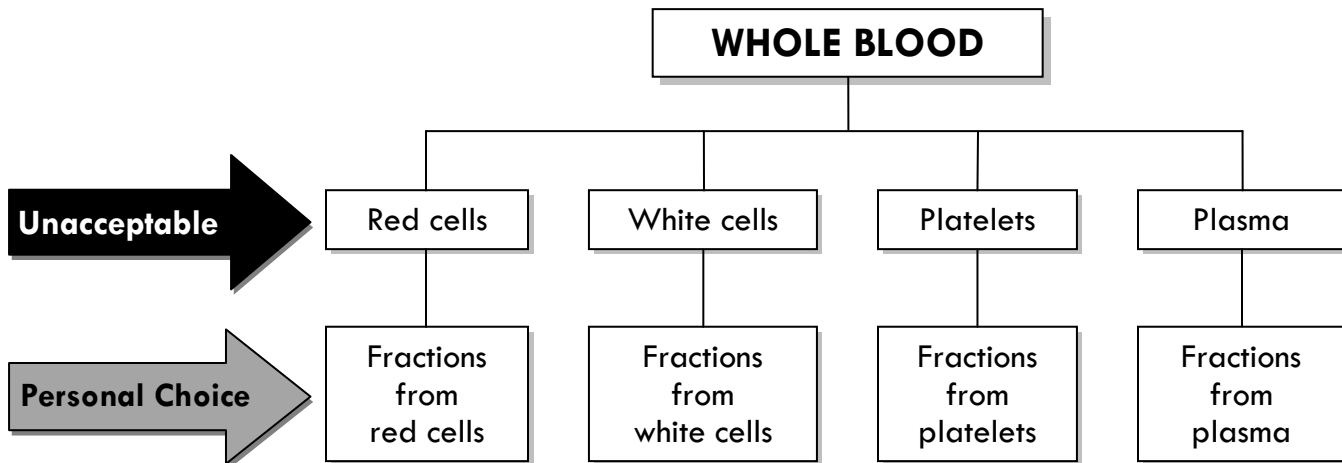


# Personal Choice Medical Treatments/Therapies Fact Sheet



## PLASMA FRACTIONS

The following products are either proteins derived from the plasma portion of the blood or contain a plasma protein to preserve the compound:

**Albumin** – the main protein found in the plasma (fluid) portion of your blood. Albumin helps to transport substances in the blood and keep the volume of the plasma constant. When the amount of albumin is increased it helps to increase the volume of blood. **Albumin is administered as a solution. It is used as a treatment to restore blood volume before or after surgery, when blood loss is excessive or blood volume has decreased.**

**Erythropoietin** – a hormone produced naturally in the body. Its primary function is to stimulate the production of red blood cells. It is used to treat anemia and is a central component for anemia management before and after surgery. **Epoetin alfa (Procrit) is used to increase the production of red blood cells. Albumin is used as a preservative. Darbepoietin (Aranesp) does not contain albumin; therefore, it is not considered in the personal choice category.**

**Cryoprecipitate** – a product composed of plasma clotting factors: Factor VIII, fibrinogen, von Willebrand Factor and Factor XIII. Cryoprecipitate is made by removing these factors from fresh frozen plasma and suspending them in sterile saline. Fibrinogen is the main clotting protein found in the blood. When excessive bleeding occurs, the fibrinogen level becomes exhausted and it becomes difficult to stop the bleeding. An adequate fibrinogen is necessary to achieve hemostasis (bleeding control). **The purpose of cryoprecipitate is to increase one's fibrinogen level in order to promote blood clotting in patients that have excessive bleeding.**

**Prothrombin Complex Concentrate (PCC)** – this product is a combination of different clotting proteins (Factors II, VII, IX, and X), which help to reverse warfarin therapy (Coumadin) by elevating or replacing the vitamin K-dependent clotting factors in the blood. When bleeding occurs in patients taking warfarin, it indicates a life-threatening situation that requires quick reversal of the warfarin. This is accomplished with the prothrombin complex concentrate. **PCC offers a rapid and specific method for replacing the vitamin K-dependent clotting proteins and restoring normal homeostasis.**

**Factor VII** – clotting is the body's mechanism to stop bleeding. There are many factors which are necessary for clotting to work efficiently and effectively. In hemophiliacs some of these factors are not present, thus clotting is very difficult in these individuals. **Two of these clotting factors used to stop bleeding in hemophiliacs, Factor VII and Factor IX, have been used "off-label" in surgical patients who have excessive bleeding and are not responding to traditional therapies. These clotting factors have been used successfully in Jehovah's Witnesses and other patients experiencing massive bleeding.**

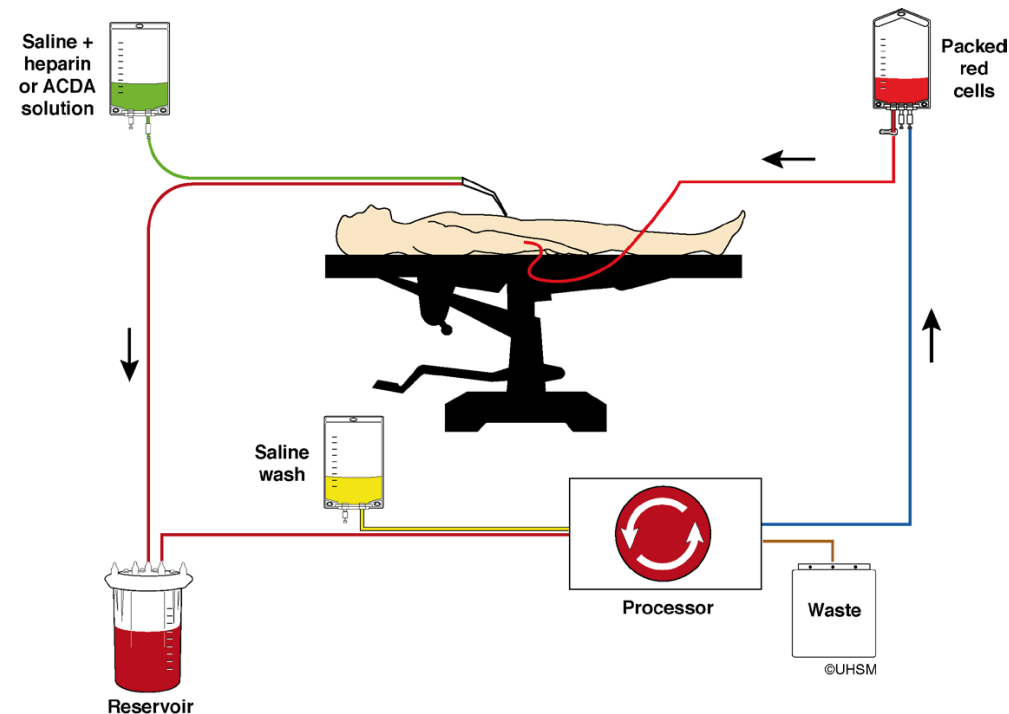
**Immunoglobulins** – a special group of blood proteins that help strengthen the body's natural defense and defend against infection. **These products are used in patients with compromised immune systems. In pregnancy, Rho (D) immune globulin is used to prevent hemolytic disease of the newborn in the case of Rh-incompatible mother and child.**

**Platelet Gel Autologous** – prior to surgery, 30-50 ml of blood is withdrawn from the patient. The blood tube is fractionated to obtain a small amount of platelet rich plasma (PRP). The PRP is mixed with thrombin and calcium to form the platelet gel. **The gel is used topically over the wound to promote wound healing, prevents bleeding, and reduces the risk for infection.**

**Sealants/Tissue Adhesives** – a group of compounds that are used to close wounds, repair fistulas (an abnormal connection between two organs or vessels which are not normally connected), and control bleeding at the wound site. Some of these compounds are made with **fibrin, a minor blood fraction.** They are known as “fibrin glues”. These “glues” **stop bleeding and promote wound healing.**

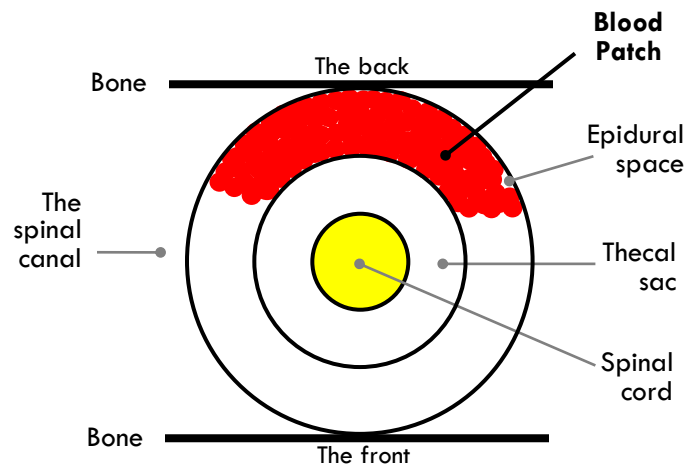
## **EQUIPMENT & PROCEDURES**

**Intraoperative autologous blood salvage (cell saver)** – this technique has three (3) distinct parts: collection, filtering/washing, and re-infusion. Blood from the operative field is suctioned into a canister/reservoir. The blood moves through a filter inside the canister. When enough blood is collected it moves through tubing connected to a machine, which filters and washes the blood. All of the impurities are removed from the salvaged blood. The salvaged blood is placed in a bag with normal saline. This bag is connected to the patient completing the closed circuit. The salvaged blood is re-infused into the patient. With this technique blood loss during surgery is minimized.

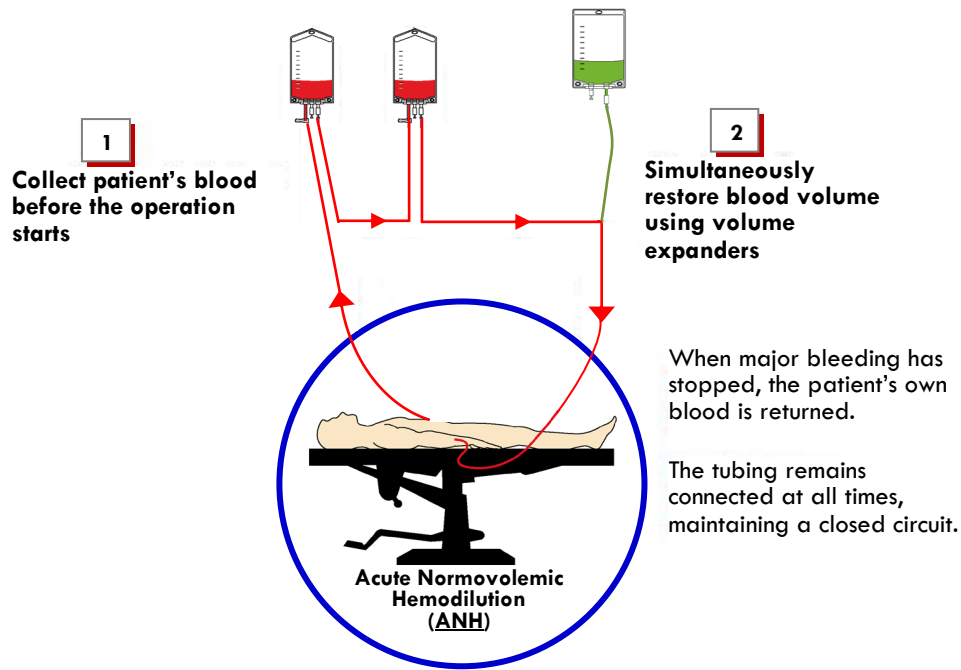


**Post-operative autologous blood salvage (cell saver)** – the same technique described above can be used in the post-operative recovery period. The minor differences between this technique and the one mentioned above are that tubes are placed in the operative field and used to drain any excess fluid after the operation. The tubes are attached directly to the reservoir. The rest of the process remains the same. There are some reservoirs used in orthopedic cases that filter the blood without the need for a separate machine. A closed circuit is set up between the reservoir and patient so that the salvaged blood that is returned remains in a closed circuit.

**Epidural Blood Patch** – used in cases where a spinal leak has not sealed from a previous spinal tap procedure. The patient's blood is removed from a vein and injected into the area of the leak. The blood forms a clot to seal the leak. **The procedure can be performed so that the blood stays in a continuous loop, as shown on the following page.**



**Acute Normovolemic Hemodilution** – a technique used to restore a patient’s blood count immediately after surgery. To accomplish this, a closed loop system is set up (see diagram) which allows the anesthesiologist to withdraw a specific amount of whole blood (250ml to 1 liter) from the patient. The volume of whole blood removed is replaced with another fluid (usually normal saline) to maintain blood volume. The removed blood is stored in blood bags containing a substance to prevent the blood from clotting. The bags are placed on rockers so that they continue to be gently moved back and forth, which also helps to prevent clotting. Just before the end of surgery, the removed blood is returned to the patient. This technique accomplishes two things. First, if there is excessive bleeding during the surgery less whole blood is lost, and second, it prevents post-surgical anemia.



**Labeling or tagging** – used diagnostically to determine the location of bleeding in the GI track. The procedure involves withdrawing a tube of blood from the patient and taking it to the nuclear lab where a radioactive isotope is added to the blood. The blood with the isotope (tagged) is reinfused into the patient. The patient then goes to radiology to scan the movement of the isotope attached to the blood. The procedure provides a better picture compared to the more conventional contrast dye.

**Plasmapheresis** – a therapy used to treat autoimmune disorders (e.g., lupus, Guillain-Barre syndrome, myasthenia gravis, and others). Similar to dialysis, blood is removed from the patient and the plasma portion is removed by a cell separator. The cells in the blood are returned to the patient. The removed plasma is replaced by a combination of albumin and saline for individuals that do not accept blood product transfusions. Plasmapheresis is a quick short-term treatment, which removes harmful antibodies. For long-term management, immunosuppressive medications are needed to prevent the return of the harmful antibodies. The system is set up as a continuous circuit (extracorporeal), which serves as an extension of the patient’s internal circulatory system.