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| **ABO Incompatible (ABOi) Heart Transplant Protocol** |
| **Purpose** | To provide blood and blood products compatible with the ABO incompatible (ABOi) heart transplant patient and donor. To evaluate circulating ABO antibody present in patients receiving incompatible heart transplants |
| **Policy Statements** | Special transfusion requirements are needed to accommodate an ABO-mismatched heart transplant, and these requirements must be a part of a patient’s permanent record. |
| **Procedure** | **Perform these steps when a patient becomes an ABOi heart transplant candidate:** |
|  | **Step** | Action |
| Patient becomes an ABO incompatible heart transplant candidate | 1 | Receive a call from heart transplant team that patient is on the transplant list.Note: If an ABO isohemagglutinin titer order is received on a heart patient, contact the ordering provider to confirm patient is on transplant list. |
|  | 2 | Enter patient’s blood requirements in the Blood Bank Administrative Data (BAD) file:* Add code **ABOIC** to the Antigen/Antibody field.
* RBCs should be either O for patients <4 months or recipient’s blood type
* Plasma products should be compatible with patient but AB plasma products should be used when possible
 |
|  | 3 | Perform ABO titers when ordered on the patient. |
|  | \*Transfusion medical director approval needed for 2nd and 3rd choice of plasma products. |
| **Enter Donor type and product requirements in patient’s BAD file for transfusion after surgery:** |
| Notification of Donor TypeProviding blood and blood products for ABO incompatible heart transplant patientsQuick Backtype |

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| **Step** | **Action** |
| 1 | Transplant team will call Transfusion Service with ABO type of donor heart. |
| 2 | Request fax of the donor type to be sent to Transfusion Service if one has not already been received. |
| 3 | Upon receipt of faxed confirmation and once the surgery has started, enter donor ABO type, date of transplant and instruction for selection of product ABO types for transfusion during surgery and post-transplant in the BAD file under the comments field.* Enter Code **ABOHT (ABO Incompatible Heart Transplant, ABO Restrictions on Plasma Products-See Procedure TS 3.30”** to the patient’s Antigen/Antibody field
* Enter **Donor Blood Type Code** to the Problem Field.
* Add **Unit Tag Comment ABORP-“ABO Restriction son Plasma Products, ABO Incomp. Heart Transplant”** to all plasma products of ABO incompatible transplant recipients.
* QA Reason Code **INHT-“ABO Incompatible Heart Transplant”** should be usedto answer QA failures for **“Patient/Unit/AG/AB incompatibility”**
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| **Provide adsol removed <5 day old RBCs for all ABOi heart transplant surgeries regardless of the patient’s age. Removing the adsol will remove any residual plasma that might be incompatible with the donor heart. There could be 8 units of RBCs ordered for each ABOi heart transplant, 4 units for surgery and 4 units for exchange transfusions.****Provide blood products for patients during and after surgery according to these requirements:****If AB platelets are not available please consult transfusion medical director and ordering provider.** |
| A Quick Backtype will be performed right before the ABOi heart transplant to determine if the patient will need to apheresis before the transplant can take place. See procedure TS 16.1.1. |
| **ABO Titers****Exchange Transfusion****All RBCs will be <5 days old and adsol removed regardless of patient’s age**  | ABO titers are performed and results communicated appropriately for ABOi heart transplant patients according to these requirements:**Note: ABO titers are performed to determine if there is circulating antibody that may be incompatible with the transplanted heart.**

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| **Step** | **Action** |
| 1 | If a sample is received for an ABO titer, perform an immediate spin (IS) back type.  |
| 2 | Evaluate the results of the back type.

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| **If the IS back type is** | **Then** |
| Negative | * If the patient is in surgery, call negative result of back type to surgery.
* Proceed to Step 3 and perform the AHG titer.

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| Positive | * If patient is in surgery call positive result of back type to surgery.
* Proceed to Step 3 and perform the titer.
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| 3 | Prepare ABTI titer following TS 4.28 Isohemagglutination titer |
| 4 | Read at **IS** 15 minute **RT** incubation and **AHG**, record results |
| 5 | * Interpret the titer as the last tube that has a 1+ reaction.
* If patient is in surgery call the titer result to surgery.
 |
| 6 | Record results into Sunquest. |

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| **Step** | **Action** |
| 1 | Choose and order RBCs according to patient’s age:* <4 months of age
	+ Select group O, Rh compatible RBCs
	+ RBCs shall be negative for HGB S
* ≥ 4 months of age
	+ ABO/RH compatible RBCs
 |
| 2 | Choose plasma that is compatible with patient and donor heart. |
| 3 | Refer to TS 3.21 Exchange Transfusions, Patients <1 year old or TS 3.22 Exchange Transfusions, Patients >1 year for further instructions |

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| **References** | 1. Foreman C, Gruenwald C, and West L. “ABO-incompatible heart transplantation: a perfusion strategy” Perfusion, 204 19(1):69-72
2. West LJ, Pollock-Barziv SM, et. al. “ABO-Incompatible Heart Transplantation in Infants”. New England Journal of Medicine, 2001 344(11): 793-800
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| **Appendices** | 1. Blood Component Selection
2. Heart Transplant Codes
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| **Approval****Workflow** | Transfusion Service/Laboratory Director |
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| **Historical Record** | **Version** | **Written/Revised by:** | **Effective Date:** | **Summary of Revisions** |
| 1 | S. Cassidy | 09/01/2018 | Initial Version |
|  | 2 | S. Cassidy | 10/22/18 | Added Heart Transplant Codes for computer |
|  | 3 | S. Cassidy | 06/13/2022 | Add AHG ABTI, quick backtype and updated blood product requirements  |

Appendix A

**Blood Component Selection**

**General Rules**

* **RBC ABO Type:** match recipient blood type.
* **Plasma/Platelets ABO Type:** match donor and recipient blood type
* **If AB platelets are not available please consult transfusion medical director and ordering provider**

Provide the following blood products unless determined otherwise by the Transfusion Medicine Medical Director:

**Note: if patient ≤4 months transfuse O RBCs and donor matching plasma/platelets**



Appendix B

**Heart Transplant Codes**

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| **Donor Blood Type Codes** |
| **HTOP** | **O Pos** |
| **HTON** | **O Neg** |
| **HTAP** | **A Pos** |
| **HTAN** | **A Neg** |
| **HTBP** | **B Pos** |
| **HTBN** | **B Neg** |
| **HTABP** | **AB Pos** |
| **HTABN** | **AB Neg** |

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| **Antigen/Antibody Code** |
| **ABOHT** | **ABO Incompatible Heart Transplant, ABO Restrictions on Plasma Products-See Procedure TS 3.30** |
| **ABOIC** | **ABOi candidate - ABO RESTRICTIONS on Plasma Products -****See procedure TS 3.30** |
| **Reason Codes BOP or BPI** |
| **INHT** | **ABO Incompatible Heart Transplant** |
| **Unit Tag Comment** |
| **ABORP** | **ABO Restriction on Plasma Products, ABO Incomp. Heart Transplant** |