**Purpose**:

To establish guidelines for antigen typing on patient and donor red cells. Antigen typing is done on patient red cells to confirm or exclude suspected antibodies in the patient serum. Donor red cells are also antigen typed to give antigen negative red cells to patients with clinically significant antibodies. Antigen typing clinically significant antibodies also recommended for patient needing long term transfusion therapy.

**Sample Requirements**:

* Patient antigen typing can only be done on pretransfusion sample.
* Red cells in donor unit segments can be tested up to the expiration date of the unit.

**Associated Documents:**

* Patient/Donor Antigen Testing Form

**Interpretation**:

* Positive result: Agglutination
* Negative result: No agglutination

**Limitations:**

* Patients should have no history of transfusions in last 90 days. If the patient was transfused in preceding 3 months, residual donor RBCs interfere with accuracy of phenotyping the patient due to dual or multiple red cell populations.
* If a patient has a positive DAT, antisera that reacts at the Coombs phase cannot be used for phenotyping.

**Procedure:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Step** | **Action** | | **Related Documents** |
| **1.** | * Check specimen for suitability. | |  |
| **2.** | * Fill a donor antigen typing worksheet or patient antigen typing worksheet | | * Patient/Donor Antigen Typing Form |
| **3.** | * Confirm patient has not been transfused in last 90 days. | |  |
| **Step** | Action | | Related Documents |
| **4.** | * Label tubes according to procedure. | | * Labeling Tubes for Manual Bench Testing. |
| **5.** | * Prepare a 3% red cell suspension from donor units or patient red cells as needed. | | * Preparation of 3-5% Red Cell Suspension |
| **6.** | * Review the current manufacturers insert for specific instructions for number of drops, method, temperature and time of incubation. | |  |
| **7.** | Select the appropriate cells for positive and negative control cells from a panel of cells.   * Negative control should not carry the antigen being tested. * Positive control should have a single dose (heterozygous) expression of the antigen being tested. | |  |
| **8.** | Record Control cell numbers, lot# and expiration date on appropriate worksheet. | |  |
| **9.** | Record name of antigen, antisera lot# and expiration date on the appropriate worksheet. | |  |
| **10.** | Add one drop of the donor or patient red cell suspension to the appropriate tube. | |  |
| **11.** | Add one drop of positive control and one drop of the negative cells to the respective tubes. | |  |
| **12.** | Add the appropriate antisera to each tube per manufacturers insert instructions. | |  |
| **13.** | Follow the manufacturer’s instructions regarding procedure. | |  |
| **14.** | Read macroscopically, grade and record results on worksheet. | |  |
| **15.** | Interpret the reactions as follows: | |  |
|  | Expected Result: |
| Positive Control | Positive (≥ 1+agglutination) |
| Negative Control | Negative(no agglutination) |
| Patient/Donor | Positive (≥ 1+ agglutination) **NOTE:** ABO and Rh must be ≥ 2+  Or  Negative (no agglutination) |
| **Note**: Any results other than expected are considered invalid and test has to be repeated. | |
| **16.** | Report results in computer.  Patient results are entered as AG/AB in BOP or BAD functions.   * Donor results are entered as test AO in BOP after allocation or BPT function. *Note: AO must be completed in BOP to charge for antigen typing of donor units.* | |  |

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| **Step** | **Action** | **Related Documents** |
| **17.** | Request review of antigen typing results from a 2nd CT Technologist:   * Antisera in date and QC performed * Correct phase of testing * Expected Results are achieved. * Sunquest entry is accurate * RBC antigen POS and/or NEG label(s) are accurate |  |
| **18.** | File worksheets. |  |

**References:**

AABB Technical Manual, Current Edition.

Judd’s Methods in Immunohematology, Current Edition.