Blood Counts

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Guideline for the Appropriate Use of Plasma in Nova Scotia

"Audits of frozen plasma use world-wide indicate considerable inappropriate transfusion of frozen plasma when measured against published guidelines..."[1]

In an audit of plasma utilization in Nova Scotia during October 2014, plasma transfusions were deemed 'appropriate' in 34% of cases.

In 2015, the Appropriate Blood Components Working Group (ABC WG), a multi-disciplinary group of medical experts and health care professionals from adult and pediatric facilities in Nova Scotia, convened to develop the *Guideline for the Appropriate Utilization of Plasma and Cryoprecipitate in Nova Scotia*. The objective of the guideline is to provide standardization of care on the appropriate use of plasma and cryoprecipitate. "Hospitals indicating they had 'guidelines' for plasma transfusion had a significantly higher rate of transfusions deemed 'appropriate'."[1]

Appropriate indications for plasma transfusion

1. in bleeding or prior to an invasive or operative procedure with an INR greater than 1.7 when the elevated INR is not associated with vitamin K antagonists (Coumadin®, Sintrom®) or vitamin K deficiency.
2. for the treatment of congenital or acquired thrombotic thrombocytopenic purpura (TTP)
3. in massive hemorrhage
4. in disseminated intravascular coagulopathy (DIC) with life-threatening bleeding
5. to replace a coagulation factor when a factor concentrate is not available (i.e. Factor V deficiency)" or the factor concentrate is contraindicated (i.e. Factor XI deficiency in a patient with high thrombotic risks).

The NSPBCP will repeat the plasma utilization audit after the guideline has been implemented in Nova Scotia.

Guidelines provide evidence-based information and consensus-based recommendations for consideration when making individual decisions. The detailed guideline for plasma and cryoprecipitate indications will be available on the NSPBCP website in the near future.

Reference:

1. *ORBCoN (2010) The Ontario Clinical Practice Recommendations for the Use of Frozen Plasma (FP) Version 1.1*

Positive Patient Identification

Blood transfusion has evolved over the years to improve safety and reduce transfusion risks such as viral concerns, bacterial contamination and even TRALI. The number one risk in blood transfusion today is considered to be "Wrong Blood in Tube" (WBIT) errors. These errors occur when the blood is collected from the wrong patient and is labelled with the intended patient's details, or when blood is drawn from the intended patient but labelled with the wrong details. These errors are very serious, almost always preventable as caused by human error during identification process at time of pre-transfusion and can result in death. Positive patient identification ensures pre-transfusion samples are collected from the correct patient and labelled appropriately to ensure the right components are transfused to the right individuals.

It is suggested that for every one incompatible red cell transfusion due to WBIT there are 100 WBIT samples detected before transfusion occurs (SHOT). The Canadian Transfusion Error Surveillance System (TESS) is a voluntary surveillance reporting system within Canada. Approximately 35% of the errors reported to TESS between 2012 and 2014 were identified as sample identification errors.

Mitigation of WBIT can include: positive patient identification measures, collection policies, sample rejection policies, comparison to patients previous records as well as the "group check".

The Canadian Standards Association has identified the importance of proper patient identification by updating the CSA-Blood and Blood Components Standards Z902-15 to help ensure patients are correctly identified prior to transfusion by implementing the use of the "group check" sample in patients with no previous ABO history at facilities with no patient identification technology.

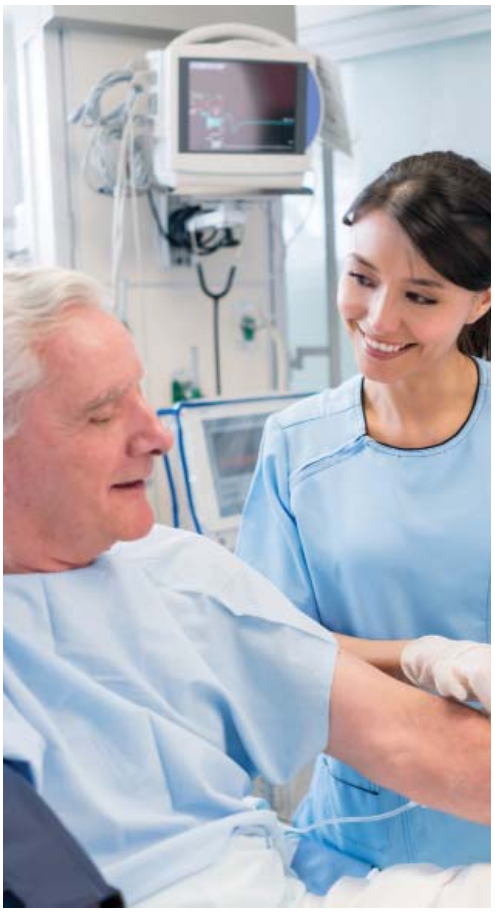
Clause 10.6.3.2 states if a computerized crossmatch system is used, two determinations of the recipients' ABO group shall be made: the first shall be on a current sample and the second shall be by one of the following methods:

a) Testing of a second current sample;
b) Comparison with previous records, or
c) Retesting of the same sample.

Note: Retesting of the same sample detects technical errors only. It will not detect sampling or identification errors. See Clause 10.6.3.3

Clause 10.6.3.3 states Retesting of the same sample shall only be done in situations where positive patient identification technology is used at the time of the specimen collection.

Current practice in Nova Scotia includes retesting of the same sample by a different technologist if patient history is unavailable. As stated in the standards this does not identify mislabelled specimens and therefore does not protect against the wrong product being given to a patient whose pre-transfusion sample was mislabelled. The CSA standards identify the importance of this while using electronic crossmatching however; it has been supported that Nova Scotia hospitals will adopt this for all mechanisms of crossmatching pre-transfusion specimens on patients with no history. A cost analysis project is underway to determine the impact to the system and aid in determining the cost difference between retesting versus implementing positive patient identification technology.



Transfusion Reaction Case Studies

Classify the following transfusion reactions including:

1. **Reaction type**
   (febrile non-hemolytic, allergic, hemolytic, delayed serological, infection, TACO, TAD, TRALI, hypotensive, TA-GVHD)

2. **Relationship of adverse reaction to transfusion**
   (definite, probable, possible, doubtful, ruled out, not determined)

3. **Severity**
   (Grade 1, 2, 3, 4, not determined)

4. **Outcome**
   (death, major or long term sequelae, minor or no sequelae, not determined)

1

66 year old male with no previous transfusions. His pre-transfusion vital signs are B/P 165/95, P. 85, RR: 20, T: 36.8. Halfway through the transfusion of plasma, the patient complained of itchiness on both of his arms. The transfusion rate was slowed but within 5 minutes multiple hives appeared on both of his forearms. The transfusion was stopped and diphenhydramine was administered resulting in relief of the symptoms. The workup was negative for evidence of hemolysis.

2

A 45 year old female on chronic Coumadin therapy due to previous deep venous thromboses secondary to Factor V Leiden mutation was admitted with spontaneous subarachnoid hemorrhage. Her pre-transfusion vital signs were : BP. 140/70, P. 70, RR: 20, T: 36.9. 18 units of plasma were transfused over a 36 hour period. During transfusion her respiratory rate and blood pressure increased. Furosemide was administered. No reaction was reported however BTS investigated this case due to the high volume of plasma administered. The investigation revealed;

1. Plasma use was inappropriate in this situation and patient should have received PCC.
2. Post-Transfusion chest x-ray - Bilateral dependent pulmonary infiltrates and increased cardiac silhouette size by radiography.
3. Decreased oxygen saturations post transfusion.
4. Investigation negative for evidence of hemolysis.

1. Answer: allergic, definite, grade 1, minor or no sequelae. 2. Answer: Transfusion Associated Circulatory Overload (TACO), definite, grade 2, minor or no sequelae

Kudos Corner

Blood Transfusion Service in Central Zone has received formal accreditation from the American Association of Blood Banks (AABB) until December 31, 2017.

An unannounced assessment was held on October 6-7, 2015, which included three AABB assessors from the US who assessed the transfusion activities of the service from vein-to-vein at all four Blood Transfusion Service testing sites in Central Zone (Halifax Infirmary, Victoria General, Dartmouth General and Hants Community). Transfusion administration on the nursing units was also audited in addition to support services such as BioMedical Dept and Refrigeration Services, who provide Transfusion Service Equipment maintenance.

The unannounced assessment occurs biannually anytime between October 1st and December 31st of the assessment year.

Did You Know

In 2011/12 133 vials of Plasma Protein Products (PPPs) were discarded which led to the development of the PPP redistribution program. In 2015/16 only 10 vials outdated! Congratulations to everyone – keep up the great work. Lets aim for zero next year.

This newsletter is published by the Nova Scotia Provincial Blood Coordinating Program (NSPBCP).
Back issues are posted at novascotia.ca/dhw/nspbcp/publications-and-reports.asp.

We welcome your feedback. E-mail your comments and story ideas to nspbcp@nshealth.ca,
or phone 902-487-0514. Our office is at 1673 Bedford Row, Room 2123, Halifax NS B3J 1T1.