



Blood Transfusion

NOTE : THIS TEAMWORK DON'T VIEW EVERYTHING IN THE SLIDES ONLY THE IMPORANT THINGS NOTED BY THE DOCTORS

Color coding

■ **important**

■ Extra info

■ Notes from lecturer

دعاء قبل المذاكرة :

(اللهم أني أسالك فهم النبيين و حفظ المرسلين و الملائكة المقربين اللهم اجعل السنتنا عامرة
بذكرك و قلوبنا بخشيتك، أنك على كل شيئ قدير و حسبنا الله نعم الوكيل)

Please don't hesitate to contact us on: Haematology434@gmail.com

Blood donors

Voluntary donors

- -outdoor voluntary
- -hospital staff
- -recruitment campaigns

Involuntary donors

- -Relatives admitted for selective surgery and normal delivery
- -relatives for emergency blood transfusion
- -driving licenses

Directed blood donation

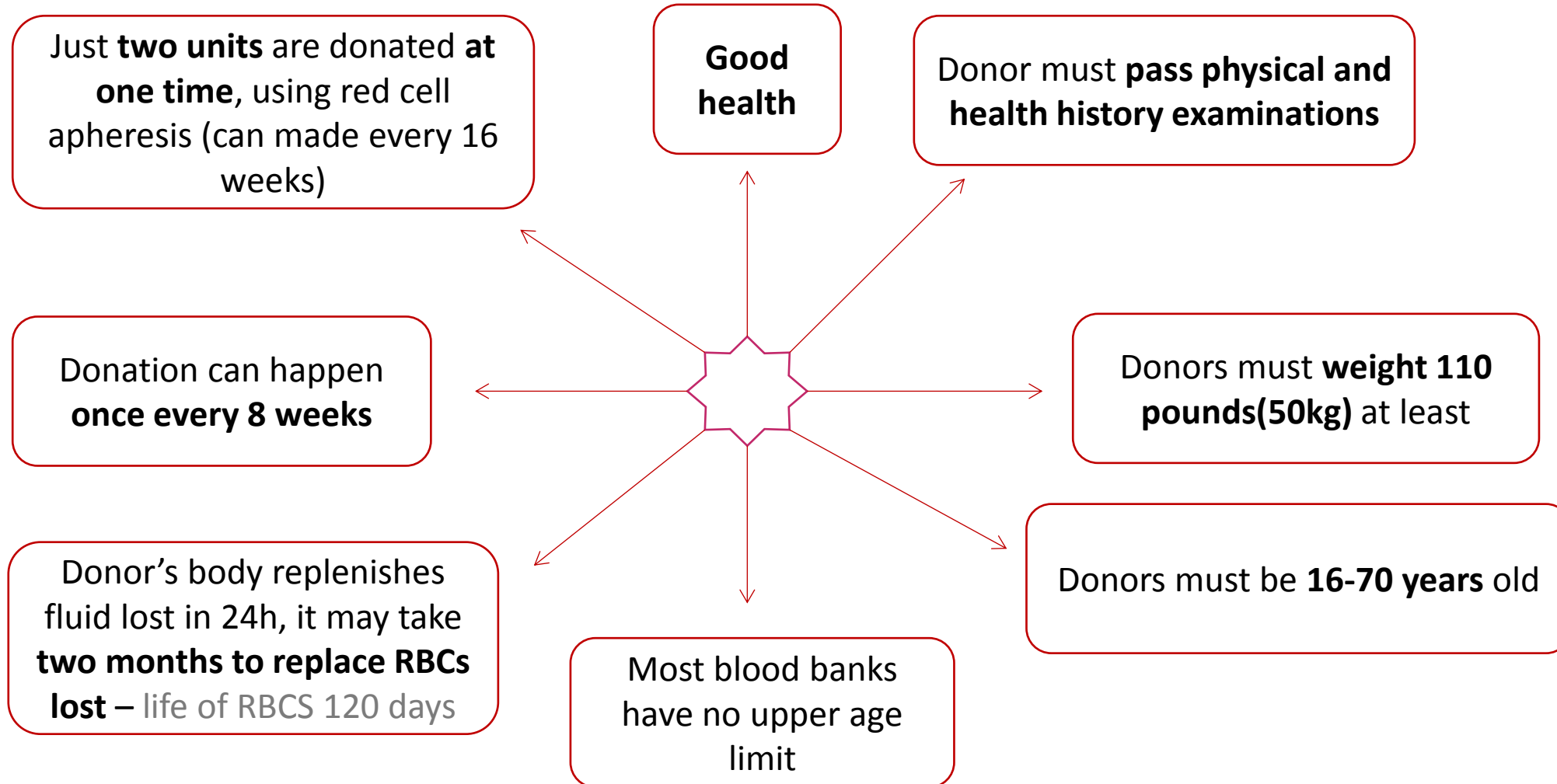
- -close relatives on there request

Autologous donation

- -patient can donate 4 units in a month before surgery
- -(2-3) units can obtained from patient immediately before surgery (Acute normovolaemic haemodilution)
- -salvage of the blood lost during surgery with special device
- -combination of the above methods)

-Acute normovolaemic haemodilution: whole blood removed while circulating volume is maintained acellular fluid.
-heamodilution: increase in plasma volume in relation to RBCs reduced concentration of RBCs in the circulation.
-salvage: heavy blood during operation is collected to be reinfused.

The criteria for blood donors



Who should not donate

Anyone used intravenous drugs(illegal)
increased risk for HIV, hepatitis

Men had sexual contact with other men
increased risk for HIV, hepatitis B

Who received clotting factor concentrate

Positive HIV test (aids virus)

Men & women who had sex for money and drugs

Who has had hepatitis

Those who may be deferred

Who took tegison for psoriasis

risk factor for cruetzfeldt-jacob disease (CJD) جنون البقر

Who has immediate family member with CJD

Who has risk factor for vCJD

-anyone spent three months or more in UK from
1980-1996 (CJD)

-anyone spent five years in europe from 1980 till now
(CJD)

Temporary deferred

Active disease under treatment	Any infectious disease
For one month	Rubella vaccination (German measles)
For six weeks	Following delivery
For Two Months	Recent blood donation
For One Year	Hepatitis B vaccine, rabies vaccine, close contact with viral hepatitis patient, tattoo patient
For Three Years	Immigrant coming from malarial endemic area, one who had diagnosis of malaria

Medication deferral list

If the donor now taking or if he has EVER taken any of these medications:

1- any drugs for prostatic, psoriasis, baldness or acne diseases.

2-growth hormone from human pituitary glands (CJD) possibility

3-insulin for diabetes

4-hepatitis B globulin

5-unlicensed vaccine

Types of anti-coagulants:

Types	Contains	Store	Duration	Notes
ACD-A(NIH-A)	Citrate dextrose water	RBCs	21 days	67.5 ml of the solution are mixed with 450 of blood
CPD	Citrate-phosphate-dextrose	RBCs	28 days	Same
		Platelet	3 days	
CPDA-1	Citrate phosphate dextrose adenine	RBCs	35 days	Same
		Platelet	5 days	
Optisol AS-s	CPDA-1 + optisol	RBCs	42 days	--
(CPDA-2) + Optisol	Citrate-phosphate-dextrose + optisol	RBCs	42 days	Same
		Platelet	5 days	

Anti-coagulants are substances mixed with the donated blood in the donation bags inside a special shaking machine to prevent coagulant of the blood.

Blood groups

RBC membranes have glycoprotein “antigens” on their external surfaces, (Presence or absence of these antigens is used to classify blood groups).

Blood groups classified by different systems, the most important two systems are: ABO & Rh

ABO system

- 4 main phenotypes (A,B,AB,O)
- ABO gene located on long arm “q” of chromosome 9
- universal donors “O”
- universal recipient “AB”
- A has galactos-amine group, B has galactose .
- most common O Rh-positive “38%”, the most rare AB Rh-negative “1%”.

Blood Group	Antigens on RBCs	Antibodies in Serum	Genotypes
A	A	Anti-B	<i>AA or AO</i>
B	B	Anti-A	<i>BB or BO</i>
AB	A and B	Neither	<i>AB</i>
O	Neither	Anti-A and anti-B	<i>OO</i>

Rh system

“Rh is an antigen on the RBC”
Presence or absence of the Rhesus antigen on the surface of RBCs determine:
-Rh-positive “has the antigen”
-Rh-negative “doesn’t have the antigen”

Blood transfusion

(Blood Compatibility Testing
“Crossmatch test”)

This test should be done before blood transfusion

1) Cross match test
mixing RBCs of the donor with plasma of the recipient **if there is no reaction that means transfusion could be done.**

Even if you know the blood group of donor and recipient. Except in emergency situations like giving O(-)

Two terms used in this test:

Term	Means
Front Type	antigens ("flags") in the ABO blood group system are on the patient's Red Blood Cells
Back Type	Antibody in the patient's serum

Other tests

For understand

Specific tests on donated blood	tests for all units	test before transfusion
<ul style="list-style-type: none"> •Hepatitis B surface antigen (HBsAg). •Hepatitis B core antibody (anti-HBc) •Hepatitis C virus antibody (anti-HCV). •HIV-1 and HIV-2 antibody (anti-HIV-1 and anti-HIV-2). •HTLV-1 and HTLV-II antibody (anti-HTLV-I and anti-HTLV-II). •Serologic test for syphilis, VDRL, RPR, TPHA. •Nucleic acid amplification testing (NAT) for HIV-1 and HCV. •NAT for WNV. •G6PD test. •Sickle cell test. 	<ul style="list-style-type: none"> •ABO group and Rh type •Screening for blood-group antibodies •Serologic test for syphilis •Serologic tests for human retroviruses including: <ul style="list-style-type: none"> •HIV-1 antibody •HIV-2 antibody •HIV p24 antigen •HTLV I antibodies •Serologic tests for hepatitis including: <ul style="list-style-type: none"> •Hepatitis B core antibody (HBcAb) •Hepatitis B surface antigen (HBsAg) •Hepatitis C antibody 	<ul style="list-style-type: none"> •Determination of the blood type with a crossmatch (between patients serum and donor red cells). •Antibody screening on patients sera. (indirect comb's test) •Directs comb's test on (donors red cells and patients red cells) •Screening for antibodies that may produce adverse effects if transfused. •Screening for possible infectious agents that could be transmitted with transfusion.

Blood components

Preparation :

After donation the blood bags should be putted in Cytospin to separate the blood components.

- **RBCs stored under refrigeration for a maximum of 42 days, or maybe frozen for up to 10 years (new mechanisms).**
- **Platelets are stored at room temperature with continuous agitation and may be kept for a maximum of five days.**
- **Plasma is kept in a frozen state (-70oC) for usually up to one year.**

❖ **1-Which one of these is involuntary donor:**

- ❖ A- outdoor
- ❖ B- hospital staff
- ❖ C- for driving license
- ❖ D- close relatives on their request

❖ **2- which one is not the criteria of blood donation:**

- ❖ A- three units can be donated at one time
- ❖ B- maximum 16 years old
- ❖ C- donation once every eight weeks
- ❖ D- less than 50 Kg

❖ **3- who should not donate blood:**

- ❖ A- who used intravenous drugs
- ❖ B- positive HIV test
- ❖ C- who had hepatitis
- ❖ D- all of the above

❖ **4-who has following delivery is deferred for**

- ❖ A- one month
- ❖ B- nine months
- ❖ C- four weeks
- ❖ D- six weeks

❖ **5-CPD anticoagulant stores :**

- ❖ A- RBCs
- ❖ B- Platelet
- ❖ C- both of them
- ❖ D- none of them

❖ **6-the most common blood type:**

- ❖ A- B Rh-negative
- ❖ B- O Rh-positive
- ❖ C- A Rh-positive
- ❖ D- AB Rh-negative

1- C

2- A

3- D

4- D

5- C

6- B

Q1 How many days the RBCs, Platelet or the plasma can be stored?

- RBCs can be stored up to 42, or it may stored up to 10 years by new mechanisms
- Platelet can be stored up to 5 days
- Plasma can be stored up to 1 year(with clotting factors)

Q2 how can crossmatch test be done ?

mixing RBCs of the donor with plasma of the recipient if there is no reaction that means transfusion could be done.

Q3 what the difference between A and B blood group ?

- A has galactose-amine group
- B has galactose

Thank you for checking our work

Now you can check a lecture out :D

Done by:

Khalil alhindas

Salih albnyan

Abdulrahman alnoaem

Mohammed albadrany

Reviewed by:

Hadeel B.Alsulami

Abdullah M.albasha



دعاء بعد المذاكرة :

(اللهم اني أستودعتك ما قرأت وما حفظت وما تعلمت، فرده لي عند حاجتي
اليه أنك على كل شيء قدير، وحسبنا الله ونعم الوكيل)