Government of Newfoundland and Labrador

Department of Health and Community Services
Provincial Blood Coordinating Program

BLOOD COMPONENTS SUBSTITUTION IN ADULTS	NLBCP-002

Office of Administrative Responsibility	Issuing Authority
Medical Advisor to the Provincial Blood Coordinating Program	Dr. Christopher Sharpe
Manager, Provincial Blood Coordinating Program	Daphne Osborne
Author	Denise Callahan Ryan
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Overview

Blood components transfused to a recipient shall be compatible with the recipient's blood. In situations where ABO/Rh(D) identical components are not available, substitutions may occur.

Policy

1. Transfusion of red blood cells (RBCs) shall be ABO compatible.
2. Rh(D) negative females less than 45 years of age shall receive Rh(D) negative RBCs, except in life threatening situations when Rh(D)negative RBCs are not available.
3. NL Health Services (NLHS) facilities shall have a policy for the transfusion of Rh(D) positive RBCs to an Rh(D) negative recipient. This may occur when the inventory of Rh(D) negative RBCs are impacted; such as: in cases of trauma, massive transfusion, emergency situations or if RBCs are in short supply.
4. Known Group O Rh(D) negative hemorrhaging patients should switch to O-positive RBC unless known to have anti-D after four units of O-negative RBCs.
5. The decision to transfuse Rh(D) positive RBCs to an Rh(D) negative recipient shall be approved by the prescriber/physician and the Hematologist on call for Transfusion Medicine Laboratory (TML).
6. There shall be an established facility policy for Rh Immunoglobulin (RhIg) administration whenever Rh(D) positive platelets are transfused to an Rh(D) negative recipient.
7. Rh(D) positive RBCs shall not be given if the recipient's plasma contains Anti-D.
8. Recipients shall be transfused with plasma that is ABO compatible with the recipient's RBCs but does not require compatibility testing. Approval by the Hematologist on call for the TML and the recipient's prescriber/physician is required for the administration of incompatible plasma.
9. A policy shall be in place concerning ABO compatibility of cryoprecipitate components, however, all recipients may be transfused with any ABO group of cryoprecipitate.
10. The donor plasma in a platelet pool or apheresis component should be ABO compatible with the recipient's RBCs. A policy shall be in place concerning group substitutions when compatible platelets are not available.

Guidelines

1. Rh(D) positive recipients may receive either Rh(D) positive or Rh(D) negative whole blood or blood components.
2. Rh(D) negative RBCs should be transfused to recipients who are Rh(D) negative.
3. Evaluation of the change from Rh(D) negative to Rh(D) positive should be made early to conserve Rh(D) negative RBCs for other recipients who may require it if the available supply of Rh(D) negative blood is less than the expected transfusion requirement.
4. Consideration of recipient age and gender, diagnosis and transfusion history are important when planning to transfuse Rh(D) positive RBCs to an Rh(D) negative recipient.
5. If a recipient requires repeated platelet transfusions or has other special circumstances, arrangements should be made with Canadian Blood Services to obtain ABO identical platelets which are preferred, if available. A recipient may receive any ABO group of platelets, if platelets are urgently required and transfusion cannot be delayed. See Platelet Guidance Document.

   NOTE: In the instance a patient receives multiple platelet components in which the donor plasma is not ABO compatible with the recipient's RBCs the patient should be monitored for hemolysis.
6. RhIg should be administered to Rh(D) negative patients within 72 hours of exposure to Rh(D) positive RBCs cells following Rh(D) positive platelet transfusions. See also Platelet Guidance Document for dosing.
7. When blood components are required in an emergency and pretransfusion testing is not complete see Emergency Issue of Blood Components.

Key Words

Blood components, substitution

Supplemental Materials

Selection of ABO Compatible Donor RBCs

Recipient ABO Group	1st Choice	2nd Choice	3rd Choice	4th Choice
O	Group O	none	none	none
A	Group A	Group O	none	none
B	Group B	Group O	none	none
AB	Group AB	Group A	Group B	Group O

Suggested ABO Group Selection Order for Plasma

Recipient ABO Group	Component ABO Group			
	1st Choice	2nd Choice	3rd Choice	4th Choice
O	O	A	B	AB
A	A	AB	none	none
B	B	AB	none	none
AB	AB	none	none	none

Suggested ABO Group Selection Order for Platelets

Recipient ABO Group	Component ABO Group			
	1st Choice	2nd Choice	3rd Choice	4th Choice
O	O	A	B	AB
A	A	AB	*B	*O
B	B	AB	*A	*O
AB	AB	*A	*B	*O

*These groups represent choices with incompatible plasma.

Suggested ABO Group Selection for Cryoprecipitate

All recipients may be transfused with any ABO group of cryoprecipitate.

When pooling cryoprecipitate, components of different ABO groups may be combined. In such cases, the label should either not specify an ABO type or be marked as "undetermined."

References

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