Blood Counts

Volume 11, Issue 2, July 2014

In This Issue

Patients Need to Know

Providing patient education regarding human allograft tissue transplant supports Health Canada's Safety of Human Cells, Tissues, and Organs for Transplantation Regulations (CTO Regs). The development of an education tool such as a patient education pamphlet assists the patient to understand the reason why a transplant may be needed. Providing education on the risks of transplant, important questions to ask and possible adverse reactions, allows the patient to make an informed decision in the consent process, and provides an opportunity for them to explore available options in relation to their medical condition and the recommended treatment.

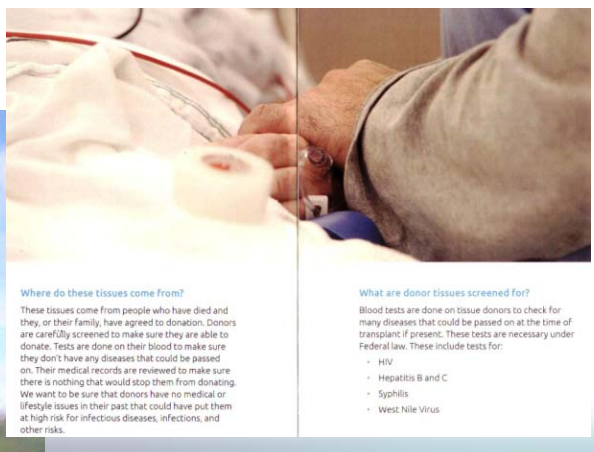
The NSPBCP along with the Tissue and Organ Surveillance System Advisory Group recognized a need to develop a Provincial patient education pamphlet as no such information for allograft recipients currently exists. The goals of this pamphlet were to include details on the signs and symptoms of a potential adverse reactions and to provide an increased focus on patient safety.

This pamphlet was developed with input from a large number of stakeholders, including the patient education coordinator at Capital Health, orthopaedic surgeons, and a small group of patients, in addition to the members of the TOSS Advisory Group. This feedback was incorporated into the pamphlet.

The pamphlet is complete and ready for implementation. The pamphlet will be provided to the Provincial Nurse Educators group and Capital Health's Educator Council for implementation.

If you would like to order copies of the pamphlet, you may contact the NSPBCP at (902) 473-8207 or nspbcp@cdha.nshealth.ca.

Catherine MacPhee
Surveillance Coordinator



NOVA SCOTIA

CMV/Irradiated/Blood Group Requirement Notification Process after BMT

Hematopoietic stem cell transplantation (HSCT) or Bone Marrow Transplant (BMT) may be the treatment for certain cancers of the blood or bone marrow. Immuno-suppressive treatments required throughout the treatment can leave the patient at risk for opportunistic infections such as transfusion-transmitted cytomegalovirus (TT-CMV). Transfusion-associated-graft-versus-host disease (TA-GvHD) can also occur in BMT patients when T-lymphocytes in blood components are transfused to patients whose immune system cannot eliminate or identify transfused lymphocytes. TT-CMV and TA-GvHD can lead to life-threatening conditions.

The type of BMT transplant determines the CMV/Irradiated requirements for cellular components:

- Autologous transplant patients require Irradiated cellular components (RBCs and platelets), but do not require CMV Negative cellular components.
- Allogeneic transplant patients require Irradiated cellular components and CMV Negative cellular components, if the recipient is CMV Negative. If the recipient is CMV Positive, they can receive CMV unscreened (CMV safe) cellular components.
- Plasma and cryoprecipitate do not need to be CMV Negative or Irradiated.

ABORh mismatched Allogeneic transplants will require specific ABORh blood components depending on the ABORh of the recipient and the donor until engraftment occurs. Once engraftment occurs, the ABORh of the blood components required for transfusion will need to be determined by BTS, Hematopathologist and Transplant Physician consultation. The CMV/Irradiated requirements will not change.

The notification process to the hospital identified by the patient where care would be received upon discharge from the QEII BMT Unit is being developed collaboratively with the QEII BMT Program, CDHA BTS and the NSPBCP.

Sue Cairns BN, RN
Transfusion Practice Coordinator - Utilization

Joan B. MacLeod MLT, DBA
CDHA Blood Transfusion Service - Technical Manager

BMT PATIENT READY FOR DISCHARGE

BMT COORDINATOR

- The Bone Marrow Transplant Coordinator asks patient *"What hospital will you go to if you get sick after discharge?"* and record on prescription/ notification document. Provide this information to BTS.
- BMT education book provided to BMT patient.

BLOOD TRANSFUSION SERVICE

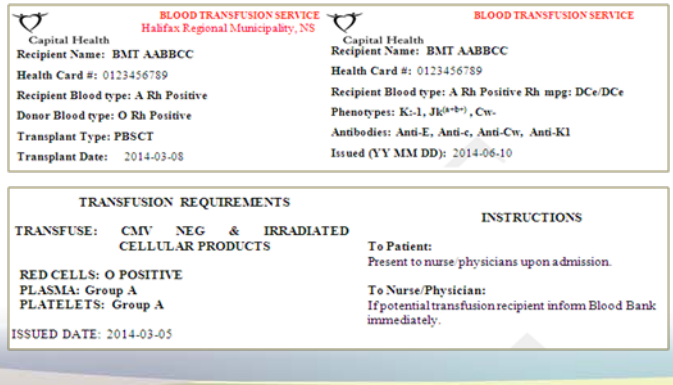
- BTS generates blood transfusion requirement card identifying transfusion requirements (CMV / Irradiated / Blood Group) and antibodies. Card sent to the Charge Nurse on MDU or BMT Unit (BMTU) and applied to patient chart. Card provided to patient upon discharge.
- BTS sends letter / form to 'home' transfusing centre as identified by BMT coordinator.
- Receiving BTS adds blood transfusion requirements to their LIS system.

MDU / BMTU

- BTS letter indicating transfusion requirements added to patient education binder by the charge nurse in MDU / BMTU. Letter accompanies blood transfusion card.
- *Discharge Instructions:* Instruct and provide blood transfusion requirement card containing information of CMV / Irradiated / Blood Group requirement to patient.

PATIENT

- Informs care givers at 'home' hospital of CMV / Irradiated / Blood Group requirements for cellular components (RBCs & Platelets)
- Patient keeps card with transfusion requirements in their possession.



BLOOD TRANSFUSION SERVICE
Halifax Regional Municipality, NS
Capital Health
Recipient Name: BMT AABBCC
Health Card #: 0123456789
Recipient Blood type: A Rh Positive
Donor Blood type: O Rh Positive
Transplant Type: PBSCT
Transplant Date: 2014-03-08

BLOOD TRANSFUSION SERVICE
Capital Health
Recipient Name: BMT AABBCC
Health Card #: 0123456789
Recipient Blood type: A Rh Positive Rh mpg: DCe/DCe
Phenotypes: K:-1, Jk(a+b+), Cw-
Antibodies: Anti-E, Anti-c, Anti-Cw, Anti-K1
Issued (YY MM DD): 2014-06-10

TRANSFUSION REQUIREMENTS
TRANSFUSE: CMV NEG & IRRADIATED CELLULAR PRODUCTS
RED CELLS: O POSITIVE
PLASMA: Group A
PLATELETS: Group A
ISSUED DATE: 2014-03-05

INSTRUCTIONS
To Patient:
Present to nurse/physicians upon admission.
To Nurse/Physician:
If potential transfusion recipient inform Blood Bank immediately.

Lean Six Sigma and Blood Inventory Management in Nova Scotia

Following the advice of its Program Advisory Council, the Nova Scotia Provincial Blood Coordinating Programs (NSPBCP) is examining inventory practices to assess the appropriateness of stocking levels relative to usage for red blood cells and plasma protein products. The goal of this initiative is to optimize inventory while delivering a high level of blood transfusion support.

Many jurisdictions in Canada have focused their attention to Lean and the Six Sigma Concept. Lean Six Sigma is a managerial concept combining Lean and Six Sigma that results in the elimination of eight kinds of waste and an improved capability of performance. The Lean Six Sigma concepts were first published in the book titled *Lean Six Sigma: Combining Six Sigma with Lean Speed* by Michael George and Peter Vincent in 2002 and is used by multiple businesses around the world including Tim Hortons and the implementation of the timer in the drive through to improve the speed in which they can deliver your morning coffee to you.

Our main target initially is to assess excess inventory and to improve inventory forecasting in the DHAs/IWK. Excess inventory is defined as stocking "just in case" inventory rather than "just in time" inventory. There is a fine line and many variables to consider as we move forward. We are challenged to ensure that patients have blood when needed, yet not holding so much in inventory that it expires, requires constant redistribution to ensure utilization or blood group substitutions being made unnecessarily when patients receive a transfusion. Inventory forecasting provided the means to determine where excess inventory was stored within the province and is based on 3 factors: 1) Daily Usage 2) Replenishment Rate (fill rate) and 3) Safety Buffer.

The province of Saskatchewan had presented its recent work on Lean Inventory Management to the Canadian Blood Coordinating Program Collaborative and the NSPBCP took the opportunity to liaise with Saskatchewan to learn more about their initiatives and progress. A key tool used by Saskatchewan was a spreadsheet in which sites inputted transfusions by blood group, blood group substitutions and outdates by blood group for a selected time frame and the tool calculates the minimum, maximum and average number of units transfused in a day by blood group. It also calculates the inventory a site would need to meet demand 90% and 99% of the time.

Hospitals in the province of Nova Scotia provided a years' worth of information from their Laboratory Information Systems to the NSPBCP. Using this information and partnering with CBS; hospital site visits are being scheduled to discuss the findings and explore opportunities related to matching inventory levels with utilization by blood group.

Previous work on decreasing discard rates of Red Cells distributed within hospitals in the province, development of the RBC dashboard to aid in inter-hospital distribution as well as this current initiative demonstrates Nova Scotia is proceeding to a Lean Blood System with many benefits. We must understand that this is a continuous process which will change along with new technologies, education and evolving transfusion practices.

Jennifer LeFrense
Laboratory Standards Coordinator

Upcoming Events

AATB 38th Annual Meeting San Diego, CA
September 16-20, 2014

AABB Annual Meeting & CTTXPO 2014 Philadelphia, PA October 25-28, 2014

"Blood Matters" 5th Annual Transfusion Medicine Conference Halifax Marriott Harbourfront Hotel Halifax, NS November 28, 2014

CSTM 2015 Winnipeg, MB May 20-24, 2015

Red Blood Cell Use in Nova Scotia: a 'Snap Shot' Audit

In September of 2013, the Nova Scotia Red Blood Cell Clinical Expert Working Group approved the AABB RBC Clinical Practice Guidelines for implementation across the province. The guidelines recommend a hemoglobin (Hgb) transfusion threshold of 70-80g/L in hospitalized stable, non-cardiac patients, and limiting orders for blood to one unit at a time.

Over the next several months, the working group facilitated the development of an algorithm and tracking tool for measuring impact from the forthcoming implementation. This algorithm included Hgb thresholds, age of Hgb level, and one-unit-at-a-time practice.

In order to effectively evaluate the impact these guidelines will have on RBC use across Nova Scotia, the DHAs and IWK participated in a 4 day audit of all RBC use during the month of March 2014.

Over the course of these 4 days, there were 180 requests for RBC for a total of 274.8 units transfused. This translated to an average of 1.5 units of blood per request/order. Of these units transfused, 166.8 were excluded based on criteria previously evaluated, including OR patients, patients who were actively bleeding, obstetrical, neonatal, cardiac and trauma patients. This resulted in 108 units of RBC being included in the audit. Table 1 outlines the audit results.

Transfusions in stable non-cardiac patients were considered appropriate for those with a current Hgb within 24 hours that was </=80g/L.

		Total Units That Did Not Meet Recommendations	**Total Units that Did Meet Recommendations**
Total Units Transfused	274.8*	----------	----------
Total Units Excluded	166.8*	----------	----------
Total Units Included in Analysis	108	29 (27%)	79 (73%)

*Includes alliquotted units

As a result of the audit, exclusion criteria has been reviewed and re-defined and is currently in the process of receiving approval from individual District Medical Advisory Committees (DMAC).

The algorithm will be implemented beginning in June across the DHAs according to the implementation schedule set out by their individual DMACs, with 6 month and 1 year evaluations to follow accordingly. These evaluations will follow the baseline audit format.

For more information, contact the NSPBCP at 473-2121.

Amber White
Utilization Management Coordinator