

## **NSHRF PROJECT FACT SHEET**

### **Using business techniques to better manage Nova Scotia's supply of platelets**

Investigators: John Blake  
Department of Industrial Engineering  
Dalhousie University

David Anderson  
Blood Transfusion Services  
Queen Elizabeth II Health Sciences Centre

Ramiro Arellano  
Department of Anesthesia  
Queen Elizabeth II Health Sciences Centre

Dorothy Barnard  
Division of Pediatric  
Hematology  
IWK Health Centre

CBS Contact: Susan Smith  
Canadian Blood Services  
Halifax

Blood is essential to human life, and there is a growing need for blood and blood products in the health care system. So it is critical that the blood supply continues to be efficiently and effectively managed. In Canada, blood is gathered from volunteer donors and distributed to health care institutions by Canadian Blood Services (CBS). CBS is the agency responsible for managing Canada's blood supply system. Platelets, a component of blood, are essential in the treatment of cancer and hemophilia. With a shelf life of five days and natural fluctuations in supply and demand, platelets are an inherently difficult product to manage.

Dr. John Blake of Dalhousie University's Department of Industrial Engineering and Dr. David Anderson, medical director of Blood Transfusion Services at the Queen Elizabeth II Health Sciences Centre, in cooperation with CBS Halifax, are leading a team to develop an integrated management system for the supply and distribution of platelets within Nova Scotia. While more than 30 health care institutions in the province use some platelets, 70% are consumed at two hospitals in Halifax. Dr. Blake and his team are developing supply-management techniques and inventory policies that balance the necessity of having platelets available when needed with the requirement that they not be unduly wasted. They found that up to 18% of potential inventory costs can be saved if certain quantitative inventory models are applied to platelet management.

Platelets are one of the components required to make blood clot. They are fragile cell fragments found in bone marrow. Their sticky or adhesive qualities help to control bleeding by plugging holes in a blood vessel wall and assisting in forming a clot to prevent blood loss. People with prolonged bleeding associated with diseases such as cancer, leukemia, aplastic anemia and hemophilia need large quantities of platelets as part of their treatment.

“Nova Scotia has an active blood liaison committee and is well placed to take advantage of supply chain management techniques,” says Dr. Blake. The team developed infrastructure and management tools to support integrated management of the platelet supply. Various models were created and operational scenarios were run. Results suggest that overall efficiency, effectiveness and costs are improved when an end-to-end, integrated planning structure is in place. The system performs best when Canadian Blood Services (CBS) and large volume customers are able to work together to jointly identify and coordinate their ordering policies.

Adopting a consignment policy of shipping outdated platelets to the Queen Elizabeth II Health Sciences Centre, but not counting them as part of the hospital’s inventory unless they are used in transfusions, has the potential to reduce both wastage and costs. Research results also suggest changing the collection method from five days a week to a twice-weekly schedule may provide better availability of this valuable blood product.

Dr. Blake and his team also recommend extending supply chain management techniques within the province to manage supplies of red cells, plasma and fractionated blood products.

-30-

Contact information:

John Blake

Department of Industrial Engineering

Dalhousie University

(P) 902-494-6068

John.blake@dal.ca