

## 5 Myths of Treating Sickle Cell Disease With Automated Red Blood Cell Exchange

Not all transfusion therapies are the same.



Unlike other transfusion therapies, automated red blood cell exchange (RBCX) efficiently and rapidly removes a patient's hemoglobin S (HbS)-containing RBCs and replaces them with healthy RBCs. You may be surprised to learn that there are a few misperceptions surrounding automated RBCX. How do you think about automated RBCX today?

### MYTH #1: RBCX IS ONLY FOR ACUTE PATIENTS



**REALITY:** Automated RBCX is recommended by the American Society for Apheresis (ASFA) and the American Society for Hematology (ASH) for sickle cell disease patients with certain chronic and acute conditions.<sup>1,2</sup>

In one study, 70% of patients with sickle cell disease who received regular automated RBCX transfusions for the management of chronic recurrent painful crises experienced a mean reduction of 40% in the number of emergency hospital attendances after the first 12 months.<sup>3</sup>

### MYTH #2: RBCX PUTS PATIENTS AT RISK FOR IRON OVERLOAD

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**REALITY:** During automated RBCX, a patient's target hematocrit percentage (HCT%) can be maintained. This results in an iron-neutral procedure, reducing the need for chelation therapy. "Automated RBCX is the most effective way of lowering the HbS level quickly, causing the least hemodynamic imbalance while at the same time reducing the risk of iron overload."<sup>3</sup>

In one study, patients with no iron overload at baseline showed no evidence of iron accumulation after 36 months of receiving automated RBCX. All six patients with preexisting iron overload and on chelation therapy showed a gradual reduction of their liver iron concentration, and two patients discontinued chelation during the follow-up period.<sup>3</sup>

### MYTH #3: RBCX IS COSTLY AND INCONVENIENT



**REALITY:** Many apheresis programs offer outpatient automated RBCX programs and peripheral venous access. Studies have also shown potential for significant cost savings for patients on a long-term RBCX program.<sup>4,5,6</sup>

An analysis of 23 patients with recurrent vaso-occlusive crisis (VOC) undergoing regular RBCX for one to five years showed that over time, RBCX led to significant cost savings due to reduction in hospital attendance and limited need for costly chelation therapy.<sup>6</sup>

### MYTH #4: RBCX ALWAYS INCREASES PATIENTS' ALLOIMMUNIZATION RISK



**REALITY:** While more RBCs are used during automated RBCX than with simple transfusion, several studies have shown that RBCX was not associated with increased alloimmunization or adverse transfusion reactions.<sup>7,8,9,10</sup>

In one study of children with sickle cell disease receiving chronic transfusion therapy, the rate of antibody formation was lower for those treated with RBCX compared to those treated with simple transfusion.<sup>7</sup>

### MYTH #5: RBCX CAUSES HYPERVISCOSITY



**REALITY:** Automated RBCX can consistently and accurately achieve the prescribed post-procedure HbS target using the system-calculated volume of replacement RBCs without increasing viscosity and can be performed as an isovolemic procedure.<sup>11</sup>

A study of 60 sickle cell disease patients receiving RBCX treatment showed that automated RBCX consistently and accurately achieved the prescribed post-procedure HbS target and the mean post-procedure HCT was consistently within 1.03% of the target.<sup>11</sup>

## APHERESIS-RELATED SAFETY INFORMATION

### Contraindications:

Leukocytapheresis is contraindicated in acute myeloid leukemia FAB M3 (acute promyelocytic leukemia) because of the accompanying disseminated intravascular coagulation.<sup>12,13</sup>

Other contraindications for the use of apheresis 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, light-headedness, 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.<sup>14,15</sup>

### Restricted to prescription use only.

- Operators must be familiar with the system's operating instructions.
- Procedures must be performed by qualified medical personnel.

Learn more about automated RBCX at:  
[TERUMOBCT.COM/rbcx](https://www.terumo.com/rbcx)

## References

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