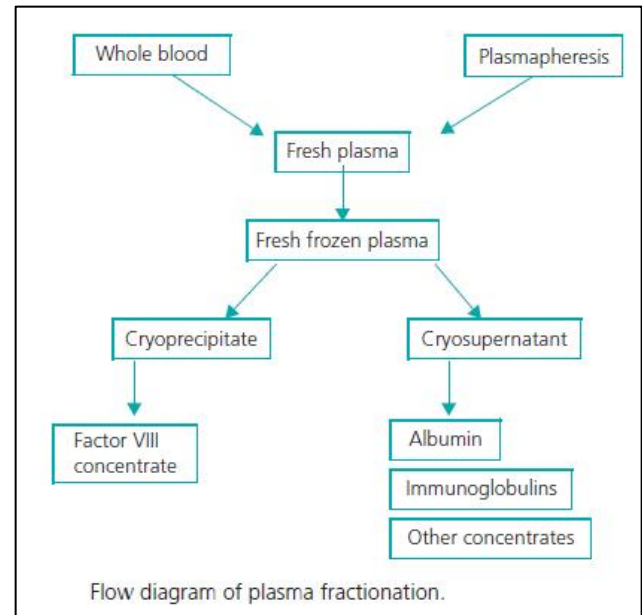


Fresh Frozen Plasma: Indications

Anesthetic Pearls: Anesthetic Management and Implications of FFP

The term **Fresh Frozen Plasma (FFP)** refers to the liquid portion of human blood which has been frozen and preserved quickly after a blood donation and will be used for blood transfusion. The term **FFP** is the proper name in the USA for the fluid portion of one unit of human blood that has been centrifuged, separated, and frozen solid at -18°C (-0.4°F) within 6 hours of collection. Other single-donor plasma units, either frozen or liquid, can be substituted for FFP.

Indications for these products are similar to those for FFP with the exception of heat-sensitive proteins in the plasma (Factor-V), and the term FFP is often used to mean any transfused plasma product. FFP is efficacious for treatment of deficiencies of Factors II, V, VII, IX, X, and XI when specific component therapy is either not available or not appropriate. Requirements for FFP vary with the specific factor being replaced. For example, hemostatic levels of Factor IX in a patient with severe deficiency are difficult to achieve with FFP alone, whereas patients with severe Factor X deficiency require factor levels of about 10 percent to achieve hemostasis and are easily treated with FFP. Patients who are anticoagulated with Warfarin are deficient in the functional Vitamin-K dependent coagulation Factors II, VII, IX, and X, as well as proteins "C" and "S". These functional deficiencies can be reversed by the administration of Vitamin-K. However, for anticoagulated patients who are actively bleeding or who require emergency surgery, single-donor plasma can be used to achieve immediate hemostasis.



Guidelines for FFP Transfusions:

1. Documented coagulation protein deficiencies for which there are no available concentrates.
2. Patients with massive transfusions and are bleeding and have abnormal coagulation tests. The PT / PTT should generally be $> 1.5\text{X}$ control or show evidence via TEG (thromboelastogram) or BRISK (LLU bleeding risk profile) of abnormal clotting.
3. Patients with multiple coagulation defects who are bleeding or need an invasive procedure and have abnormal coagulation tests. Examples would include advanced liver disease and Warfarin therapy.
4. Patients with anti-Thrombin III (AT-3) deficiencies who are resistant to Heparin and inadequately anticoagulated for cardiac surgery.
5. Diffuse bleeding after one blood volume transfusion given
6. Miscellaneous non-surgical bleeding indications

While 2 units of FFP will generally return clotting factors to sufficient levels needed for coagulation, some situations will require 4-6 units to correct certain abnormalities. FFP should **NOT** be given for volume expansion or prophylactically following CPB. FFP is no less infectious than a transfusion of pRBC's.