

Acute Transfusion Reactions

Suspected Transfusion Reaction Signs & Symptoms	Immediate Actions	Additional Actions/Recommendations	Possible Etiology /Cause	
Fever > 38 °C and ↑ of at least 1°C from baseline	38 °C to <39°C with chills or rigors	✓ STOP the transfusion	Febrile Non-Hemolytic Transfusion Reaction (FNHTR) •Antibodies to leukocyte antigens (mostly HLA); cytokines	
	Or <39°C with chills, rigors, hypotension, shock, nausea, vomiting, headache	✓ PERFORM bedside clerical check to verify right component, right patient		Bacterial Contamination •Most commonly caused by platelets which are stored at room temperature. Also contamination can occur during donation
	Or ≥ 39°C with chills, rigors, pain at IV site, nausea, vomiting, flank pain, red or dark brown urine, bleeding. May progress to shock or renal failure.	✓ CHANGE IV set and start and new infusion of KVO 0.9% NaCl or Plasmalyte		
Urticaria (Hives) or Rash	Rash, pruritus, hives *** Not indicated for this reaction	✓ RECORD vital signs and continuously monitor and take measures necessary to stabilize /support patient	Acute Hemolytic Transfusion Reaction (AHTR) •Usually due to ABO incompatible blood	
	Hives, wheezing, laryngeal edema, respiratory distress, hypotension, nausea, circulatory collapse, anaphylaxis	✓ NOTIFY Physician and Blood Bank ✓ MONITOR Urinary Output, if indicated		Allergic-Mild •Antibodies to plasma proteins
		✓ DOCUMENT reaction symptoms and actions taken *** ✓ RETURN the following to the Blood Bank: 1) Blood component with the patient information label attached. 2) Attached blood administration set and any IV solutions connected. 3) Post-Transfusion sample(s)		
Dyspnea ↓oxygen saturation	New onset or exacerbations of 3 or more of the following: acute respiratory distress, ↑BNP, ↑CVP, evidence of left heart failure, evidence of positive fluid balance, x-ray evidence of pulmonary edema	DO NOT RESTART TRANSFUSION <ul style="list-style-type: none"> Admin. antihistamines for mild reactions - itching NOTE: With mild reactions, it may be possible to restart if no other cause or symptoms are found and there is relief of itching after antihistamines 	Allergic-Moderate to Severe •Antibodies to plasma proteins including IgA	
	No evidence of acute lung injury prior to transfusion. No evidence of circulatory overload. Symptoms include: fever, hypoxia, hypotension, pulmonary edema, normal pulmonary capillary wedge pressure	DO NOT RESTART TRANSFUSION <ul style="list-style-type: none"> Consider epinephrine/corticosteroids for severe anaphylactic reactions For severe respiratory distress call Rapid Response/Code Provide supportive treatment as indicated Avoid future reactions with pre medications 		
		DO NOT RESTART TRANSFUSION <ul style="list-style-type: none"> Monitor urinary output and signs of shock Observe for signs of Disseminated Intravascular Coagulation (DIC) Support medical therapies to reverse the patients untoward circumstances 		
		DO NOT RESTART TRANSFUSION <ul style="list-style-type: none"> Administer diuretics For severe distress call Rapid Response/Code Provide supportive treatment as indicated For subsequent transfusions in patient with cardiac history or ≥ 80, reduce the rate and consider diuresis prior or between transfusions Place patient in semi-Fowler or upright or sitting position to increase venous resistance Auscultate lung sounds (crackles present) 	Transfusion- Associated Circulatory Overload (TACO) •Rapid infusion in in patients with limited cardiac reserve, renal failure or impaired tolerance to fluids •Can be caused by excessive quantity	
		DO NOT RESTART TRANSFUSION <ul style="list-style-type: none"> Auscultate lung sounds (crackles will be absent) For severe distress call Rapid Response/Code Order chest x-ray Provide other supportive treatment as indicated If symptoms occur POST transfusion and TRALI is suspected, contact the Blood Bank 	Transfusion-Related Acute Lung Injury (TRALI) •Donor antibodies reacting to the recipient's white blood cells; or recipient antibodies to donor white blood cells	

Delayed

Suspected Transfusion Reaction Signs & Symptoms

Symptoms such things as rash, diarrhea, fever hepatomegaly, liver dysfunction, and a decreased white blood cell count, 2-6 weeks post transfusion

Post transfusion anemia and decreasing benefit from transfusion. Symptoms may also include mild jaundice, fever and hemoglobinuria (red/brown urine). Typically seen 5-10 day days after transfusion.

Signs and symptoms of infection typically occur weeks to months after transfusion Disease/infection may include bacterial, viral, parasitic and well as others

New clinically significant antibodies against red blood cells occurring between 24 hours and 28 days after a transfusion. Signs of hemolysis not present.

Thrombocytopenia. Typically a decrease in the platelet count between 20-80% from pre-transfusion counts occurring 5-12 days following the transfusion of platelets or red cells.

Additional Actions/Recommendations

- Physician to notify Blood Bank for follow-up investigation when clinical syndrome is apparent.

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- Will require additional time to provide antigen-negative compatible RBC products for patient

- Physician will typically notify Blood Bank for follow-up investigation

- Usually detected in the Blood Bank when a new Type and Screen or additional units are requested
- Will require additional time to provide antigen negative, compatible RBC components

- Alternative explanations for thrombocytopenia are likely but transfusion as a cause should be ruled out
- Physician should notify Blood Bank for follow-up investigation

Possible Etiology /Cause

Graft vs. Host Disease (GVHD)

- Transfused donor lymphocytes become engrafted in tissues and bone marrow of recipient, donor lymphocytes proliferate and destroy patient cells.

Delayed Hemolytic Transfusion Reaction (DHTR)

- Stimulation of antibody development by foreign red cell antigens.

Transfusion-Transmitted Infection (TTI)

- Pathogens transmitted by the donor

Delayed Serological Transfusion Reaction (DSTR)

- Significant antibodies against red blood cells

Post Transfusion Pupura (PTP)

- Alloantibody in the patient directed against HPA or other platelet specific antigen

Other

Tingling in fingers, cramps, hyperactive reflexes, convulsions, laryngeal spasm, respiratory distress

Nausea, diarrhea, muscular weakness, bradycardia, anxiety, cardiac arrest

Chills, decrease in body temperature, irregular heart rate, cardiac arrest

- Infuse slowly if possible but no longer than 4 hours
- Consider calcium supplement when multiple units are being transfused
- Monitor calcium levels

- Take steps to return potassium to normal levels
- Monitor potassium levels
- Washed or fresh blood, if patient at risk

- Use fluid/blood warmer for patients requiring multiple blood products within a short period of time

Hypocalcemia/Citrate Intoxication - Rare

- May occur in massively transfusion patients or those with liver dysfunction and the inability of the liver to metabolize citrate that may be present in banked blood.

Hyperkalemia

- Electrolyte imbalance usually associated with massively transfused patients or those with renal failure

Hypothermia

- Usually a result of the administration of multiple blood products