**Purpose:**

To describe the selection of PRBC units by Transfusion Services (TSL) at Harborview Medical Center (HMC), including units with special attributes, and alternative ABO/Rh selections when ABO/Rh identical products are unable to be transfused due to inventory management issues.

**Policy:**

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| --- | --- |
| **General Statements:** | **Related Documents** |
| 1 | * Patients will receive ABO/Rh identical crossmatch compatible PRBC units whenever possible
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| 2 | * If ABO substitution is necessary, units shall be selected according to the “Alternative ABO Selections for RBCs” Table (table 1).
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| 3 | * The TS Leads, TS Manager &/or TS Medical Director / Resident / Covering Physician will be involved in RBC selection when the “Alternative ABO Selections for RBCs” Table (table 1) is not applicable
 |  |
| 4 | * Substitution will be utilized to reduce inventory wastage
 |  |
| 5 | * Product selection CANNOT be based on the Puget Sound Blood Center patient history. Serologic results for at least 2 ABO/Rh tests performed by TSL at HMC from 2 separate collections, including 1 during the current HMC patient encounter are required to issue non group O units
 |  |
| 6 | * When emergency RBC transfusion is deemed medically necessary on patients with 2 separate collections, ABO compatible units will be issued. Rh substitution will be based on patient age and gender
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| **Emergency Release Uncrossmatched RBC:** |  |
| 7 | * For Emergency Release uncrossmatched red cell (RBC) transfusions, group O RBCs shall be provided for patients who DO NOT have:
	+ An active type and screen (T&S) OR
	+ An ABO/Rh type from their current HMC encounter AND
	+ A total of 2 independent serologic ABO/Rh type results over all HMC encounters
		- Rh- units shall be provided for females < 50 years old and pediatric patients ≤ 15 YO & < 40kg
		- Rh+ units shall routinely be provided for:
			* Males ≥ 15 years old
			* Females ≥ 50 years old
 |  |
| **Emergency Release Uncrossmatched RBC continued:** | **Related** **Documents** |
| 8 | * For Emergency Release uncrossmatched RBC transfusion, ABO/Rh type specific units shall preferentially be provided for patients who have:
	+ An active type and screen (T&S) AND
	+ An ABO/Rh result from a separate collection at HMC
	+ OR
	+ An ABO/Rh type performed during their current HMC encounter AND
	+ A minimum of 2 ABO/Rh type results over all HMC encounters
* When ABO identical units cannot be provided based on inventory, alternative selections shall be made according to the choice order in the “Alternative ABO Selections for RBCs” Table (table 1)
	+ - For Rh- patients, if there is a critical shortage of ABO type specific or compatible Rh- RBC, and only a limited supply of O- RBCs, Rh+ units may be substituted with the approval of the Medical Director or Resident/Covering Physician for:
			* Male patients
			* Female patients ≥ 50 years old
	+ For Rh- females < 50 years of age, in extremely rare event that NO Rh- ABO type specific or compatible units (including O-) are available, Rh+ units may substituted with the approval of the Transfusion Services Medical Director,/Resident /Covering Physician.
 | Table 1 |
| **Crossmatched RBC:** |  |
| 9 | * + Crossmatched RBCs shall be provided for patients who have:
* An active type and screen + crossmatch
* An HMC historical ABO/Rh from a separate collection than the Type and Screen/Type and Crossmatch
	+ For patients with an active type and screen, ABO/Rh identical units shall preferentially be provided.
* When ABO/Rh identical units cannot be provided due to inventory, alternative ABO compatible units shall be selected according to the choice order in the “Alternative ABO Selections for RBCs” Table (table 1).
* Rh negative patients must receive Rh negative RBCs
* Rh+ patients shall preferentially receive Rh+ RBCs, but may also receive Rh- units if required for inventory management
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| **Special Product Attributes:** |
| 10 | * **Leukoreduced PRBC Units** will be routinely provided for:
* Patients who have orders for CMV Negative products. (LR = CMV safe)
* Neonates & Infants < 4 months age or intrauterine transfusion.
* Pregnant females
* HIV positive patients
* Chronically transfused patients
* e.g. sickle cell disease, thalassemia
* Patient’s with hematologic malignancies
* e.g. leukemia, lymphoma, Hodgkin’s disease
* Hematopoietic progenitor cell (HPC)/”bone marrow” transplant candidates & recipients
* Organ donors and potential organ donors
* Solid organ transplant candidates & recipients
* e.g. kidney, liver, heart, lung transplants
* Patients with bone marrow failure
	+ e.g. severe aplastic anemia
		- Patient’s with congenital immunodeficiencies
* Patients on cardiac bypass (until 24 hours post op)
* Patients on intra-aortic balloon pumps, LVAD, artificial hearts, awaiting cardiac transplant
 |  |
| 11 | * **Irradiated PRBC Units** will be routinely provided for:
	+ Neonates & Infants < 4 months age
* Patient’s with hematologic malignancies
* e.g. leukemia, lymphoma, Hodgkin’s disease
	+ Patients receiving fludarabine or other high dose chemotherapy
* Hematopoietic progenitor cell (HPC)/”bone marrow”/”stem cell” transplant candidates & recipients
* Patient’s with cellular immunodeficiencies
* e.g. SCID, Di George syndrome
* Recipients of
* Directed donor RBCs

- e.g. parent, sibling, child, family friend donated unit* HLA matched RBCs
 |  |
| 12 | * **Patient’s with Sickle Cell Disease/Thalassemia/Other Hemoglobinopathy** should receive units that are:
* Leukoreduced
* Hemoglobin S negative
* Irradiated - IF status post hematopoietic progenitor cell transplant (HPC-T), or receiving preparative chemotherapy/treatment for HPC-T
* Consider partial antigen matched (C, E, and K negative)
 |  |
| **Selection of RBC Units for Neonatal Transfusion** |
| 13 | * For **Neonates** and **Infants < 4 months of age**:
* Group O, leukoreduced, irradiated, hemoglobin S negative RBCs that are Rh compatible and < 7 days old will be routinely provided
* Neonates who are group A, B or AB may receive ABO type specific units ONLY if their initial type and screen demonstrated no maternally derived anti-A or anti-B isoagglutinins directed against a corresponding A &/or B antigen(s).
* ***Note:*** *For group A, B, or AB infants with maternally derived anti-A or anti-B directed against their corresponding A/B antigen(s), when subsequent reverse typing demonstrates no residual maternally derived anti-A/anti-B, ABO type specific units may be released*
* For neonates with passively acquired maternal red cell alloantibodies directed against their corresponding RBC antigen:
	+ If the antibody is clinically significant: AHG crossmatch compatible units negative for the corresponding RBC antigen must be given
		- ***Note:*** *For low frequency RBC antigens for which no typing reagent is available, AHG crossmatch compatible units may be given*
		- ***Note:*** *Antigen negative, AHG crossmatch compatible units will no longer be required once subsequent antibody screens become negative*
	+ If the antibody is Clinically insignificant: Immediate spin compatible units may be provided
* Units shall be irradiated, unless:
* The neonate requires immediate urgent transfusion, and < 7 day old leukoreduced, freshly irradiated RBC are not immediately available
* If the patient is receiving massive transfusion and the patient’s physician/pediatrician requests non-irradiated RBC (in order to avoid high dose potassium administration).
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**Table 1: Alternative ABO Selections for RBCs**✝

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Recipient ABO** | **1st Choice** | **2nd Choice** | **3rd Choice** | **4th Choice** |
| **O** | O | - | - | - |
| **A**✪ | A | O | - | - |
| **B** | B | O | - | - |
| **AB** | AB | A | B | O |

✝ If neonate or infant < 4 months of age, only group O RBCs will be provided. If there are no RBCs in the TSL inventory, Transfusion Services Medical Director/Physician approval is required for ABO substitution.

✪ If patient is group A2 or A2B subtype with an anti-A1 reactive at 37C, only A2 or O RBCs may be issued.

**References:**

AABB Standards for Blood Banks and Transfusion Services, Current Edition.

AABB Technical Manual, Current Edition.