

Patient Blood Management (PBM) & Bloodless Medicine Program

PERSONAL CHOICE: Fractions/Treatments/Procedures/Equipment

PERSONAL CHOICE: FRACTIONS

1. Fractions from RED BLOOD CELLS (RBCs):

Red Blood Cells (about 40-45% of the blood) transport oxygen from the lungs to body cells. People who have low numbers of red blood cells (RBCs) are said to have anemia.

- a. **HEMOGLOBIN**: A protein that helps carry oxygen from the lungs to the rest of the body, and then returns carbon dioxide from the body to the lungs.
- b. **HEMIN**: An enzyme inhibitor (salt) derived from the Hemoglobin protein used to treat rare genetic blood disorders (Porphyrias).

2. Fractions from WHITE BLOOD CELLS (WBCs):

White Blood Cells (about 1% of the blood) act as one of the body's defense against infection (bacteria, viruses). **White blood cell transfusions are given rarely.** Instead of transfusing WBCs, doctors now commonly use drugs called colony-stimulating factors or growth factors to help the body make its own.

- a. **INTERFERONS/INTERLEUKINS**: Small proteins responsible for helping your body to fight infections. Also used in some cancer treatments.

3. Fractions from PLATELETS:

Platelets (Thrombocytes) are small fragments of cells that prevent blood loss by stopping the bleeding at site of injury (forming clots). **At this time, fractions from platelets are not typically used.**

4. Fractions from PLASMA/Fresh Frozen Plasma (FFP):

Plasma/Fresh Frozen Plasma (FFP) is the liquid part of blood and is made of approximately 90% water. Albumin, clotting factors, salts/electrolytes, sugars, fats, vitamins, and hormones from Plasma can be used in medical/surgical care.

- a. **ALBUMIN**: The main protein in plasma that helps to increase blood volume. Passes freely between mother and fetus. Used as a blood volume expander. May be present in medications like Erythropoietin & Procrit (**synthetic alternative is Retacrit**), Neupogen, and Surgical Sealants.
- b. **CLOTTING FACTORS**: Proteins in concentrated forms, and combinations of these proteins, are used to help stop active bleeding.
 - i. **Cryoprecipitate**: A concentration of clotting factors (Plasma Fractions) and coagulation proteins (Plasma Fractions), typically given in emergency situations when bleeding is unable to be controlled by other means. May contain Plasma. If acceptable, a Type & Screen blood test is required.
 - ii. **Thrombin**: An enzyme that causes the conversion of fibrinogen to fibrin, which is the last step of the blood clotting process. *May also be present in Surgical Sealants.*
 - iii. **Fibrinogen**: This protein functions primarily to occlude blood vessels and stop excessive bleeding.
 - iv. **Prothrombin Complex Concentrate (PCC, Kcentra)**: Used to reverse the effects of medications that thin the blood (Examples: Xarelto, Eliquis).
 - v. **Antithrombin III**: A protein that acts as a natural blood thinner.
 - vi. **Humate-P**: A protein that helps the blood thicken, contains von Willebrand factor complex.
 - vii. **Factors VII and IX**: Used to help stop bleeding in hemophiliacs.

Patient Blood Management (PBM) & Bloodless Medicine Program

PERSONAL CHOICE: Fractions/Treatments/Procedures/Equipment

(Personal Choice: Fractions cont.)

- a. **IMMUNOGLOBULINS (Immune Globulins)**: Proteins extracted from plasma that help the body to fight infection. Passes freely between mother and fetus. Used in medications to provide immunity, improve immune response to infections, and can be administered for Rh incompatibility for pregnant women.
 - i. **RhoGAM (Rhig)**: Treats the blood disorder called immune thrombocytopenic purpura (ITP), and is also given to pregnant women who have Rh Factor of ‘Rh negative.’ **Type & Screen is typically performed in order to determine the Rh Factor.** RhoGAM prevents the mother from forming antibodies which could act to destroy the blood in future babies.
 - i. **If a baby is born Rh positive, and the mother is Rh negative, and the mother is not treated with RhoGAM, this could result in serious condition for the baby requiring blood transfusions for the baby.**
 - ii. **HBig (Hep B IG), VZig (Varicella IG), Tig (Anti-Tetanus IG), RHig (Rabies IG)**: Unlike vaccines, these immunoglobulins are administered AFTER one is exposed, to help the immune system fight the infection.
- b. **SEALANTS/GLUES/TISSUE ADHESIVES**: Various combinations of fractions and coagulation proteins from plasma, can also be derived from animal sources. Used to help stop surface bleeding especially during surgery.
 - i. **Fibrin Glue**: A mixture of fibrinogen and thrombin used to seal operative wounds and can be used on sites to curtail hemorrhage.
 - ii. **Albumin** (see above definition): Example=Progel
 - iii. **Thrombin** (see above ‘Clotting Factors’): Examples=Evicel, Tisseel, Thrombin (human or bovine).
 - iv. **Recombinant ‘Synthetic’ Sealing Agents**:
 - i. May contain ‘gelatin’ substances from plant, bovine or porcine sources.
 1. Bovine or Porcine: Avitene (bovine), Surgicel (plant and surgical snow), Gelfoam (porcine), Surgiflo (bovine or porcine).
 2. Plant: Duseal.
 3. **Some products, like Surgicel and Surgiflo, can either be mixed with Thrombin or Saline Solution in their preparation.**

IMPORTANT REMINDERS:

*With EVERY emergency and/or admission, **promptly** identify yourself to ALL providers/specialists/surgeons/etc. and nursing staff as a ‘Bloodless Care’ patient. If desired, request to be enrolled in the Nuvance Patient Blood Management (PBM) & Bloodless Medicine Program.

*If applicable, provide a copy of your Advance Directive (or **NO BLOOD** Advance Directive document) to all your physicians (PCP and Specialists). Please also provide to the hospital upon registration with EVERY Emergency Room visit, Surgery, or Hospital Encounter/Admission for your medical records, even if it has previously been ‘scanned’ into your medical record.

*Confirm that your Health Care Agent (designated on an Advance Directive/Health Care Proxy) is aware of your wishes.

****Please note: This is a general listing and is NOT inclusive of all forms of fractions/treatments/procedures/equipment that can be used in your bloodless medical care. If you have questions regarding fractions/medications or treatments/procedures/equipment and any possible alternatives specific to your medical condition(s), please discuss with your doctor. For questions regarding the Nuvance PBM & Bloodless Medicine Program, please contact us at 1-833-NO BLOOD (1-833-662-5663).**

Patient Blood Management (PBM) & Bloodless Medicine Program

PERSONAL CHOICE: Fractions/Treatments/Procedures/Equipment

PERSONAL CHOICE: TREATMENTS/PROCEDURES/EQUIPMENT

1. CELL SALVAGE (Cell Saver): Blood collected during surgery is retrieved, filtered/cleaned, then your RBCs are returned to your body. Cell Salvage can be set up in a manner that makes it possible to have blood circulation in a continuous closed circuit. ***For Nuvance Health System, cell saver should be arranged prior to the day of surgery, if indicated, however can also be arranged in an emergency. If cell saver is indicated and you desire to have a closed-circuit system set-up, this should be discussed with your surgeon.**
2. PLASMAPHERESIS/APHERESIS: Filters off your own plasma and replaces with a substitute. Removal, treatment return or exchange of your plasma and or components with a closed system machine. It is used if your plasma has antibodies that are attacking your body. The plasma is filtered and replaced with a substitute *with Saline (Salt Water) and/or Albumin (Plasma Fraction-see definition on page 1).*
3. EPIDURAL BLOOD PATCH: About 5-10mL of blood is removed from your vein and injected into your spinal membrane to seal a spinal fluid leak. Typically used for treating severe headaches after procedures.
4. PLATELET GEL AUTOLOGOUS (your platelets), Platelet-Rich Plasma (PRP): Used for wound healing and to stop bleeding.. Your own plasma is drawn up and separated (spun), and **only the clotting factors (your own plasma fractions) are pulled out**. These clotting factors are then mixed with calcium citrate to form a paste and applied to surgical sites to reduce bleeding and enhance wound healing. Sometimes used in liver and orthopedic surgeries, and to treat tendon/strained muscle issues.
5. ACUTE NORMOVOLIC HEMODILUTION: Preserves your blood through dilution in surgery. Specific amount of your blood is removed at initiation of surgery and replaced with intravenous fluids. Blood is then returned in an uninterrupted system at the end of surgery.
6. HEART-LUNG BYPASS MACHINE (Cardio-Pulmonary Bypass): A closed-system pump that directs your blood to a bypass pump in a closed system machine. The machine adds oxygen to your blood and returns your blood to your body during cardiovascular (heart) surgery. Mimics the function of your heart.
7. HEMODIALYSIS: Filters and cleans your own blood, mimics the function of your kidneys. Your blood flows into a closed system machine that filters and cleans the blood, then flows back into the body. It is used if your kidneys are not working well, or harmful substances need to be taken out of the blood.
8. CELL TAGGING/LABELING: Mixes your blood cells with a tracer and then reinjects for a test. Timeframe of blood outside your body varies. A small sample of your blood is taken, radioisotope tracers are added to the sample which tags/labels your blood cells, then reinjected into your body. A nuclear medicine scan is then performed for certain diagnostic tests. Example = Nuclear Stress Test.