

**HACKETTSTOWN REGIONAL MEDICAL CENTER  
NURSING POLICIES  
BLOOD TRANSFUSION REACTION PROCEDURE**

Effective Date: 12/28/1990  
Cross Referenced:  
Reviewed Date: 7/06, 10/10  
Revised Date: 7/31/15, 10/1/15

Policy No: 8620.070b  
Origin: Department of Nursing  
Authority: Chief Nursing Officer  
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**SCOPE**

All Providers and RNs in areas that administer blood products.

**PURPOSE**

To outline the steps to follow after a patient has a suspected blood transfusion reaction

**DEFINITIONS**

- I. Transfusion reaction- An adverse event which is a non-infectious complication of blood transfusion and which occurs when donor blood is incompatible with recipient's blood or when the recipient has sensitivity to a plasma protein in the transfused blood.
  - A. Hemolytic Reaction- An acute immediate reaction due to ABO, Rh incompatibility or the presence of recipient antibodies to red cell antigens. Usually occurs within 15 minutes of transfusion initiation.
  - B. Delayed hemolytic reaction- antigen-antibody reaction; an immune response to foreign red cell antigens or HLA antigens on WBCs and platelets. Can occur > 24 hours after transfusion.
  - C. Febrile, non hemolytic reaction - less than 1% of reactions and is a possible sensitivity of recipient to the leukocytes or platelets in the donor's blood. Usually occurs during a transfusion but may occur up to 4 hours after.
  - D. Allergic Reaction- caused by recipient allergy to a plasma protein in the donor's blood. Can occur during the transfusion to 1 hour after the transfusion.
    1. Mild allergic reaction- is a limited urticarial response
    2. Severe allergic reaction-is more serious anaphylactic reaction.
  - E. Transfusion related acute lung injury (TRALI)- Non cardiogenic pulmonary edema with an onset within 6 hours of transfusion. It is believed to be caused by HLA (WBC) antibodies in the donor and occasionally in the recipient.
  - F. Transfusion-related Acute Circulatory Overload (TACO) -a rare, noninfectious complication of transfusion. Acute pulmonary edema caused by volume overload, occurs within 1 -2 hours after transfusion; patients may develop jugular venous distension, elevated central venous pressure, dyspnea; orthopnea; changes on electrocardiogram, elevated troponin and BNP, increased BP.

**POLICY**

- I. Early recognition, prompt cessation of the transfusion and further evaluation is key to a successful outcome.

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II. Transfusion reaction clinical signs and symptoms can be associated with more than one type of adverse reaction. The following may be indicators of a transfusion reaction that should be monitored during blood product administration:

- A. Fever, defined as greater than or equal to a 1 degree Celsius rise in temperature AND with an end point of  $\geq 38C$ .
- B. Chills with or without rigors
- C. Respiratory distress including wheezing, coughing, dyspnea
- D. Hyper or hypotension
- E. Abdominal, chest, flank or back pain
- F. Skin manifestations, including urticaria, rash, flushing, pruritis, and localized edema
- G. Jaundice or hemoglobinuria
- H. Nausea/vomiting
- I. Abnormal bleeding
- J. Oliguria/anuria

III. When symptoms of a suspected transfusion reaction are recognized, **the ordering physician and blood bank are notified immediately.**

IV. Physician may opt to continue transfusion while work up proceeds.

V. Transfusion reaction work up occurs regardless of physician order to continue the administration of the product.

VI. Lab will draw a post transfusion blood sample as part of the transfusion reaction workup.

**PROCEDURE**

Procedure Steps:

If you suspect a blood transfusion reaction perform the following steps:

**I. Stop the transfusion and immediately notify the physician and the blood bank.**

II. Obtain and document temperature, pulse, and blood pressure at time of suspected transfusion reaction if not already done. Remain with the patient for continuous monitoring until additional patient care orders are received.

III. Once the physician is notified with suspected transfusion reaction, and orders/confirms the discontinuation of the blood product, follow the steps listed below (V-XI) for transfusion reaction work up.

IV. If the transfusion is to continue, follow the transfusion reaction work up steps listed below

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from step VII. The transfusion still must be completed according to policy guidelines regardless of stopping for a brief time while awaiting orders.

- V. If transfusion is not continued, remove the blood and tubing containing blood product and replace them with a NEW saline bag and tubing at a rate prescribed by the physician or restart patient's pre-transfusion IV fluid if ordered by the physician.
- VI. Document time blood was stopped and the amount infused.
- VII. Document signs and symptoms of suspected transfusion reaction in the EHR.
- VIII. Repeat all identification and clerical checks. If there were discrepancies, report it to the Blood Bank and physician. Return remainder of the blood components and attached blood tubing to the blood bank.
- IX. Order Transfusion Reaction Order Set in the EHR once you have notified the blood bank and physician of the suspected transfusion reaction.
- X. Obtain first voided urine sample/ or obtain catheter specimen and send to lab.
- XI. Document nursing interventions completed in relation to the transfusion reaction workup such as name and time of physician notification, time of urine sample obtained, name and time of lab personnel notified and when blood component and tubing sent to lab and any medications given in response to the suspected transfusion reaction.
- XII. Continue to monitor patient and complete physician orders.

References:

1. AABB Standards for Blood Banks and Transfusion Services, 29<sup>th</sup> Edition 2014, pp 87-89
2. AABB Technical Manual 18<sup>th</sup> Edition 2014, pp 545-559, 666-683
3. Nettina S. M. (2014). Lippincott Manual of Nursing Practice 10<sup>th</sup> Ed, Wolters Kluwer Health/Lippincott, Williams and Wilkins; pg 1004-1009
4. Perry, A., Potter P. Perry and Potter Clinical Nursing skills and Techniques, 7<sup>th</sup> edition, (2010) Mosby Elsevier; p 788-799
5. Agency for Healthcare Research and Quality (AHRQ), Guideline Summary, Blood transfusions indications, administration and adverse reaction. <http://www.guideline.gov>. Downloaded July 15, 2015

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<b>Type of reaction</b>	<b>Common Presentation</b>
Hemolytic	Chills, fever, hemoglobinuria, hypotension, renal failure, DIC, severe lower back pain, pain and/or sensation of heat along infusion site, anxiety, increase HR, headache, nausea, chest pain/tightness. Usually occurs within 15 minutes of transfusion initiation
Delayed hemolytic	Unexplained fever, unexplained decreasing hemoglobin, new positive antibody screen, mild jaundice
Febrile NON hemolytic	Temperature rise greater than or equal to 1° C above 37°; flushing, chills, headache, muscle pain, vomiting. Can occur during transfusion or up 4 hours after. These symptoms may also indicate possible bacterial contamination or TRALI. Some patients may remain afebrile but have the remaining constellation of symptoms.
Mild Allergic	Urticaria (hives), pruritis, flushing urticaria (hives), an outbreak of swollen, raised red areas that appear suddenly. As a result the hives cause itching (pruritis). They can last for hours before fading but often respond quickly to treatment with antihistamines. Can be suspected to be caused by the transfusion if symptoms emerge during the transfusion or within 4 hours after its completion and no other cause such as concurrent new medication can be identified.
Severe Allergic	Hypotension, urticaria, bronchospasm (respiratory distress/wheezing) local edema, anxiety, possible cardiac arrest. Dyspnea, generalized urticaria, nausea, and loss of consciousness may progress quickly to a life threatening situation. Typically occurs at the start of the transfusion; treatment is symptomatic based and care planning is needed if future transfusion is required.
TRALI	Hypoxemia, hypotension, respiratory failure, fever. Onset within 6 hours of transfusion. Typically there are no signs of concurrent volume overload or left ventricular failure; neither is there any evidence for the present of other factors able to lead to acute respiratory insufficiency during or within 6 hours of transfusion. This reaction is a clinical diagnosis.
TACO	Acute pulmonary edema caused by volume overload, occurs within 1 -2 hours after transfusion; patients may develop jugular venous distension, elevated central venous pressure, dyspnea; orthopnea; changes on electrocardiogram, elevated troponin and BNP, increased BP.

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