

COMPATIBILITY TESTING

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Sample

- Proper identification
 - 2 unique identifiers
- Collected within 3 days of intended transfusion
 - If history of transfusion / pregnancy in past 3 months
 - If history unavailable
- Written blood product requisition

5.14.5 Pretransfusion Testing for Allogeneic Transfusion

There shall be two determinations of the recipient's ABO group as specified in ~~Standard 5.14.1~~. The first determination shall be performed on a current sample, and the second determination by one of the following methods:

- 1) Testing a second current sample.
- 2) Comparison with previous records.
- 3) Retesting the same sample if patient identification was verified using an electronic identification system or another process validated to reduce the risk of misidentification.

Serologic Crossmatch

- Minor
 - Testing of donor plasma with intended recipient's red cells
- Major
 - Testing of intended recipient's serum or plasma with donor's red cells

Minor Crossmatch

- Performed when donor plasma products were ordered
- No longer performed
 - Donor antibody screening test

Major Crossmatch

- Performed when donor red cell products are ordered
- Ensure ABO compatibility of donor red cell antigens with recipient antibodies

Major Crossmatch

- IAT or full crossmatch
 - Tested recipient serum and donor cells through same phases as antibody screening test
 - Immediate spin
 - 37°C incubation
 - AHG

Major Crossmatch

- IS or immediate spin abbreviated crossmatch
 - Tests recipient serum and donor cells
 - Immediate spin phase only
 - Detects ABO mismatch

IS Crossmatch

- Criteria for use
 - No current or previously identified clinically significant antibodies

IS vs. IAT

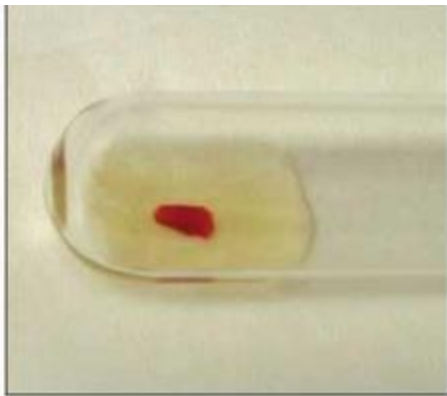
- Conserves time, reagents and supplies
- Decreased cost to intended recipient
- Conserves donor inventory
 - Type and screen policy

Electronic Crossmatch

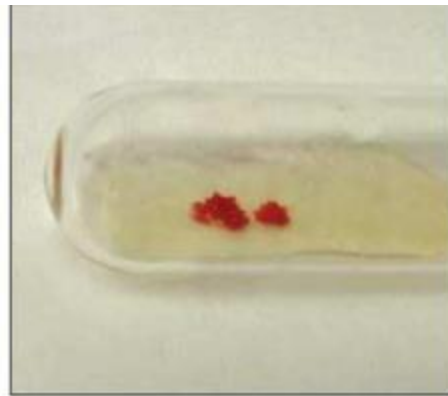
- No serologic crossmatch
- Computer validation
 - Ensure correct data entry
 - Ensure detection of discrepancy
 - Ensure detection of ABO mismatch
- Same criteria as for IS crossmatch
- 2 verifications of recipient's ABO

Interpretation of Serologic Crossmatch

- **Compatible**
 - No agglutination or hemolysis at any phase
- **Incompatible**
 - Agglutination or hemolysis at any phase



4+ Reaction



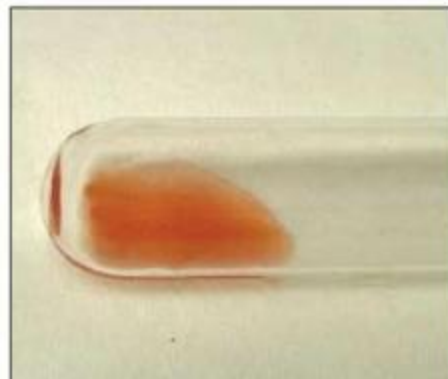
3+ Reaction



2+ Reaction



1+ Reaction



Negative Antibody Screen Compatible Crossmatch

- Most common finding
- Check for previous records
- Tag and issue donor unit for transfusion

Negative Antibody Screen Incompatible Crossmatch (IS)

- ABO mismatch
- Unexpected ABO antibody
- Weak IgM antibody reacting only with red cells with double dose antigens
- Polyagglutinable donor red cells

Negative Antibody Screen Incompatible Crossmatch (IAT)

- Donor red cells have positive DAT
- Weak IgG antibody reacting only with red cells with double dose antigens
- Antibody to low frequency antigen

Positive Antibody Screen Compatible Crossmatch

- Donor unit is antigen negative
- Weak antibody only reacting with double dose antigens
- Anti-IH or Anti-H in an A₁ or A₁B individual

Positive Antibody Screen Incompatible Crossmatch

- Positive auto control
 - Cold autoantibody
 - Warm autoantibody
 - Delayed transfusion reaction
 - Rouleaux
 - Reactions due to enhancement reagent
- Negative auto control
 - Alloantibody

Selection of Donor Red Cells

Recipient	Donor RBCs
O pos	O pos, O neg
O neg	O neg
A pos	A pos, A neg
A neg	A neg, O neg
B pos	B pos, B neg, O pos, O neg
B neg	B neg, O neg
AB pos	AB pos, AB neg, O pos, O neg A pos, A neg, B pos, B neg
AB neg	AB neg, O neg, A neg, B neg

Selection of Donor WB

Recipient	Donor WB
O pos	O pos, O neg
O neg	O neg
A pos	A pos, A neg
A neg	A neg
B pos	B pos, B neg
B neg	B neg
AB pos	AB pos, AB neg
AB neg	AB neg

Selection of Donor Plasma

Recipient	Donor Plasma Products
O	O, A, B, AB
A	A, AB
B	B, AB
AB	AB

Compatibility Testing for Emergency Transfusions

- Positive identification of intended recipient
- Signed emergency release
- Transfuse uncrossmatched red cells
 - If no sample
 - Transfuse O neg or O pos donor red cells
 - If sample
 - Transfuse ABO/Rh compatible red cells

Compatibility Testing for Neonates

- Perform forward ABO test
- Perform D test
- Perform antibody screening test
 - If negative
 - Transfuse uncrossmatched O pos or O neg red cells
 - If positive
 - Must crossmatch, may use maternal sample