



Government of Newfoundland and Labrador

Department of Health and Community Services
Provincial Blood Coordinating Program

PRE-TRANSFUSION TESTING	NLBCP-032
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Overview

Pre-transfusion testing is performed to ensure blood components transfused are compatible with the recipient's blood.

Policy

1. The Regional Health Authorities (RHAs) shall have operating procedures for:
 - 1.1. The management of requests for blood components;
 - 1.2. Pre-transfusion testing of the recipient;
 - 1.3. The selection of blood components for use; and,
 - 1.4. Confirming essential recipient identification at time of issue.
2. In emergency situations, if pre transfusion testing is not complete, red blood cells (RBCs) shall be emergency issued. The policy on emergency issuing of blood components can be found [here](#).
3. All samples collected for pre-transfusion testing shall be collected using positive recipient identification according to the policy found [here](#).
4. The Transfusion Medicine Laboratory (TML) shall only accept orders that are complete, accurate and legible. Any discrepancies or errors must be resolved as defined in the RHA policies and procedures. More information on transfusion orders can be found at [here](#).
5. Patient transfusion history shall be reviewed and documented. The following information shall be reviewed:
 - 5.1. Previous ABO group and Rh(D) typing;
 - 5.2. Previous transfusions;
 - 5.3. Difficulties in blood typing;
 - 5.4. Previously identified clinically significant RBC antibodies;
 - 5.5. Adverse reactions to previous transfusions; and,
 - 5.6. Special transfusion requirements.
6. RHAs shall have policies in place for the identification and investigation of the recipients ABO type and Rh(D) groups and clinically significant RBC alloantibodies.
7. Compatibility testing shall be performed before RBCs are issued and/or transfused.

8. Further testing shall be completed for all positive antibody screens to identify the RBC antibody and to determine if it is clinically significant.
9. A direct anti-globulin test (DAT) shall be performed for investigation of:
 - 9.1. Hemolytic disease of the newborn;
 - 9.2. Autoimmune hemolytic anemia;
 - 9.3. Hemolytic transfusion reactions;
 - 9.4. Sensitization caused by drugs;
 - 9.5. Unexpected or unusual results during pre-transfusion and/or compatibility testing;
and,
 - 9.6. A positive antibody screen.
10. A direct anti-globulin test (DAT) shall be performed on pre-transfusion sample with a positive antibody screen.
11. The recipient's pre-transfusion sample shall be tested to determine if the corresponding antigen is present, once an alloantibody has been identified to determine the presence/absence of the corresponding antibody.
12. The RBC donor unit(s) selected for crossmatch shall lack the corresponding antigen(s) to any clinically significant antibodies detected in recipient's serum or plasma or in the recipient's past history.
13. When the antibody screen is negative and there is no previous history of clinically significant antibodies, an immediate spin or electronic crossmatch may be used.
14. When an antibody screen indicates the presence of a clinically significant RBC antibody, or the recipient has a previous history of clinically significant antibodies an indirect antiglobulin crossmatch technique shall be used.
15. It is not necessary to repeat the ABO group on a donor (RBC) unit if a serological crossmatch is performed; however, if a computer crossmatch is performed, ABO grouping of donor RBCs shall be confirmed.
16. To provide non-group O, ABO-compatible RBCs, there shall be at least two determinations of the recipients blood group on record. One from a current sample and the second from the:
 - 16.1. Recipient's previous records;
 - 16.2. Testing of a separate sample collection, not at the same time as current sample;
or,

16.3. Retesting of the same sample where positive patient identification technology was used at the time of sample collection.

Until the blood group is established confirmed by a second sample, group O RBCs shall be transfused.

17. Information about blood component substitution can be found [here](#).

18. Information about transfusion of blood components can be found [here](#).

Guidelines

1. All pre-transfusion testing includes:
 - 1.1. ABO groups;
 - 1.2. Rh type;
 - 1.3. Antibody screen; and,
 - 1.4. Crossmatch.
2. Pre-transfusion testing may include:
 - 2.1. DAT;
 - 2.2. Antibody identification; and,
 - 2.3. Antigen phenotype.
3. A type and screen involves the testing of a recipient's blood specimen for ABO group and Rh(D) type, and for clinically significant RBC alloantibodies.
4. An elution should be performed on RBCs from patients who have a positive DAT and:
 - 4.1. Have received a transfusion or RBCs or platelets in the past three months;
 - 4.2. Have been pregnant in the past three months; or,
 - 4.3. Transfusion or pregnancy history is questionable or unavailable.
5. A crossmatch confirms the ABO group and Rh type compatibility between the patient serum/plasma and the donor's RBCs.
6. All Transfusion Medicine specimens must be collected every 96 hours for compatibility testing if the recipient(s):
 - 6.1. Has been transfused with RBCs or platelets within the last three months;
 - 6.2. Has been pregnant in the last three months; and/or

- 6.3. Transfusion or pregnancy history is questionable or unavailable.
7. Following transfusion of the first unit of blood, the original recipient blood sample may be used to crossmatch additional units up to 96 hours.
 8. An antibody screen may be performed using an enhancement medium to strengthen the sensitivity of antibody detection by indirect antiglobulin test.
 9. Antigen typing may be performed for patients requiring long-term transfusion therapy (example: Sickle cell disease) to obtain phenotypically compatible units. Genotyping may be considered in special circumstances.

Quality Control

1. An ABO group and Rh type and antibody screen is performed on the patient sample to be crossmatched. Any discrepancies shall be resolved or antibodies identified before crossmatch is performed.
2. Incompatible results shall be investigated as per facility procedures.
3. Quality control (QC) shall be performed on all testing reagents.
4. If unexpected QC results are observed, the source of the problem shall be determined and resolved before patient tests results are reported. Corrective actions must be documented.

Key Words

Crossmatch, transfusion, antibody, screen, DAT, pre-transfusion

References

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