

Autologous and Directed Units – General Comments

Autologous Blood Usage:

Preoperative autologous blood donation (PAD) is not routinely recommended for elective surgical patients nor supported by evidence based patient blood management guidelines.

Use of PAD may be an option for patients where blood availability is limited, such as:

- Patients with multiple RBC alloantibodies or when provision of appropriate antigen negative, crossmatch-compatible RBC units are limited
- Patients who refuse allogeneic blood but will consent to PAD

Autologous blood transfusion is not without risk and transfusion criteria for this product should be the same as that used for other red blood cell transfusions. Though adverse reactions to autologous blood transfusions are minor (febrile and allergic symptoms), the frequency is similar to allogeneic blood transfusions. Other risks associated with autologous blood transfusions may include transfusion associated-bacterial contamination and incompatible transfusion due to mis-identification at time of sample collection or administration. Errors related to production and handling of autologous units are not uncommon with one quarter of the errors related to unavailability of the component at the start of surgery, diminishing any benefit from the autologous collection.¹⁻⁴

If Preoperative Autologous Blood Donation is being considered:

- Autologous units cannot be transfused to anyone other than the person who donated the unit, as the criteria for donation of autologous blood is not the same as that for allogeneic volunteer donors.
- PAD can result in lower preoperative hemoglobin which can lead to increased likelihood of the patient requiring a transfusion (autologous or allogeneic or both); thereby, diminishing any benefit of PAD in avoiding transfusion⁵⁻⁷
- Attention should be given to timing of donation and use of iron replacement therapy, including erythropoiesis stimulating agents if needed, to prevent preoperative anemia.
- Surgical techniques such as use of perioperative blood recovery and/or acute normovolemic hemodilution are recommended in place of preoperative autologous blood donation for surgical cases where blood transfusion may be likely.⁴
- A physician's order is required for autologous donation. Pre-surgical autologous donations must be made at least 1 week, though preferably 2 to 3 weeks, prior to date of surgery.
- See www.versiti.org/medical-professionals/physician-services/specialty-products-services for additional information about autologous blood donation.

Directed Donations:

- Directed donations are defined as a blood donation by family or friends specifically for an individual.
- Donors must meet all the criteria for allogeneic blood donations which allow the units to be released into the general inventory if not needed by the patient.
- ABO group and Rh type of directed donations must be compatible with the patient; if not, the unit is released into general inventory.
- Directed donated units are not necessarily safer than those collected from volunteer donors.
- Directed donations intended for biological family members must be irradiated to prevent transfusion-transmitted graft-versus-host disease.

If Direct Donation is being considered:

- A woman should not receive a transfusion from a man or his blood relatives if she has had or is planning to have his children.
- Transfusion from a woman to her biologic children or the father of her biologic children should be avoided. (Some women may possess antibodies developed during pregnancy that may result in a transfusion reaction in her child or child's father.)
- A physician order is required for a directed donation. Such donations must be made at least one week prior to the expected transfusion.
 - o There may be an additional fee not covered by insurance.
- See www.versiti.org/medical-professionals/physician-services/specialty-products-services for additional information about directed blood donation.

References:

1. Vasallo R, Goldman M, Germain M, et al. Preoperative Autologous Blood Donation: Waning Indications in an Era of Improved Blood Safety. *Transfus Med Rev* 2015 Oct;29(4):268–275.
2. Goldman M, Remy-Prince S, Trepanier A, Decary F. Autologous donation error rates in Canada. *Transfusion* 1997; 37:323-527.
3. Domen RE. Adverse reactions associated with autologous blood transfusion: evaluation and incidence at a large academic hospital. *Transfusion* 1998; 38:301-306.
4. Yazer MH, Waters JH. How do I implement a hospital-based blood management program? *Transfusion* 2012; 52: 1640-1645.
5. National Blood Authority. Patient Blood Management Guidelines: Module 2 – Perioperative, 3.6.1 PREOPERATIVE AUTOLOGOUS DONATION section. Australia, 2012 (found at: <https://www.blood.gov.au/pubs/pbm/module2/3-clinical-guidance/3.6.1-preoperative-autologous-donation.html> accessed June 2020)
6. Manuel SP, Spitzer TR and Ishizawa Y. Preoperative autologous blood donation in healthy bone marrow donors contributes to pre-procedure anemia. *Bone Marrow Transplant* 2017 Aug; 52(8):1191-1193.

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7. Kelly MP, Zebala LP, Kim HJ, et al. Effectiveness of preoperative autologous blood donation for protection against allogeneic blood exposure in adult spinal deformity surgery: A propensity-matched cohort analysis. *J Neurosurg Spine* 2016 Jan; 24(1):124-130.

Additional Resources:

8. Apfelbaum JL (Committee Chair) et al. Revised by the American Society of Anesthesiologists Committee on Standards and Practice Parameters. Practice Guidelines for Perioperative Blood Management: An Updated Report by the American Society of Anesthesiologists Task Force on Perioperative Blood Management. *Anesthesiology* 2015;122(2):241-275.