband. The patient's armband ~~can~~ be attached to a bed.
- Collect red and pink or lavender EDTA tubes. Remain at bedside to attach specimen labels to tubes. The labels should be attached to the tubes over any existing tube label to allow a window through which to view the amount of blood in the tube.

Tubes are labeled with the following information:

Patient's full name (First and last name) (no nicknames)

Note: If LIS label has cut off any portion of the patient's name, the pathologists have given the BB permission to use the sample without recollection.

Date of Birth

Date of collection

UnityPoint Health-Meriter Medical Record Number (if applicable)

Typenex™ Number (if applicable)

Mother-Baby number (if applicable)

Initials of phlebotomist if not using LIS

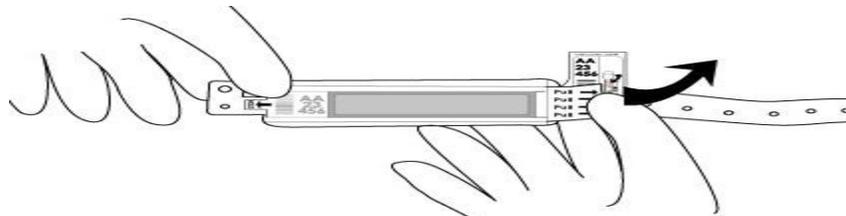
- Deliver specimen tubes to Blood Bank after receiving the order in LIS. STAT specimens may be sent to Blood Bank via the pneumatic tube system to station 220.

**OutPatient Procedure: (Patient must be willing to wear armband)
Blood Bank Specimen Collection - Typenex® Identification Procedure**

Specimens submitted to the Blood Bank for type and screen and intended for compatibility testing must be labeled using the Typenex® Blood Recipient Identification System. Typenex® armbands and cards are available by calling the Blood Bank at (608- 417-6064).

1. Verify the patient's identity by asking him/her to state their name and date of birth.
 - If the patient is wearing an armband from the facility obtaining the blood bank specimen, compare with information on the band with the verbal information received from the patient.
 - If patient is not wearing an armband from the facility, have a Nurse or Physician identify the patient.
 - If collecting specimen in UnityPoint Health-Meriter Laboratories Outpatient Department, ask the patient for a photo ID.
 - All information must agree before proceeding.
2. Complete the Patient Information area at the top left hand corner of the Typenex® identification card with the following information:
 - Patient's Last name, First name and middle initial
 - Date of Birth
 - Medical Record Number (if applicable)
 - Date of collection

Note: If patient is wearing an existing Typenex® band, check to see if a sample is still available for use before proceeding. If the dating has exceeded its 3 day limitation, a new blood sample needs to be obtained. The existing Typenex® armband may be used.
3. Complete the Collector information at the top of the card.
4. If patient was identified by a physician, nurse or photo ID, write the verifiers name in the "Verifier/Other" line on the Typenex® card.
5. Complete the Specimen label at the bottom left hand corner of the card and the Armband. Insert # 1 located at the lower right hand corner of the card with the following information:
 - Patient's Last name, First name and middle initial
 - Date of Birth
 - Medical Record Number (if applicable)
 - Date of collection
 - Initials of the phlebotomist.
6. Remove the armband insert from the card along the perforations. The insert will look like an "L" shape when removed.
7. Insert the properly labeled insert into a FlexiBLOOD band behind the paper liner with the patient information is facing up. The insert is designed to align itself into the pocket for maximum protection of patient information under the adhesive strip.



8. While holding the "HOLD TAB", pull the paper liner out of the band pocket and smooth the adhesive over the pocket.
9. Place the band around the patient's arm and secure with the button snap closure. Remove excess material.
10. Collect the patient blood specimen into a 6 ml EDTA (pink top) tube and a plain red top tube.
11. Remove the Specimen Label from the form and place it on the tube length wise. Label the second tube with the Patient's Last name, First name and middle initial, Date of Birth, Medical Record Number (if applicable). Apply a Blood Bank Identification Number card to the tube. If using a preprinted label, use the specimen label on the right hand side of the card. Apply the specimen label lengthwise on the tube and apply the preprinted label carefully so you do not cover the Key identification numbers. Tear the excess from the band and discard.

	<p>Hand Written Label</p> <p>After writing the patient information on the label, remove the label from the card. Place the label lengthwise on the tube.</p> <p>For the second tube, write the patient information on a blank label or on the tube label. Attach a barcoded form label to the tube.</p>
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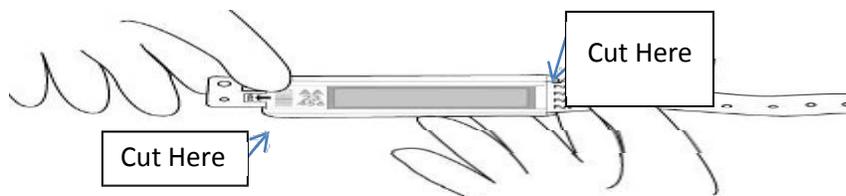
	<p>Pre-printed Label</p> <p>Apply the Specimen label lengthwise on the tube.</p> <p>Apply the preprinted label beginning at the dotted line on the preprinted label. Wrap the label around the tube. DO NOT cover up the Key Number and bar code.</p> <p>For the second tube, write the patient information on the blank label or on the tube label. Attach a barcoded form label to the tube.</p>
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12. Send the blood samples, Typenex® card, and Blood bank order forms (if not previously faxed) in a biohazard bag to the Core Lab.

In the event a patient's armband needs to be removed and reattached:

Note: The arm band needs to be reattached by the person removing the original band.

- Carefully cut the armband off the patient.
- Cut barcode band between the snap closure and the slot to the left of the patient information.



- Using a "white" Typenex® armband, slip the armband behind the patient information portion of the armband.
- Reattach the armband to the patient. Cut off any excess band material.

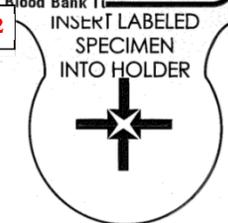
Collector's Name

Verifier's Name

POSITIVE PATIENT IDENTIFICATION
 Collector: *Susie Phlebotomist* **AG 25 563**
 Verifier/Other: _____
 BLOOD BANK ID NUMBER

47280645 - 10 11/28/11 09:23 GOES HERE
 SOFTTEST, MALE
 M#: MR00000002 :99999
 ROUT
 ABOR1 ABS

Patient Information; Step 2



DONOR UNIT & FORM LABELS

AG 25 563							
[Barcode]							
AG 25 563							
[Barcode]							

Typenex
*flexiBLOOD*TM
 Product Code: FLX001
 Phone: 866 897 3639
 Fax: 866 897 3630
 Web: www.typenex.com
 Enabling you to deliver the right blood to the right recipient



SPECIMEN LABEL (handwriting)

AG 25 563
 47280645 - 10 11/28/11 09:23
 SOFTTEST, MALE
 M#: MR00000002 :99999
 ROUT
 ABOR1 ABS

Specimen Label

INSERT #2 (use as necessary, per facility protocol) INSERT #1 (use first and label specimen)

AG 25 563
 [Barcode]



Secondary armband if needed

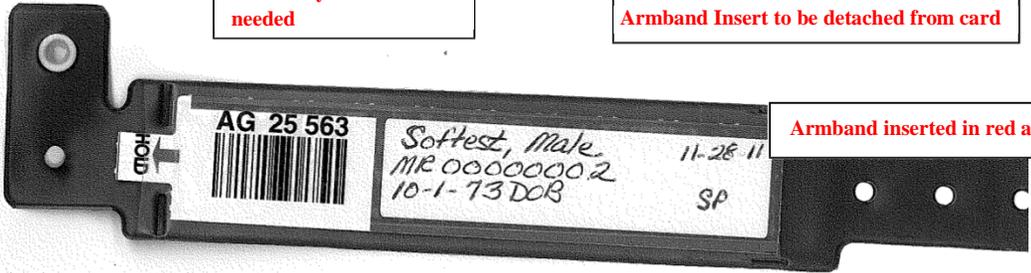
AG 25 563
 [Barcode]

Softtest, Male 11-28-11
MR 00000002
10-1-73 DOR SP

Armband Insert to be detached from card



Specimen Label



Armband inserted in red armband

Removal and Replacement of Patient's Wrist/Ankle Band

- A. Hospital patient identification bands and/or the Typenex™ Transfusion Service Key Transfusion Number bands must not be removed from the patient.
- B. If they are removed to start intravenous (IV) infusions or due to edema, they should be immediately reinserted into a new plastic bracelet and reattached to the patient by the person who removed the band. Each nursing unit should have available extra plastic bands.
- C. It is the nursing unit's responsibility to ensure that the patient has the proper identification bands on at all times and if bands have been removed, they will immediately be reattached. Placing identification bands on the patient's bed is unacceptable per hospital policy.

Procurement of Blood or Blood Components

- A. No blood products will be issued unless the patient identification is presented to the Transfusion Service in person or via the phone. This should include the patient's name, MR number, or the key number, and date of birth. The individual obtaining the blood product is responsible only as the carrier. The proper identification of the blood product for a specific patient is the responsibility of the transfusionist and a delegate. The Transfusion Service retains the patient identification forms.
- B. The IV should be started before obtaining any blood product to facilitate prompt transfusion. Never store blood or components in a nursing unit refrigerator since maintenance of an acceptable temperature is not reliable. Moreover, storage of blood or components with other materials is not permitted.
- C. Return blood or components to Transfusion Service immediately if there is a delay in starting the infusion.

Blood Components Returned to Transfusion Service

- A. For blood or components issued to nursing units, it will be necessary to fill out a Record for Blood or Blood Components Issued Without Ice form by the Nursing Units supplied by Transfusion Service.
- B. For blood or components issued in iced containers, it will be necessary to fill out a Record of Reissuance of Blood Record for Blood or Plasma (FFP) Issued on Ice form which accompanies the container.
- C. Reissue: Transfusion Service will evaluate units regarding suitability for reissue and will dispose of any which are unsuitable.

Blood Products not Transfused

- A. Blood products that are not transfused, but an order has been placed, and the products cannot be used on another patient, the products will be charged to the ordering facility. This would include expired or damaged products.

Transfusion Record Documentation

- A. A Blood Component Transfusion Record is issued with each unit of blood or component except Rh immunoglobulin. Before starting the transfusion, it is necessary to properly identify the blood or component for a specific patient. At the patient's bedside, the physician or nurse transfusionist, as well as another individual, must verify and compare each item as noted in the Transfusionists Identification check section of the transfusion record. Both the transfusionist and delegate must verify the information and sign the form.
- B. Blood warmers should be used for patients with high titer cold agglutinins, or those receiving massive rapid transfusions or exchange transfusions. Never immerse the entire blood bag into warm water. Surgery, Emergency Services, Birthing Rooms, and Nursery have their own warming apparatus. The use of a blood warmer must be indicated in the Transfusion Data area of the Blood Component Transfusion Record. An example of the Blood Component Transfusion Record and Explanatory Notes follow.
- C. At cessation of transfusion, chart completed transfusion information in EPIC.

Transfusion Reaction Work-up (If Any Severe Signs or Symptoms are Observed During or After the Transfusion)

- A. *Stop the Transfusion:* Clamp tubing on the administration set. Leave set attached to bag.
- B. *Notify a Physician Immediately:* Regardless of whether physician requests reaction work-up, complete reaction area on the Transfusion Requisition, and send a copy to Transfusion Service.
- C. *Phone Transfusion Service:* Call as soon as work-up has been requested and order transfusion reaction work-up in EPIC. Inpatient phlebotomy will draw a blood specimen and obtain the clamped-off blood bag and administration set.
- D. *Collect First Urine and Send Immediately to Core Lab:* Indicate “Suspected Transfusion Reaction” on the urinalysis request. Order a Transfusion Reaction Urine.
Note: In the case of an indwelling catheter, be sure to collect the urine in a new collection bag.
- E. *ML Phlebotomist:* Check key numbers on the patient’s band and blood unit to exclude misidentification or clerical error. Draw and label a post-transfusion blood specimen and return the bag and attached administration set to Transfusion Service.
- F. *Transfusion Service Work-up:*
 - 1. ABO and Rh₀(D) (donor units, pre- and post-transfusion patient specimens).
 - 2. Direct AHG (Coombs) (pre- and post-transfusion blood specimens).
 - 3. Visual check for hemolysis in post-transfusion blood specimen.
 - 4. Check the urine visually and chemically for hemoglobin and do a microscopic examination if chemical test is positive.
 - 5. The nursing unit will be notified of work-up results. Transfusion Service will notify a pathologist if the results suggest a possible hemolytic or other severe reaction. The pathologist will consult with the responsible physician to inform him/her of the findings, and discuss further testing and appropriate treatment.