

TRANSFUSION-ASSOCIATED GRAFT VS. HOST DISEASE (TAGVHD)

The introduction of immunocompetent lymphocytes into susceptible hosts. The allogeneic lymphocytes engraft, proliferate, and destroy host cells. If performed, marrow study shows hypoplasia, aplastic anemia, or marked hypocellularity with a lymphohistiocytic infiltrate.

Definitive: A clinical syndrome occurring from 2 days to 6 weeks after cessation of transfusion characterized by:

- Characteristic rash: erythematous, maculopapular eruption centrally that spreads to extremities and may, in severe cases, progress to generalized erythroderma and hemorrhagic bullous formation.
 - Diarrhea
 - Fever
 - Hepatomegaly
 - Liver dysfunction (i.e., elevated ALT, AST, Alkaline phosphatase, and bilirubin)
 - Marrow aplasia
 - Pancytopenia

AND

Characteristic histological appearance of skin or liver biopsy.

Probable: Meets definitive criteria

EXCEPT

Biopsy negative or not done.

Possible: N/A

POST TRANSFUSION PURPURA

Thrombocytopenia usually arising 5-12 days following transfusion of cellular blood components with findings of antibodies in the patient directed against the Human Platelet Antigen (HPA) system.

Definitive: Alloantibodies in the patient directed against HPA or other platelet specific antigen detected at or after development of thrombocytopenia

AND

Thrombocytopenia (i.e., decrease in platelets to less than 20% of pre-transfusion count).

Probable: Alloantibodies in the patient directed against HPA or other platelet specific antigen detected at or after development of thrombocytopenia.

AND

Decrease in platelets to levels between 20% and 80% of pre-transfusion count.

Possible: PTP is suspected, but laboratory findings and/or information are not sufficient to meet defined criteria above. For example, the patient has a drop in platelet count to less than 80% of pre-transfusion count but HPA antibodies were not tested or were negative. Other, more specific adverse reaction definitions do not apply.

UNKNOWN

Use this category if the patient experienced transfusion-related symptoms, but the medical event that caused those symptoms could not be classified.

TRANSFUSION-RELATED ACUTE LUNG INJURY (TRALI)

Acute hypoxemia with PaO₂/fraction of inspired oxygen [FiO₂] ratio of 300 mmHg or less combined with chest x-ray showing bilateral infiltrates in the absence of left atrial hypertension (i.e., circulatory overload). Onset of TRALI is abrupt in association with transfusion.

Definitive: NO evidence of acute lung injury (ALI) prior to transfusion

AND

ALI onset during or within 6 hours of cessation of transfusion

AND

Hypoxemia defined by any of these methods:

- PaO₂/FiO₂ less than or equal to 300 mmHg
- Oxygen saturation less than 90% on room air
- Other clinical evidence

AND

Radiographic evidence of bilateral infiltrates

AND

No evidence of left atrial hypertension (i.e., circulatory overload)

Probable: N/A

Possible: N/A

TRANSFUSION-ASSOCIATED CIRCULATORY OVERLOAD (TACO)

Infusion volume that cannot be effectively processed by the recipient either due to high rate and/or volume of infusion or an underlying cardiac or pulmonary pathology.

Definitive: New onset or exacerbation of 3 or more of the following within **12 hours** of cessation of transfusion:

(At least 1 of the following from A & B:)

- A. Evidence of acute or worsening respiratory distress (dyspnea, tachypnoea, cyanosis and decreased oxygen saturation values in the absence of other specific causes) **and/or**
- B. Radiographic or clinical evidence of acute or worsening pulmonary edema (crackles on lung auscultation, orthopnea, cough, a third heart sound and pinkish frothy sputum in severe cases); **or both**

AND

- Elevated brain natriuretic peptide (BNP) or NT-pro BNP relevant biomarker
- Evidence of cardiovascular system changes not explained by underlying medical condition (Elevated central venous pressure, evidence of left heart failure including development of tachycardia, hypertension, widened pulse pressure, jugular venous distension, enlarged cardiac silhouette and/or peripheral edema)
- Evidence of fluid overload

Probable: N/A

Possible: N/A

TRANSFUSION-TRANSMITTED INFECTION (TTI)

A bacteria, parasite, virus, or other potential pathogen transmitted in donated blood to transfusion recipient.

Definitive: Laboratory evidence of a pathogen in the transfusion recipient.

Probable: N/A

Possible: Temporarily associated unexplained clinical illness consistent with infection, but no pathogen is detected in the recipient. Other, more specific adverse reactions are ruled out.

Note: Possible cases cannot meet the definite or probable imputability criteria.



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QUICK REFERENCE GUIDE

NHSN Hemovigilance Module: Adverse Reaction Definitions

ALLERGIC REACTION

The result of an interaction of an allergen with preformed antibodies. In some instances, infusion of antibodies from an atopic donor may also be involved. It may present with only mucocutaneous signs and symptoms.

Note: Minor allergic reactions (non-severe) do not have to be reported to NHSN.

Definitive: 2 or more of the following occurring during or within 4 hours of cessation of transfusion:

- Conjunctival edema
- Edema of lips, tongue and uvula
- Erythema and edema of the periorbital area
- Generalized flushing
- Hypotension
- Localized angioedema
- Maculopapular rash
- Pruritus (itching)
- Respiratory distress; bronchospasm
- Urticaria (hives)

Probable: ANY 1 of the following occurring during or within 4 hours of cessation of transfusion:

- Conjunctival edema
- Edema of lips, tongue and uvula
- Erythema and edema of the periorbital area
- Localized angioedema
- Maculopapular rash
- Pruritus (itching)
- Urticaria (hives)

Possible: N/A

TRANSFUSION ASSOCIATED DYSPNEA (TAD)

Respiratory distress within 24 hours of cessation of transfusion that does not meet the criteria for TRALI, TACO, or allergic reaction. Respiratory distress should not otherwise be explained by a patient's underlying or pre-existing medical condition.

Definitive: Acute respiratory distress occurring within 24 hours of cessation of transfusion

AND

Allergic reaction, TACO, and TRALI definitions are not applicable.

Probable: N/A

Possible: N/A

OTHER

Use this option if the recipient experienced an adverse reaction that is not defined in the Hemovigilance Module Surveillance Protocol (e.g., transfusion-associated acute gut injury (TRAGI), transfusion-associated immunomodulation (TRIM), iron overload, microchimerism, hyperkalemia, thrombosis).

FEBRILE NON-HEMOLYTIC TRANSFUSION REACTION (FNHTR) ::::::::::::

Fever and/or chills without hemolysis occurring in the patient during or within 4 hours of cessation of transfusion. If transfusion-related, the most common cause is a reaction to passively transfused cytokines or a reaction of recipient antibodies and leukocytes in the blood product. If blood culture of patient or residual component is performed, the results should be negative. Laboratory findings should show no evidence of acute hemolysis.

Note: Reactions may be classified as FNHTRs in the absence of fever if chills or rigors occur.

Definitive: Occurs during or within 4 hours of cessation of transfusion

AND EITHER

- Fever (greater than or equal to 38°C/100.4°F oral and a change of at least 1°C/1.8°F from pre-transfusion value)

OR

- Chills/rigors are present.

Probable:

Possible: FNHTR is suspected, but reported symptoms and/or available information are not sufficient to meet the criteria defined above. Other, more specific adverse reaction definitions do not apply.

HYPOTENSIVE TRANSFUSION REACTION ::::

A drop in blood pressure occurring during or within 1 hour of cessation of transfusion. Other symptoms, such as facial flushing, dyspnea, or abdominal cramps may occur, but usually hypotension is the sole manifestation.

Definitive: All other adverse reactions presenting with hypotension are excluded

AND

Hypotension occurs during or within 1 hour after cessation of transfusion.

- Adults (≥ 18 years): Drop in systolic BP of greater than or equal to 30 mmHg and systolic BP less than or equal to 80 mmHg.
- Infants, children and adolescents (1 year to <18 years): Greater than 25% drop in systolic BP from baseline (e.g., drop in systolic BP of 120mmHg to below 90mmHg).
- Neonates and small infants (<1 year old OR any age and <12 kg body weight): Greater than 25% drop in baseline value using whichever measurement is being recorded (e.g., mean BP).

Probable:

Possible: Hypotension occurs, does not meet the criteria above. Other, more specific adverse reaction definitions do not apply.

DELAYED HEMOLYTIC TRANSFUSION REACTION (DHTR) ::::::::::::

The recipient develops antibodies to RBC antigen(s) between 24 hours and 28 days after cessation of transfusion. Clinical signs of hemolysis are usually present. If performed, post-transfusion LDH and bilirubin levels increase and subsequently fall back to baseline in the following days.

Note: Report all hemolytic reactions, including when the recipient is intentionally transfused with incompatible blood components.

Definitive: Positive direct antiglobulin test (DAT) for antibodies developed between 24 hours and 28 days after cessation of transfusion

AND EITHER

- Positive elution test with alloantibody present on the transfused red blood cells

OR

- Newly-identified red blood cell alloantibody in recipient serum

AND EITHER

- Inadequate rise of post-transfusion hemoglobin level or rapid fall in hemoglobin back to pre-transfusion levels

OR

- Otherwise unexplained appearance of spherocytes.

Probable: Newly-identified red blood cell alloantibody demonstrated between 24 hours and 28 days after cessation of transfusion

BUT

Incomplete laboratory evidence to meet definitive case definition criteria.

Note: Patient may be asymptomatic or have symptoms that are similar to but milder than AHTR; symptoms are not required to meet case definition criteria.

Possible: DHTR is suspected, but reported symptoms, test results, and/or available information are not sufficient to meet the criteria defined above. Other, more specific adverse reaction definitions do not apply.

DELAYED SEROLOGIC TRANSFUSION REACTION (DSTR) ::::::::::::

Demonstration of new, clinically significant alloantibodies against red blood cells between 24 hours and 28 days after cessation of transfusion despite an adequate, maintained hemoglobin response.

Note: DSTR should only be reported for patients transfused at your facility.

Definitive: Absence of clinical signs of hemolysis

AND

Demonstration of new, clinically-significant antibodies against red blood cells

BY EITHER

- Positive direct antiglobulin test (DAT)

OR

- Positive antibody screen with newly identified RBC alloantibody.

Probable: N/A

Possible: N/A



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ACUTE HEMOLYTIC TRANSFUSION REACTION (AHTR) ::::::::::::

Rapid destruction of red blood cells during, immediately after, or within 24 hours of cessation of transfusion. Clinical and laboratory signs of hemolysis are present.

Note: Report hemolytic reactions resulting from immune or non-immune causes, including when the recipient is intentionally transfused with incompatible blood components.

Definitive: Occurs during, or within 24 hours of cessation of transfusion with new onset of **ANY** of the following signs/symptoms:

- | | |
|--|--------------------------------------|
| • Back/flank pain | • Hematuria (gross visual hemolysis) |
| • Chills/rigors | • Hypotension |
| • Disseminated intravascular coagulation (DIC) | • Oliguria/anuria |
| • Epistaxis | • Pain and/or oozing at IV site |
| • Fever | • Renal failure |

AND

2 or more of the following:

- | | |
|-------------------------|--------------------------------------|
| • Decreased fibrinogen | • Hemoglobinuria |
| • Decreased haptoglobin | • Plasma discoloration c/w hemolysis |
| • Elevated bilirubin | • Spherocytes on blood film |
| • Elevated LDH | |
| • Hemoglobinemia | |

AND EITHER

IMMUNE MEDIATED

- Positive direct antiglobulin test (DAT) for anti-IgG or anti-C3

AND

- Positive elution test with alloantibody present on the transfused red blood cells

OR

NON-IMMUNE MEDIATED Serologic testing is negative, and physical cause (e.g., thermal, osmotic, mechanical, chemical) is confirmed.

Probable: Meets signs and symptoms criteria for acute hemolysis

AND EITHER

IMMUNE MEDIATED Physical cause is excluded but serologic testing is incomplete

OR

NON-IMMUNE MEDIATED Physical cause is suspected and serologic testing is negative.

Possible: AHTR is suspected within 24 hours of cessation of transfusion, but symptoms, test results, and/or information are not sufficient to meet the criteria defined above. Other, more specific adverse reaction definitions do not apply.

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