

SNS COLLEGE OF ALLIED HEALTH SCIENCE

Affiliated to The Tamil Nadu Dr MGR Medical University, Chennai

DEPARTMENT OF CARDIOPULMONARY PERFUSION CARE TECHNOLOGY

COURSE NAME: Physiology

UNIT I : Blood

TOPIC: Blood Grouping & Rh Factor

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Empathize - Why Blood Groups Matter

Patients:

Concerned about safe transfusions or pregnancy complications (e.g., Rh incompatibility).
Confused by terms like “O-negative” or “Rh-positive.”

Clinicians:

Need accurate blood group data for transfusions, surgeries, and prenatal care.
Want tools to explain blood types to patients.

Donors:

Curious about their blood type's impact on saving lives.

Why It Matters: Blood groups and Rh factor are critical for safe medical interventions.

Define - Blood Groups and Rh Factor Basics

- **ABO Blood Groups:**

- Determined by antigens (A, B, or none) on red blood cells.
- Types: A, B, AB, O (O has no antigens, universal donor).

- **Rh Factor:**

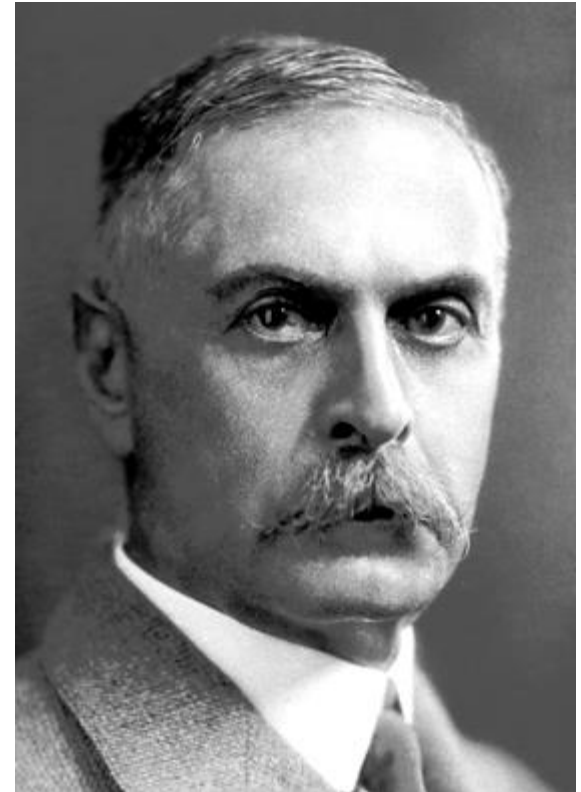
- Protein (D antigen) on red blood cells; Rh-positive (has D) or Rh-negative (lacks D).
- Key in transfusions and pregnancy (e.g., Rh incompatibility risks).



Define - Blood Groups and Rh Factor Basics

- Landsteiner's Law explains the fundamental principle behind the ABO blood group system and safe blood transfusions. The law states:

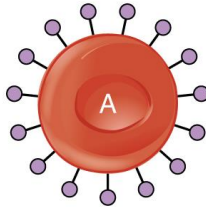
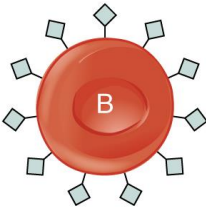
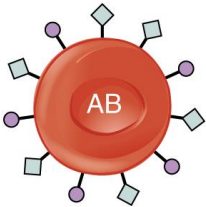
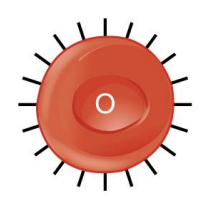
“If an antigen is present on the red blood cells, the corresponding antibody will be absent in the plasma; if an antigen is absent on the red blood cells, the corresponding antibody will be present in the plasma.”



Ideate - Creative Ways to Educate About Blood Groups

Brainstorm questions about

- Universal Donor
- Universal Recipient
- Importance of Blood Donation
- What does Rh-negative mean for baby?
- Benefits of Blood Donation

	Blood Type			
	A	B	AB	O
Red Blood Cell Type				
Antibodies in Plasma	 Anti-B	 Anti-A	None	 Anti-A and Anti-B
Antigens in Red blood Cell	 A antigen	 B antigen	 A and B antigens	None
Blood Types Compatible in an Emergency	A, O	B, O	A, B, AB, O (AB ⁺ is the universal recipient)	O (O is the universal donor)

Prototype - Blood Type Identification

- Draw two (or three, if including Rh) separate circles on a clean glass slide.
- Place a drop of Anti-A serum in the first circle and a drop of Anti-B serum in the second circle.



Prototype - Blood Type Identification

- Clean the fingertip with an alcohol swab, prick with a sterile lancet, and wipe away the first drop of blood.
- Allow a fresh drop of blood to fall into each circle containing the reagents.
- Use separate toothpicks or sticks to gently mix the blood with the Anti-A and Anti-B reagents in each circle.



Test – Interpretation of Blood Report

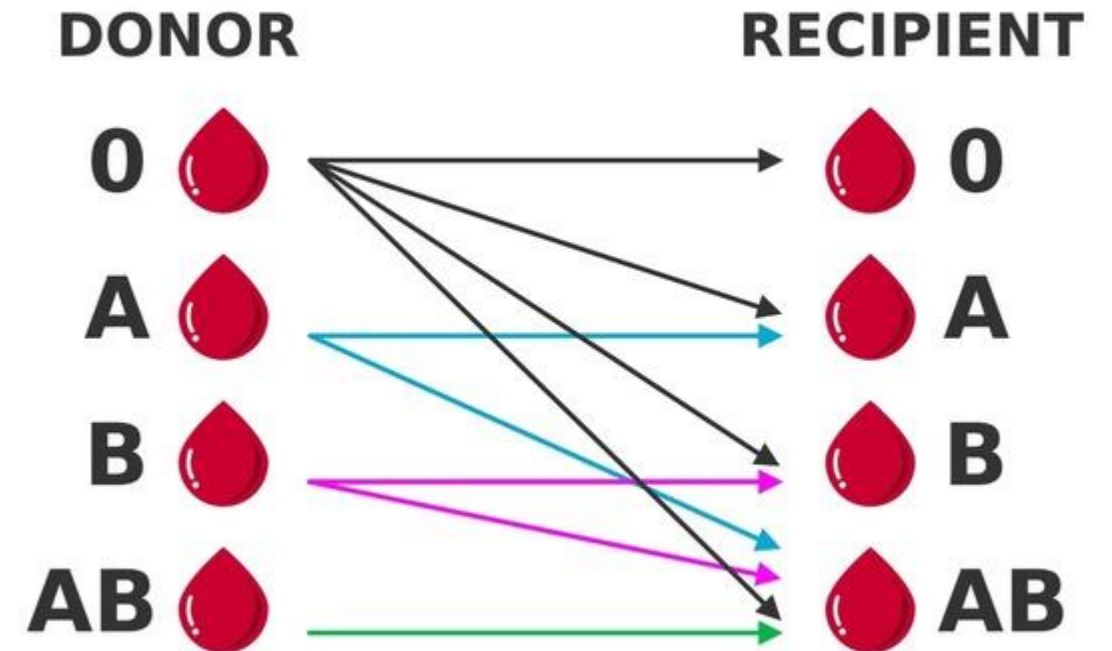
After about a minute, observe each circle for agglutination (clumping).

Clumping with Anti-A only = Blood group A

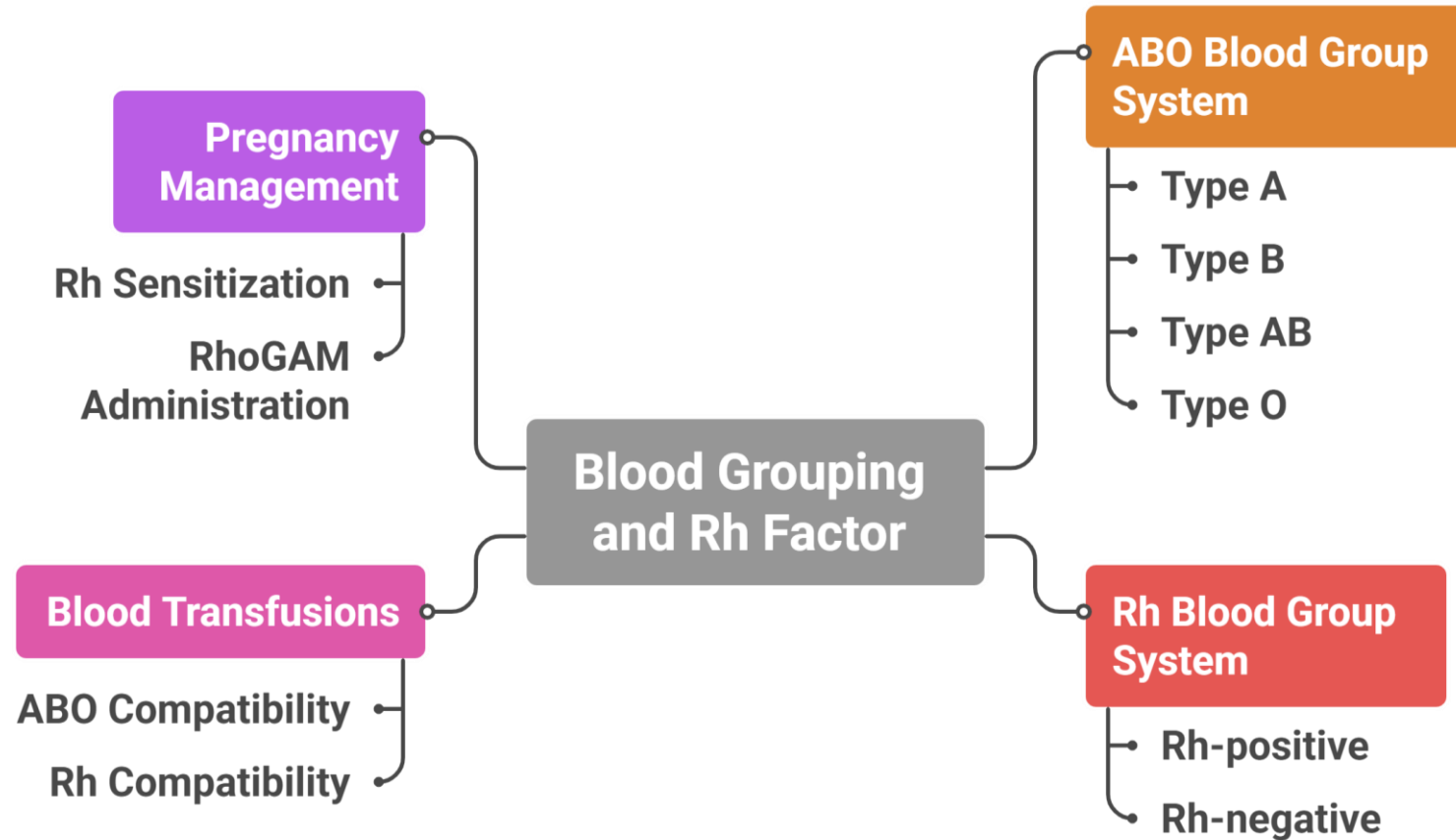
Clumping with Anti-B only = Blood group B

Clumping with both = Blood group AB

No clumping = Blood group O



Summary



References

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