

Ontario AB Plasma Audit

2018



Inspiring and facilitating best transfusion practices in Ontario.



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1.0 Executive Summary

The Ontario Regional Blood Coordinating Network (ORBCoN) conducted a provincial AB plasma audit in order to gather more detailed information on the utilization of AB plasma in Ontario.

Nationally there has been a downward trend in plasma utilization however, at the same time there has been an increase in the proportion of AB plasma requested by hospitals. Approximately 3% of the general population of Canada is group AB however hospital requests for AB plasma represent 14% of the plasma demand. (1) As AB plasma is considered to be the universal plasma donor group and can be given to patients of any ABO blood group, AB plasma is used for initial resuscitation of massively bleeding patients and in urgent situations where there is no blood group on file. While Canadian Blood Services makes every attempt to manage this large gap between supply and demand, periodic shortages occur.

This is the first time AB plasma utilization has been audited province-wide in Ontario. The goal of this AB plasma audit is to determine: the disposition of AB plasma in Ontario, AB to AB recipients, AB to non-AB recipients and, specifically, the reasons for the latter.

All Ontario hospitals with a transfusion medicine laboratory were invited to participate in this provincial audit (Note: not all Ontario hospitals stock and/or transfuse plasma, therefore were not able to participate in the audit). The data were collected for three months in total by eighty-two (82) hospitals, which captured 89.5% of the provincial AB plasma shipped by Canadian Blood Services in this time period.

Overall, during the audit period, 24.7% of the AB plasma was transfused to an AB recipient and 75.3% was transfused to a non-AB recipient. A difference was seen between the three regions of the province (Central, Northern and Eastern, and South West Ontario). The most common reasons for transfusing group AB plasma to patients of other ABO blood groups were: (1) for use in a Massive Hemorrhage Protocol (MHP) before the patient's blood group was known (32.4%) and (2) to avoid outdate of plasma originally thawed for a MHP but not used (24.8%). The disposition of AB plasma for reasons other than transfusion was relatively small, with the highest percentage being outdated due to being thawed for a MHP but not used (7.0%).

This audit was not intended to examine the appropriateness of MHPs throughout the province, however a few comments can be made in this regard. It is important to obtain a group and screen as soon as possible following the activation of a MHP so that patients may receive group-specific plasma and the limited AB plasma supply may be preserved. If MHP activations are uncommon, the rationale for the practice of maintaining a stock of thawed AB plasma should be carefully considered. It is also worthwhile reviewing all MHP activations for appropriateness and determining how many patients actually receive the pack containing plasma (usually the second pack). In smaller centres, the patient may be transferred before plasma is used.

Participating hospitals will receive a report with site specific data and graphs generated from submitted data.

2.0 Background and Purpose

The Ontario Regional Blood Coordinating Network (ORBCoN) conducted a provincial AB plasma audit in order to gather more detailed information on the utilization of AB plasma in Ontario.

Nationally there has been a downward trend in plasma utilization however, at the same time there has been an increase in the proportion of AB plasma requested by hospitals. Approximately 3% of the general population of Canada is group AB however hospital requests for AB plasma represent 14% of the plasma demand.(1) AB plasma is considered to be the universal plasma donor group since it lacks anti-A and anti-B, and can be given to patients of any ABO blood group, therefore, AB plasma is used for initial resuscitation of massively bleeding patients and in urgent situations where there is no blood group on file. While Canadian Blood Services makes every attempt to manage this large gap between supply and demand, periodic shortages occur.

This is the first time AB plasma utilization has been audited province-wide in Ontario. The goal of this AB plasma audit is to determine: the disposition of AB plasma in Ontario, AB to AB recipients, AB to non-AB recipients and, specifically, the reasons for the latter.

All Ontario hospitals with a transfusion medicine laboratory were invited to participate in this provincial audit. Participating hospitals will receive a report with site specific data and graphs generated from submitted data.

Note: not all hospitals stock and/or transfuse plasma so not all hospitals in the province were able to participate.

2.1 Recent Developments

Massive Hemorrhage Protocols (MHPs) have been developed and are in widespread use in hospitals across the province. (2) The development of MHPs is suspected to have caused a significant increase in the utilization of AB plasma and that AB plasma thawed for MHPs is often discarded due to outdating or transfused to another patient to avoid outdating.

Since group AB plasma is compatible with all ABO blood groups, it is usually provided in MHP blood component packs, and some centres maintain a stock of thawed group AB plasma to accommodate MHPs. The practice of maintaining a stock of thawed group A plasma (instead of

thawed group AB plasma) for MHPs, in order to address the chronic shortage of group AB plasma, remains controversial and is not widely used in Canada. (3,4).

3.0 Method

An email communication was sent to all Ontario hospitals with a transfusion medicine laboratory inviting participation in a provincial audit of AB plasma. As with all provincial audits conducted by ORBCoN, participation is not mandatory however many hospitals elect to participate as the Canadian Standards Association (CSA) Z902 Standard on Blood and Blood Components, and Canadian Society for Transfusion Medicine Standards for Hospital Transfusion Services state that regular audits must be conducted by each facility.(5,6) Participation in the ORBCoN audits helps hospitals satisfy this requirement.

There are three defined ORBCoN regions in Ontario- Central (CE), Northern and Eastern (NE) and Southwest (SW). The provincial data was collected cumulatively as well as by each region in order to determine if there were any regional specific practices.

The data points to be surveyed were determined and a survey with the data capture points was created using LimeSurvey™ 3.13.1, a statistical web-based survey tool. The participating hospitals collected monthly AB plasma disposition data from January 1 to March 31, 2018. A manual data collection form was provided for data collection prior to entry into the LimeSurvey™. The form was not mandatory but was provided to hospitals to aid in data collection if use of the Laboratory Information System (LIS) printout was not feasible. There were no patient identifiers on the disposition data collection form.

A separate monthly link for LimeSurvey™ was created for each region, CE, NE and SW. The link was provided to participating hospitals by the ORBCoN representative at the end of each audit month. The audit data was exported from the LimeSurvey™ for analysis by ORBCoN.

Participating hospitals will receive a report with site-specific data. These data will be presented in comparison with both regional and total provincial participant data.

Provincial data for the number of AB plasma units shipped during the period of the audit were obtained from Canadian Blood Services.

3.1 Data Capture Points

- Hospital site
- Green level of AB plasma inventory

- AB plasma transfused to AB recipient
- AB plasma transfused to non-AB recipient
 - due to MHP with no blood group on file
 - thawed for another patient and/or for MHP –transfused to another patient to avoid outdating
 - frozen product near expiry –thawed and transfused to avoid outdating
 - due to only plasma group available in stock at the time of transfusion
 - for plasma exchange
 - with ABO incompatible renal transplant
 - who is a neonate
 - other reasons not listed
- AB Plasma redistributed to another site
- AB Plasma transferred with patient to another site
- AB Plasma frozen and outdated
- AB Plasma thawed for MHP, not used and outdated
- AB Plasma ordered, thawed, not used and outdated
- AB Plasma discarded, not outdated
 - broken in plasma thawer
 - other reasons not listed

4.0 Validation Procedure

Verification and validation procedures took place monthly during the data collection period and at the end of the final data entry period for each region. As part of the verification process, all the data were reviewed for any duplicate, missing or discrepant entries.

Fourteen (14) hospitals were contacted regarding seventeen (17) questionable entries. All 17 questionable entries were reviewed by the participating sites and all entries were corrected.

The questionable entries included: entering the value in the incorrect response, including the same component in more than one entry response, full duplicate entry and typographical errors.

Manual data sheets were not a mandatory requirement for the data collection, and the majority of hospitals participating in the audit entered their data directly from a LIS printout. Four (4) hospitals out of eighty-two (82), approximately five (5) percent, submitted manual data entry sheets which were compared to the web-based data entry to confirm a match between the two.

A few questions were raised during the January data entry period, the answers to which were provided for reference during the next two data entry periods.

- 1) 500 mL apheresis plasma to be counted as two units
- 2) Neonate aliquot to be counted as one per unit number, not per aliquot transfusion
- 3) If no blood group on file, and if for use other than MHP to be entered in the "Other" category with reason specified for no blood group being on file
- 4) AB plasma to non-AB recipient to avoid outdating if thawed for another patient/MHP(specify) and then not used – If this question had an entry, the dropdown menu opened requiring an answer specifying thawed for another patient or thawed for MHP. The total had to match the original answer.

5.0 Utilization Results

The data were collected for three months in total by eighty-two (82) hospitals, and this captured 89.5% of the provincial AB plasma issued by Canadian Blood Services during this time (Table 1.0). There was representation from each of the three Ontario regions.

Not all hospitals in the province stock and/or transfuse plasma therefore not all of the 150 hospitals with a transfusion service in the province would have been able to participate.

AB Plasma shipped by Canadian Blood Services and utilized during the audit period

Region	Total AB Plasma Transfused	"Total AB Plasma Usage= (Transfused + outdated, broken, returned, discarded other, used other, failed inspection, improper storage, patient related)"	Total AB Plasma Shipped by CBS
CE	520	582	
NE	257	323	
SW	575	673	
Total Participants	1352	1578	
Provincial			

Table 1.0

Overall the transfusion of AB plasma to an AB recipient during the audit period was 24.7% and to a non-AB recipient 75.3%. Figure 1.0 shows to whom the AB Plasma was transfused. A difference is seen between the regions.

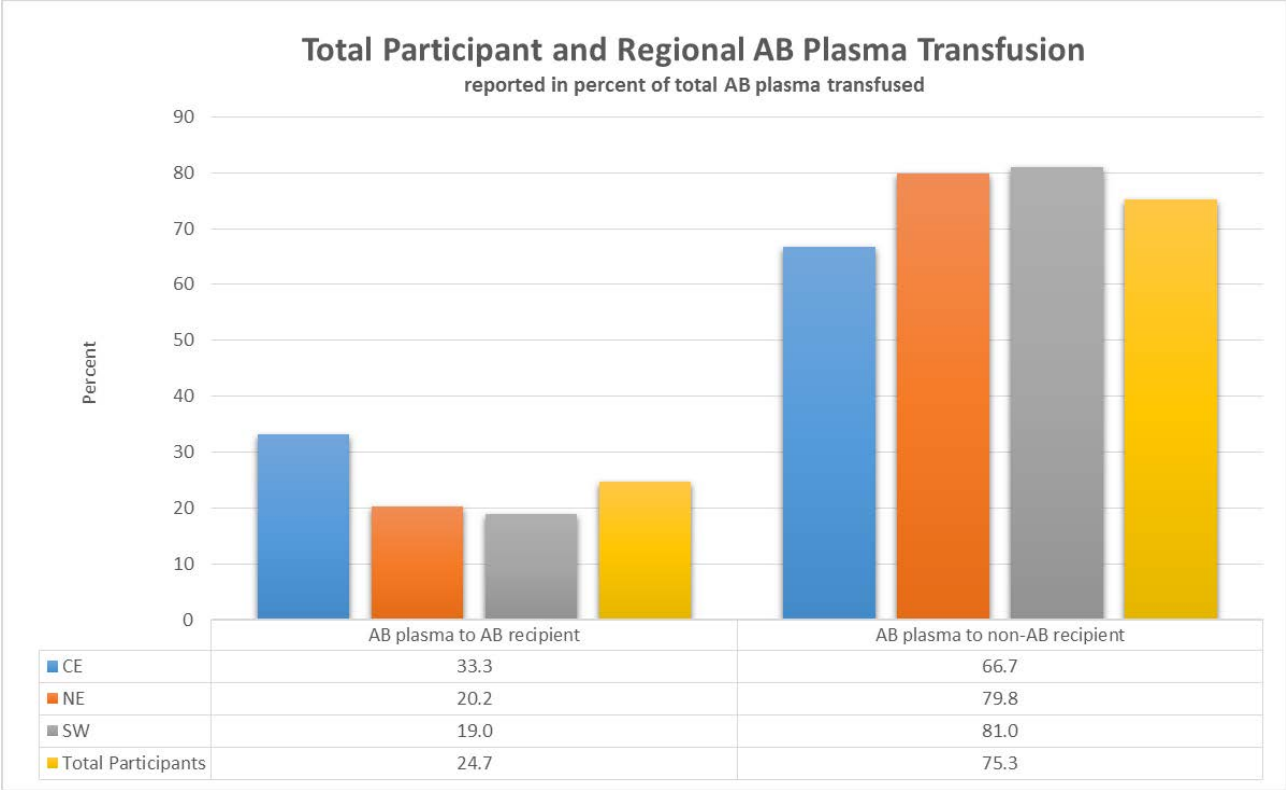


Figure 1.0

Figure 2.0 and Table 2.0 show the reasons for transfusion of AB plasma to non-AB recipients.

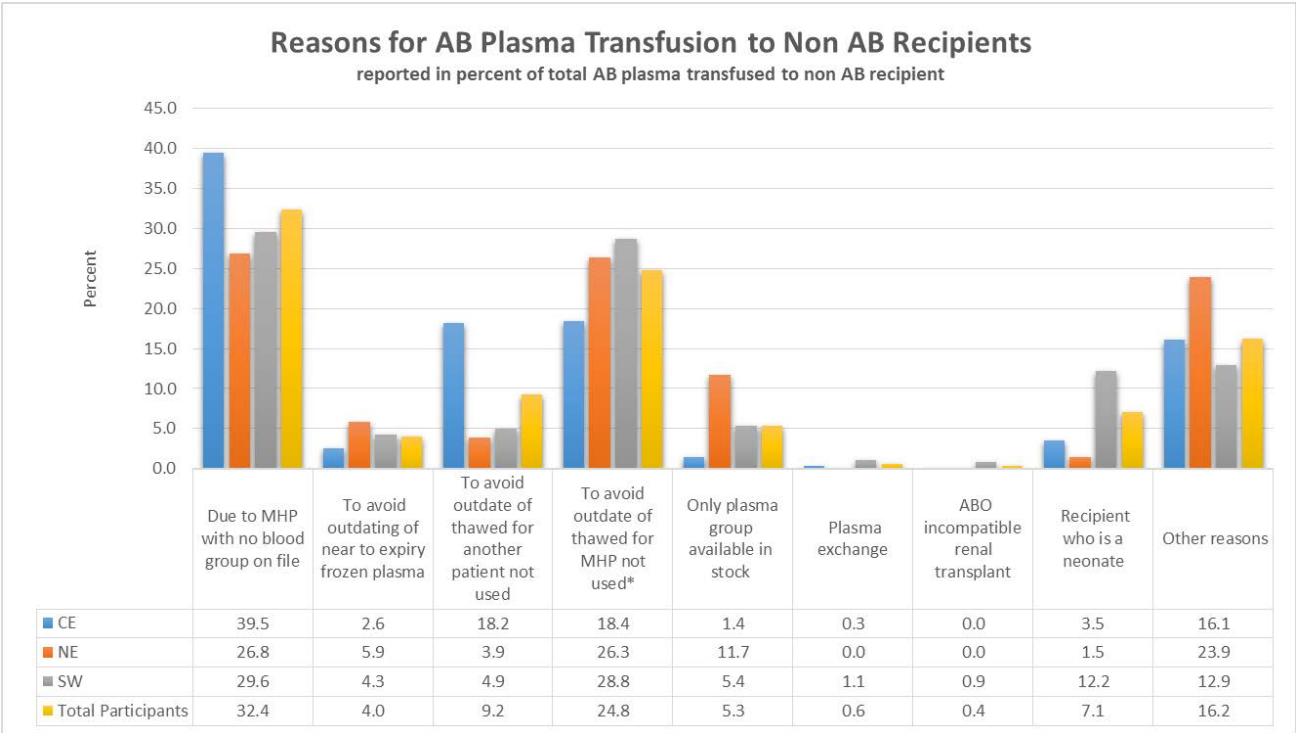


Figure 2.0

*Includes plasma thawed for a specific MHP activation or thawed plasma kept in stock for MHP

AB plasma to non-AB recipient for “Other” reasons (160 units)

Number of AB Plasma	“Other” reason for transfusion
51	No group on file, Urgent/Stat order
31	Stat requests for plasma - AB was thawed and readily available
18	No current/in-date blood group on file
12	Emergency issue
8	FP order STAT
8	Unknown
8	Pending completion of ABO/Rh confirmatory testing
4	Sepsis biliary obstruction
3	Transfused to a Group A patient who received IVIG and has a positive DAT due to anti-A
2	Selected in error
2	Thawed for trauma, used for urgent bleed inpatient
2	Bone Marrow transplant patient
2	Patient was group B, only keep A, O and AB in inventory
2	Arrived thawed with patient from another hospital
2	Patient blood group on file, but physician unable to wait for group specific plasma to be thawed, issued units of thawed AB plasma kept on hand for MTP
2	ABO/RH group problem
1	Unable to obtain sample from patient before they were transferred to another hospital
1	Whole blood exchange
1	Child - ABO/RH not resolved prior to transfusion

Table 2.0

A recent international survey by the BEST Collaborative showed that 73% of group AB plasma was transfused to non-AB recipients, a finding similar to that shown by this Ontario audit (7). Standards for red cell transfusion require the verification of a patient’s blood group from 2 separate blood draws before red cells other than group O are transfused (8). Hospitals may be interpreting this to mean also that 2 separate blood groups are required before plasma other than group AB may be used.

5.1 AB Plasma Disposition Other than Transfused

The disposition of AB plasma was reported under seven categories if not transfused:

- AB Plasma redistributed
- AB Plasma transferred with patient to another site

- AB Plasma frozen and outdated
- AB Plasma thawed for MHP, not used and outdated
- AB Plasma ordered, thawed, not used and outdated
- AB Plasma discarded, not outdated
 - broken in plasma thawer
 - other reasons not listed

The disposition of AB plasma for reasons other than transfusion was relatively small, with the highest percentage being “thawed for MHP, not used and outdated” at 7.0%. There is a large variance between the three regions. (Figure 3.0)

Hospital Total AB plasma Usage = Transfused + outdated, broken, returned, discarded other, used other, failed inspection, improper storage, patient related

The AB Plasma redistributed and transferred with a patient is not included because the final disposition is unknown. It is assumed that receiving hospitals included the final disposition in their own audit data.

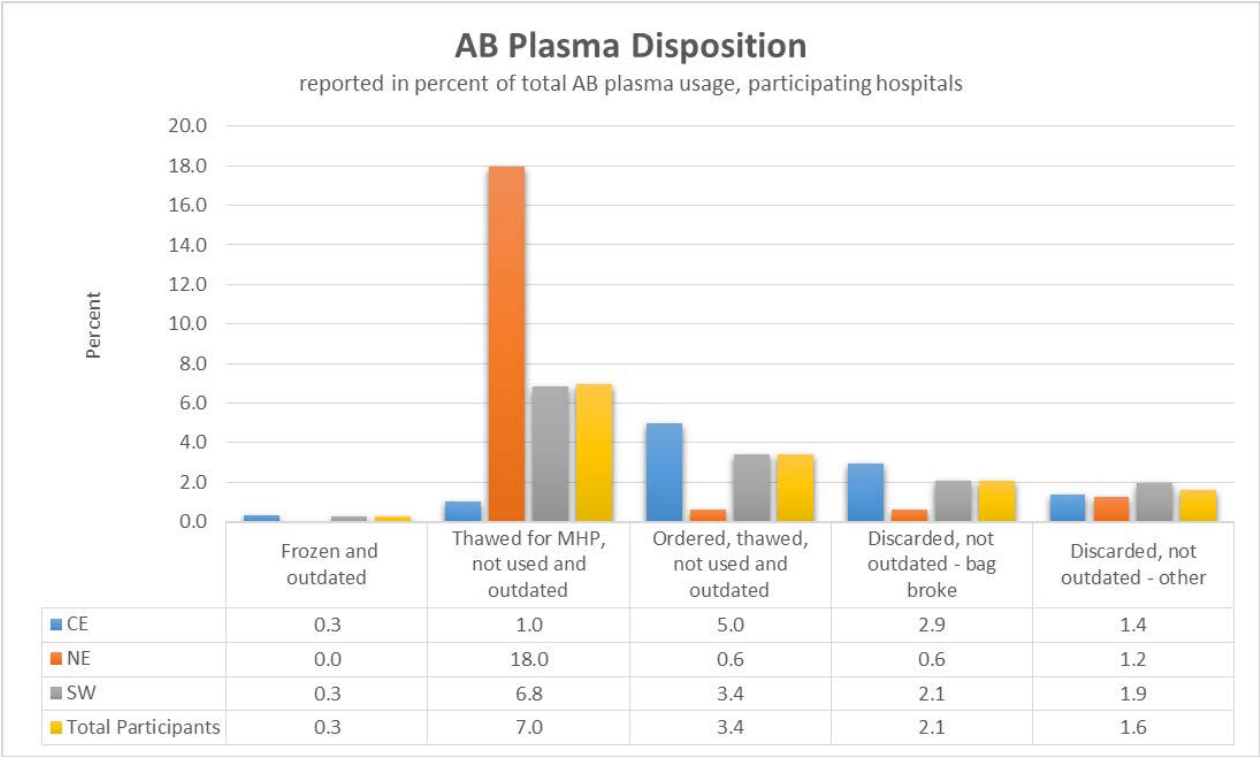


Figure 3.0

The major reason for discard for “other reasons not listed” was questionable storage during time out of the Transfusion Medicine laboratory, at 88% (22 of 25 instances). (Table 3.0)

Number of AB Plasma	Discarded not outdated- Other
22	Questionable storage (19-temperature, 3-time)
1	Questionable shipping conditions
1	Patient expired
1	Unit thawed, dropped and broken

Table 3.0

6.0 Conclusion and Recommendations

The results of this audit are comparable to other audits on the use of group AB plasma.

The most common reasons for transfusing group AB plasma to patients of other blood groups were:

- To accommodate MHPs before the patient's blood group is known (32.4%).
- To avoid outdate of plasma thawed for MHP but not used (24.8%).

The differences between regions are listed below:

- Hospitals in CE region use a higher per cent of AB plasma in MHPs compared to NE and SW regions.
- CE region hospitals reported use of a much higher per cent of AB plasma that has to be used on another patient as it was ordered for a patient but then not used. They also reported a higher per cent discarded due to the same reason.
- NE and SW use a higher per cent of AB plasma for other patients due to thawing for an MHP and then not using. NE subsequently also reports having to discard a much higher per cent of AB plasma for this same reason.
- NE region has a higher number of small hospitals that stock predominantly or only AB plasma. Some smaller hospitals have no other option than to stock group AB plasma only.
- SW region reported a higher per cent of AB plasma transfused to neonates.
- CE region reported a very low per cent of having to discard AB plasma due to thawing for an MHP but not using it.
- CE region reported a higher per cent of AB plasma discarded due to breakage.

Although this audit was not intended to examine the appropriateness of MHPs throughout the province, a few recommendations can be made in this regard.

- Monitor how often AB plasma is ordered but not used, and determine the cause(s) to see if this wastage of AB plasma can be reduced.
- Obtain a group and screen as soon as possible following the activation of a MHP so that patients may receive group-specific plasma as soon as possible.
- If MHP activations are uncommon, the rationale for the practice of maintaining a stock of thawed AB plasma should be carefully considered.
- Review all MHP activations for appropriateness and determine how many patients actually receive the pack containing plasma, usually the second pack. In smaller centres, the patient may be transferred before plasma is used.

7.0 Acknowledgements

ORBCoN would like to acknowledge the following:

The Transfusion Medicine Staff at all participating facilities

Canadian Blood Services for providing shipment data

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8.0 References

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