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Electronic Crossmatch - Blood Bank

Document Type: Procedure

I. PURPOSE AND OBJECTIVE:

This document will provide Blood Bank staff with instructions for providing red blood cells to transfusion recipients by the electronic crossmatch method

II. CLINICAL SIGNIFICANCE:

A. Crossmatching is performed by one of two methods: either the electronic crossmatch or a serologic crossmatch method. The majority of crossmatches are performed by the electronic crossmatch method, which uses computer logic to assist in detecting ABO incompatibility. Electronic crossmatch may only be used in place of serological methods provided that certain safeguards are met.

B. In general, patient samples with 2 confirmed blood types, no ABO/Rh discrepancies and no current or historical unexpected antibody(ies) may be eligible for electronic crossmatching.

C. Patients are not eligible for electronic crossmatching during computer downtimes, if they have an ABO/Rh discrepancy, or if they have a current indication or historical record of unexpected antibodies.

III. DEFINITIONS/ACRONYMS:

A. CDM: Blood Bank Computer Documentation Manual; Computer Documentation work flow

B. MRN: Medical Record Number

C. RBC: Red Blood Cell

D. Allogeneic RBCs: refers to all RBCs, including directed donors, that are not from autologous donation.

E. Autologous donor unit: A red blood cell donation that is made from the same person as the intended recipient.

F. Directed donor unit: Allogeneic red blood cell donation that is made for a particular recipient.

G. Unexpected antibody: any antibody (other than naturally occurring Anti-A or Anti-B that is regularly found in normal serum or plasma) that is currently or was historically present in a patient's sample.

H. Clinically significant antibody: refers to an antibody that;

1. is known to cause Hemolytic Disease of the Newborn or shortened survival of antigen positive RBCs, and

2. requires transfusion of antigen negative red cells, and
3. is usually IgG and best detectable with AHG.

I. Clinically insignificant antibody refers to an antibody that;

1. does not cause shortened red cell survival of antigen positive RBCs and,
2. does not require transfusion of antigen negative red cells,
3. is usually IgM and reacts best below 37°C.
   Antibodies that are usually considered clinically insignificant include the following specificities: Anti- IH, Anti-H, auto-Anti-I, Anti-Le^a, Anti-Le^b, Anti- P_1, Anti-M, Anti-N

J. Current sample: a sample that was collected no more than 3 days before the current date. For example, if a sample is drawn on Monday (day 0), then the sample remains "current" all day Mon., Tues., Wed., and Thur.

K. Neonate: infant from birth through the first four (4) months of life.

L. Passively acquired antibody: is an antibody due to passive transfer from another source, e.g., transfused in donor plasma or product or Rh Immune Globulin.

M. RhIG: Rh Immune Globulin.

N. Special Needs: refers to a patient's special requirements for the provision of blood and blood products, e.g. irradiated, Kell negative.

O. Complete ABO/Rh typing: refers to an ABO/Rh typing that includes both a forward and a reverse typing (i.e., does not include a neonatal typing).

P. Massive transfusion: the administration of 8-10 RBC units within a 24-hour period, or the acute administration of 4-5 RBC units within a one-hour period to an adult patient.

IV. SPECIMEN COLLECTION AND HANDLING:

The preferred specimen is a current 6 ml EDTA sample that is affixed with identifying label that includes the patient's first and last name, wristband number, medical record number, collection date and phlebotomist identification. Refer to Transfusion Medicine policy, Transfusion Services Criteria for Specimen Acceptability

V. POLICY:

A. The Blood Bank computer must be validated on site to confirm that only ABO- compatible RBCs may be selected for transfusion.

B. Patient History Check
   A historical record check must be performed before RBCs are crossmatched. Refer to Transfusion Medicine Policy, Historic Blood Bank Record Check. If a discrepancy exists between the current and historical results, the computer will warn the technologist. Any discrepancies must be resolved before crossmatching RBCs. Refer to Transfusion Medicine Policies, *Resolving ABORh Discrepancies*, Antibody Screening (Comparison of Current Antibody Screen to Historical Record)

C. Criteria for Electronic Crossmatch

1. Sample Requirements
   Patient must have a current properly labeled specimen. Refer to Transfusion Medicine policy, Triaging And Identifying Acceptable Samples For Testing.

a. Sample must be collected no more than 3 days before the current date and

b. Sample must be labeled with an identifying label that includes:

i. patient's first and last name

ii. patient wristband number

iii. patient medical record number

iv. collection date

v. phlebotomist identification.

2. Antibody Screen Testing Requirement

a. An antibody screen must be performed on the current sample.

b. The current antibody screen must be negative.

3. ABO/Rh Testing Requirement

a. Patient blood type must be performed on current sample.

b. Patients must have two (2) complete, separate sets of ABO/Rh results in the Blood Bank computer.
Note: Patients with unresolved ABORh discrepancies are not eligible for electronic crossmatch.

4. Patient History Requirement

a. Patient does not have a history or current indication of unexpected antibodies.

5. Computer Requirements

a. Computer system is available, and

b. Computer indicates that the patient is electronic eligible, and

c. all sample and testing criteria above are met.

6. Donor Requirements

a. Unit blood type must be retested and confirmed in the Blood Bank computer system.

b. Unit is ABO/Rh compatible with the patient.

D. Irradiation of RBC

1. All RBC components that require irradiation should be irradiated prior to electronic crossmatching.

VI. PROCEDURE:

A. In the Blood Bank computer, confirm that all Sample Labeling and Testing Requirements are met and that the patient's current sample meets the criteria for performing an electronic crossmatch as outlined in the policy section above.

B. Determine whether the patient has unexpected antibodies.

1. Antibodies display in the “antibody” field of the patient’s Blood Bank computer record.

2. If unexpected antibodies are present, then the patient is not electronic crossmatch eligible. Refer to Transfusion Medicine Policy, *Providing Red Blood Cells to Patients with Unexpected Antibodies.*

C. Determine whether the patient has autologous or directed units.

1. “Autologous” displays in the “messages” field of the patient’s Blood Bank computer record.

2. If the patient has autologous or directed RBCs, then also comply with the policies of Transfusion Medicine Policy, *Policies Related to Autologous and Directed Donation.*

D. Determine whether the patient has any other special transfusion requirements (e.g., irradiated or CMV neg).
   1. These requirements display in the “messages” field of the patient’s Blood Bank computer record.
   2. RBC unit(s) selected for crossmatching must meet the patient’s special transfusion requirements, if applicable. Refer to Transfusion Medicine Policy, *Special Transfusion Requirements for Patients Greater than Four Months Old.*

E. Select RBC(s) to crossmatch. Refer to Transfusion Medicine Policies, RBC Crossmatch Guidelines, *Providing Red Blood Cells with Unexpected Antibodies, Policies Related to Autologous and Directed Donations* and *Special Transfusion Requirements for Patients Greater than 4 months old.*

F. Verify that the selected RBC(s) passes visual inspection, has appropriate confirmatory testing, and that the expiration date is acceptable. Refer to Transfusion Medicine Policy, Visual Inspection. Do not crossmatch if unit fails visual inspection or is expired.

G. Perform the electronic crossmatch in the Blood Bank computer and print transfusion tag(s) of acceptable RBC unit(s). Refer to Blood Bank CDM - Electronic Crossmatch.

H. Verify the accuracy of the information on the transfusion tag against the information on the component’s face label.

I. Attach transfusion tag(s) and place RBC unit(s) in appropriate crossmatch refrigerator. Refer to Transfusion Medicine Policy, *Tagging Blood Components*, if appropriate.

VII. REFERENCES:

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

Attachments

No Attachments

Approval Signatures

Step Description	Approver	Date
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Applicability

Dearborn, Farmington Hills, Grosse Pointe, Royal Oak, Taylor, Trenton, Troy, Wayne