

THINK PERIPHERAL ACCESS FIRST

Increasing peripheral access to reduce risk and treatment delays

*Hemapheresis and Transfusion Support (HATS) Department
Johns Hopkins Hospital, Baltimore, MD*

BACKGROUND:

The Hemapheresis and Transfusion Support (HATS) department at Johns Hopkins Hospital performs approximately 2,500 apheresis procedures each year using 10 Spectra Optia® Apheresis Systems. Nearly half of these procedures are automated red blood cell exchanges (RBCX).

As part of its ongoing efforts to reduce risk and treatment delays for patients, the HATS team sought to avoid unnecessary central line placements. While central venous access remains necessary for many patients, peripheral venous access (PVA) is a less invasive option when it is feasible.*

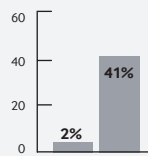
A central line requires an interventional radiology (IR) procedure to insert the line and one to remove it, and the patient must be admitted to the hospital. The use of PVA for apheresis procedures is associated with a lower risk of complications than central venous access.^{1,2,3,4}

HATS implemented a program to utilize PVA with ultrasound guidance (USG) for eligible patients. An additional benefit of PVA and Spectra Optia is the single-needle option that can be used to establish or reestablish access if one point of access is lost during a procedure.†

The program described below resulted in these improvements:



RBCX procedures using PVA more than doubled after the program was implemented.⁵



RBCX procedures using USG increased 39%.⁵



IMPLEMENTATION:

Plan

- HATS' Medical Director educated colleagues throughout the hospital about the benefits of peripheral access as an option for apheresis procedures.
- Registered Nurse Sonja Vozniak designed the train-the-trainer program to orient her future coaches to the ultrasound and single-needle approach.

Invest

- Citing USG as a proven standard of care, the team purchased ultrasound devices for use during vein assessments.
- These devices help quickly isolate the best veins for apheresis,⁶ which helped boost nurses' confidence in both peripheral access and single-needle procedures.*†

Train

- Several nurses who were identified as potential future coaches kicked off the initial training.
- Following a 3-month program of USG PVA training, the HATS team began measuring against baseline metrics like total procedure volume and number of central lines placed, and they collected patient experience stories as USG PVA increased.

RESULTS:

HATS performs approximately 2,500 apheresis procedures annually. Over the course of implementing their program of PVA with USG, the HATS team has more than doubled the number of RBCX procedures using peripheral access, and they now use USG for 41% of RBCX procedures.⁵

This shift has reduced central line placements helping patients avoid IR appointments and the risks related to central lines.

The reduction in IR appointments has eased scheduling issues and excessive meetings between the IR and HATS teams to schedule central line placements, which helped avoid treatment delays.⁵

HATS has also eliminated the need for a separate vein assessment appointment. Experience with USG has given their nurses such confidence with PVA that they complete the USG vein assessment and the procedure in one appointment.⁵

CONCLUSION:



Sonja Vozniak and the HATS team believe the key to successfully increasing peripheral access in therapeutic apheresis is preparation and comprehensive ultrasound training and support. They advise:

- **Allow more time.** In the beginning of your program implementation, schedule additional time for locating veins and troubleshooting.
- **Provide ongoing support.** In addition to ultrasound device training, it's critical to provide ongoing support via the ultrasound company or the hospital's venous access team (VAT).
- **Boost nurse confidence.** To facilitate the change, the VAT was available for consultation and supported the HATS team in their initial procedures, helping them become comfortable with peripheral and single-needle access.*†

Spectra Optia Apheresis System Intended Use

The Spectra Optia Apheresis System, a blood component separator, may be used to perform the following therapeutic apheresis, cell collection, and cell processing procedures: Therapeutic plasma exchange; red blood cell exchange, depletion, and depletion/exchange for the transfusion management of sickle cell disease in adults and children; mononuclear cell collection from the peripheral blood; granulocyte collection from the peripheral blood; white blood cell reduction for patients with leukocytosis at risk for leukostasis; and processing of harvested bone marrow for the purpose of facilitating hematopoietic reconstitution.

Apheresis-Related Safety Information

Contraindications for the use of Spectra Optia are limited to those associated with the infusion of solutions and replacement fluids as required by the apheresis procedure and those associated with all types of automated apheresis systems.

Adverse events of apheresis procedures can include anxiety, headache, lightheadedness, digital and/or facial paresthesia, fever, chills, hematoma, hyperventilation, nausea and vomiting, syncope

(fainting), urticaria, hypotension, allergic reactions, infection, hemolysis, thrombosis in patient and device, hypocalcemia, hypokalemia, thrombocytopenia, hypoalbuminemia, anemia, coagulopathy, fatigue, hypomagnesemia, hypogammaglobulinemia, adverse tissue reaction, device failure/disposable set failure, air embolism, blood loss/anemia, electrical shock, fluid imbalance and inadequate separation of blood components.

Reactions to blood products transfused during procedures can include hemolytic transfusion reaction, immune-mediated platelet destruction, fever, allergic reactions, anaphylaxis, transfusion-related acute lung injury (TRALI), alloimmunization, posttransfusion purpura (PTP), transfusion-associated graft-versus-host disease (TA-GVHD), circulatory overload, hypothermia, metabolic complications and transmission of infectious diseases and bacteria.^{9,10}

Restricted to prescription use only. Operators must be familiar with the system's operating instructions. Procedures must be performed by qualified medical personnel.

REFERENCES

- ¹Otrock ZK, Thibodeaux SR, Jackups R Jr. Vascular access for red blood cell exchange. *Transfusion*. 2018;58(S1):569-579.
- ²Polderman K, Girbes A. Central venous catheter use: part 2: infectious complications. *Intens Care Med*. 2002;28:18-28.
- ³Crookston KP, King KE. *Therapeutic Apheresis: A Physician's Handbook*. 5th ed. Bethesda, Maryland: AABB/ASFA; 2017.
- ⁴Kalantari K. The choice of vascular access for therapeutic apheresis. *J Clin Apher*. 2012;27(3):153-159.
- ⁵Internal Data from Hemapheresis and Transfusion Support (HATS) Department at Johns Hopkins Hospital, Baltimore, MD.
- ⁶Salazar E, Garcia S, Miguel R, Segura FJ, Ipe TS, Leveque C. Ultrasound-guided peripheral venous access for therapeutic apheresis procedures reduces need for central venous catheters. *J Clin Apher*. 2017;32(4):266-269.
- ⁷Vahdat L, Maslak P, Miller WH Jr, et al. Early mortality and the retinoic acid syndrome in acute promyelocytic leukemia: impact of leukocytosis, low-dose chemotherapy, PMN/RAR-alpha isoform and CD13 expression in patients treated with all-trans retinoic acid. *Blood*. 1994;84(11):3843-3849.
- ⁸Daver N, Kantarjian H, Marcucci G, et al. Clinical characteristics and outcomes in patients with acute promyelocytic leukaemia and hyperleucocytosis. *Br J Haematol*. 2015;168(S):646-653.
- ⁹AABB. Circular of Information for the Use of Human Blood and Blood Components. Bethesda, MD: AABB; 2017.
- ¹⁰European Directorate for the Quality of Medicines & HealthCare (EDQM). Guide to the Preparation, Use and Quality Assurance of Blood Components. 19th edition. Strasbourg, France: EDQM Council of Europe; 2017.

Disclaimers

*Peripheral access may not be feasible in all patients.

†Single-needle access is not available in all world areas. It requires Spectra Optia version 12 system software. Contact your Terumo Blood and Cell Technologies representative to upgrade to version 12.



Terumo Blood and Cell Technologies is a medical technology company. Our products, software and services enable customers to collect and prepare blood and cells to help treat challenging diseases and conditions. Our employees around the world believe in the potential of blood and cells to do even more for patients than they do today. TERUMOBCT.COM

Terumo BCT, Inc.
Lakewood, CO, USA
+1.303.231.4357

Terumo BCT Europe N.V.
Zaventem, Belgium
+32.2.715.0590

Terumo BCT Asia Pte. Ltd.
Singapore
+65.6715.3778

Terumo BCT Latin America S.A.
Buenos Aires, Argentina
+54.11.5530.5200

Terumo BCT Japan, Inc.
Tokyo
+81.3.6743.7890