SAWA UNIVERSITY

PRACTICAL BLOOD TRANSFUSION

CROSS MATCHING

Sawa University

College of health and medical techniques

Department of Medical Laboratories.....

Stage: forth

جامعـــــة ســـــــاوة

الاهلية

كليـــــة التقنيـــات الصحيـة والطبيـة

قسم تقنيات المختبرات الطبية

تدريسي المادة :د. هبة محمد

Learning Objectives

- Define cross matching.
- Explain the purpose and importance of cross matching.
- Describe the different types and techniques
- Interpret results and identify sources of error

STEPS IN PRETRANSFUSION TESTING

- **Recipient test:**

  Request for transfusion.

  Blood specimen collected.

  ABO group and Rh type.

  Antibody screen.

- **Donor RBC unit testing:**

  ABO group and Rh type confirmation.

  Compatibility testing (cross match).

  Labeling of blood with the recipient's identifying information.

Introduction to Compatibility Testing

- Compatibility testing ensures safe transfusion by detecting antibodies in patient serum that may react with donor RBC antigens.

Definition of Cross match

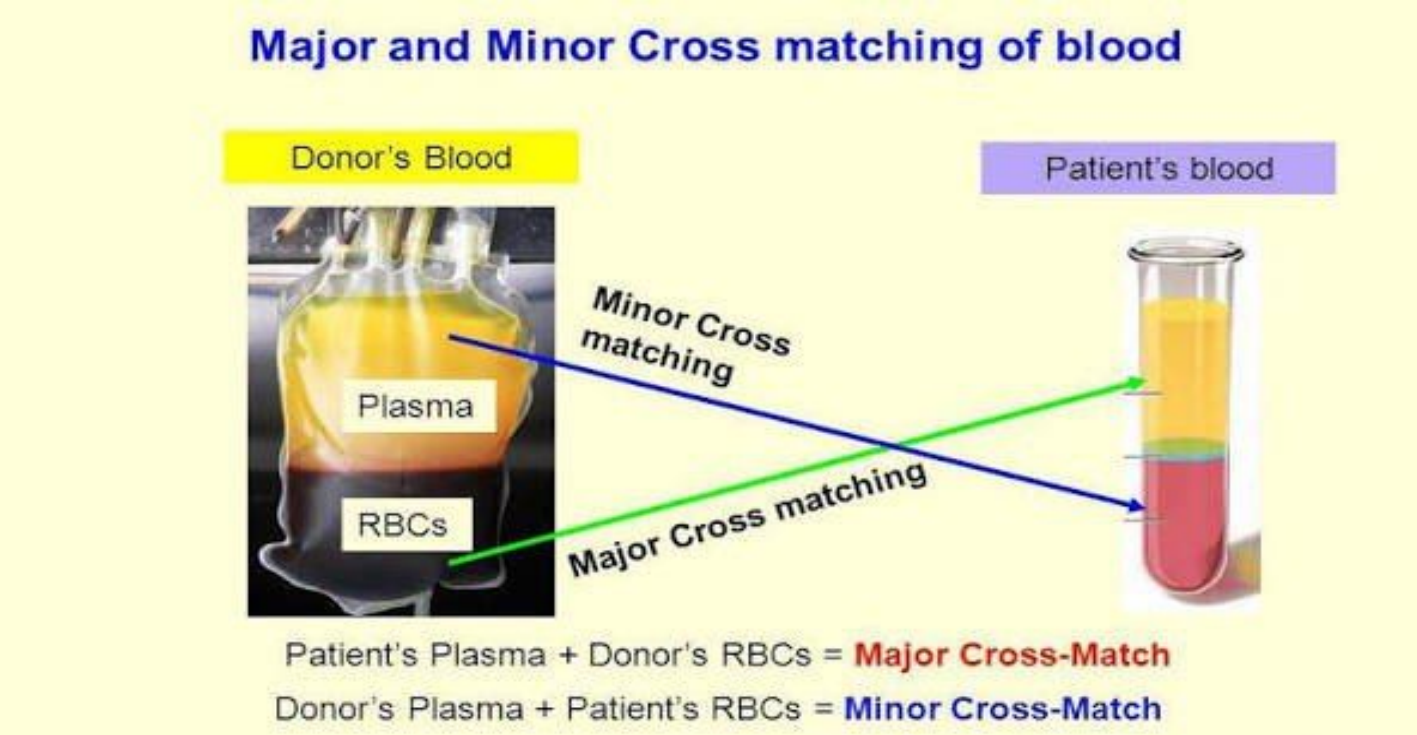
- A laboratory test performed before transfusion to detect serologic incompatibility between donor and recipient.

Purpose and Importance:

1. To prevent transfusion reactions.
2. To confirm ABO compatibility.
3. To detect unexpected antibodies.

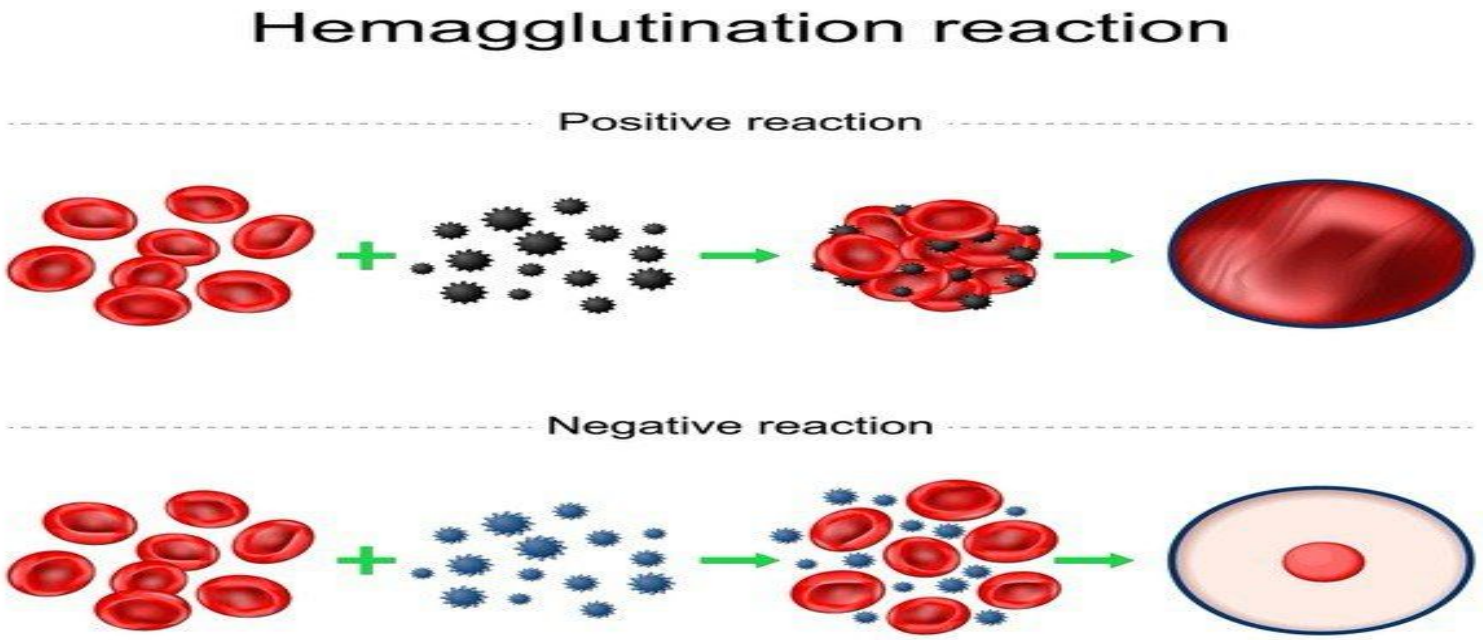
Types of Cross match

- Major cross match: recipient serum vs. donor RBCs.
- Minor cross match: donor serum vs. recipient RBCs (less used today.(



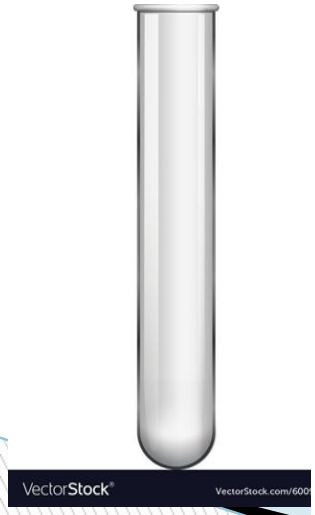
Principle of Cross matching

- The test is based on the agglutination or hemolysis that occurs when antibodies in serum react with corresponding antigens on RBCs.



Materials and Reagents

- Patient serum.
- Donor RBC.
- AHG reagent.
- Test tubes, centrifuge, pipette, incubator.



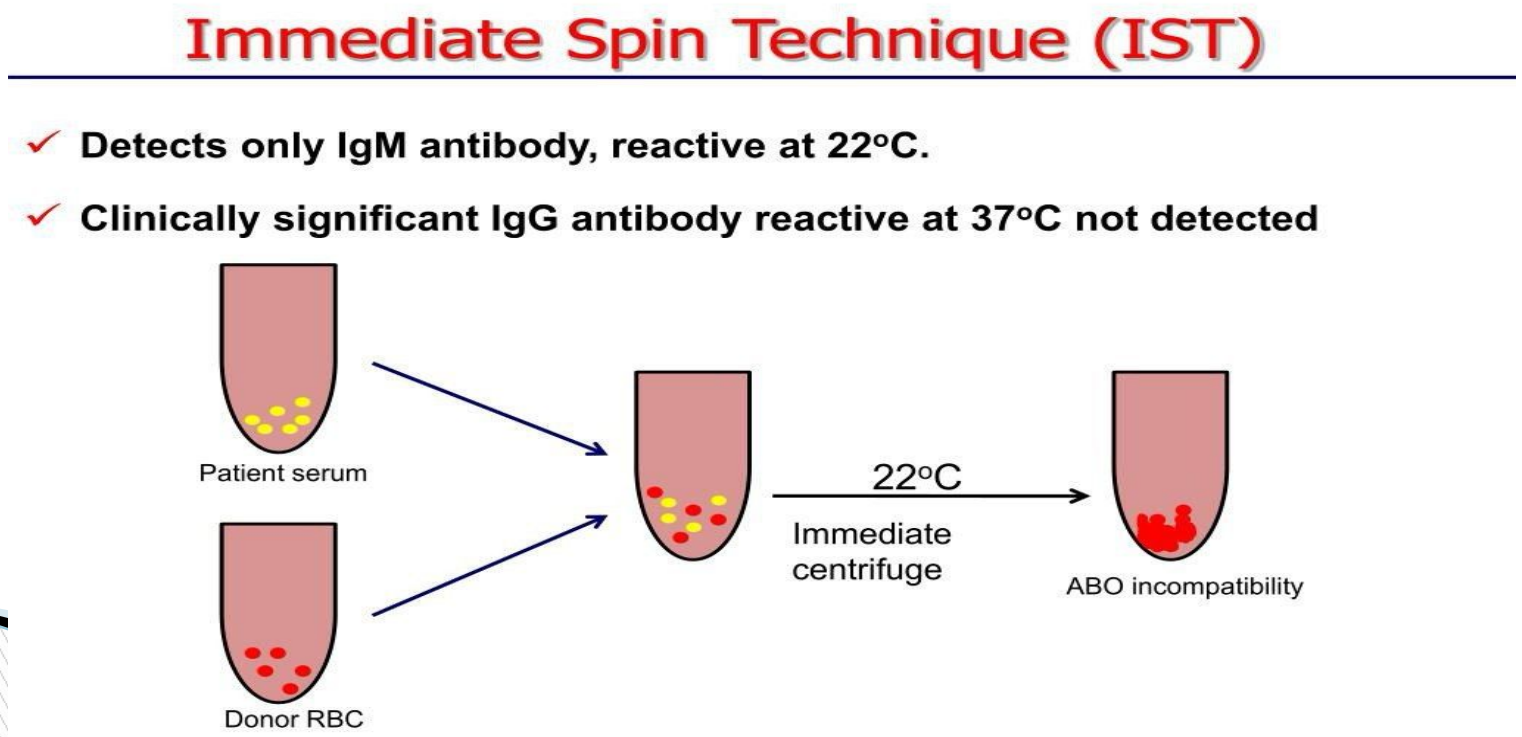
Steps of cross match

1. Immediate Spin Cross match.
2. AHG (Indirect Anti globulin) Cross match.

Note: The donor sample is collected from one of the segments of the tube attached to the bag.

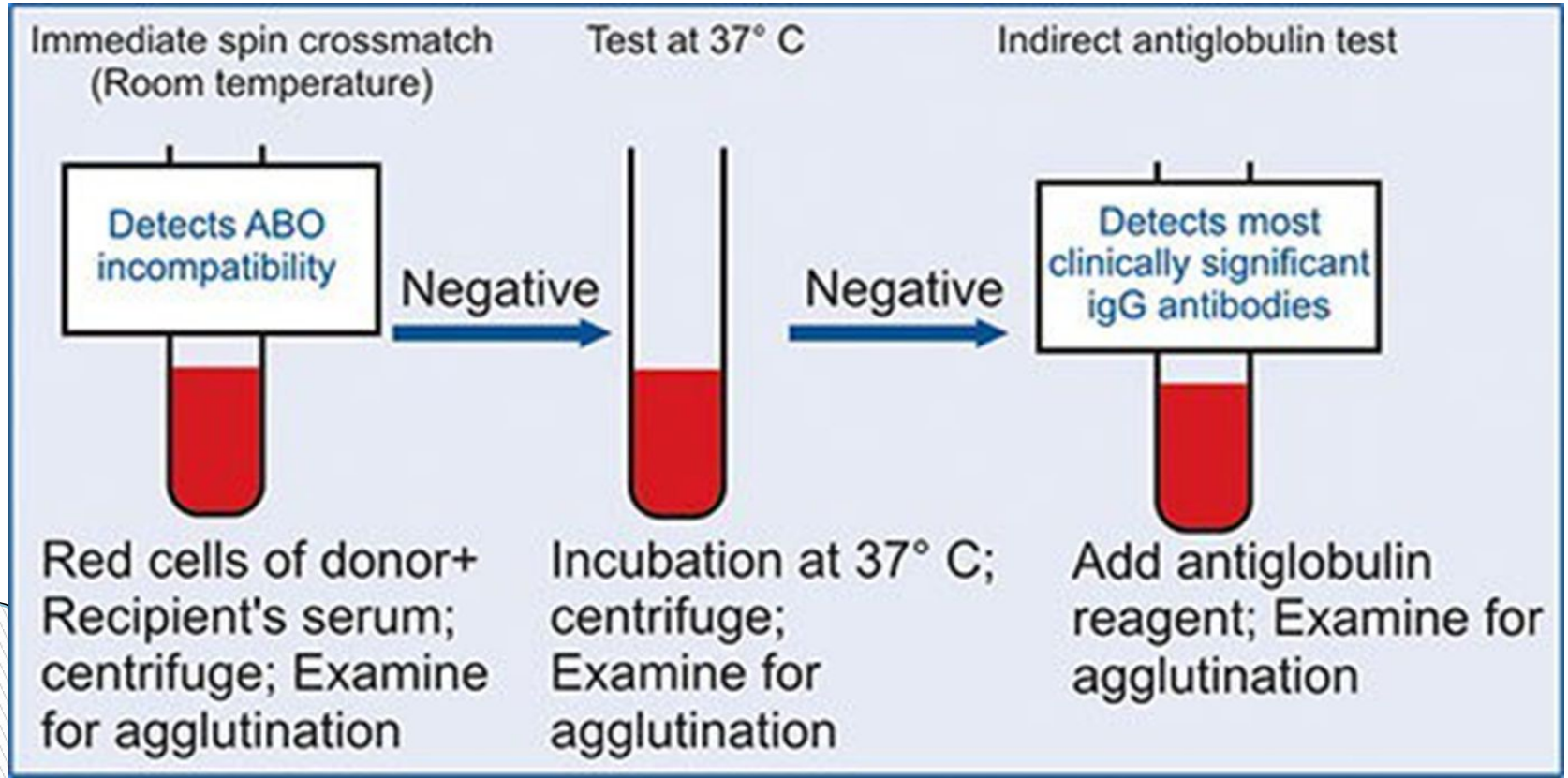
Immediate Spin Cross match

- Mix patient serum and donor RBCs.
- Centrifuge and read for agglutination at room temperature.
- Detects ABO incompatibility.



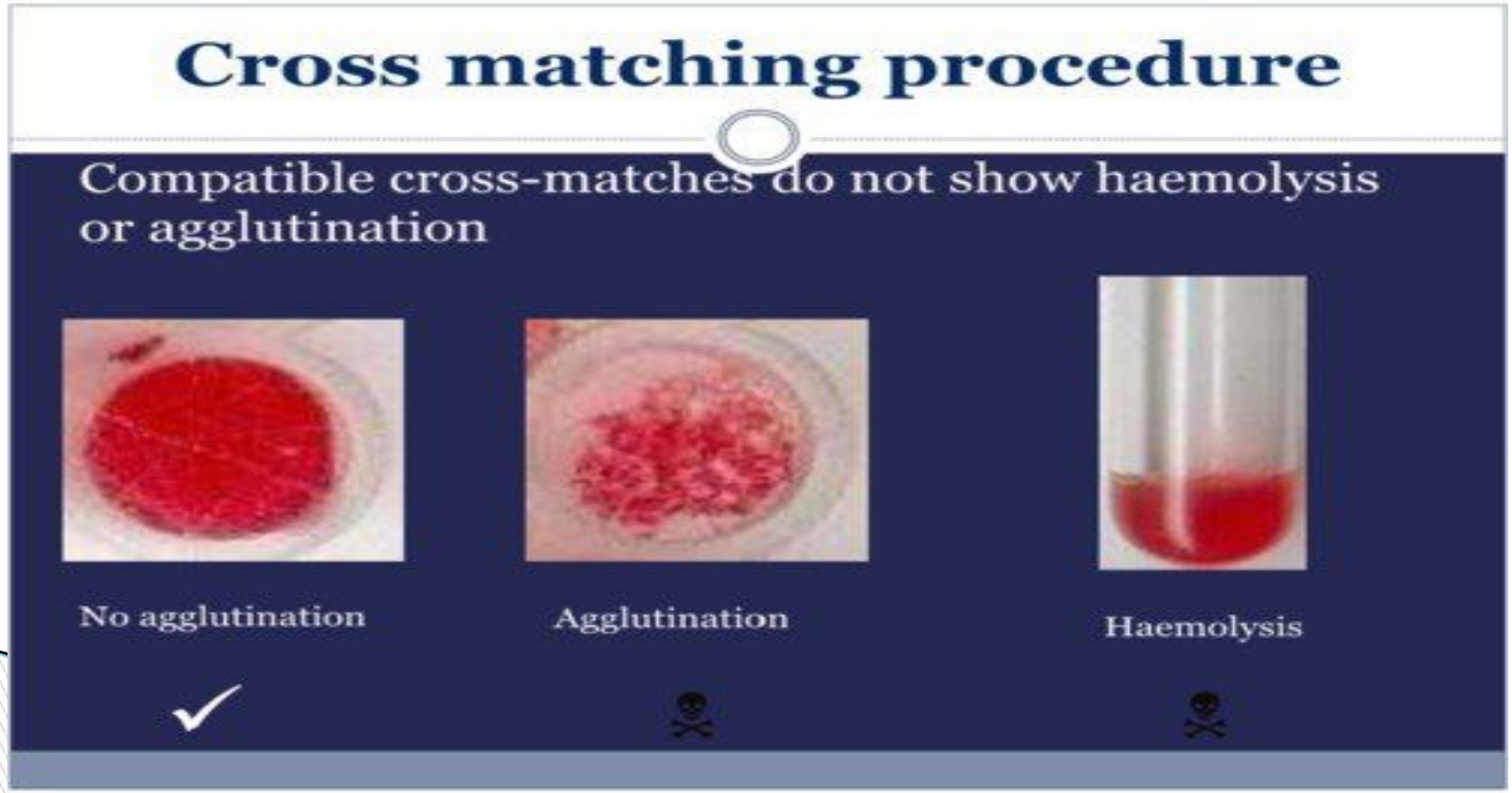
AHG (Indirect Anti globulin) Cross match

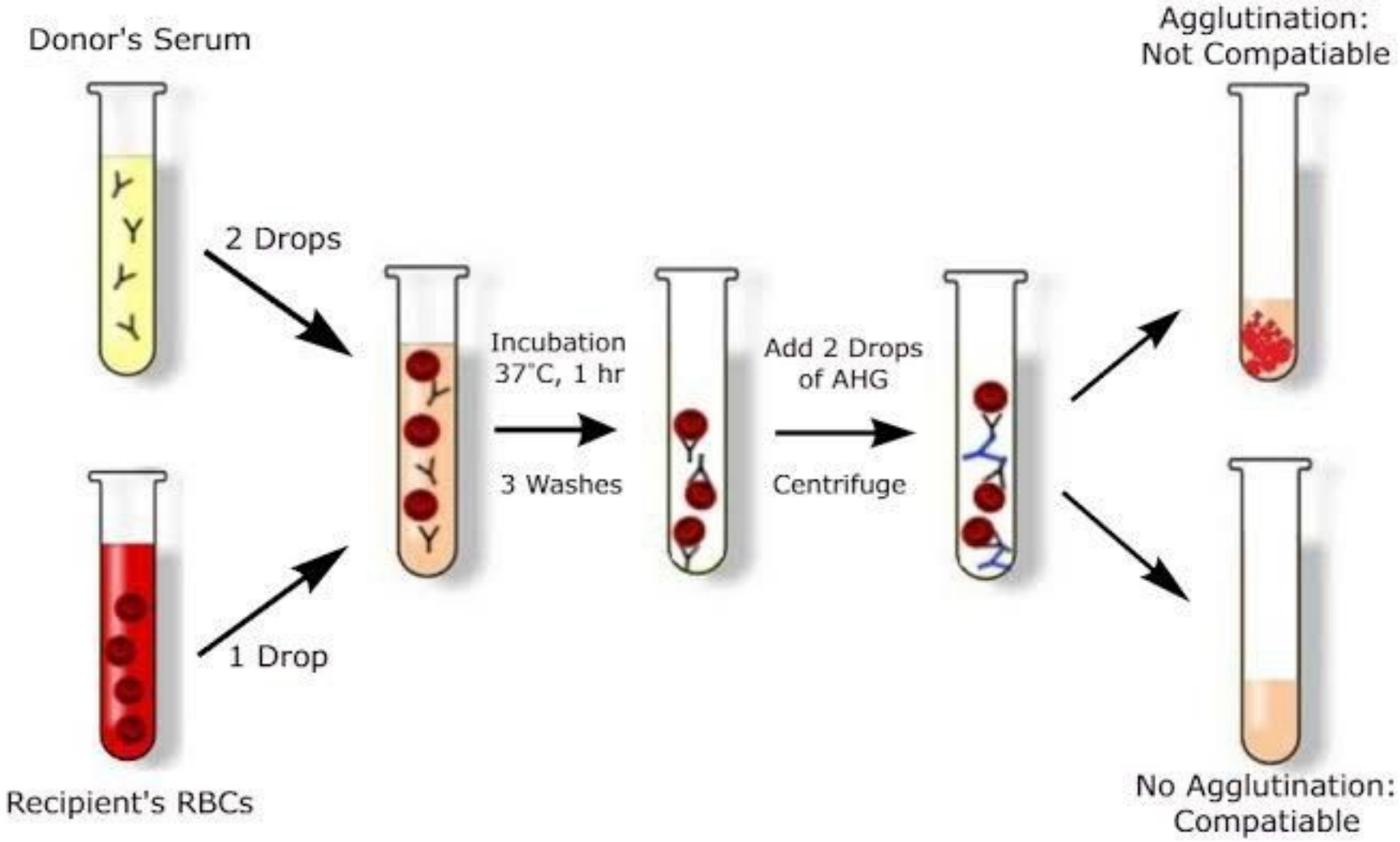
- Incubate serum and RBCs at 37°C.
- Wash cells and add AHG reagent.
- Detects clinically significant IgG antibodies.



Interpretation of Results

- No agglutination = Compatible.
- Agglutination or hemolysis = Incompatible.




Donor's Serum
2 Drops
1 Drop
Recipient's RBCs
Incubation
37°C, 1 hr
3 Washes
Add 2 Drops
of AHG
Centrifuge
Agglutination:
Not Compatiable
No Agglutination:
Compatiable

Causes of Incompatible Cross match

- ABO mismatch.
- Unexpected antibodies in patient serum.
- Technical errors (mislabeling, improper cell suspension, incorrect reagent use).

Table 10–3 Suggested ABO Group Selection Order for Transfusion of RBCs

RECIPIENT ABO GROUP	1st CHOICE	2nd CHOICE	3rd CHOICE	4th CHOICE
AB	AB	A	B	O
A	A	O		
B	B	O		
O	O			

Electronic Crossmatch

- Computer-based validation of ABO/Rh compatibility.
- No serologic testing required when criteria are met.

- Which blood group person has neither antigen on his red cells ?
- In which type of cross matching , recipient's serum is mixed with donor's red cells?

References

- AABB Technical Manual, 20th edition.
- Harmening, Modern Blood Banking and Transfusion Practices, 7th edition.