Sawa University

Blood transfusion
1st semester

APHERESIS

Sawa University

College of health and medical techniques

Department of Medical Laboratories

Stage 4th

جامعـــــــة ســـــــاوة

الاهلية

كليـــــة التقنيـــات الصحيـة

والطبيـة

قسم تقنيات المختبرات الطبية

المرحلـــــــــــــة:4

الجانب العملي محاضرة رقم 7

Practical Lecture No .7

تدريسي المادة : د. هبة محمد عبدالواحد

Definition

Apheresis is derived from a greek word meaning “to take away”.

Separation & removal of specific blood component from donor/ patient by passing his blood through a medical device then return the remaining blood to the donor/ patient.

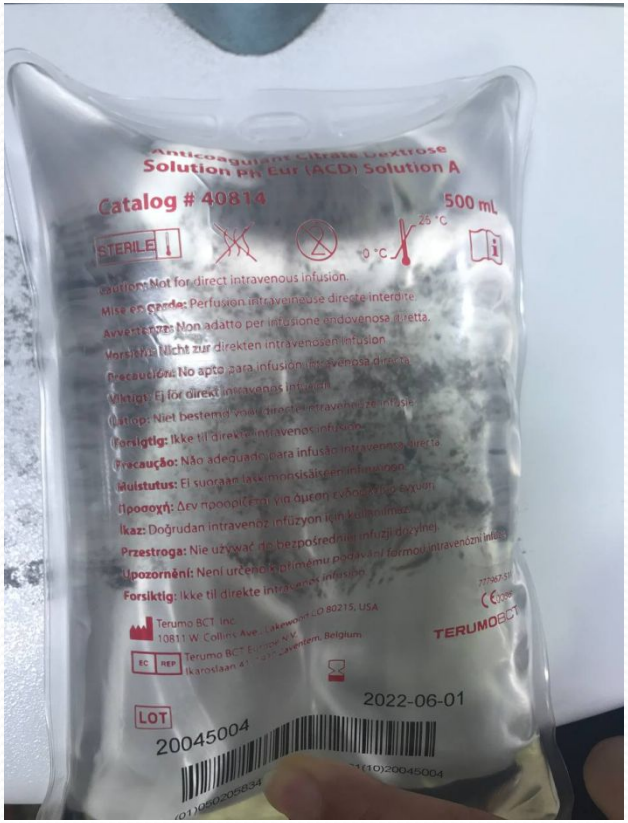
- Apheresis, automated technology.
- Performed by centrifugation.
- Computerized control panel allows to select the desired component.
- Disposable equipment; sterile single use tubing sets, bags & collection chamber.
- Donor/ patient, attached to instrument for 45 _ 120 min.

Component

1. Platelet, Plateletpheresis.
2. Plasma, Plasmapheresis.
3. Erythrocyte (RBC), Erythropheresis.
4. Leukocyte (WBC), leukopheresis.
5. Stem cell , stem cell pheresis

Anticoagulation

- **Citrate;** is the primary anticoagulant in apheresis
- Citrate is mixed with the blood immediately as it is removed from the donor's/patient's vein
- Effectively anticoagulate the blood before it enters the machine.




trima
End run
Continue
TERUMOBCT

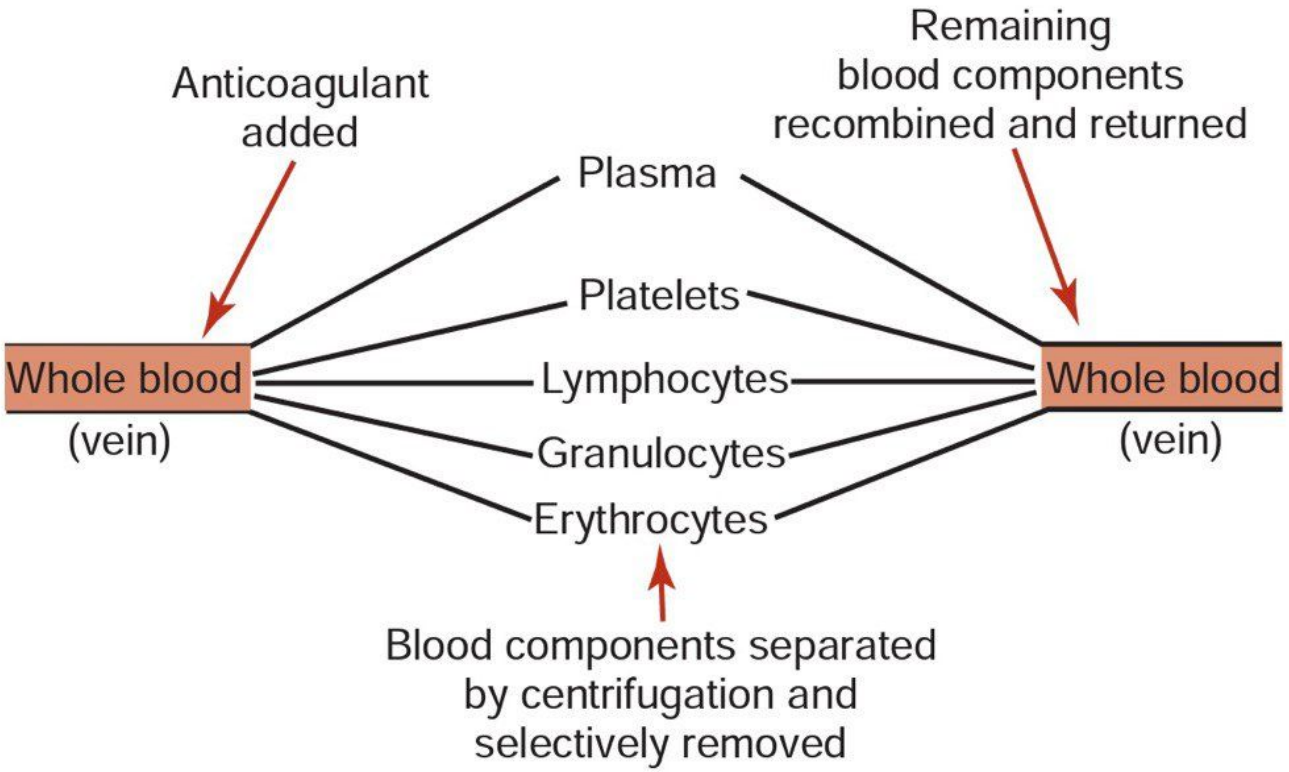


Figure 14–2. Principles of apheresis.

Donation criteria

"Donors for apheresis procedure must meet the criteria applicable as the donors for normal donation.

Donor criteria

1. General physical examination.
2. A minimum age 18 year.
3. Weight: > 50 Kg .
4. Pulse: 60 – 100 bpm.
5. A minimum hemoglobin 12.5 g/dl for women, 13.0 g/dl for men.
6. Temperature; less than or equal to 37.5 C; orally.
7. Blood pressure; Systolic 100 – 140, Diastolic 60 – 90 mmHg.

8. No history or risk factors for infectious disease (hepatitis, HIV, malaria, syphilis).

9. No certain medications, no malignancy or chronic disease.

10. Minimum platelet count of 150 ×10 9\l .

11. donors who have taken aspirin within 2 days of donation should be temporarly deffered.

Donor's test

1. CBC (hemoglobin & platelet count).
2. ABO and Rh typing
3. Antibody screening
4. Testing for transfusion transmitted diseases:

    HIV1 & 2

    Hepatitis B & C

    HTLV 1& 2

    Syphilis

Table 14–2 Donation Frequency

APHERESIS COMPONENT COLLECTED	FREQUENCY OF DONATION*
2RBC	16 weeks
Plasma (frequent)	Every 2 days (no more than two times in 7 days)
Plasma (infrequent)	Every 4 weeks (no more than 13 times/year)
Platelets, single apheresis unit	Every 2 days (no more than 2 times in 7 days; no more than 24 times in 12 months)
Platelets, double or triple apheresis unit	Every 7 days
Granulocytes	Every 2 days

2RBC = double unit of red blood cells.

* Donation frequency will vary, based on red cell loss and if more than one type of component is collected concurrently. Donation frequency may be often if for a specific medical reason and is approved by the blood bank medical director.

Types of apheresis

1.Therapeutic (for patient), to remove blood component thought to contribute a disease state.

2. Non therapeutic (from healthy donor).

- Single component as RBC, WBC, plasma, or platelet.
- Multicomponents as RBC & plasma.


Draw in progress
End run
5.0 x 10
0.0 x 10
TERUMOBCT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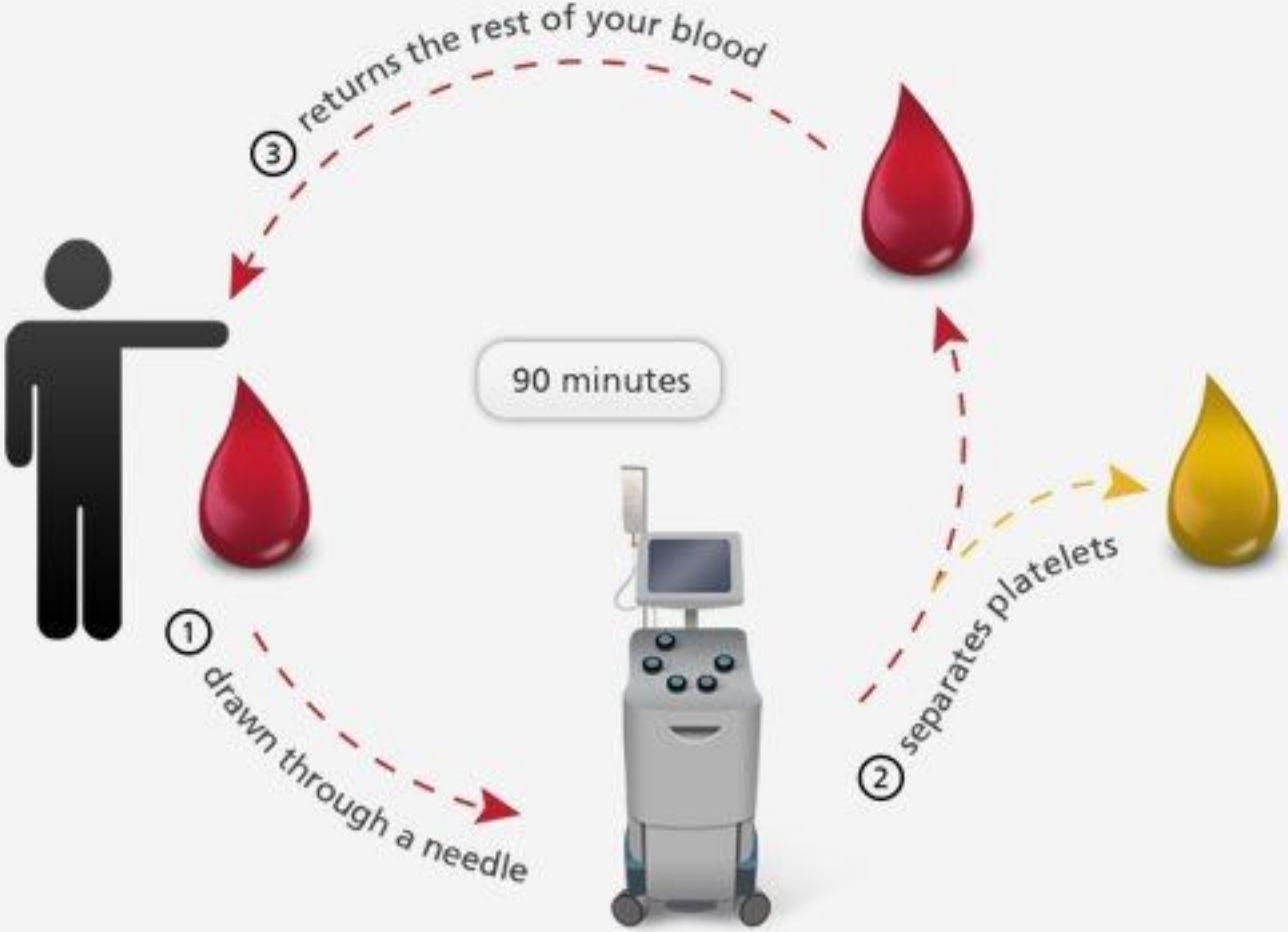
3 returns the rest of your blood
90 minutes
1 drawn through a needle
2 separates platelets

Adverse effects of apheresis

- Citrate toxicity.
- Vascular complication: sepsis, neuropathy, phlebitis.
- Allergic reaction.
- Hemolysis.
- Hematoma.
- TTIs.
- Depletion of clotting factors.
- Depletion of proteins & immunoglobulin.

- Q/ what are the blood components that can be prepared by apheresis machine?
- Q/ enumerate the types of apheresis?
- Q/ the best anticoagulant used for apheresis procedure?

References

1. Modern Blood Banking and Transfusion Practices.
2. AABB Technical Manual.


thanks
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