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Resolution of ABO/Rh Discrepancies for Patients Who Have Been Recently Transfused

Document Type: Procedure

I. PURPOSE AND OBJECTIVE:

This document will provide the Blood Bank staff with a course of action for the resolution of ABO/Rh discrepancies for patients who have been recently transfused with red blood cells (RBCs) of a dissimilar ABO or Rh type to their own.

II. CLINICAL SIGNIFICANCE:

A. Patients who have been transfused within the preceding 90 days with RBCs of a dissimilar ABO or Rh type may present with an ABO or Rh discrepancy. The combination of patient cells and dissimilar transfused cells may cause a forward typing problem, usually observed as mixed-field reactivity in the forward ABO or Rh typing.

B. A patient who has been transfused with platelets or plasma components may also present with an ABO discrepancy due to passively acquired ABO antibodies. For example, if a group AB patient is transfused with multiple group O platelets, then the donor Anti-A or Anti-B may be detected in the patient's post-transfusion sample reverse type.

III. DEFINITIONS:

A. **ABO discrepancy**: A generic term for a variety of situations in which the interpretation of a patient or donor's ABO grouping results is unclear.

B. **Rh discrepancy**: A generic term for a variety of situations in which the interpretation of a patient or donor's Rh results are unclear.

C. **Mixed field (MF)**: A sample that contains 2 distinct populations of red cells, usually as a result of recent RBC transfusions of a dissimilar ABO or Rh type as the patient.

D. **WBIT (wrong blood in tube)**: When a sample is drawn from the wrong patient, so that the identifying information of the patient on the label does not correlate with the patient from whom the blood in the tube was drawn.

E. **NPR (No previous result)**: A SoftBank test code that allows repeat ABO/Rh values to be entered into the system but does not generate a patient charge and does not cross the interface to the hospital computer system.

F. **GND (Group not determined)**: If the forward typing and the reverse typing do not agree, an ABO discrepancy has occurred. If the discrepancy cannot be resolved at that time, then the patient's group is considered "Not Determined".

G. **RND (Rh not determined)**: If the Rh typing discrepancy of a patient cannot be resolved at that time, then the patient's Rh type is considered "Not Determined".

H. **QSR (Quality Safety Report)**: Report made in the hospital incident reporting system (i.e. RL Solutions) regarding any process / incident inconsistent with the routine operation of the hospital or the routine care of patients in any setting. This includes errors that result in actual or potential injury to a patient or visitor, including near misses or unsafe conditions.

I. **Internal Variance**: Report made in the Blood Bank for documentation of an incident such as an error detected, accident, complaint, unplanned deviation, or incident for review, evaluation, investigation, and correction.

J. **Designee**: Any Blood Bank technical director, or transfusion medicine fellow.

IV. PROCEDURE:

A. Assess the patient situation for the following five (5) conditions. If all of these conditions are met, then the discrepancy may be resolved; if all 5 of the conditions are not met then the discrepancy remains unresolved.

1. **Condition #1**
    a. The patient had a complete, valid blood type from a historical sample in the Blood Bank computer system for which the graded reactions can be viewed in the computer system.
        i. Only blood types from Beaumont institutions are acceptable for this purpose.
2. **Condition #2**
    a. The patient was transfused one or more RBCs of a dissimilar ABO or Rh type in the last 90 days.
3. **Condition #3**
    a. One of the following forward typing discrepancies exists in the current sample. *The following italicized, forward typing discrepancies are illustrated using a patient with an historical blood type of AB negative, who was transfused 5 days ago with multiple type A positive RBCs.*
        i. Mixed-field (MF) reactivity is observed in the forward ABO or Rh typing.
            a. *For example: The forward B typing reaction is mixed field. The mixed field reaction is likely due to the presence of two distinct RBC populations. One population is agglutinated by the anti-B antisera (the patient's AB RBCs) and one population is not agglutinated by the anti-B antisera (the donor's A RBCs).*

ii. Missing reactions (non-reactive) in the forward ABO or Rh.
    a. *For example: The forward B typing reaction is non-reactive (missing). The patient's entire blood volume (of AB RBCs) may have been replaced, leaving only the donor group A RBCs that are not agglutinated by the anti-B antisera.*

iii. Extra reactions are observed in the forward ABO or Rh.
    a. *For example: The forward typing Rh reaction is 3+ ("extra" reactions). The transfused A positive RBCs are agglutinated by the anti-D reagent.*

4. **Condition #4**
    a. The mixed-field, missing, or extra reactivity may be attributed to / explained by the combined ABO/Rh of the recipient's and the donor's RBCs.

5. **Condition #5**
    a. The forward typing discrepancy (attributed to condition 4) is the only unresolved ABO or Rh typing discrepancy observed in the patient's current sample.
    b. *For example:*
        i. The current sample also has rouleaux in the reverse type. The saline replacement technique is applied as described in Transfusion Medicine policy, *Compatibility Testing for Patients with Rouleaux - Saline Replacement Technique* and the reverse typing discrepancy is resolved. Condition # 5 is met.
        ii. The current sample also has an apparent weak reverse type. The technologist attempts to enhance the reverse type as described in Transfusion Medicine policy, *Resolution of ABO Discrepancies: Enhancement of Weak Reverse Typings*, but the enhancement is unsuccessful and the reverse typing discrepancy remains unresolved. Condition # 5 is not met.

B. If all 5 of the conditions are met, then the following policies apply:
    1. The ABO or Rh discrepancy may be resolved.
        a. The ABO or Rh may be interpreted to correlate with the recipient's historical blood type, despite the mixed-field, missing, or extra reactions.
        b. This may require an override in the Blood Bank computer. If the technologist does not have override access, then the technologist should submit an *ABO/Rh Discrepancy Form* to a Lead Medical Technologist or the Supervisor if necessary.
    2. The recipient may receive ABO-identical or Rh-identical RBCs for transfusion, based on the recipient's historical blood type.
        a. However, if the patient is a neonate, then group O, Rh compatible RBCs must be used as described in Transfusion Medicine policy, *Policies for the Selection of Blood Components for Patients less than 4 Months Old.*
    3. Add the canned message **ABOTR** to the ABO/Rh test, indicating that the ABO or Rh discrepancy is resolved, due to recent transfusions of ABO or Rh dissimilar RBCs.
    4. Refer to Transfusion Medicine policy, *Policy V.H Documentation of Resolved ABO or Rh Discrepancies.*

C. If all 5 of the conditions are not met, then the following policies apply:

1. Make a reasonable number of attempts to resolve the discrepancy, considering the possibility of another kind of ABO or Rh discrepancy (besides recent transfusion of dissimilar RBCs). Refer to Transfusion Medicine policy, Resolution of ABO and Rh Discrepancies.
2. If transfusion is necessary, refer to the following policies detailed in the Transfusion Medicine policy, Resolution of ABO and Rh Discrepancies.
    a. *Unresolved ABO Discrepancies- Transfusion Required,* which indicates that group O RBCs must be used if transfusion is necessary.
    b. *Unresolved Rh Discrepancies- Transfusion Required,* which indicates that Rh negative RBCs should be used if transfusion is necessary.

V. REFERENCES:

1. AABB, *Technical Manual*, current edition.
2. AABB, *Standards for Blood Banks and Transfusion Services*, current edition.

Approval Signatures

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