BLOOD AND BLOOD PRODUCTS

PURPOSE: To outline the management of the patient receiving blood and blood products.

SUPPORTIVE DATA:

Blood and blood products include red blood cells, plasma (which includes fresh frozen plasma [FFP], 24-hour plasma, and thawed plasma), cryoprecipitate, platelets, apheresis, and factors 7, 8, and 9. Reconstituted whole blood may be used for neonatal exchange transfusion. All patients will receive cellular blood products that are leukoreduced (which is CMV reduced risk). Selected patients may need to receive cellular blood products that have been irradiated/leukocyte reduced and/or are CMV negative.

Fever is **RARELY** a contraindication for transfusion. A febrile, non-hemolytic transfusion reaction is defined as a rise in temperature greater than 1°C or 1.8° F from a pre-transfusion level of not lower than 37°C or 98.6°F when no other explanation for the fever exists.

Transfusion rates vary with the patient's clinical condition. An 18-gauge needle provides good flow for red blood cells. Smaller needles can be used for patients whose large veins are inaccessible. Forced flow under high pressure through small lumen intravenous access may damage red blood cells.

Religious/personal preferences must be considered for the adult and in the case of a child, the parent/guardian.

In NON-EMERGENCY SITUATIONS the following must be done:

- Patient is informed of transfusion options by a provider in compliance with the Paul Gann Blood Safety Act
- The provider must obtain a transfusion consent:
  - Outpatient: Consent is good for one year unless there is a significant change in risk
  - Inpatient: A new consent must be obtained with each hospital admission
  - The consent must be inclusive of the blood product being ordered for the patient

Units may be divided by Blood Bank if required.
Unused blood **must** be returned to the Blood Bank. Must arrive to Blood Bank within 30 minutes of issuance. DO NOT place this unit in any unmonitored refrigerator or in/on/near a heating unit/element.

Elective Transfusion in the Outpatient setting (excluding emergency rooms):

- Transfusion should be started no later than three hours before the clinic closes.
- Patients should remain in clinic for 30 minutes after transfusion, in case a transfusion reaction should occur.
- Patients with special transfusion needs, such as those with red cell antibodies or warm autoimmune hemolytic anemia, should have their blood drawn and submitted one to two days before the transfusion is needed. Call Blood Bank (x 97134) for specimen requirement since multiple tubes may be needed.

OBTAINING TYPE & SCREEN SPECIMEN

1. Draw blood for type & screen or type & cross as ordered.
2. Verify patient identity using barcode scanner (Specimen Collect feature) and:
   - ED:
     - Ensure 2 licensed personnel (RN, LVN, provider) double check patient identity at the bedside by matching the patient's name band with the label on the tube and asking the patient to state their name (if

patient is able). The second licensed personnel's name is documented in the electronic health record (EHR).

- Inpatient/ Ambulatory Care:
  - Ensure 2 licensed personnel (RN, LVN, provider) identifies the correct patient at the bedside by matching the patient's name band with the label on the tube and ask the patient to state their name (if patient is able).

3. Draw ABO/Rh confirmatory specimen when requested by the Blood Bank. Label with patient identifying data, and sign, date and time the sample.

PRIOR TO OBTAINING BLOOD:

4 Verify the provider has obtained signed transfusion consent and verify the blood product indicated on the consent matches the provider's order (in non-emergency situations) and contact provider immediately if consent documentation has not been completed.

5. Verify patient will accept transfusion.
6. Assure patient has received Paul Gann Act pamphlet "If You Need Blood" (given by provider).
7. Check blood/blood product transfusion order / request. Order to include:
   - Type of blood product
   - Number of units
   - Special processing requirements (if needed)
   - Number of mL to be infused (NICU and ALL Pediatric patients weighing 30 kg or less. Provider should enter Order set: Blood Product transfusion less than 30 kg).
   - Administration rate
8. Order/ print pick-up slip from EHR for blood/blood product pick up. Write name and employee number on slip.
   - Blood call card/ pick-up slip: Complete and validate the contents of the card /slip with a second licensed person (RN, LVN, provider) at the bedside to ensure it correlates with the patient's name band and the provider's order). Both licensed persons write name and employee number on the card/ slip.
9. Assess vital signs (VS), mental status, IV site and patency no more than 30 minutes prior to transfusion.
10. Pre-medicate the patient as ordered.

PRIOR TO ADMINISTRATION:

11. Ensure the licensed personnel (RN, LVN, provider) that will be administering the blood product and 1other licensed personnel (RN, LVN, provider) match the provider's order with the blood unit and the Blood Product Record.
12. Ensure that licensed personnel (RN, LVN, provider) that will be administering the blood product and 1 other licensed personnel (RN, LVN, provider) identify patient AT THE BEDSIDE.
    - Ask patient to state full name (if possible) and match it with identity band
    - Compare and verify patient identity band (full name and MRN) matches component bag and blood product record
    - Ensure the following information on Blood Bank Product Record and blood component bag (both bag labels) matches:
      - Name and MRN
      - Patient ABO/Rh (not required for Factors 7, 8, 9)
      - Donor ABO/Rh (not required for Factors 7, 8, 9)
      - Expiration date
      - Component type
      - Unit number
      - Provider ordered attributes for example: CMV negative, Leukoreduced, Irradiated, reconstituted, etc.

ADMINIS-TRATION

13. Administer blood products per provider's order. The following infusion rates are recommended:

Adults	Normal Recommended Rate†	Emergency Situations‡
Platelets	10 mL/min	May be given up to 70 mL/min
Plasma	10 mL/min	May be given up to 70 mL/min
Cryoprecipitate	10 mL/min	May be given up to 70 mL/min
RBC	Each unit over 2-4 hours	No upper limit
Factors 7, 8, 9	Per provider's order	Per provider's order

† For patients, with a compromised cardiovascular system, slower rates may be necessary. Smaller aliquot may be obtained from the Blood Bank.

‡ Pediatrics/Newborn: The amount and rate of administration is based on weight (kg) and clinical condition.

14. Use blood administration tubing **ONLY** (not required for Factors 7, 8, 9)
    - Blood administration filter with IV tubing
    - Change blood tubing every 4 hours or sooner if debris in filter impairs flow
        - Blood tubing may be used for more than one unit of the same blood product
    - When using an infusion pump, use appropriate manufacturer tubing and filter
15. Do not administer blood product with any solution except for 0.9% Sodium Chloride (NS). Flush IV line with NS before and after transfusion.
16. Do not administer any medications through blood infusion line during transfusion.
17. Administer Factors 7, 8, and 9 per manufacturer's instructions (i.e. the product insert).

PRESSURE BAG INFUSION:

18. Adhere to the following when administering blood via pressure bag:
    - Use greater than or equal 18 gauge IV (Pediatrics/Newborn: use largest IV available)
    - Do not inflate pressure bag to more than 150 mmHg
        - 10 mmHg for Peds

BLOOD WARMER:

19. Use a blood warmer (for ICU/PCU/DEM/OR) at the directive of the provider, if the patient has any of the following:
    - Temperature less than 97.8 °F or 36.0°C
    - Receiving greater than 4 units/hr of red blood cells
    - Cold agglutinin disease large volume transfusions (≥4 units/hr) the use of a blood warmer is recommended.
    - Cold agglutinin disease receiving small volume transfusions, can be managed without a blood warmer by transfusing slowly (i.e. transfuse over 4 hours), warming the extremity receiving the transfusion, and/or raising the temperature of the room and allowing the blood to rest within that room prior to transfusion.
      *Note: must be completed within 4 hours of issuance

20. Do not infuse cryoprecipitate and platelets through a blood warmer (these are room temperature blood products, not refrigerated).

CELL SAVER ADMINISTRATION:

21. Utilize Cell Saver blood (collected in Operating Room) as follows:
    - Store at room temperature
    - Must have label completed by perfusionist, which includes:
        - Patient name & MRN
        - Time transfusion must be completed

- Cell Saver blood must be transfused within 6 hours of being obtained. If not transfused, dispose of in a biohazardous waste container (do not deliver to Blood Bank)

ONGOING ASSESSMENT:

22. Re-assess VS:
    - After transfusing 50 mL of blood or blood product or after 15 minutes of administration (whichever occurs first)
    - Within two (2) hours of transfusion completion
    - With any signs/symptoms (S/S) of adverse reaction
23. Assess for the following adverse reactions a minimum of q1h during transfusion:
    - Anaphylaxis
    - Back/chest/flank pain
    - Fever (unexplained rise > 1.8°F or 1°C)
    - Red urine
    - Restlessness/anxiety
    - Shortness of breath
    - Hives, itching or rash
24. Obtain/monitor per provider's order 1- hour post-transfusion the following:
    - HCT/Hgb: red blood cell transfusion
    - Platelet count: platelet transfusion
25. Observe and adhere to time limits for blood and blood product transfusion:
    - Return unused (not spiked) blood to Blood Bank. Must arrive to Blood Bank within 30 minutes of issuance, if it will not be used (e.g., provider cancels order) or there is an anticipated delay in starting the transfusion (e.g. cannot be completed within 4 hours of issuance).
    - In the event of an unanticipated delay (i.e. loss of IV access) in starting the transfusion after 30 minutes, the transfusion must be completed within 4 hours of the issuance from the Blood Bank.
26. DO NOT store blood products in any refrigerators.

REPORTABLE CONDITIONS:

27. Notify provider **immediately** for the following:
    - Signs/symptoms of transfusion reaction
    - Persistent abnormal lab values

TRANSFUSION REACTION:

28. Follow these steps if the patient experiences any reaction **OTHER THAN** only hives, itching or rash
    - Stop transfusion immediately, disconnect at catheter hub and cap blood tubing, notify provider
    - Keep primary IV line open with normal saline (obtain providers' order for normal saline)
    - Re-check identification of patient and compare to blood component bag and Blood Product Record
    - Notify Blood Bank of reaction and possible need of retype and cross match or additional treatment
    - Document any reaction
    - Send the following to Blood Bank:
        - Blood specimens - one pink top tube
        - Completed form 739 "Transfusion Reaction Investigation Request" NOTE: the original (top) copy of form 739 goes in the chart and the second copy (pink) goes to Blood Bank. In addition, a copy of all blood product forms (for all units) involved is sent to the Blood Bank.
        - Remaining blood/blood product bag and administration set (ensure no needle is attached) with attached solutions

    Elective Transfusion in the Outpatient setting (excluding emergency rooms):
        - Continue to monitor and do not discharge the patient until the preliminary transfusion reaction testing is performed and reported to

you by the Blood Bank. (This usually takes about 30-45 minutes from the time the specimen is received.)

- If the Blood Bank reports that the preliminary work-up is negative and the patient's reaction-related signs/symptoms have subsided, the patient may be discharged after evaluation by a provider, or another blood product unit may be requested for transfusion.

- If the transfusion-related signs/symptoms persist or worsen, and/or the Blood Bank reports positive findings requiring additional testing, the patient should be kept in clinic for additional observation or admitted until the Blood Bank's work-up is complete and a provider has cleared the patient for discharge home (after consultation with a transfusion medicine physician).

29. Follow these steps immediately in the event of only **hives, itching or rash**:
    - Stop transfusion and disconnect at catheter hub
    - Leave administration set hanging at bedside until provider evaluates patient
    - Keep primary IV line open with normal saline
    - Re-check identification of patient and compare to blood component bag and Blood Product Record.
    - Report the reaction to blood bank once the transfusion is stopped and/or completed.

PATIENT/CAREGIVER EDUCATION:

30. Instruct on purpose of transfusion.
31. Instruct to notify nurse for signs/symptoms of transfusion reaction:
    - Itching or rash
    - Fever/chills
    - Red urine
    - Shortness of breath or difficulty breathing
    - Back/flank pain
    - Restlessness/anxiety
32. Elective Transfusion in the Outpatient setting (excluding emergency rooms): Provide preprinted written instructions "Patient Information Regarding Blood Transfusion Side Effects" (form 1154, 1154-S) to patient/caregiver for patients who receive transfusions and ensure patient signs.

ADDITIONAL STANDARDS

33. Refer to the following as indicated:
    - Autotransfusion
    - Hyperthermia
    - Hypothermia – ICU
    - Intravenous Therapy
    - Massive Transfusion Protocol

DOCUMENTATION:

34. Document in accordance with documentation standards in iView and I&O:
    - Blood Product Administration Navigator band
    - Blood Products Transfusion Education

    NOTE: When documenting: must *manually* enter unit number, blood products are not scanned.
35. Record use of blood warmer or Cell Saver transfusion
36. Complete Blood Product Record, and Transfusion Reaction Investigation Request, as indicated.

References

Blood Guidance's. (2021) U.S. Food and Drug Administration. Accessed September 1, 2021 from: https://www.fda.gov/vaccines-blood-biologics/biologics-guidances/blood-guidances

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