

Blood transfusion Physiology

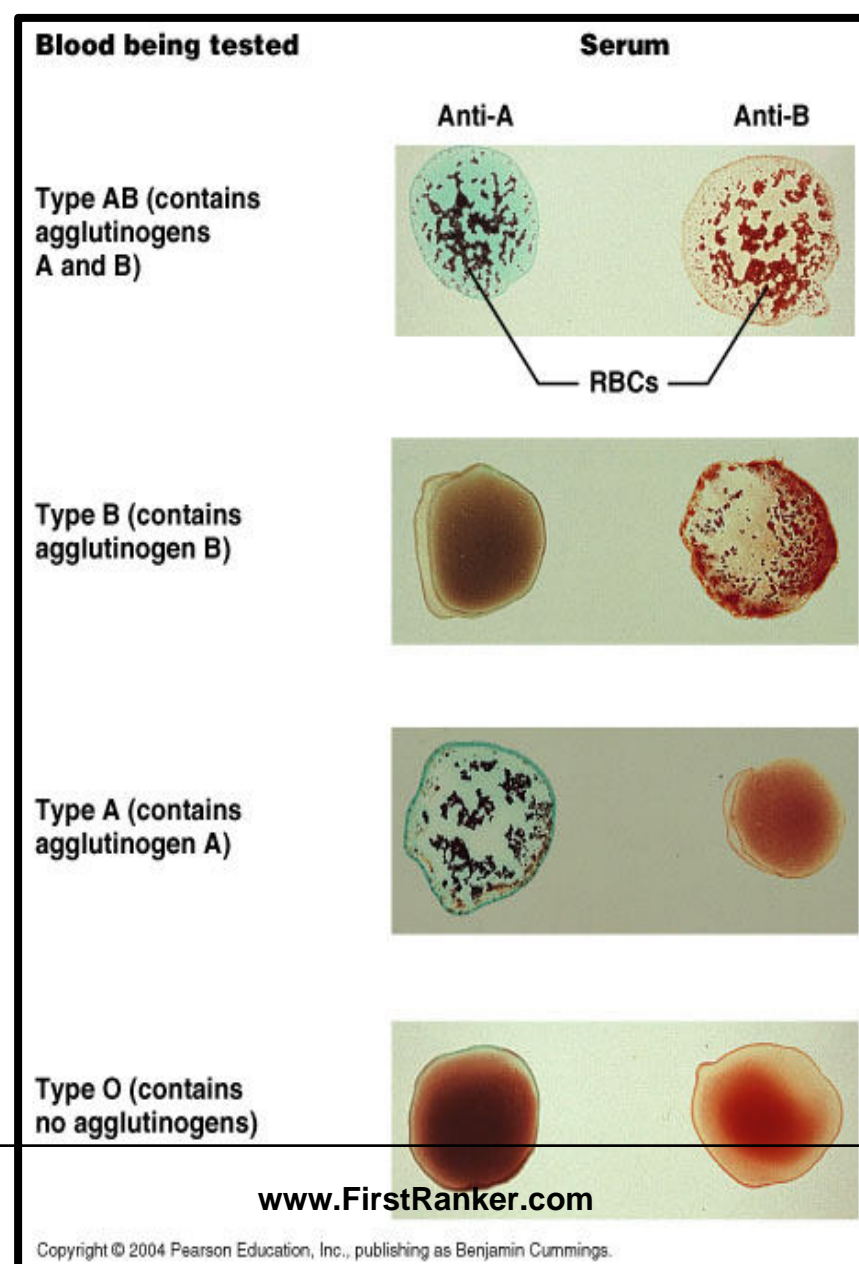
Learning Objectives

- Blood transfusions - basis of blood typing, Cross matching
- Blood Storage in blood bank
- Who can be a blood donor
- Complications of Blood transfusions (transfusion reactions)
- Blood components

What is blood transfusion

- The transfer of blood or blood components from one person (the donor) into the bloodstream of another person (the recipient)

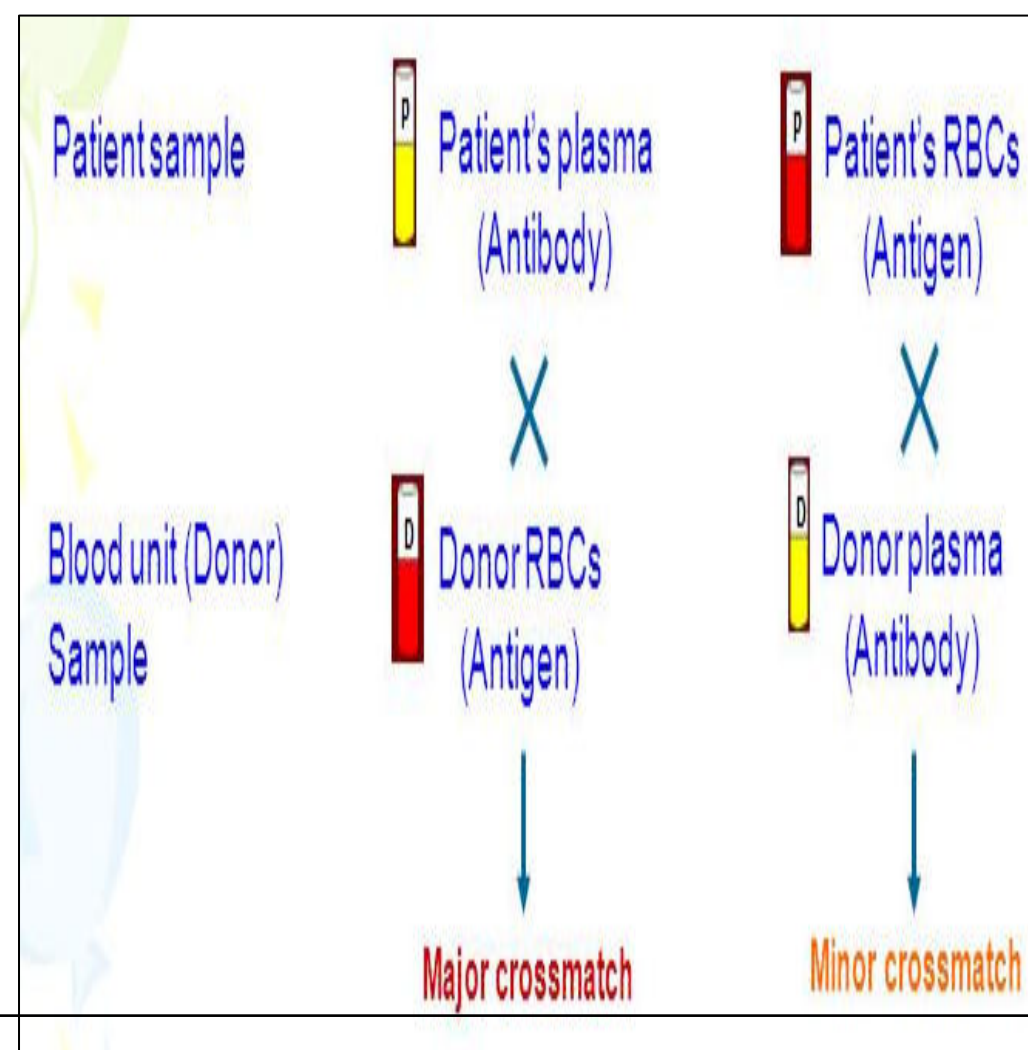
Blood Typing



Cross Matching

- Cross Matching is a procedure performed prior to a blood transfusion to detect incompatibilities between the donor and recipient.

Cross Matching



Indication of blood transfusion

Many times, blood transfusion might not be without hazards, so the risk should be weighed out against benefit.

The dictum is - **TO USE BLOOD PRODUCTS ONLY WHEN NO OTHER ALTERNATIVE IS LEFT**

Blood Donation : Who Can Give Blood?

Basic Eligibility Guidelines

Age:

Weight:

Hb:

Serum Transmitted Disease patient :

Vaccination:

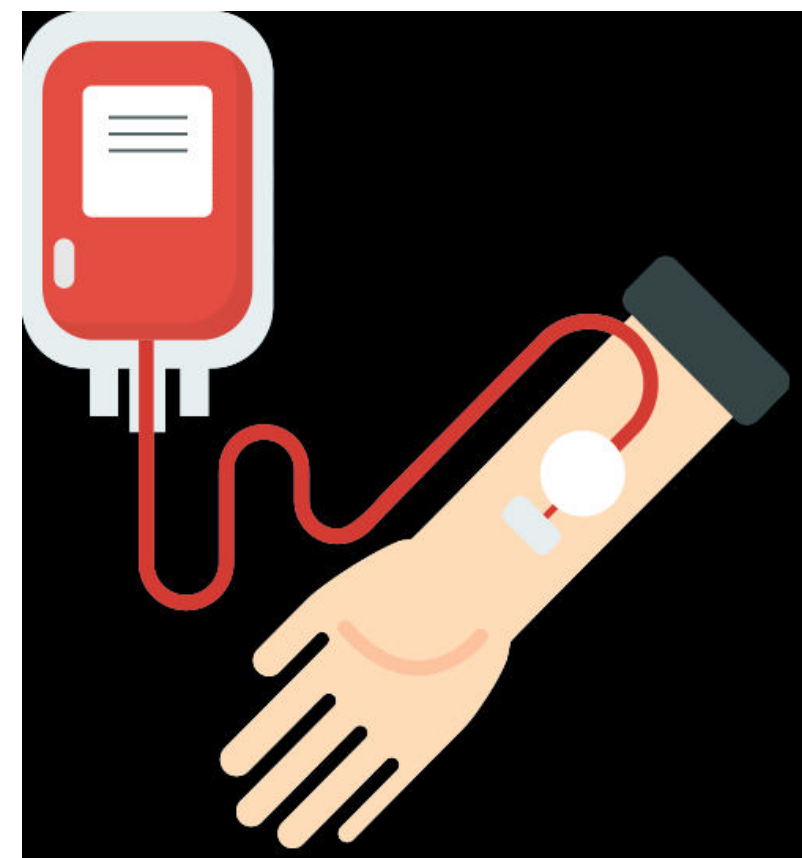
High Blood Pressure:

Diabetes:

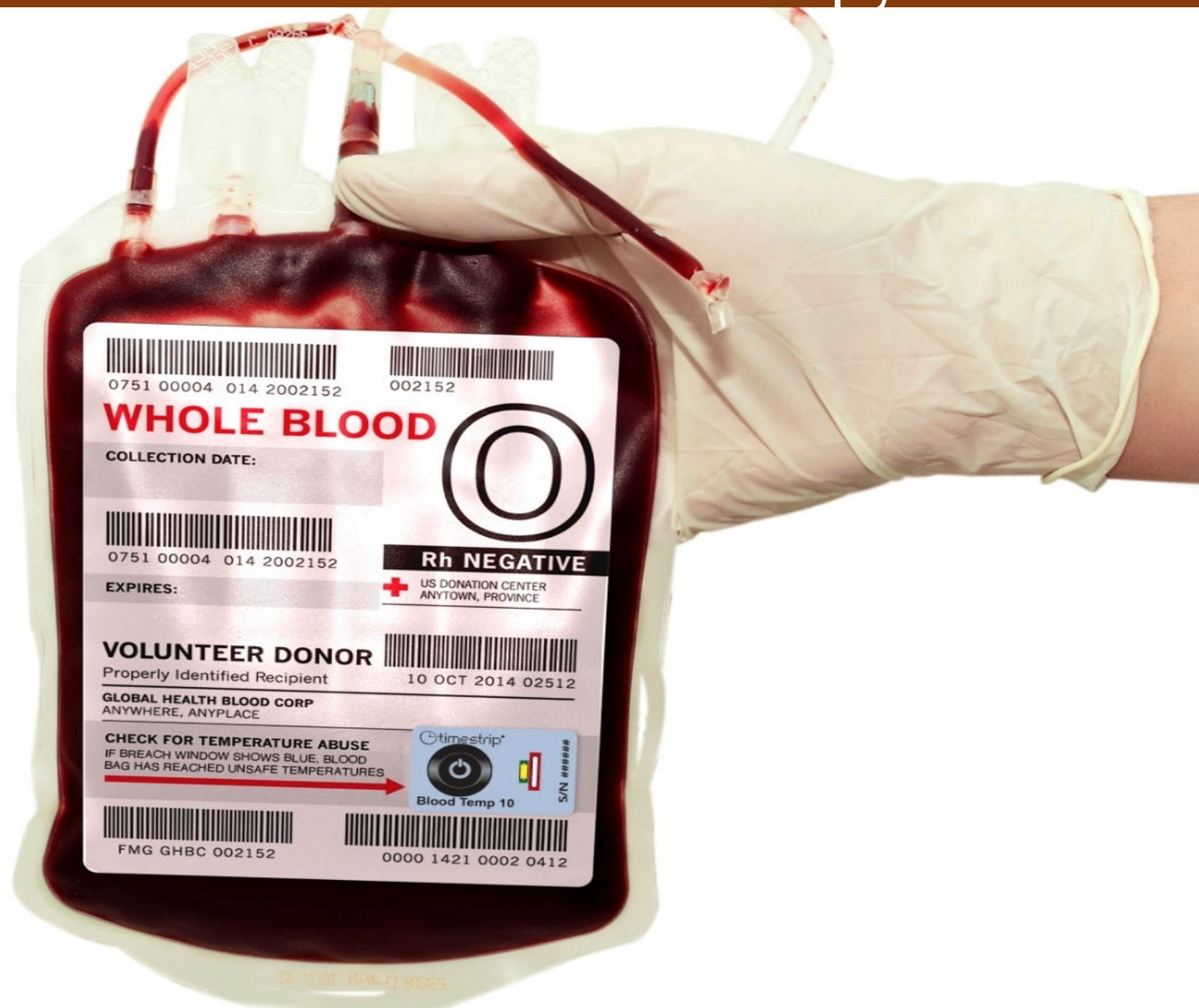
Cold and Flu:

Diet:

Tattoos and Piercing:



Blood Transfusion Therapy



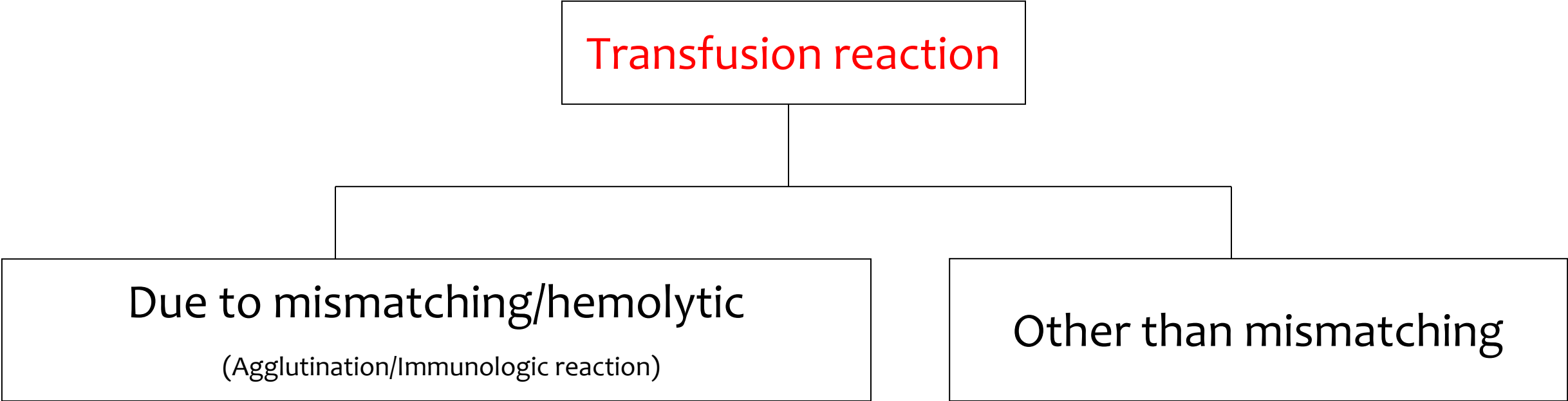
Storage of blood

Blood should be tested for Blood/Serum Transmitted Diseases (STDs) before storage

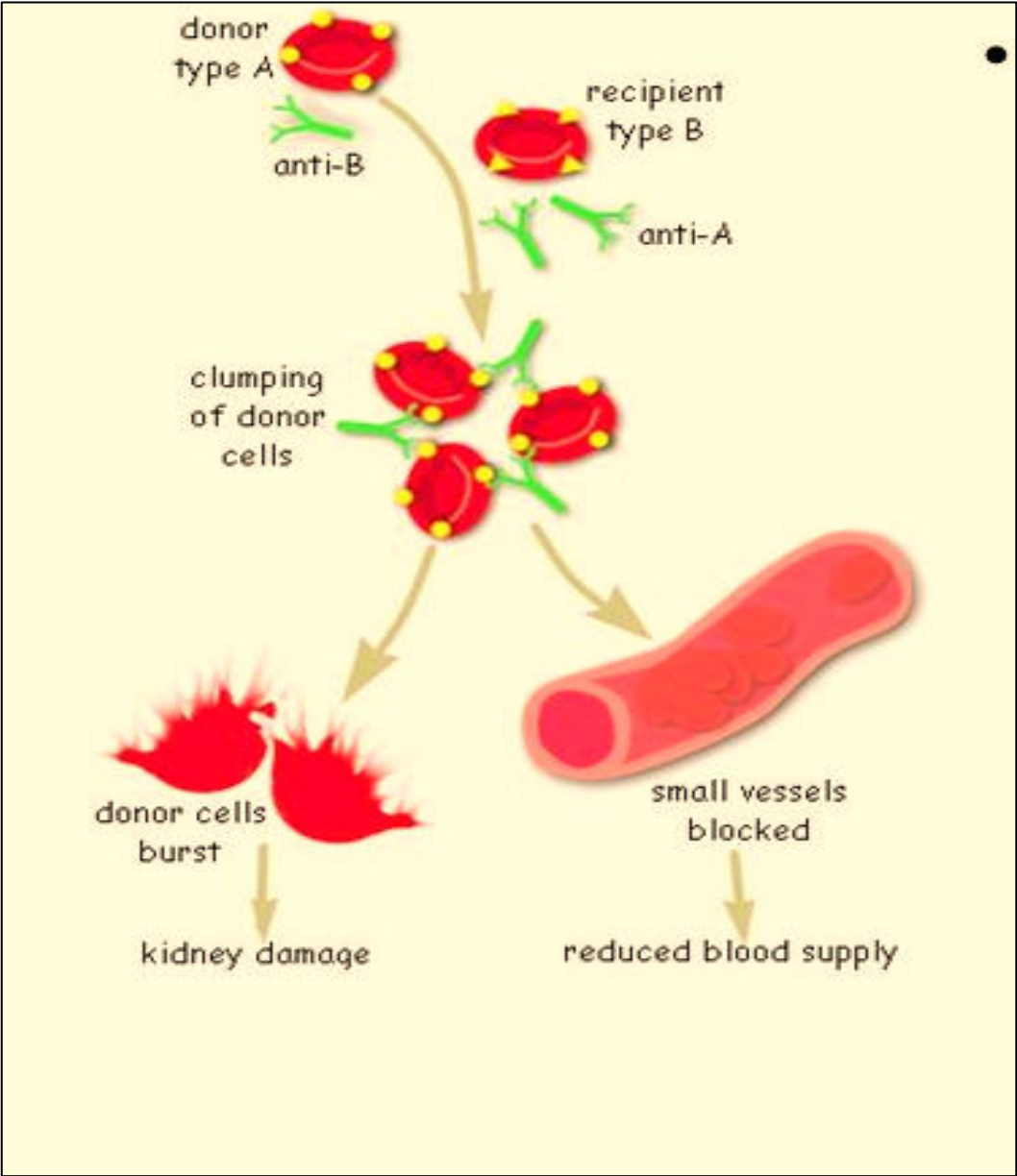
Storage of blood

	CPDA-1
Tri sodium citrate (g)	26.35
Citric acid (g)	3.27
Dextrose (g)	31.90
Monobasic sodium phosphate (g)	2.22
Adenine (g)	0.27
Distilled water (ml)	1000
Preservative (ml) / 100ml blood	14
Storage at 2-6 °C	

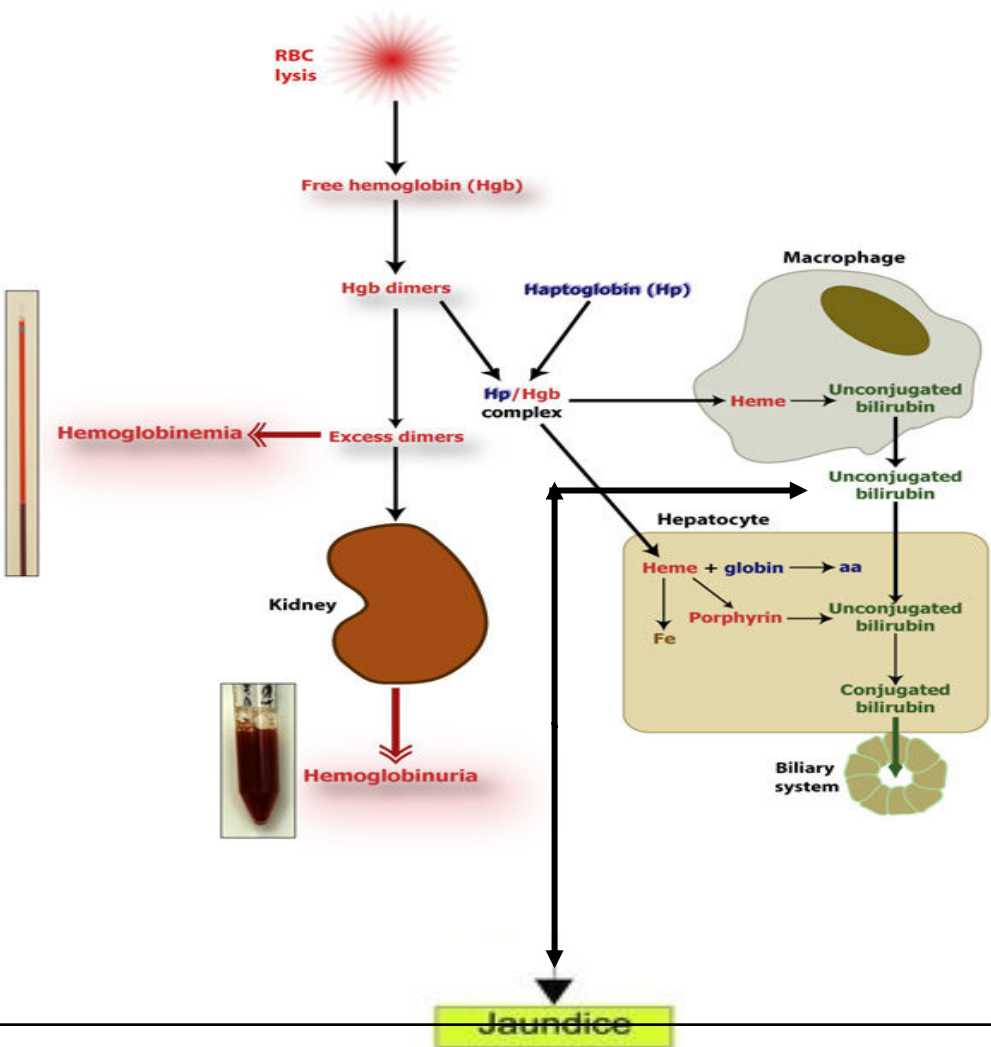
Hazards of blood transfusion



Hemolytic Transfusion Reactions (HTR)



Hemolytic Transfusion Reactions (HTR)



Non-Hemolytic Transfusion Reactions (NHTR)

Mild Allergic Reactions

Anaphylactic Shock

Spread of Serum Transmitted Disease

Transfusion of Blood Components

Transfusion of 'Blood Components' is –

When, specific portion or fraction of blood that is lacking in a patient is transfused.

Advantages of blood component therapy

Avoids the risk of sensitizing the patients to other blood components.

Provides optimal therapeutic benefit while reducing risk of volume overload.

Increases availability of needed blood products to larger population.

Thus it is a safe and low risk procedure

Self Assessment

Critical Thinking Questions

1. Following a motor vehicle accident, a patient is rushed to the emergency department with multiple traumatic injuries, causing severe bleeding. The patient's condition is critical, and there is no time for determining his blood type. What type of blood is transfused, and why?
2. In preparation for a scheduled surgery, a patient visits the hospital lab for a blood draw. The technician collects a blood sample and performs a test to determine its type. She places a sample of the patient's blood in two wells. To the first well she adds anti-A antibody. To the second she adds anti-B antibody. Both samples visibly agglutinate. Has the technician made an error, or is this a normal response? If normal, what blood type does this indicate?

Self Assessment

1. The process in which antibodies attach to antigens, causing the formation of masses of linked cells, is called-
 - A. sensitization
 - B. coagulation
 - C. agglutination
 - D. hemolysis
2. People with type O blood group -
 - A. have both antigens A and B on their erythrocytes
 - B. lack both antigens A and B on their erythrocytes
 - C. have neither anti-A nor anti-B antibodies circulating in their blood plasma
 - D. are considered universal recipients
3. Hemolytic disease of the newborn is a risk during a subsequent pregnancy in which:
 - A. a type AB mother is carrying a type O fetus
 - B. a type O mother is carrying a type AB fetus
 - C. a Rh⁺ mother is carrying an Rh⁻ fetus
 - D. a Rh⁻ mother is carrying a second Rh⁺ fetus

Thank you

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