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Additional Testing for Transfusion Reactions

Document Type: Procedure

I. PURPOSE AND OBJECTIVE:

This document will outline under what circumstances additional testing shall be performed and what additional testing shall be performed for transfusion reaction evaluations.

II. POLICIES:

Determination of whether Additional Testing is Indicated

A. Evaluate the following four (4) conditions as true or false
    1. The ABO and Rh of the pre-reaction and post-reaction sample are in agreement.
    2. An antibody investigation on the post-reaction sample is not indicated.
    3. The Direct Antibody Test (DAT) of the post-reaction sample is negative, or the DAT of the post-reaction sample is less than or equal to the strength of the pre-reaction DAT.
    4. The post-reaction sample is not hemolyzed.

B. Determine whether additional testing is indicated, as follows:
    1. If each of the 4 conditions are true, then additional serologic testing is not indicated. Notify the caregivers, document this notification on the report, and crossmatch additional blood products if needed.
        a. For example, notify the nurse that "the Blood Bank has found no clerical or serologic evidence that would explain the patient's adverse symptoms; to be reviewed by the Blood Bank pathologist."
    2. If any of the 4 conditions are false, then:
        a. Additional serologic testing is indicated (as described in this document).
        b. The Blood Bank Medical Director must be consulted before additional blood products may be issued. Additional products may not be issued until additional

testing is completed, unless the patient's physician authorizes emergency issue.

c. The Medical Director's directions from this consultation should be documented on the report and in the patient's special messages Comment Text.

III. PROCEDURE:

A. **ABORh testing** If the pre and post sample ABO and Rh results are not in agreement, then repeat the ABO/Rh testing on the pre and post samples. If a typing discrepancy still exists:

1. Consider the possibility of a wrong-blood-in-tube (WBIT) collection error, an additional sample may be required for resolution, and
2. Refer to Transfusion Medicine policy, *Resolution of ABO/Rh Discrepancies,* and
3. Consult a supervisor or the Medical Director.

B. **Eluate Studies** Compare the strength of post-reaction DAT and the pre-transfusion DAT to determine whether eluate studies of the post-reaction sample are indicated. If eluate testing is indicated and the patient's transfusion history indicates that the patient has received ABO-incompatible-plasma components (e.g., plasma, platelets, or cryoprecipitate), then eluate testing with A1 and B cells should also be performed.

DAT of the post-reaction sample	DAT of the pre-transfusion sample	Eluate on the post reaction sample
negative	any result, or not tested	Not required.
positive, strength less than or equal to the pre-transfusion DAT strength	positive	
positive with IgG	negative	Required. If the post DAT is positive with complement only, then consult the Medical Director to determine whether to perform an eluate.
positive with IgG, strength greater than pre-transfusion DAT strength	positive	

C. **Antibody studies**
Verify that antibody studies were performed, if indicated (based on the post-reaction sample antibody screen) and that the computer record has been updated accordingly. Leave the antibody study paperwork with the transfusion reaction paperwork for review as described in Transfusion Medicine policy, *Review of Antibody Investigations*.

D. **Antigen Typing of Donor Units**

1. If a **new antibody** was identified in this investigation (e.g., in a panel or eluate), then the segments of any units transfused in the last 2 months should be typed for the antigen corresponding to the newly identified antibody. If a pre-transfusion sample is available (no transfusions in the preceding 90 days), then antigen type the pre-transfusion sample.
2. If the patient had known, **historical antibodies** at the time of the transfusion reaction and additional testing is indicated, then repeat the antigen typings of the unit implicated in the transfusion reaction.

E. **Serologic Crossmatch of the Transfused Unit**

1. Perform serologic crossmatches with the unit implicated in the transfusion reaction if:
    a. The 2nd post sample is hemolyzed, **or**
    b. A new antibody was detected (in a panel or eluate), **or**
    c. A transfused unit is found to be positive for an antigen corresponding to the patient's clinically significant antibody.
2. Perform a serologic crossmatch using *pre-transfusion* plasma vs. transfused donor cells, and also perform a serologic crossmatch using the *post-reaction* plasma vs. transfused donor cells. Document the crossmatch results on a downtime form.
3. *Downtime Crossmatch Worksheet* should be used, and the crossmatch will need to be entered separately.
4. Refer to Transfusion Medicine policy, Providing RBCs for Patients with Unexpected Antibodies.

F. **Return to Procedure step D in** Transfusion Medicine policy Laboratory Investigation of Suspected Transfusion Reaction.

IV. REFERENCES:

1. AABB, *Technical Manual*, current edition.

Approval Signatures

Step Description	Approver	Date
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