



Appleton, Wisconsin

A Case Study

by

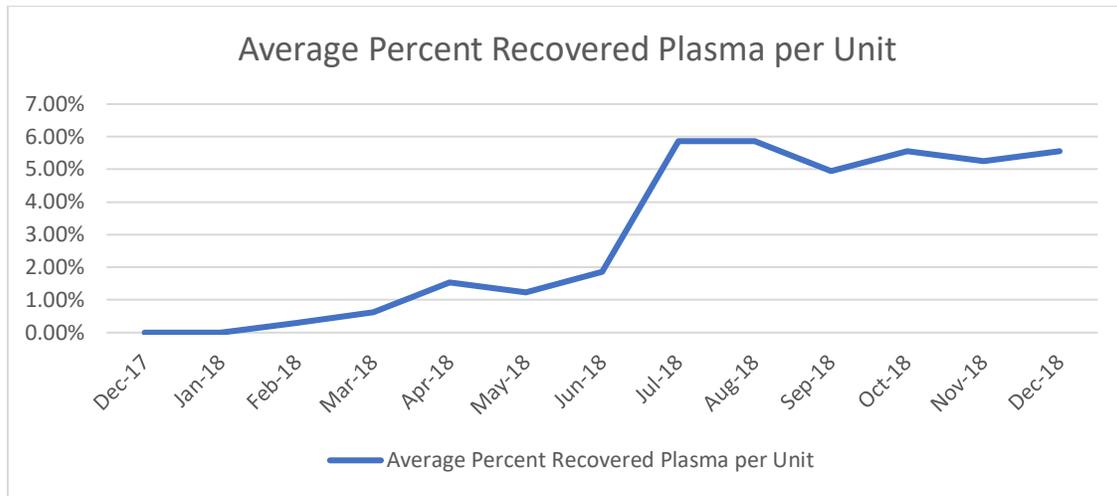
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The Community Blood Center went from serving two Appleton-area hospitals in 1955 to collecting over 50,000 blood and blood product donations in 2019 and now serves nearly 30 hospitals in northeastern Wisconsin, the Northwoods and upper Michigan. CBC has donor centers in Appleton, Oshkosh, Little Chute and Woodruff, and hosts over 100 blood drives every month. In our never-ending search for keys to ongoing success, we recently reviewed industry trends and internal operations—resulting in the adoption of variable blood volume (VBV) technology and a partnership with a vendor that pioneered this process. Through that process, our team learned several valuable lessons that should help others facing the same challenges in fast-changing marketplaces.

Like blood centers all across the country, we specifically knew we had to increase the overall volume of usable collections while meeting stringent quality standards. We also knew that any increases in the costs of unusable collections was not an acceptable means to operate. The Community Blood Center's return on investment depended on increasing recovered plasma per unit, so we looked intensively at every step of our collection procedures. The inquiry led to making major improvements in the mechanical process for weighing and mixing whole blood collections, the type and volume of collection bags, and the data collected from donors—with a special focus on the accuracy of height, weight, and other clinical measures that are evaluated to optimize compliant and safe blood donations.

An industry-wide search for user-friendly products and services that met our precisely targeted needs led us to Applied Science, Inc (ASI). We implemented ASI's HemoFlow 400XS (<https://www.applied-science.com/hemoflow-400xs>) in June, 2018 and subsequently compared the monthly averages of milliliters collected in the six months before and after installation of the new collection system. As shown in the following graph indicated as Table 1, the average recovered plasma percentages corresponding before-to-after implementation shows an increase of 5%.

Table 1



As shown in Table 2 below, incomplete draws averaged 3.97% per month before adopting HemoFlow and 3.66% after adoption. The corresponding decrease in unusable collections for The Community Blood Center indicates that adopting the HemoFlow along with procedural changes, did not adversely affect the success of collections performed.

Table 2

Jan-18	4.03%
Feb-18	5.09%
Mar-18	3.99%
Apr-18	4.00%
May-18	4.01%
Jun-18	2.71%
Jul-18	3.35%
Aug-18	4.45%
Sep-18	3.96%
Oct-18	3.09%
Nov-18	3.86%
Dec-18	3.25%

Our 5% increase in average recovered plasma volume and an overall decrease in unusable collections both represent significant operational improvements. VBV allows us to optimize collection volume from donors based on their gender, height, and weight. Additional blood is collected from donors who are physically capable of donating more than their standard (e.g., historic) donation, and fewer donors are subjected to an unsuccessful collection process.

The HemoFlow 400XS utilizes Nadler’s formula to estimate the individual donor’s total blood volume. This volume, used in conjunction with the blood center’s parameters (blood bag capacity, sample tube volume, etc.), is then used to calculate the optimized collection volume for each donor. This calculation allows for maximum collections from larger donors (thus increasing plasma volumes) and lower collection volumes from smaller donors (thus utilized as a donor reaction mitigation tool).

Our data has posed challenges in accessibility to perform an accurate assessment of cost changes associated with the adoption of the HemoFlow system. Given the average 5% increase in average recovered plasma volume following implementation, this would generate approximately \$74,250 in additional revenue using an industry average reimbursement of \$0.11/mL¹ from approximately 45,000 units collected annually. Blood banks that already have robust cost accounting systems can use our productivity findings and their financial data to estimate the economic benefits they may experience by adopting VBV technology.

Ironically, one of the most valuable benefits from adopting HemoFlow and VBV has been successful innovation in our day-to-day operations. The technology transformation made us believers in the opportunity that you can't improve what you don't measure. HemoFlow's built-in transmission to information systems has been particularly helpful in providing enhancements to our data collection and analytics for continuous performance and process improvement. We have also begun to collect new and tangible baseline information for measuring the impact of other operational changes. For example, we will be able to measure how new technologies and processes help us accomplish targeted improvements and reduction in discards due to accessible and reproducible phlebotomy information. The initial assessment of products saved due to reproducible phlebotomy information was a .2% of total collections. The collaborative software application allows for process advancements into electronic phlebotomy interface solutions as well. Our new data systems are also allowing The Community Blood Center to optimize economic and operational performance across the organization.

Another critical success factor has been working with a consumer-focused vendor to make a dramatic change in technology over a short period of time. We could not have accomplished the rapid increase in collections and reduction in waste without ASI's team of experienced blood bank professionals. We knew what needed to be done, and they knew how to do it. This synergy has been one of the biggest benefits from installing HemoFlow. In addition, we have benefitted from the resulting interaction with other blood centers that use the same ASI technology. Adopting VBV, installing HemoFlow, and expanding our partnership with ASI are unquestionably steps in all the right directions.

¹ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4317088/>