

Transfusion Reactions

For all reactions (except mild allergic/uricaria): STOP transfusion, send remaining blood product and fresh blood sample to blood bank)

Acute Hemolysis (caused by ABO incompatibility)

- **Signs:** fever/chills, hypotension, flushing, dyspnea, flank pain. Fever often initial sign (rational for attempting to prevent non-hemolytic transfusion reaction)
- **Complications:** acute renal failure, shock, DIC, death
- **Diagnosis:** RUA (hemoglobinuria), Positive direct Coombs' test, Agglutination of RBCs on smear
- **Workup:** type and cross of donor and recipient blood (post-transfusion blood sample) with order for post-transfusion workup (sample is visually inspected for hemolysis)
- **Treatment:**
 - 1- Stop transfusion immediately if reaction suspected!
 - 2- Maintain blood pressure and urine output with vigorous NS hydration via new infusion set.
 - 3- Lasix 80-100 mg, or mannitol IV to maintain urine output with goal >100 cc urine/hr.
 - 4- Follow strict I/Os.
 - 5- Close monitoring for any electrolyte abnormalities (hyperkalemia)

Anaphylaxis

- **Cause:** recipient antibodies react with donor plasma forming immune complexes which activate complement. Reported in patients with congenital IgA deficiency and high titers of anti-IgA IgG.
- **Signs:** sudden onset flushing and hypertension followed by hypotension, edema, respiratory distress, shock.
- **Workup:** none (no evidence of RBC incompatibility)
- **Treatment:** 0.2-0.5 cc of epinephrine 1:1000 SQ/IM. Repeat every 3-5 minutes as necessary. NS infusion to maintain urine output and BP. Treat hypoxia with supplemental O₂.
- **Prevention:** patients with history of anaphylaxis to blood should receive components depleted of plasma (saline washed RBCs).

Acute Lung Injury

- **Cause:** not completely clear. Likely mediated by leukocyte agglutinating antibodies in donor plasma reacting with recipient leukocytes in pulmonary vasculature
- **Signs:** acute respiratory distress, cyanosis, fever, bilateral pulmonary infiltrates without other signs of heart failure.
- **Onset:** within 6 hours of transfusion

- **Treatment:** ventilatory assistance (i.e. ARDSNET protocol), diuretics, steroids (no data for use of steroids)
- **Prevention:** assay donor's blood, generally bar donor from future donation.

Delayed Hemolysis

- **Cause:** patients with undetectable antibodies when typed and crossed develop antibodies to minor antigens, leading to extravascular hemolysis. Sometimes these antibodies persist indefinitely after transfusion or following exposure to fetal antigens during pregnancy.
- **Onset of symptoms:** 4-14 days post-transfusion
- **Signs:** fever, jaundice, anemia, hemoglobinuria
- **Workup:** identify responsible antibody to avoid acute hemolysis in future! Patient should carry a transfusion alert card. Send H/H, total and direct bilirubin, direct Coombs', type and screen of donor and recipient blood.

Bacterial Contamination

- **Signs:** fever, hypotension
- **Onset:** within 4 hours of transfusion
- **Workup:** culture of remaining product and immediate antibiotics for the patient.

Febrile, Non-Hemolytic Transfusion Reaction

- **Cause:** recipient antibodies to passenger donor leukocytes or donor cytokines produced by stored leukocytes.
- **Signs:** fever, rigors, nausea, vomiting, back/chest pain, HTN
- **Onset:** within 2 hours of transfusion
- **Workup:** similar to hemolytic reaction (difficult to differentiate based on clinical signs alone)
- **Treatment:** leukocyte reducing filters for transfusion dependent patients. Only 15% of patients with 1 reaction have a repeat episode; if a 2nd reaction does occur, give leukocyte reduced RBC and platelets.

Urticaria

- **Cause:** soluble substances in donor plasma react with IgE which stimulates mast cell degranulation.
- **Symptoms:** rash, pruritus
- **Treatment:** monitor for anaphylaxis. Benadryl 50 mg IV. If rash or symptoms resolve within 30 minutes, may resume transfusion.