Immunohematology

Discrepancies between Forward and Reverse Typing

Missing Agglutinins (Ab)

Seen in newborns, the elderly, and immunocompromised patients

Immunocompromised: people with HIV, certain viruses, leukemia, lymphoma, or who are on immunosuppressive drugs (as with organ transplants)

Weak or Missing Agglutinogens (Ag)

Weak subgroups of A or B

Leukemia

Substances on plasma that neutralize antigens

Alterations in the Plasma/Protein Ratio

Certain immunoproliferative disorders: you see an increase in protein concentration, the cells may then be coated, and you can see **rouleaux**. Eliminate this problem by washing cells.

- Rouleaux is the phenomenon when red cells are stacked like coins and may appear like hemagglutination

Miscellaneous Things that Cause Cells to Agglutinate

- Cold antibodies that can be so strong they make an EDTA tube look clotted
    - Keep warm
- Bacterial or viral contamination can expose **T antigen** in vitro or in vivo.
    - T antigen is a hidden erythrocyte antigen which everyone has and to which we make naturally occurring antibodies

See Table 6-25 on page 127 for more.

Compatibility Testing Procedures

*A series of pre-transfusion tests performed on the patient/recipient and donor blood to assure the **best possible** results for blood transfusion.*

1. ABO & Rh_0 (D) Typing
    a. Include *Weak D* workup if needed
2. Antibody Screen
    a. Testing of patient and donor sera for unexpected antibodies

Key Words

Typing Discrepancies

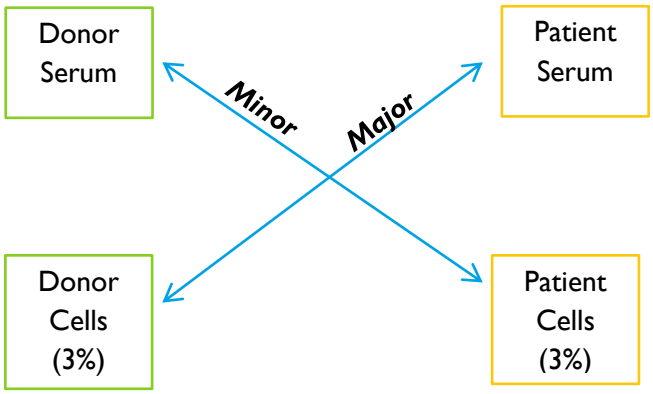
Rouleaux

T Antigen

Compatibility

Testing Procedures

3. Cross Match



Progression of Compatibility Testing Changes

- 1940s: mixed cells and serum in petri dish
  Only did ABO
- Mid 1950s-early 60s: Major and Minor Cross Match at 37C and RT
- Late 1970s-90s: Major Cross Match at 37C and RT
- Today: Major Cross Match, mostly at 37C
- Future: Type & Screen at 37C and give blood to negative people
  Pharmaceutical substitutes

Eliminated Items

- Minor Cross Match
  - Antibody screen now done on all donors. Use donor serum and commercial screening cells to test donor for unexpected antibodies. This is in effect a minor cross match
  - Now give packed RBCs
- Combined two procedures to yield:
  - Saline initial spin, add LISS (not albumin), incubate at 37C, AHG

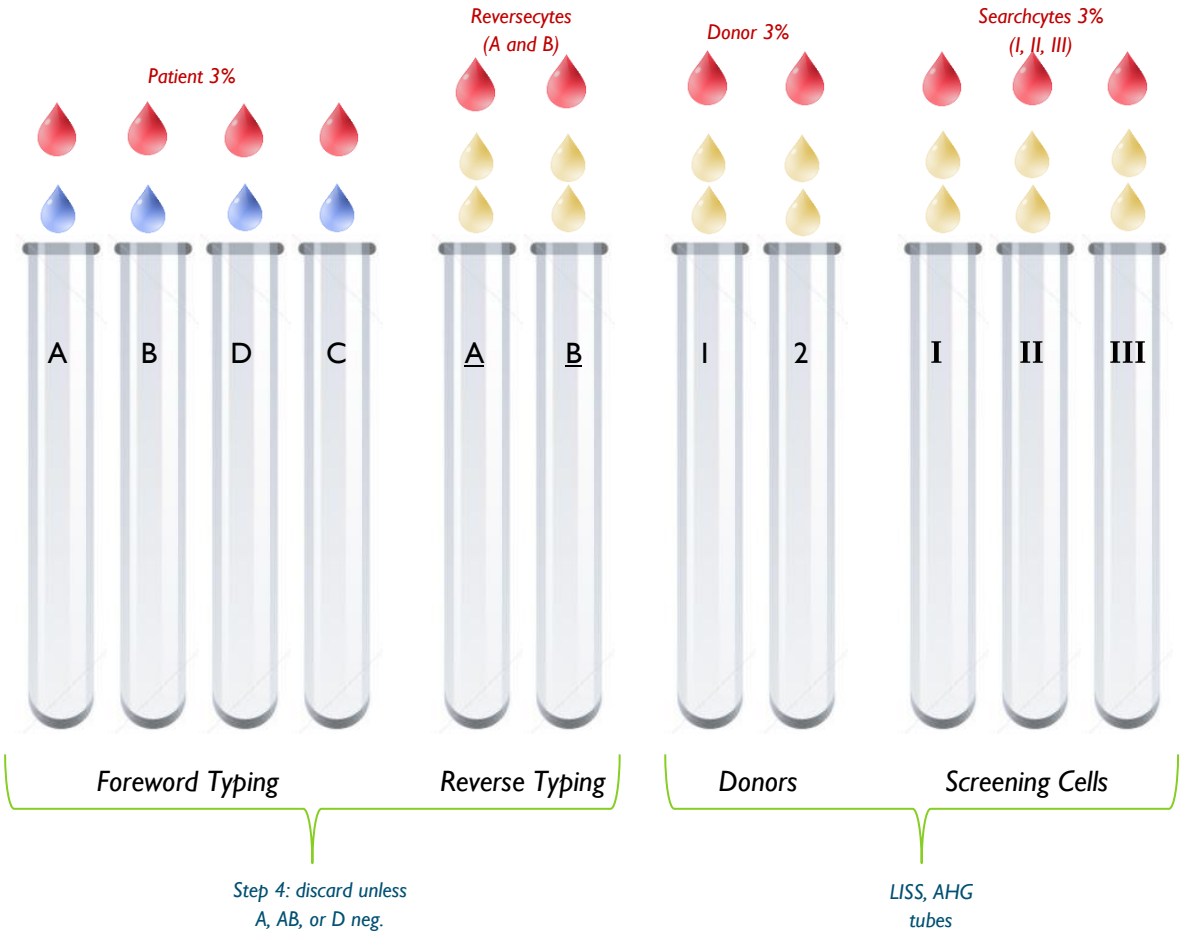
Key Words

Cross Match

Major and Minor

Cross Match

Summary of Cross Match, Compatibility Testing Procedure



1. Add antisera (💧) and patient serum (💧) to appropriate tubes.
   STOP AND LOOK
2. Add cell suspensions (🩸) to appropriate tubes (be sure to mix commercial reagent cells).
3. Mix tubes (shake the rack), centrifuge 30 sec on low, read and record **Initial Spin** agglutination reactions of all tubes.
4. Discard *Forward* and *Reverse* Typings unless:
   - **patient is A or AB**, let tubes sit at room temperature for 15-30 minutes (don't add LISS), mix, centrifuge 30 sec on low, check for agglutination
     - This could indicate anti-A_1 or anti-A_1B
   - **patient is D negative**, do weak D procedure
5. Add 2 drops of LISS to remaining tubes (**1,2,I, II, III**), mix, incubate for 10-30 minutes at 37C
6. Mix, centrifuge 30 sec on low, read and record **37C** reactions
7. Wash tubes/cells x3 with saline (use Cell Washer)
8. Add 2 drops AHG to each tube, mix, centrifuge 30 sec on low, read and record **AHG** reactions
9. Add 1 drop of Coombs Control Cells to each negative tube, mix, centrifuge 30 sec on low, read and record **CC** reactions (all should be positive)