**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 |  |
| 2 | * If ABO substitution is necessary, units shall be selected according to the “Alternative ABO Selections for RBCs” Table (table 1). |  |
| 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 |  |
| **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). |  |

**Table 1: Alternative ABO Selections for RBCs**✝

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| **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.