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Resolution of ABO or Rh Discrepancies and Transfusion Policies for Patients Who Have Received Stem Cell Transplants - Blood Bank

Document Type: Procedure

I. PURPOSE AND OBJECTIVE:

This document will provide transfusion related policies and procedures for the resolution of ABO or Rh discrepancies for patients who have received a stem cell transplant.

II. PRINCIPLE:

Although human leukocyte antigen (HLA) compatibility is crucial for successful engraftment of hematopoietic progenitor cells (HPCs), ABO compatibility is not. ABO incompatible transplants may be performed because HPCs do not possess ABH antigens, allowing engraftment to occur successfully regardless of ABO incompatibility. As engraftment of an ABO incompatible or Rh dissimilar transplant occurs, an ABO or Rh discrepancy may be observed. In addition, stem cell transplant recipients often require transfusion support in the period immediately following transplantation, potentially complicating the ABO or Rh discrepancy.

III. DEFINITIONS / ACRONYMS:

- A. **Hematopoietic progenitor cells (HPCs):** Cells that are capable of multiplying and producing additional blood cells of a particular lineage. These are often called “**stem cells**”.
- B. **ABO discrepancy:** A generic term for a variety of situations in which the interpretation of a patient or donor’s ABO grouping results are unclear.
- C. **Rh discrepancy:** A generic term for a variety of situations in which the interpretation of a patient or donor’s Rh results are unclear.
- D. **GND (Group not determined):** If the forward typing and the reverse typing do not agree, an ABO discrepancy has occurred. If the discrepancy cannot be resolved at that time, then the patient’s group is considered “Not Determined”.
- E. **RND (Rh not determined):** If the Rh typing discrepancy of a patient cannot be resolved at that time, then the patient’s Rh type is considered “Not Determined”.

- F. **Engraftment:** Engraftment in stem cell transplantation is when your body accepts the transplanted bone marrow or stem cells, and they begin to produce new blood cells and immune system cells. It is a step in a successful stem cell transplant.
- G. **Health information system (HIS):** Refers to a system designed to manage health care data. This includes systems that collect, store, manage and transmit a patient's electronic medical record, a hospital's operational management or a system supporting health care policy decisions.
- H. **QSR (Quality Safety Report):** Report made in the hospital incident reporting system (i.e.RL Solutions) regarding any process/incident inconsistent with the routine operation of the hospital or the routing care of patients in any setting. This includes errors that result in actual or potential injury to a patient or visitor, including near misses or unsafe conditions.
- I. **Internal Variance:** Report made internally in the Blood Bank for documentation of an incident such as error detected, accident, complaint, unplanned deviation, or an incident for review, evaluation, investigation, and correction.
- J. **Designee:** Any Blood Bank technical director, or transfusion medicine fellow.

IV. POLICIES:

All policies from Transfusion Medicine policy, *Resolution of ABO/Rh Discrepancies* are fully applicable to this document.

A. Patient History

If a stem cell transplant is suspected, the Blood Bank shall obtain the patient's history and document the *Stem Cell Transplant History Form* (see attachment) and the *Special Studies Worksheet*, as applicable.

1. Stem Cell Transplant History Form

- a. Section I
 - i. Once it is known that the patient received a stem cell transplant, the Blood Bank will call the transplanting facility to obtain the information in Section I.
 - ii. Once this information has been obtained, the Medical Director (MD) or designee will be consulted.
- b. Section II
 - i. A technologist will consult the MD to determine how the ABO and Rh of the current sample and the demographic screen should be interpreted.
 - ii. The Medical Director will also determine whether the patient has any special transfusion requirements.
- c. Section III
 - i. A technologist will then update the Blood Bank computer with the information provided by the MD (e.g., update the ABO/Rh, add special messages, etc.). Note: This may require supervisor computer access.
- d. Once these forms are reviewed by the MD and the computer record is updated, they will be filed alphabetically in the designated Stem Cell Transplant binder/file in the department.

B. ABO/Rh Discrepancies – Editing the ABO or Rh of

the Post Transplant Recipient after Successful Engraftment

1. Stem cell donors may be ABO or Rh dissimilar to the recipient. Therefore, once a stem cell has successfully engrafted the recipient's ABO or Rh should change to that of the donor's ABO or Rh. Before editing the patient's ABO or Rh in the demographic screen, and before interpreting the ABO/Rh based on successful engraftment, the following conditions must be met:
 - a. Two ABO/Rh types must be performed, on samples that were collected from the post-transplant recipient at different times. Note: These samples may be collected on the same date.
 - b. The ABO/Rh types of these two samples must match.
 - c. There must not be any ABO or Rh discrepancies on these two samples.
Note: It may be difficult to meet this condition if the stem cell transplant occurred recently; patients are often transfused in the period following the transplant and mixed field reactivity may be observed in the forward typing.
 - d. The MD must approve the edit of the stem cell transplant recipient's ABO/Rh. This approval may be written or verbal and should be documented on the *Stem Cell Transplant History Form*.
 - e. Another technologist must be present when the ABO/Rh is edited and must initial and date the *Stem Cell Transplant History* form to verify the accuracy of the computer edit.

C. Unresolved ABO or Rh Discrepancies

If the above 5 conditions are not met, or if the Medical Director or designee has not yet reviewed the *Stem Cell Transplant History Form*, then the ABO or Rh discrepancy is considered unresolved. Refer to the following Transfusion Medicine policies:

1. *Unresolved ABO Discrepancies- Transfusion Required*, which indicates that group O RBCs must be used if transfusion is necessary.
2. *Unresolved Rh Discrepancies- Transfusion Required*, which indicates that Rh-negative RBCs should be used if transfusion is necessary.
3. *Documentation of Unresolved ABO or Rh Discrepancies*.

V. REFERENCES:

1. AABB, *Technical Manual*, current edition.
2. AABB, *Standards for Blood Banks and Transfusion Services*, current edition.

Attachments

[Stem Cell Transplant History Form](#)

Approval Signatures

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Applicability

Dearborn, Farmington Hills, Grosse Pointe, Royal Oak, Taylor, Trenton, Troy, Wayne