Children's Hospital and Health System
Patient Care Policy and Procedure

This policy applies to the following entity(s):
☒ Fox Valley Hospital and Specialty Clinics

SUBJECT: Blood and Blood Components - Verification Procedure Administration and Monitoring

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POLICY

The entire blood verification process must occur at the patient's bedside with two individuals: a transfusionist and a witness. In an emergent situation, the blood/blood component may be double-checked by persons other than the transfusionist.

All required information must be verified in the presence of the patient and must match exactly. Blood may not be administered if there are any discrepancies.

Education:

HOSPITAL STAFF OBTAINING BLOOD OR BLOOD COMPONENTS:

- Must complete introductory safety training and annual safety competency.

REGISTERED NURSES and other transfusing personnel (includes personnel acting as either transfusionist or witness):

- Must complete, in the online learning system, the following prior to administering blood and blood components:
  - Blood Administration: Administration of Blood & Blood Components
  - Blood Administration: Blood Components
  - Blood Administration: Transfusion Reaction

- Must complete the following on an annual basis:
  - Annual Blood and Blood Product Administration Refresher

PROCEDURE

I. Blood Products Brought from Home (Factor Products):

Blood products brought from home by patients/families that are certified for home administration of blood products, by the Great Lakes Hemophilia Foundation (GLHF), may be administered to the patients provided all the following criteria are met:

A. Evidence of the patient/family certification is documented in the GLHF manuals.
B. The order from the Attending Hematologist referring the patient to the Children's Wisconsin - Fox Valley (CW-FV):
   1. The product name
   2. Dose
   3. Route
   4. That product may be brought in by patient/family for administration in the designated setting.
C. The Registered Nurse (RN) verifies with the patient/family that the product, per package insert, was properly thawed or prepared, stored properly, and that the product has not expired. The RN must document the communication in the medical record.

II. Directed and Autologous Blood Donations:

A. Donations should be made a minimum of 3 working days prior to the date needed.

Physician's Responsibility:

1. Order ABO and Rh type for patient if not already done
2. Order number and type of units
3. Indicate special product requirements if applicable, e.g., CMV negative.

Physician/Registered Nurse/Inpatient Case Manager Responsibility:

1. Registered Nurse or Inpatient Case Manager to obtain *Special Collection Order Directed Donations form from the lab. Section A completed by RN or inpatient case manager.* Physician to complete *Special Collection Order Directed Donations* Section B Once filled out give to Inpatient Case Manager
2. Provide patient or family with *Guidelines for Directed Donations and Direct Donations Patient Information Form* from the labRequest that patient or family fill this out and return to Inpatient Case Manager as soon as possible.
3. Inpatient Case Manager will fax *Special Collection Order Directed Donations* form to the Community Blood Center. Attn: Special Procedures Coordinator.
4. Inpatient Case Manager will inform patient and/or family that the Community Blood Center will be in contact with them to schedule an appointment for donation once all forms have been faxed.
5. For any questions please see Inpatient Case Manager.

B. If directed/autologous blood is not used on anticipated date but will be needed before the blood outdates (example - child sick, surgery postponed, unable to make clinic visit) notify the host hospital blood bank. The blood will be kept available if a new expected date of blood administration is given to the host hospital blood bank, and the unit does not outdate before that date.

III. Obtaining Informed Consent for Blood Products Transfusion(s):

A. General Information:
   1. **Consent is required for all blood products except IVIG, albumin and manufactured/factor products (Addendum C).** Patients scheduled to receive non-emergent transfusions must be advised of the risks, benefits and alternatives to blood transfusions. If refusal to consent occurs, consult social work and refer to "Refusal to Consent to Treatment or Blood Products" policy.
      a. The consent for all patients requiring a transfusion will be placed in the active medical record.
      b. The consent is valid for the current treatment period (one per admission/visit) unless the patient is considered to be chronically transfused.
   2. The consent for chronically transfused patients will be valid for a period not to exceed one year. The consent for the chronically transfused patient will remain in the permanent medical record.

      Chronically transfused patients include but are not limited to:
      a. Patients being treated at CW-FV for a malignant disease.

b. Patients with sickle cell disease and/or thalassemia.
c. Patients with congenital or acquired hematological diseases requiring transfusions more often than every 3 months.
d. Potential liver transplant candidates likely to be transfused at least once a year.

Physician or Nurse Practitioner Role/Responsibilities:

1. The provider ordering the transfusion is responsible for obtaining or verifying written consent, documenting "emergency transfusion", or "consent pending "(if parent/guardian isn't available pre-transfusion).

Registered Nurse Responsibilities:

1. The RN is responsible for verifying that written consent has been obtained prior to administering any blood product, and notifying the physician if consent is still needed.
2. The blood product should not be administered without verification of consent, with the exception of emergent situations (this must be indicated in the order as "emergency use-consent implied").

IV. Ordering Blood Products:

Physician or Nurse Practitioner Responsibility:

Evidence of informed consent for blood product transfusion must be obtained in writing prior to ordering blood product. Exception: Life threatening/emergent situations.

A. Order blood and blood components. Order will include:
   1. Type of blood or blood component;
   2. Any special requirements (i.e. irradiated, CMV negative, directed or autologous donor blood, phenotype matched for sickle cell patients, leuko-reduced, volume reduction or saline-washed).
   3. Irradiated CMV negative blood is automatically ordered on patients less than 1 year old. Irradiation should be ordered for patients who are immune deficient (i.e. patients receiving chemotherapy or undergoing stem cell transplant).
   4. Amount to be administered:
      - In mLs (NICU: also add 10mL for blood used in priming IV tubing)
      - In units or mLs (Pediatric floor)
   5. Time/date product is to be administered;
   6. Length of administration time;
   7. Indication for transfusion
   8. Pregnancy status for female and transgender male patient 11 years of age and older
   9. Instructions regarding anticipated interference with medications ordered (i.e. establish a second line, temporarily interrupt transfusion or administer when blood infusion completed.)

Physician Responsibilities:

1. The physician will enter the order into the Electronic Health Record (EHR). Platelets, plasma, cryoprecipitate require only a type and blood bank number. Manufactured/factor products do not require a type & cross-match.

Registered Nurse Responsibility:

1. Verify consent for blood/blood components has been obtained and document in HER.

V. Drawing a Cross-match:

A. **Pediatrics**

1. A cross-match expires at 2400 (midnight) on the third day from the date sample was drawn, e.g. drawn 3-1 at 1800, expires 3-4 at 2400.
2. **Exception** for pre-operative patients (outpatient surgery) that have not been transfused, are not pregnant, or have not had an aborted pregnancy or miscarriage within the last 3 months, and date of surgery is documented in the patient's medical record.
   a. A type and screen or type and cross-match drawn up to 7 days prior to the expected date of surgery.
   b. The blood expires at 2400 (midnight) on the third day after surgery.

B. **NICU**

1. Initial pre-transfusion testing should at least include ABO/Rh (Du if necessary), direct antiglobulin test (IgG only) and a neonatal antibody screen. A cross-match may also be necessary.
2. If the initial neonatal antibody screen (NAS) is negative, repeated antibody screens may be omitted for the remainder of the neonatal period (Infants <4months) during any one hospital admission.
3. If an antibody screen has been completed on the mother and is negative, if transfusion is urgent, the blood may be released prior to completion of the NAS.
4. If the NAS is negative, it is not necessary to cross-match donor red cells for the initial or subsequent transfusions as the donor cells are type O (or are ABO compatible with both the mother and infant)
5. If the NAS is positive, all donor units must be cross-matched by the antiglobulin technique until a repeat antibody screen shows that the antibody is no longer demonstrable in infant's serum. Additionally, the donor cells must be tested and found negative for the corresponding antigen. (If the NAS is positive due to passive anti-A, passive anti-B, or passive anti-D only, cross- matching is not necessary.)

C. **Lab Personnel, or Registered Nurse's Responsibility when Drawing a Cross- match:**

1. Check that the order was entered into the computer, and verify blood components with

the host hospital blood bank.

2. Obtain Blood Bank ID band, the band should include:
   - Blood Bank number. If a patient has an existing Blood Bank band, that band should be used and **no** new bands applied.
3. NICU: The person drawing the blood will place one of the hospital-generated patient identification bands and the blood identification (ID) band sticker to a posey wrap with an opsite and secure to patient extremity.
   Pediatrics: The person **drawing the blood** will apply the blood identification (ID) band to an extremity.

   Exceptions:
   a. **Burn Patients** with dressings on all extremities must have the blood ID band pinned to the dressing.
   b. For NICU infants, one patient identification band and the blood ID band must be on the patient at all times.
   c. **Exception**: NICU infants with potential for impaired skin integrity (i.e. low birth weight infants weighing less than 1200 grams or infants with labile weight gain increasing or decreasing) will have the blood ID bands secured to equipment attached to baby such as around ventilator tubing or IV tubing.
      - NICU infants must have the blood ID band on his/her person when receiving whole blood transfusion or if the infant is transferred from NICU to another unit.
4. Compare pre-printed labels with patient's identification bracelet checking 2 patient identifiers and blood ID band.
   a. The person drawing the blood must label each blood tube immediately at the bedside with preprinted labels. Add to the label:
      - Patient's Blood Bank number (may use barcode label on blood bank ID band)
      - Date and time
      - Lab number of RN drawing lab
6. Draw the specimen:
   a. Pink – 5 ml of blood for T&C (type and cross-match), and T&S (type and screen) platelets.
   b. NICU may use 2 lavender top Microtainers for T&C/T&S
7. Label specimen, as above.
8. Instruct parents/patients not to remove the blood bands and explain rationale.
9. Patients should retain their blood bands until the likelihood of further transfusion is past. Neonate blood bands should remain on infant until they are discharged from the hospital, regardless of the likelihood of further transfusion during the inpatient stay.
10. Send the labeled blood tubes to the lab.

VI. Patients Requiring Emergency Transfusions not Previously Typed and Crossed (Trauma and Life Threatening Situations):

O Rh Negative Blood for emergent transfusion is patient specific. The blood **must not** be used for a subsequent patient requiring emergent infusion. In the event there is an emergent need for blood for another patient, notify blood bank for rapid response for additional units.

Medical Technologist Responsibility:

1. Verifies that the units are O Rh Negative Packed Red Blood Cells.
2. Places the blood in a cooler with the host hospital blood bank compatibility label attached.
3. Place ice over the top of units.

Health Care Provider Picking up Blood/Blood Product Responsibility:

1. Uncrossmatched or incompatible blood shall be issued only if a physician has specifically ordered this. The Emergency Blood/Component Request/Release form obtained from lab shall be signed by a RN on a physician's order, but the physician must personally sign the form in the lab at the earliest convenient time.
2. Pick up the blood from the blood bank according to procedure contained herein.
   - Complete and take Blood Component Pick-up card to Lab (Addendum D)
   - Take red tackle box for transporting blood product from Lab to unit.

Registered Nurse Responsibility:

1. When blood is dispensed in an emergent situation without completing a type and screen, barcode scanning and documentation in the EHR will not be available. Use the downtime form in addendum E.
2. Verify by two individuals prior to hanging that the unit is O Rh Negative Packed Red Blood Cells and it is being given to the appropriate patient by checking two patient identifiers and the blood ID band number. Call lab with two patient identifiers and Blood Bank number if cross-match has been drawn and Blood Bank number assigned
3. If blood product is not required, the RN or designee will immediately walk the blood back to the blood bank in red tackle box.
4. If a trauma patient comes into the Emergency Department (ED) with blood hanging and infusing, the unit can be completed. It is not necessary to stop that transfusion. Any additional units brought by the transferring agency cannot be used and must be sent to the host hospital blood bank for proper disposal. Any transfusion paperwork that arrives with the transfer will be completed and a copy will be sent to the host hospital blood bank and the other copy is to remain with the patient's medical record.

Physician's Responsibility:

1. Sign the release statement within 24 hours of infusion. ()

Life Threatening Situation, Non-Trauma Patient

1. A physician or RN will notify blood bank that emergent O Rh Negative blood is needed STAT.
2. The blood ID band is applied to patient. A blood sample for a cross-match will be collected as soon as possible and sent to lab.
3. If the patient is type and cross-matched before the need for blood/blood component is assessed, the patient will receive type and cross-matched blood/blood component, as per this policy.

Medical Technologist Responsibility (Blood Bank):

1. If blood/blood component is sent by cooler, the medical technologist places the blood/blood component in a cooler with a temperature indicator.

VII. Obtaining Blood or Blood Products:

All blood and blood components are to be obtained from the host hospital blood bank immediately prior to administration. Blood cannot be reissued after being at room temperature for more than 15 minutes. The infusion must be completed within 4 hours of release of the blood/blood component from the host hospital blood bank. Blood and blood components should not be signed out from the host hospital blood bank until IV access has been successfully established.

A. **Blood/Blood Component Picked Up from Lab:**

1. Healthcare Provider Requesting Blood/Blood Product Responsibility:
   a. On a blood/blood component pick-up card (Addendum D), place one of the hospital-generated patient identification labels, Blood ID band number, and the blood/blood component name, special prep (irradiated &/or CMV negative) and bring to the host hospital blood bank.
2. Blood Bank Personnel and Person Obtaining Blood Shall Verify the Following Information:
   - Patient name
   - Hospital number
   - Blood bank ID band number
   - Appropriate blood product and unit number
   - ABO and Rh factor
   - Special prep
   - Date and time
   - Expiration date
3. Any trained hospital personnel can pick up the blood/blood component. The badge of the employee picking up the blood product will be scanned into the computer or the host hospital blood bank personnel will enter the last name of the person picking up the blood into the computer system. The time of the unit being dispensed from the blood bank should be recorded on the unit tag attached to the blood product. That person

may then transport the blood/blood component in the approved biohazard container.

4. If any discrepancy is noted, blood or blood component is not released from the host hospital blood bank until error is rectified.

B. **Department Ordering the Blood or Blood Component Responsibility During Downtime:**
   1. Complete Universal Requisition form obtained from lab.
   2. Send to lab via the tube system.

C. **Healthcare Provider Removing Blood/Blood Component Responsibility:**
   1. If blood will not be used, it must be returned to the host hospital blood bank within 15 minutes.

VIII. Storage of Blood or Blood Products:

When the patient is in surgery, ThedaCare Regional Medical Center Neenah (TCN) will follow their procedure for the storage of blood or blood components. Blood/Blood components may never be placed in the refrigerators on the hospital units. Blood/Blood components may be stored at room temperature for no longer than 15 minutes. If unused, return to blood bank within 15 minutes. Cryoprecipitate, granulocytes, and platelet products are stored at room temperature and should not be refrigerated.

IX. Double Checking / Verification Process of Blood / Blood Component Prior to Administration:

A. **Blood ID Band**

Any patient who requires administration of cross-matched blood/blood components must have a blood ID band affixed as per this policy. (This includes all infants receiving cross-match not required/un-crossmatched PRBC's). If blood ID band is not intact or the ID bands do not match, the patient must be recross-matched with a new sample prior to transfusion.

Double-Checking Process
NOTE: The entire verification process must occur at the bedside with two individuals.

There are 2 roles in the double-checking process:
First role: Transfusionist (Nurse, physician, nurse practitioner or perfusionist administering blood/blood component)
Second role: Witness (Witness must be another nurse, physician, nurse practitioner, perfusionist, or respiratory therapist (RCP))

B. Procedure for Double Check/Verification Process:

1. Transfusionist reads aloud from the blood/blood component container and tag attached to blood/blood component.

2. Witness will look at the transfuse order in the electronic medical record to verify information or the hand-written order during EHR down-time, only.
3. Witness will read back out loud the transfusion information to the transfusionist to confirm accuracy.
4. Transfusionist will look at blood/blood component container and label to verify that the information the witness repeats is correct.
5. Both the transfusionist and the witness will inspect the integrity of the blood/blood component container.
6. Both the transfusionist and witness will match information simultaneously on the patient ID and blood bank band to the transfuse order and blood/blood component. (Both the transfusionist and the witness must visualize the ID band on the patient.)

C. **Elements of the patient and blood/blood component that require verification by the transfusionist and the witness**

NOTE: All information below must be verified in the presence of the patient and must match exactly. Do NOT administer the product if there are any discrepancies. Contact blood bank immediately if a discrepancy is noted.

1. Consent status
2. Name (first and last), date of Birth, medical record number, and blood band number (if applicable)
3. Blood/blood component unit number and ABORh
4. Compatibility of donor and patient ABORh (see Addendum A – Blood and blood component administration chart)
5. Expiration date and time of the blood/blood component (blood products are acceptable for transfusion if the blood product was spiked prior to expiration date/time but reaches expiration during the course of transfusion, as long as the infusion is completed within 4 hours of spiking the product).
6. Type of blood/blood component ordered to be transfused in the medical record
7. Volume of blood/blood component to be transfused in the medical record
8. Special requirements of the blood/blood component ordered in the medical record
9. Inspect the blood/blood component container for any leaks, abnormal cloudiness, color, clots, excessive air, or bubbles. If any of these problems are detected, notify blood blank immediately and hold the transfusion.
10. After double checking process is complete, the transfusionist may then prime the blood/blood component at the bedside and begin documenting blood product administration in the EHR, or on the record of transfusion form (Addendum E) for downtime only. (For proper storage, the blood/blood component must be returned within 30 minutes of being sent from the lab if there is no intention to infuse. Exception: pediatric products must be returned within 15 minutes). If there are questions, call blood

bank.

Blood Product Administration in Epic

Open the Blood flowsheet in the patient's chart

- Click on the blue **Release Transfusion Report** header, look for **Transfusions to release** section where the patient orders are visible and click **Release** to make the unit available on the blood flowsheet. The blood flowsheet will not have a documentation section for the released blood product.
- The RN administering the blood product and second licensed personnel should be present at the bedside with the blood product to complete the visual inspection and verbal verification of the blood product and patient identifiers.
- Be sure to **insert** Column to reflect current time. Click on the blood product **Action** row then click on the syringe icon.
- The **Administration** window opens: recent result components are visible as well as the most recently entered vital signs. If nothing populates or vitals have not been entered within 15 minutes prior to blood product administration, document a current set of vitals.
- If the patient's arm band has not been scanned, do so now.
- Scan the blood product to populate each field: **Unit Number, Product Code, Unit Blood Type,** and **Expiration**; verify populated fields match the unit. Ensure the unit blood type is compatible with patient blood type.
  If scanner is broken please see manual entry details section
- In the **Action** field select **New Bag**
- Hand the blood product and initiate the administration. Edit the start time to be the time the blood product reaches the patient's vein.
- Click **Accept** for the documentation of administration
- There will be a prompt for the dual sign off where the second nurse will enter username and password as second signature.
- To document completion of a blood product **Add Column** on the blood flowsheet. Click **Action** row then click on syringe icon. (You may have to rescan the patient identification band). When the **Administration** window opens, the **Action** to choose is **Stopped**. Then choose **Accept**, which will file the stopped action and return to the flowsheet. In the **Volume** row for the blood product unit, record the infused volume after each unit from the IV pump
- ***Manual Entry Details:***
  1. **Patient ID**: capture the reason the scan cannot be performed and select **Override**
  2. **Unit Number**: Enter the unit number all together or with spaces (Do not include the 00 in front of the box, but do make sure to include the letter in the box)
  3. **Product Code**: Enter the product code in upper case
  4. **Expiration**: Enter the date as is on the bag or with slashes

X. Blood Warmers

Physician's Responsibility:

1. Order blood warmer when indicated.

Registered Nurse Responsibility:

1. Warm blood/blood component with blood warmer only when ordered by the physician.
2. At the start of transfusion, record temperature of blood warmer in EHR or on Addendum Eduring EHR downtime.
3. Do not warm blood/blood component higher than 42 degrees Celsius.
4. If blood warmer alarms for temperature above 42 degrees Celsius, stop transfusion and document.
5. Never warm blood/blood component by holding bag under hot tap water, immersing in an unmonitored water bath, or placing in a microwave oven.

XI. Administration & Monitoring

Physician/Registered Nurse Responsibility:

1. Medication or IV solution, except normal saline, will not be added to blood/blood components or run simultaneously in the same line as blood/blood components except in life-threatening situations and under the direct order of a physician.
2. It is not recommended to interrupt blood transfusions for medications. Timing of blood transfusions should be coordinated with intravenous medication administration.

Registered Nurse Responsibility:

1. Blood/Blood components must be returned to the host hospital blood bank within 15 minutes if unable to begin transfusion, unless stored in validated coolers.
2. All blood/blood components must be started within 15 minutes from issue time from the host hospital blood bank. All blood and blood components are to be transfused within 4 hours of entering the product. All blood and blood component's expiration date and time is on the front of the product (if no time is indicated, blood/blood component expires at 2359).
3. Premedication may be recommended for patients with a history of transfusion reactions. Premedications are not given to every patient; consult with the patient's physician or the host hospital Lab Medical Director if you have any questions.
4. All blood and blood components must be filtered, except Albumin and clotting concentrates. (Addendum A)
5. Inspect container for integrity, gas bubbles, punctures, abnormal color, large clots, cloudiness or sediment. If any are present, return to the host hospital blood bank.
6. Flush patient IV line with normal saline prior to connecting blood/blood component to patient. Assure that a 10mL syringe of normal saline is at the patient's bedside.
7. **For each unit of Whole Blood, Packed Red Blood Cells, Granulocytes, Platelet, Plasma, Cryoprecipitate & Immunoglobulin hung, the sequence below is repeated from beginning to end:**

a. All vital signs obtained as outlined Addendum G must be documented in the EHR or on Addendum E during downtime.
b. Obtain baseline full set of vital signs within one hour, prior to start of transfusion.
c. Observe patient for the first 15 minutes of transfusion.
   - Serious transfusion reactions generally occur within the first 5 to 15 minutes of the transfusion, so the RN **must stay** with the patient during this time. The patient will be observed frequently during the course of the transfusion, and for approximately 15 minutes thereafter for potential reactions. Instruct the patient/parent to report any unusual symptoms.
   - Refer to Addendum B for suspected transfusion reactions.
d. Monitor blood glucose as indicated by physician orders
e. Monitor for signs of hypothermia in infants.

8. Change transfusion filter per manufacturer's recommendation. 4 hour maximum per filter:
   a. Unvented blood set with 200 micron filter/tubing should be changed after every unit.
9. Document product type, unit number, tubing, filter changes and the volume infused in the EHR. For Immunoglobulin, document the product type, amount infused and lot number of the product on the EHR.
10. Pressure cuffed infusion may be initiated by a RN, but only continued under supervision of a physician.
11. Upon completion of the transfusion:
    a. Document completion of transfusion.
    b. Clamp tubing on bag of untransfused blood or blood component, keeping blood/blood component bag and tubing as an intact unit, and discard it into biohazard container or bag.

Administration of Blood and Blood Component Procedures

XII. Transfusion Reaction:

Refer to, "Transfusion Reactions" (Addendum B)

A. If a transfusion reaction is suspected:
   Registered Nurse Responsibility:
   1. Stop the transfusion:
      - Peripheral IV Line - Flush with 1 ml normal saline and/or heparin flush as per standing orders.
      - CVL - Withdraw 3-5 ml of discard blood, flush with 3-5cc normal saline.
      - Connect the ordered IV to keep IV line patent and/or flush per CVC line protocol.
   2. Notify physician.
   3. Notify the host hospital blood bank
   4. Remain with the patient and assess patient's condition and obtain vital signs. Document assessment in the EHR.

5. Complete host hospital blood bank form Investigation of Transfusion Reaction which can be obtained from the host hospital blood bank. Make a copy for the patient's medical record, sending the original to the lab. Complete Transfusion Reaction Testing as ordered by provider or pathologist. Check blood bag compatibility label and patient identification for clerical errors.
6. Immediately following a reaction or suspected reaction to granulocytes, PRBC's or whole blood, send patient's first urine sample labeled "Post Transfusion UA – Reaction" to the host hospital lab.
7. If the reaction is noted during the transfusion time, the entire transfusion set- up, including the saline shall be returned to the host hospital lab for the transfusion reaction work-up.
8. Mild allergic reactions (no pulmonary or systemic changes) should be reported to the host hospital blood bank, but submission of specimens is not necessary. For reactions consisting of localized urticaria only, which resolves with antihistamine therapy, consult with attending physician and consider resuming transfusion.
9. Enter safety event into Midas system.

Physician's Responsibility:

1. Assess patient and determine type of reaction.
2. Order transfusion reaction testing in EHR.
3. Document assessment in patient medical record.
4. Complete physician section on Transfusion Reaction Report obtained from lab.
5. For allergic reactions that are limited to localized urticaria, and resolve with antihistamine therapy, consider resumption of transfusion.

Host Hospital Blood Bank Responsibilities:

1. Complete laboratory portion of Investigation of Transfusion Reaction Report obtained from lab and place a copy in the patient's medical record.
2. Assure appropriate blood specimens are drawn.
3. Complete Transfusion Reaction Audit Tool.

B. If transfusion reaction is verified by physician:

Registered Nurse Responsibilities:

1. Notify the host hospital blood bank.
2. Complete Nursing section on the Investigation of Transfusion Reaction form obtained from lab.
3. Send blood bag with attached administration set and labels to host hospital blood bank. The pneumatic tube system CANNOT be used. Since the blood/blood component bag has been spiked it is now an open system and has a greater risk for contamination. The blood bag and attached set must be hand delivered to the host hospital blood bank.
4. Treat symptoms per physician's orders.

5. A blood and urine sample should be collected from the patient if reaction is due to red cell products. **When collecting the blood, label it in the same manner as a crossmatch sample, and be sure to include the patient's current blood ID number on the blood tubes.**
6. Enter safety event into Midas system.

Host Hospital Blood Bank Responsibilities:

1. Assure appropriate blood specimens are drawn.
2. Perform appropriate work-up of reaction.
3. Complete remaining portion of Transfusion Reaction Report and place a copy in the patient's medical record.

XIII. Management of Human Immunodeficiency Virus (HIV) – Infected, Hepatitis C (HCV)

– Infected, and other Infectious Diseases Lookback Investigation (Post-Transfusion Transmitted Disease):

Please refer to host hospital Theda Care Regional Medical Center - Neenah Laboratories' policy: *Blood product lookback: investigation of transfusion transmitted disease*

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Approved by:

Fox Valley Joint Clinical Management Committee February 13, 2023
Fox Valley Medical Executive Committee April 12, 2023

ADDENDUM A - BLOOD & BLOOD COMPONENT ADMINISTRATION

COMPONENT	TYPE & CROSSMATCH REQUIRED	PATIENT'S ABO, Rh TYPE	ACCEPTABLE DONOR UNIT ABO, Rh TYPE	FILTER TYPE -	INFUSION METHOD
Red Blood Cells	Yes **Exceptions:** -Infant < 4 months may receive Type O, Rh compatible un-crossmatched, after initial evaluation. -Administration of all other un-crossmatched blood is restricted to life threatening situations and is the responsibility of the ordering physician.	O+ O- A+ A- B+ B- AB+ AB-	O+, O- O- A+, A-, O+, O- A-, O- B+, B-, O+, O- B-, O- AB+, AB-, A+, A-, B+, B-, O+, O- AB-, A-, B-, O-	Standard blood filter (180 micron) or blood transfusion filter (40 micron). 40 micron for patients currently on cardiopulmonary bypass or if volume is < 60mL.	IV pump, syringe pump or gravity.
Whole Blood	Yes	O+ O- A+ A- B+ B- AB+ AB-	O+, O- O- A+,A- A- B+. B- B- AB+, AB- AB-	Standard blood filter (180 micron) or blood transfusion filter (40 micron). 40 micron for patients currently on cardiopulmonary bypass or if volume is < 60mL.	IV pump, syringe pump or gravity.
Fresh Frozen Plasma	Requires a blood type on file from the current admission.	O A B AB	Rh type is Not a factor. O, A, B, AB A, AB B, AB AB	Standard blood filter (180 micron) or blood transfusion filter (40 micron). 40 micron for patients currently on cardiopulmonary bypass or if volume is < 60mL.	IV pump, syringe pump or gravity.
Granulocyte Concentrate	Yes	O+ O- A+ A- B+	O+, O- O- A+, A-, O+, O- A-, O- B+, B-, O+, O-	**Only 180 micron filter.**	IV pump,Syringe pump or gravity.

COMPONENT	TYPE & CROSSMATCH REQUIRED	PATIENT'S ABO, Rh TYPE	ACCEPTABLE DONOR UNIT ABO, Rh TYPE	FILTER	INFUSION METHOD
		B- AB+ AB-	B-, O- AB+, AB-, A+, A-, B+, B-, O+, O- AB-, A-, B-, O-		
Platelet Concentrate	Requires blood type on file from the current admission.	Rh+ Rh-	Rh+, Rh- Rh- All ABO groups are acceptable; components compatible with the recipient's red cells are preferred. If not ABO compatible, volume reduction is preferred Neonatal consideration: Neonates with isoimmune thrombocytopenia who require platelet transfusions may require "PI -A1" negative platelets	Standard blood filter (180 micron) or blood transfusion filter (40 micron). 40 micron for patients currently on cardiopulmonary bypass or if volume is < 60mL.	IV pump ,syringe pump, or gravity.
Cryoprecipitate	Requires blood type on file from current admission.		Rh type is not a factor. All ABO groups are acceptable; components compatible with the recipient's red cells are preferred.	**Standard blood filter (180 micron) or blood transfusion filter (40 micron). 40 micron for patients currently on cardiopulmonary bypass or if volume is < 60ml**	IV pump, syringe pump or gravity.
Clotting Concentrates (Novoseven, Proplex, Factor IX, Factor VII, Humate P, Profilate)	No	NA	NA	**Filter needle provided with product or 200 micron.**	IV pump, syringe pump or gravity.
Immunoglobulin (Gammagard S/D® or Gammagard liquid®) Obtained from Pharmacy For additional	No	NA	NA	Gammagard Liquid: An in-line filter is not required. • Gammagard S/D: **A 15 micron filter is required to be used during administration** Pharmacy will supply a compatible filter.	IV pump preferred. Syringe pump if small dose administered.

COMPONENT	TYPE & CROSSMATCH REQUIRED	PATIENT'S ABO, Rh TYPE	ACCEPTABLE DONOR UNIT ABO, Rh TYPE	FILTER TYPE	INFUSION METHOD
information refer to Addendum K				• For NICU: If drawn in a syringe, Pharmacy will prefilter medication if required▪If the patient is receiving less than 50 mL, pharmacy will prepare the dose in a syringe ▪ If the patient is receiving more than 50 mL, pharmacy will prepare the dose in an IV bag. Pharmacy will dispense a 15 micron filter with the IV bag for administration if required.	
Albumin Obtain from Pharmacy	No	NA	NA	**None - Can not pass through 0.22 micron filter.**	IV pump, syringe pump or gravity.

ADDENDUM B - TRANSFUSION REACTIONS

REACTION	CAUSE	CLINICAL MANIFESTATIONS	MANAGEMENT	PREVENTION
Acute Hemolytic	Infusion of ABO-incompatible whole blood, red blood cells, or components containing 10 mL or more of red blood cells. Antibodies in the recipient's plasma attach to antigens on transfused red blood cells causing red blood cell destruction.	Fever (rise of 1□C during the transfusion or within 1-2 hours) occurs in greater than 70% of all hemolytic transfusion reactions. Fever is the most common initial manifestation of immune hemolysis. Chills, low back pain, flushing, tachycardia, tachypnea, hypotension, vascular collapse, hemoglobinuria, hemoglobinemia, bleeding, acute renal failure, shock cardiac arrest, death.	Stop transfusion immediately. Recheck verification of unit. Send blood bag, saline, tubing and filter intact to Lab. Send Transfusion Reaction Report form to Lab. Send first voided urine specimen to Lab. Lab will draw blood work. Treat shock, if present. Maintain BP with appropriate IV solutions. Give diuretics as prescribed to maintain urine flow. Insert indwelling catheter or measure voided amounts to monitor hourly urine output. Dialysis may be required if renal failure occurs. Do not transfuse additional red blood cell-containing components until cause of problem has been ascertained and/or Transfusion Service physician, in discussion with patient's physician, has agreed on course of action. Do not restart transfusion.	Meticulously verify and document patient identification from sample collection to component infusion.
Febrile, non hemolytic	Sensitization to donor white blood cells, platelets, or plasma proteins.	Sudden chills and fever (rise in temperature of greater than 1□C), headache, flushing, anxiety, muscle pain.	Stop transfusion immediately. Recheck verification of unit. Send blood bag, saline, tubing and filter intact to Lab. Send transfusion reaction form to Lab. Send first voided urine specimen to Lab. Lab will draw blood work. Give antipyretics as prescribed--avoid aspirin in thrombocytopenic patients. Do not restart transfusion unless cleared by the Transfusion Svcs MD.	Consider premedication with antipyretics.

REACTION	CAUSE	CLINICAL MANIFESTATIONS	MANAGEMENT	PREVENTION
Mild Allergic	Sensitivity to foreign plasma proteins.	Flushing, itching, urticaria (hives).	Do not restart if hives are moderate to severe, or patient experiences fever or pulmonary symptoms. If the reaction is mild the transfusion can be temporarily stopped, the patient treated with antihistamines and the transfusion resumed if ordered by the physician. Typical therapy includes administration of antihistamines. All allergic reactions should be reported to the Transfusion Services, however specimens for mild reactions are not required. For reactions consisting of localized uticaria only that resolve with antihistamine therapy, consider resuming the transfusion.	Treat prophylactically with antihistamines. Changing transfusions to saline washed red cells, and/or platelets may be required for patients with recurrent reactions failing premedication strategies
Anaphylactic	Severe allergic reaction to a plasma protein or infusion of IgA to an IgA deficient recipient who has developed IgA antibodies.	Anxiety, , wheezing, progressing to cyanosis, shock, and possible cardiac arrest.	Stop transfusion immediately. Recheck verification of unit. Initiate CPR, if indicated. Have epinephrine ready for injection. Send blood bag, saline, tubing and filter intact to Lab. Send Transfusion Reaction Report form to Lab. Send first voided urine specimen to Lab. Lab or RN will draw blood work. Do not restart transfusion.	Premedication with antihistamines and corticosteroids may be considered. Washed red blood cells and, or platelets may be necessary in severe cases. When Anti-IgA has been documented, products from IgA deficient donors may be considered.
Transfusion Associated Circulatory Overload (TACO)	Fluid administered faster than the circulation can accommodate.	Cough, dyspnea, pulmonary congestion (rales), headache, hypertension, tachycardia, distended neck veins.	Stop transfusion immediately. Place patient upright with feet in dependent position. Administer prescribed diuretics, oxygen, morphine.	Adjust transfusion volume and rate based on patient size and clinical status. Order divided RBC's into smaller aliquots for better spacing of fluid input.

Original: 09/2008
Revised: 11/6/2019
Effective: 11/7/2019
Blood and Blood Components/ Process Owner: Director of Patient Care - Inpatient

REACTION	CAUSE	CLINICAL MANIFESTATIONS	MANAGEMENT	PREVENTION
Sepsis	Transfusion of contaminated blood components.	Rapid onset of chills, high fever, vomiting, diarrhea, and marked hypotension and shock.	Stop transfusion immediately. Recheck verification of unit. Send blood bag, saline, tubing and filter intact to Lab. Send Transfusion Reaction Report form to Lab. Send first voided urine specimen to Lab. Lab or RN will draw blood work. Obtain culture of patient's blood. Send to transfusion service for further study. Treat septicemia as directed -- antibiotics, IV fluids, vasopressors, steroids.	Collect, process, store and transfuse blood products according to blood banking standards.
Transfusion Related Acute Lung Injury (TRALI)	Donor HLA or WBC antibodies attach to antigens on the recipient's WBC cells - one of the possible causes	Acute respiratory distress, bilateral pulmonary edema, hypoxemia, tachycardia, fever, hypotension, cyanosis, dyspnea, up to 6 hours post transfusion	Stop transfusion immediately. Give respiratory support as needed (0xygen supplementation, intubation, mechanical ventilation).	Permanent deferral of donors implicated in TRALI. Limit plasma components from multiparous women.

ADDENDUM C – CONSENT FOR BLOOD/BLOOD TRANSFUSION

Children's Hospital of Wisconsin

CONSENT FOR BLOOD/BLOOD PRODUCT TRANSFUSION (ENCOUNTER RELATED)

I, understand that my child/I may need a transfusion of blood and/or one of its products during treatment. This has been determined by physicians of the medical staff of CHW based on their judgement of the potential benefits given the individual needs of my child/myself.

The risks, benefits and alternatives of receiving blood or blood products have been explained to me.

Risks: Among these risks are fever, rash, shock (low blood pressure), allergic reaction, kidney damage, shortness of breath, infection, and in rare circumstances, transmission of infectious diseases, such as hepatitis, or HIV (AIDS). I understand that precautions are taken by the blood bank in screening donors and in matching blood for transfusions to minimize those risks. In order to improve the safety of our blood products, new non-FDA required research tests are performed. Occasionally, specified blood products may need to be transfused prior to the completion of this research testing. Your treating physician may determine that not receiving the blood product will put you/your child at higher risk than receiving a blood product that has not completed the research testing; however all standard FDA required infectious disease testing will be performed prior to the release of blood products.

Alternatives: The alternatives to transfusion, such as donating my/my child's own blood, receiving my/my child's own blood back, or having someone donate blood on my/my child's behalf have been explained to me. I understand the risks and consequences of not receiving this therapy, such as severe anemia, bleeding and death.

Benefits: Anticipated benefits may include one or more of the following: Increased oxygenation, prevention of active bleeding or stopping of abnormal bleeding, maintenance of blood pressure, improvement of blood flow, prevention of infection, and sustaining of life.

I voluntarily consent to the ordered blood/blood products for myself/my child. I understand the contents of this form and any questions I had were answered to my satisfaction by the doctor before signing.

Date: _____ A.M. P.M. (Time) Signature: _____ Patient or person legally responsible

Witness: _____ _____ Relationship to Patient

I informed the patient/legal guardian regarding the availability of alternative, viable medical modes of treatment and the benefits and risks of each. The patient/legal guardian had received the information necessary in order to give an informed consent to the proposed procedures.

_____ Signature of Treating Provider* Date Time **(Required)**

* Provider includes the following: Attending Physician, PA, APN, APNP or Resident.

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DT585

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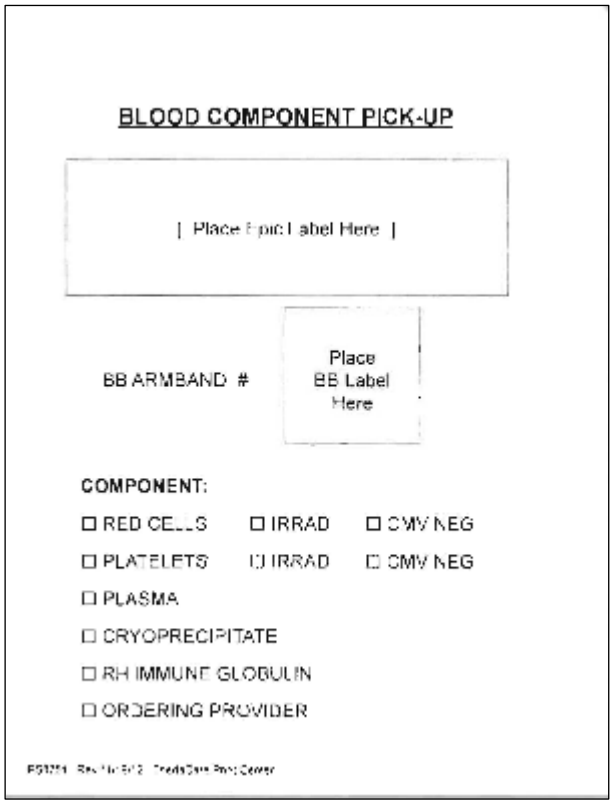
Blood and Blood Components/ Process Owner: Director of Patient Care - Inpatient

ADDENDUM D – BLOOD COMPONENT PICK-UP CARD



BLOOD COMPONENT PICK-UP

| Place Epic Label Here |

BB ARMBAND #

Place BB Label Here

COMPONENT:

☐ RED CELLS ☐ IRRAD ☐ CMV NEG

☐ PLATELETS ☐ IRRAD ☐ CMV NEG

☐ PLASMA

☐ CRYOPRECIPITATE

☐ RH IMMUNE GLOBULIN

☐ ORDERING PROVIDER

ADDENDUM E – RECORD OF TRANSFUSION FORM (For Epic Downtime Use)

PATIENT LABEL

RECORD OF TRANSFUSION

Children's Hospital of Wisconsin

☐ Consent Signed ☐ Verbal Consent

☐ PKU Done Date _____

Document Vital Signs (Temp, Pulse, Respirations, BP)
Within 15 Minutes Prior To Start **15 Minutes after Start**
15 Minutes after Every Rate Change **Every Hour from Start**
At Completion **Restart Process with Each New Unit**

Start Date	Start Time	Blood Products		Initials		Tubing Change Time (every 2 units and/or 4 hours)	Completed Time	Completed by (initials)	Reaction (Circle Yes or No)		Check if any unused blood returned to lab (add reason)	Check if blood warmer used (add °C)
		Component	Unit Number	Started by (transfusionist)	Verified by (witness)							
									Yes	No	☐	☐ ___°C
									Yes	No	☐	☐ ___°C
									Yes	No	☐	☐ ___°C
									Yes	No	☐	☐ ___°C
									Yes	No	☐	☐ ___°C

Initials	Signature:	Initials	Signature:	Initials	Signature:	Initials	Signature:
Initials	Signature:	Initials	Signature:	Initials	Signature:	Initials	Signature:
Initials	Signature:	Initials	Signature:	Initials	Signature:	Initials	Signature:

C7434FV (8/15)

ADDENDUM E – RECORD OF TRANSFUSION FORM

NURSING SERVICE PRE-TRANSFUSION BEDSIDE VERIFICATION

1. There is a current (valid) blood consent signed.
   N/A for emergency-consent implied, factor products
2. Checked Transfuse order for amount and type of product ordered to be transfused.
3. Performed verification simultaneously by two transfusing personnel **at the bedside.**
4. Performed bedside checks using a **read/read back** confirmation method.
5. Patient's name, D.O.B. and when appropriate the BB# on the form, unit label and the patient's arm band are identical.
6. Unit number and the ABO/Rh, when applicable, are on the bag, form and unit label match.
7. Blood and blood component is **not** expired.
8. Donor blood and patient ABO/Rh are compatible
   N/A for cryoprecipitate, factors products.
9. Primed blood product **in the room** after verification of blood product with patient.

IF TRANSFUSION REACTION IS SUSPECTED, PERFORM THE FOLLOWING

1. Stop the transfusion
2. Maintain IV access
3. Notify the patient's physician and transfusion service.
4. Verify identification between unit and patient match.
5. Monitor all vital signs.
6. Collect first urine specimen and obtain post-reaction blood samples for transfusion reaction work-up.
7. **Complete transfusion reaction form and follow guidelines.**
8. Complete on-line incident report

TRANSFUSION REACTION

Signs and symptoms of a transfusion reaction may include:

Increased pulse	dyspnea	chills	flushing
Decreased B/P	back pain	fever	urticaria
Chest pain	hemoglobinuria	vomiting	rash
Heat or pain along infusion vein		nausea	

C7434FV (8/15)

ADDENDUM F:

Gammagard Liquid 10% liquid

Other IVIG products are available besides Gammagard Liquid; each may have different infusion guidelines (refer to the individual IVIG product's package insert)

Pharmacology
- Contains polyclonal (broad spectrum) IgG antibodies against bacterial and viral agents
- Provides passive immunity
- Half-life is approximately 35 +/- 9 days; decreased half-life may occur with fever and infection

Contraindications:
- Patients with IgA deficiency (All IVIG formulations contain trace amounts of IgA)
- History of anaphylactic or severe systemic reaction

Adverse Effects
- Common: headache, fatigue, chills, backache, leg cramps, lightheadedness, fever, urticaria, flushing, slight elevation of blood pressure, nausea, and vomiting
- Serious side effects (rare): renal failure, aseptic meningitis, transfusion-related lung injury, thrombotic events

Dosage and Administration
- Dose or frequency may be adjusted relative to serum IgG levels when used for immunodeficiency syndrome or B-cell CLL
- Primary Immunodeficiency: 100-800 mg/kg every 3-4 weeks based on clinical response
- B-cell CLL: 400 mg/kg every 3 to 4 weeks
- Idiopathic Thrombocytopenic Purpura: 1 gram/kg; additional doses based on clinical response. Total dose is 2 grams/ kg.
- Kawasaki Syndrome: 2 grams/kg x 1 *over at least 12 hours*; may be repeated based on clinical response
- Guillain-Barre Syndrome: 2 grams/kg x 1 day, or 1 grams/kg per day x 2 days, or 400 mg/kg per day x 5 days
- Adjunctive therapy for severe, refractory C.difficile colitis, Group A streptococcal TSS and Staphylococcal TSS
    - Passive immunotherapy with IV immunoglobulin may be useful adjunctive therapy, in addition to antibiotic treatment, for severe, refractory C. difficile colitis, Group A streptococcal TSS and Staphylococcal TSS. Prospective, randomized, double blind trials have not been published.
- Multifocal Motor Neuropathy: 500 mg/kg - 2.4 grams/kg per month based on clinical response

- **Infusion rates: Refer to infusion rate chart below.**
    - Other IVIG products are available besides Gammagard Liquid; each may have different infusion guidelines (refer to the individual IVIG product's package insert)
    - Recommended infusion rate (advance as tolerated:
        - Initiate infusion at 0.1 mL/kg/hr for 30 minutes then,
        - 0.2 mL/kg/hr for 30 minutes then,
        - 0.5 mL/kg/hr for 30 minutes then,
        - 1 mL/kg/hr for 30 minutes then,
        - 1.5 mL/kg/hr for 30 minutes then,
        - 2 mL/kg/hr for 30 minutes then or until completed.
        - 3 mL/kg/hr until completed (CAUTION – use only for selected patients)
    - If adverse effects occur, the rate should be reduced or the infusion interrupted until the symptoms subside

- The infusion can then be resumed at a rate that is tolerated by the patient

Nursing Considerations

- Monitoring:
  - Obtain baseline values for temperature, pulse, respiration, pulse oximetry and blood pressure before beginning the infusion
  - Observe the patient carefully for signs of a possible reaction. The RN/ LPN administering the IVIG **must stay** with the patient for the first fifteen minutes to observe any immediate reactions or complications.
  - Instruct the patient to report any unusual symptoms
- A full set of vital signs (HR, RR, BP, temp) is required immediately prior to starting infusion, 15 minutes after infusion starts, every time you make a rate increase, and 30 minutes after the infusion is complete.
- Generally, the rate is increased every 15-30 minutes.
  - Obtain vital signs every 15-30 minutes until the infusion is at its final rate and then every hour until completed
- IVIG is derived from pooled human plasma; transfusion reactions are possible
  - A crash cart must be available
  - If mild reactions occur (headache, flushing, dizziness, nausea, chills, mild hypotension) temporarily stop or slow infusion rate; symptoms should subside promptly
  - For severe reactions (anaphylaxis) discontinue IVIG
- May be infused peripherally; large bore veins are recommended to decrease discomfort at infusion site
- Administer at room temperature
- Filter requirements:
  - Gammagard Liquid: An in-line filter is not required.
- Ensure adequate hydration prior to infusing IVIG to decrease risk of renal failure
- Other IVIG products are available besides Gammagard Liquid and have different infusion guidelines
- Live vaccines should not be given following a dose of IVIG for specified time periods depending on the IVIG dosage

Compatibility:

- **Must be administered via a dedicated line**.
- Gammagard liquid is compatible with dextrose 5% water (D5W). Line may be flushed with NS or D5W.
- Other IVIG products are available besides Gammagard and have different infusion guidelines. ThedaCare Pharmacy will notify CHW when there is a shortage of these products and what the replacement will be. Specific separate orders will be required from the Provider.

Administration infusion rates

Administration rates are weight-based; utilize patient's current actual weight when determining rate

Weigh the patient upon admission. Use admission weight to determine IVIG rate based on the chart below. You do not need to do calculations at the bedside based on the patient's weight. If patient's weight is in between the rows, use the row with the lower weight. Ex: If your patient's weight is 12 kg use the rates in the 10kg row.

Weight (kg)	0.1 mL/kg/hr	0.2 mL/kg/hr	0.5 mL/kg/hr	1 mL/kg/hr	1.5 mL/kg/hr	2 mL/kg/hr	3 mL/kg/hr
	mL/hr	mL/hr	mL/hr	mL/hr	mL/hr	mL/hr	mL/hr
1	0.1	0.2	0.5	1	1.5	2	3
2.5	0.3	0.5	1.3	2.5	3.8	5	7.5
5	0.5	1.0	2.5	5	7.5	10	15
7.5	0.8	1.5	3.8	7.5	11.3	15	22.5
10	1	2	5	10	15	20	30
15	1.5	3	7.5	15	22.5	30	45
20	2	4	10	20	30	40	60
25	2.5	5	12.5	25	37.5	50	75
30	3	6	15	30	45	60	90
35	3.5	7	17.5	35	52.5	70	105
40	4	8	20	40	60	80	120
45	4.5	9	22.5	45	67.5	90	135
50	5	10	25	50	75	100	150
55	5.5	11	27.5	55	82.5	110	165
60	6	12	30	60	90	120	180
65	6.5	13	32.5	65	97.5	130	195
70	7	14	35	70	105	140	210
75	7.5	15	37.5	75	112.5	150	225
80	8	16	40	80	120	160	240
85	8.5	17	42.5	85	127.5	170	255
90	9	18	45	90	135	180	270
95	9.5	19	47.5	95	142.5	190	285
100	10	20	50	100	150	200	300
105	10.5	21	52.5	105	157.5	210	315
110	11	22	55	110	165	220	330
115	11.5	23	57.5	115	172.5	230	345
120	12	24	60	120	180	240	360
125	12.5	25	62.5	125	187.5	250	375
130	13	26	65	130	195	260	390
135	13.5	27	67.5	135	202.5	270	405
140	14	28	70	140	210	280	420
145	14.5	29	72.5	145	217.5	290	435
150	15	30	75	150	225	300	450

IVIG dosing for Neonatal Hyperbilirubinemia and Kernicterus

Kernicterus is the chronic and permanent neurologic sequelae of bilirubin-induced neurologic dysfunction (BIND). Term and late preterm infants are at risk for BIND when total bilirubin (TB) concentrations ≥25 mg/dL. In 2004, the American Academy of Pediatrics (AAP) identified risk factors and suggested treatment for severe hyperbilirubinemia. Treatment options include phototherapy, exchange transfusion and improving frequency and efficacy of feeding. **Intravenous immunoglobulin** — IVIG can reduce the need for exchange transfusion in infants with hemolytic disease caused by Rh or ABO incompatibility.

IVIG (dose 0.5 to 1 g/kg over two hours) is recommended in infants with isoimmune hemolytic disease if the TB is rising despite intensive phototherapy or is within 2 or 3 mg/dL of the threshold for exchange transfusion. The dose may be repeated in 12 hours if necessary.

For administration at CHW, consider modified “ramp up” dosing chart to allow administration in 2 hours, as this is considered a medical emergency. May have to go up to 8 mL/kg/hr if the dose is 1 g/kg.
Example: 0.5 mL/kg/hr for 10 minutes
1 mL/kg/hr for 10 minutes
2 mL/kg/hr for 10 minutes
4 mL/kg/hr until finished

Check your numbers to get dose completed in 2 hours. Also make sure that duration specified in the EHR is 2 hours.

American Academy of Pediatrics: Subcommittee on Hyperbilirubinemia. (2004). Management of Hyperbilirubinemia in the Newborn Infant 35 or More Weeks of Gestation. *Pediatrics*, *114*(1), 297-316. doi:10.1542/peds.114.1.297

NOTE: This is only a guideline. Refer to a drug reference book or unit based pharmacist for complete information on the use of this drug.

Addendum G Administration of Blood and Blood Component Procedures

PRBC's	Must be used within 4 hours of being signed out/removed from a monitored (1-6 degrees Celsius) refrigerator. Usual Transfusion rates = 2-5ml/kg/hr (start slowly). Example: 2.5ml/kg/hr for the first 15 min, then if tolerated 5.0ml/kg/hr for the remainder of the infusion. Obtain vital signs within one hour of start time, at the 15-minute mark (before the rate increase), and then hourly until infusion complete; repeat with each new unit of PRBC.
Whole Blood	Must be used within 4 hours of being signed out/removed from a monitored (1-6 degree Celsius) refrigerator. Usual Transfusion rates = 2-5ml/kg/hr (start slowly). Example: 2.5ml/kg/hr for the first 15 min, then if tolerated 5.0ml/kg/hr for the remainder of the infusion with a maximum rate of 250ml/hr. Obtain vital signs at baseline, at the 15-minute mark (before the rate increase), and then hourly until infusion complete; repeat with each new unit of whole blood.
FFP	Must be used within 24 hours of time thawed. Infuse within 4 hours; 1 hour preferred at a maximum rate of 30 ml/kg/hr Obtain vital signs within one hour of start, within 15-30 after starting the transfusion, and every hour until transfusion is complete. Repeat vital sign monitoring with each new unit.
Cryoprecipitate	Must be used within 4 hours of time thawed. Administer slowly over 5-15 min. Obtain vital signs at baseline and end of infusion. Use of same set for multiple bags is acceptable, but infusion set is only good for 4 hours

Platelets All Volume Reduction Platelets* HLA-matched or non-matchedSingle Donor Pheresis platelet	*Volume reduced platelets: Must be used within 4 hours from time of volume reduction. Must be used within 4 hours after donor platelets are pooled. All Types of Platelets: Administer by gravity, IVpush,or via an infusion pump: Infuse over 1 hour (maximum of 4 hr) at 30 mL/kg/hr (maximum rate). Obtain vital signs within one hour of start, within 15-30 after starting the transfusion, and at the end of transfusion. Repeat vital sign monitoring with each new unit.
Granulocytes	Expires 24 hours from preparation. Never use a leukocyte reduction filter. Transfuse within 24 hours of collection (preferably as soon as they are available as granulocytes die quickly). Usually infused over 2-4 hours (start at 1ml/kg/hr). Obtain vital signs within one hour of start, within 15-30 after starting the transfusion, and every hour until transfusion is complete. Pre-medication with acetaminophen and diphenhydramine may be indicated to prevent reactions per physician order. Watch patient closely for fever, chills, and urticaria. Assess for acute pulmonary symptoms: Dyspnea, development of infiltrates, chest tightness and hypoxia. Do NOT administer Amphotericin B products within 4 hours of a granulocyte transfusion; concurrent or close administration has been associated with severe pulmonary reactions.

Albumin and Clotting Concentrates:	Administer with nonfiltered IV tubing (see package insert). 25% Albumin is preferred to be administered through a CVAD but peripheral administration is acceptable. Obtain vital signs within one hour of start and at the end of infusion. Average pediatric dose and administration times * Albumin 5% = 1 g/kg = 20 mL/kg at 1-2 mL/min or faster if the patient is in shock. * Albumin 25% = 1 g/kg = 4 mL/kg at 0.2 to 0.4 mL/min.
Immunoglobulin (Gammagard S/D®, Gammagard Liquid®, Gammagard®)	See Addendum A and F