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How to avoid complication of blood trans fusion

❖ Precautions during collection of blood

1. Good selection of the donor (examination and tests to avoid AIDS & hepatitis).
2. Sterilized apparatus and bottle (to avoid infections and febrile reactions).





Standard Precautions

A simple, consistent and effective approach to infection control



Handwashing



Use of gloves



Personal protective equipment



Use of fluid resistant gown or apron



Safe handling of sharps



Safe handling of waste



Safe handling of soiled linen



Environmental cleaning

Minimise contact with blood and body substances by utilising safe work practices and protective barriers.

❖ Precautions during storage and preparation:

1. Anti-coagulation: by addition of specific formulas: .

Previously, ACD (acid - citrate - dextrose)) storage for 1 week.

. Replaced by CPD (citrate - phosphate - dextrose)) storage for 3 weeks.

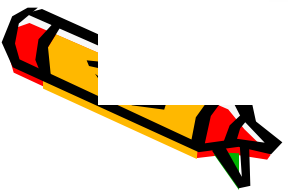
. Recently, SAG-M (saline - adenine - glucose - mannitol)) storage for 5 weeks.

2. Storage at special refrigerator:

. 4oC for blood and packed RBCs. .

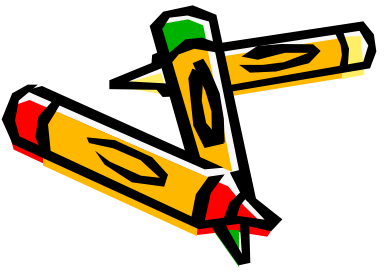
—40oC for plasma and its fractions.





❖ Precautions before transfusion

1. Assurance of the name of the patient and date of storage.
2. Fresh blood transfusion (< 6 hours) is recommended in old age, liver disease renal failure and urgent massive transfusion where the RBCs have temporary reduction to release oxygen to tissue in 24-72 hours
3. Determination of the blood group (direct or indirect method) and Rh antigen.
4. Cross matching between the donor's and recipient's blood.



❖ Precautions during transfusion :

Don't leave blood outside the refrigerator for more than half an hour

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2. Don't heat the blood except in massive transfusion (using special warming devices).

3. Use filter apparatus to prevent:

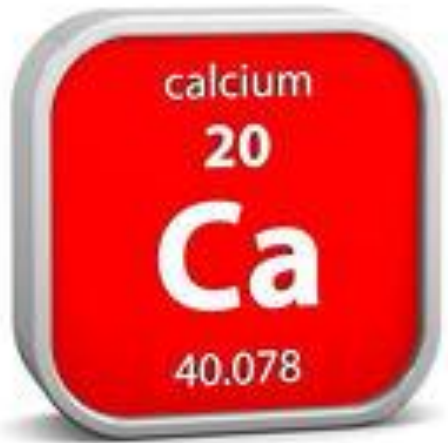
- . Microscopic clots and debris.
- . Platelet aggregation.
- . Abnormal white cell membrane in stored blood.

4. Selection of the site (forearm or dorsum of the hand)

5. Rate of flow > 30 drops / minute allows 500 ml / 8 hours (if there is no acute loss).

6. Give the first 100 ml slowly: detect immediate reactions (febrile or incompatibility)

7. Give calcium ampoule every 100 cc blood



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❖ Precautions to avoid over-transfusion

: continuous monitoring of CVP.

❖ Precaution during massive transfusion to avoid bleeding tendency

Monitoring of clotting should be done by thrombo-elastography in the theater or in the laboratory

Alternatives to homologous blood transfusion



1. Autologous blood transfusion:



- A patient who is going to have a major elective operation, can donate some units of his own blood over several days.

The blood is kept in the refrigerator to be given back to him during surgery.

2. Preservation of the blood lost during surgery & its reinfusion to the patient. This needs a special apparatus



Pathogenesis of renal failure in blood transfusion

- ❖ Mismatched transfusion.
- ❖ Donor blood itself contains sufficient antibodies to hemolyse recipient cells.
- ❖ Intravascular hemolysis leads to an increase in the circulating hemoglobin.
- ❖ The hemoglobin is bound by plasma protein and haptoglobin until the amount exceeds 100 mg/100 ml) circulates in the blood) reaches the kidney.
- ❖ It causes renal tubular necrosis with subsequent acute renal failure



Take-Home Messages

- **Blood transfusion can be bad for your patients**
- **Don't transfuse unless you are sure that the patient really needs it**
- **There are alternatives to transfusion that should be considered seriously for all types of medical and surgical patients**



References

1. Bailey and Love's Short Practice of Surgery 25th Edition
2. .Adams KW, Tolich D. Blood transfusion: the patient's experience. American Journal of Nursing.
3. Peter Lawrence, Essentials of General Surgery, 4th ed

