

Anesthesiology Rounds
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Physiopathology and Clinical Management of Massive Transfusion and Hemostatic Dysfunction
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Objectives:

- To understand the physiopathology of the hemostatic complications (secondary to anemia, coagulation factors deficit, or thrombocytopenia) associated with massive transfusions in adults;
- To distinguish the characteristics of massive transfusions in an emergency situation (polytrauma victim) from those in planned surgery;
- To describe the management of blood products and perioperative hemostatic complications in planned and emergency surgery for the polytransfused patient: what to do, what to transfuse.

Answer the following questions (only one right answer)

1. A 36-year-old man, previously in good health, is operated on for a retroperitoneal tumour. He is 178 cm tall, weighs 80 kg, and the preoperative hemoglobin concentration was 160 g/L. The preoperative coagulogram was normal. So far, he has lost about 1 L of blood and the surgeon is getting worried. Coagulation tests are ordered.

At this point, you should focus on all *except one* of the following factors:

- a. Hemoglobin/hematocrit
 - b. Platelet count
 - c. Fibrinogen concentration
 - d. D-dimer
 - e. PT and aPTT
2. At this stage, you do all *except one* of the following:
- a. Make sure the patient remains normothermic
 - b. Maintain strict normovolemia
 - c. Absolutely avoid hydroxyethyl starches, given the associated hemorrhagic risk
 - d. Make sure there is a back-up supply of packed cell units
 - e. Make sure there is a back-up supply of fresh frozen plasma

3. The operation continues and the patient has now lost a large amount of blood. The surgeon asks you to “do something” because the situation is going from bad to worse and he is having problems controlling the bleeding. The wound begins oozing, but the patient is hemodynamically stable. An emergency coagulogram is ordered.

While waiting for the results, you (only one answer):

- a. Avoid transfusing the patient
- b. Maintain hemoglobin at a minimum of 10 g/L
- c. Transfuse 2 units of plasma
- d. Transfuse 10 units of platelets
- e. Transfuse all available blood products (shotgun therapy)

4. The coagulogram comes back with the following results: INR of PT 1.8, aPTT 49 sec, fibrinogen 0.7 g/L, platelets 80 G/L and hemoglobin concentration of 85 g/L. The clinical situation deteriorates a bit more.

You begin by transfusing

- a. 2 packed red cell and 4 fresh frozen plasma units
- b. 2 fresh frozen plasma and 10 platelet units
- c. 10 cryoprecipitate and 6 platelet units
- d. 2 packed red cell, 4 fresh frozen plasma and 10 platelet units
- e. All the blood products available (shotgun therapy)

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