

Better Practice Case Study: BloodMove Platelets – a successful system to significantly reduce platelet wastage

Summary

... reducing platelet wastage rates from highs of up 21% to lows of down to 6% - it is possible!

The BloodMove Platelets project aimed to reduce platelet wastage rates due to expiry. High platelet wastage rates which were previously seen as unavoidable were deemed unacceptable in the current climate of healthcare cost containment.

BloodMove Platelets involves a collaborative platelet inventory concept comprising of moving Day 4 platelet blood stocks from low usage sites to high usage sites and then sharing a common multi-site near expiry Day 5 platelet inventory. Additionally, minor inventory level changes and dispatch practices were implemented.

Transfusion Service laboratories across the SA Pathology network, together with the large private pathology transfusion service laboratories, have significantly reduced platelet wastage to levels previously thought as unachievable. As a result, BloodMove Platelets has achieved a 54% reduction in platelet wastage for all metropolitan public hospitals in Adelaide (comparing the 12 month averages pre and post BloodMove of 17% to 7.8%). This reduction has been sustained for 12 months and is expected to be maintained. The flow on substantial cost savings to State and Commonwealth Governments will allow redirection of funding to other areas within health.

Importantly, BloodMove practices have reduced the out-dating of the valuable resource freely provided by blood donors. These initiatives have shown that with good planning, collaboration and education, significant reduction in platelet component wastage due to expiry is attainable.



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Introduction and Background

BloodMove Platelets is a city wide platelet wastage minimisation project involving collaboration between the SA Health Blood, Organ and Tissues Programs Unit, the metropolitan SA Pathology Transfusion Service laboratories and the private pathology transfusion service sector.

Blood product wastage minimisation is a national stewardship obligation for all transfusion laboratories and hospitals. Platelet inventory management and wastage minimisation forms part of this stewardship. Platelet wastage is almost exclusively due to product expiry and the short product expiry time of the product represents a challenge. Financial year 2012/2013 platelet wastage rates in South Australia were 17% (equating to an approximate total product cost of \$0.9 million).

Aim

The aim of the BloodMove Platelets project was to minimise platelet wastage due to expiry.

Implementation

The BloodMove Platelets project was implemented in a staged manner following initial planning, preparation, consultation and education. Initial planning included auditing inventory levels, platelet usage and wastage patterns across all metropolitan public hospitals.

The BloodMove project aimed to minimise platelet wastage through a number of different strategies including:

- transfer of near expiry platelets to large metropolitan hospital laboratories,
- establishing a common shared Day 5 Platelet Listing for use by all Adelaide metropolitan hospital and private laboratories (in preference to the use of available Day 3 or 4 platelets or by placing a BloodNet order), and by
- reducing platelet inventories deemed excessive.

Platelet usage and discard audits

The Platelet Day Usage and Discard Mapping Audit (*Figure 1*) is a visual tool used to test the concept of different labs sharing their Day 5 inventory. The details of every platelet used and discarded in all the laboratories in a network were recorded for two days. Then 'what if' analyses were performed i.e. could a platelet unit that was discarded in Lab A have been used by Lab B which used one of its own Day 4 platelets? (*Figure 2*)

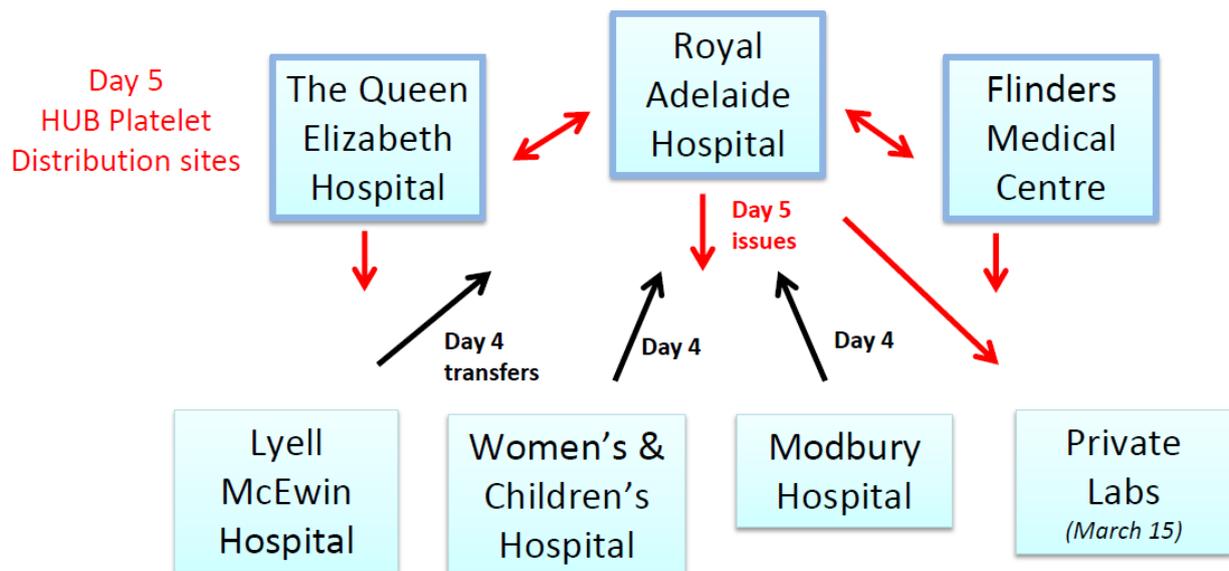
Transferring Day 4 Platelets from Low use sites to High use sites

The next stage of the project implementation commenced in late July 2014 with transfer of Day 4 platelets from smaller metropolitan Transfusion Service laboratories to larger Transfusion Service sites in anticipation that the platelets would more likely be used at those sites. As a result, the platelet wastage rate at the smaller sites approached 0%.

Figure 3 - Flowchart detailing transfer of Day 4 platelets (in black) and issue of Day 5 platelets (in red)

Implementation of the Platelet Network

- redistribution of Day 4 platelets and preferential use of Day 5 platelets
- All public Adelaide metro hospitals included in Network



the concept: many labs but ONE Day 5 Inventory

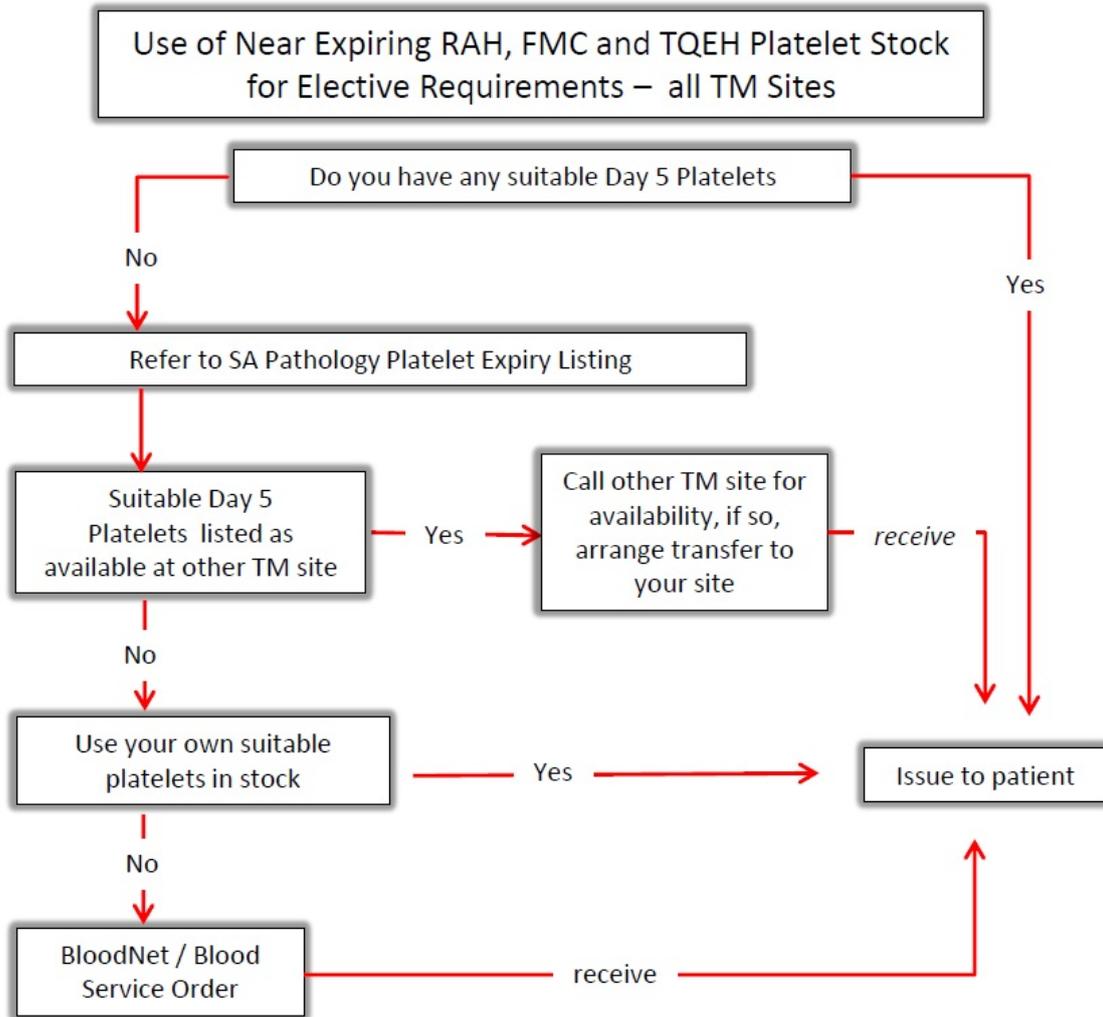
Preferentially Using a Common Day 5 Inventory

To deal with the increased number of Day 5 platelets at the larger sites, a daily shared *Day 5 Platelet Listing* was prepared for use by all public Transfusion laboratories and more recently private pathology laboratories. This *Day 5 Platelet Listing* was used by all Transfusion laboratories to source non-urgent platelets in preference to using available fresher platelets (i.e. Day 3 or Day 4) or requesting platelets from the Blood Service through BloodNet.

Initially, the *Day 5 Platelet Listing* was faxed daily to all stakeholder Transfusion Service sites, but the later development of an IT network solution provided an ongoing updated online Expiring Product Report (i.e. Day 5 report) which was accessible by all public Transfusion Service sites through the SA Health intranet. The process was later transferred to the internet and since early April 2015, two large private pathology Transfusion laboratories can also view the State's *Day 5 Platelet Listing*.

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Figure 4 -Flowchart detailing how to source platelets for elective transfusion



Platelet Inventory Adjustments at High Use Sites

Once the process was stabilised, inventory levels were appropriately reduced at the main sites receiving the Day 4 platelets. Subsequent stages included the targeted reduction in platelet inventory of those blood groups typically having a high discard rate and optimal number of CMV negative platelets in the inventory depending on clinical use.

Table 1 Platelet inventory reductions and adjustments at a large site

Inventory Holding	CMV No.	Total	O Pos Pooled	O Pos Apheresis	O Pos Apheresis CMV(-)	O Pos Pooled CMV(-)	O Neg Pooled	O Neg Apheresis	O Neg Apheresis CMV(-)	A Pos Pooled CMV(-)	A Pos Pooled	A Pos Apheresis	A Pos Apheresis CMV(-)	A Neg Pooled	A Neg Apheresis	A Neg Apheresis CMV(-)	B Pos Pooled
Large Site July 2014	4	13	2		2		1	1			2		2	1	1		1
Large Site Aug 2014		10	2		2		1	0			2		2	1	0		0
Large Site November 2014	6	8	0		1	2	1			1	0		2	1			

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Preferential Use of Day 5 Group O Platelets rather than using younger group specific

The inventory of group O low titre apheresis and pooled platelets was increased, in preference to holdings of other ABO types to facilitate increased ABO cross grouping. ABO cross group, i.e. issue of ABO minor incompatible platelets, was already being successfully practiced at some medium metropolitan sites. However it was not commonly practiced at large sites which maintained a wide platelet blood group inventory, resulting in these sites having the highest discard rates. A group O inventory allowed for adoption of a policy in which Day 5 group O platelets were issued in preference to ABO specific Day 3 or Day 4 platelets. This practice contributed to wastage reduction.

Engagement with Clinical Units

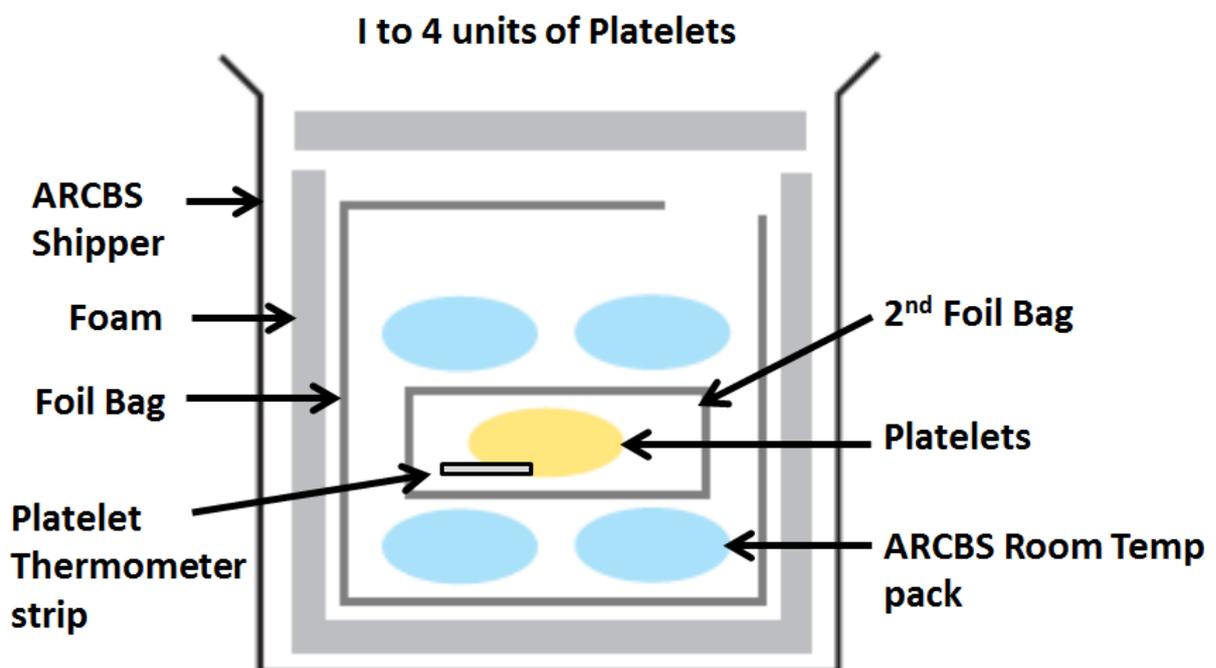
The haematology / oncology wards at the Royal Adelaide Hospital were the biggest users of platelets in Adelaide and the BloodMove Project Team engaged with staff on these wards to streamline platelet ordering practices using the BloodMove single inventory model. Staff on the wards were requested to obtain their patient platelet counts earlier in the morning allowing placement of platelet unit orders earlier. This allowed the sourcing of Day 5 platelets from other sites in metropolitan Adelaide.

Additionally, all clinical units ordering platelets electively were asked if the order could be fulfilled within the timeframes that allowed sourcing from another metropolitan transfusion service laboratory.

Simplified Platelet Shipper Configuration

To facilitate faster platelet transfers across metropolitan sites an alternate shipper was validated, which was simpler to pack and use. The Blood Service platelet shipping configuration (P2) then in use was generally regarded by operational staff as cumbersome/ heavy and complex to pack for routine simplified use. Initially a hard case polyurethane based shipper was used, but later the existing Blood Service shipper was re-adopted using an alternate validated configuration which was very simple and quick to pack.

Figure 5 - Platelet Shipper Packing Configuration details: SA Pathology Blood Shipper Configuration BSPLT1 (validate for 4 hours)



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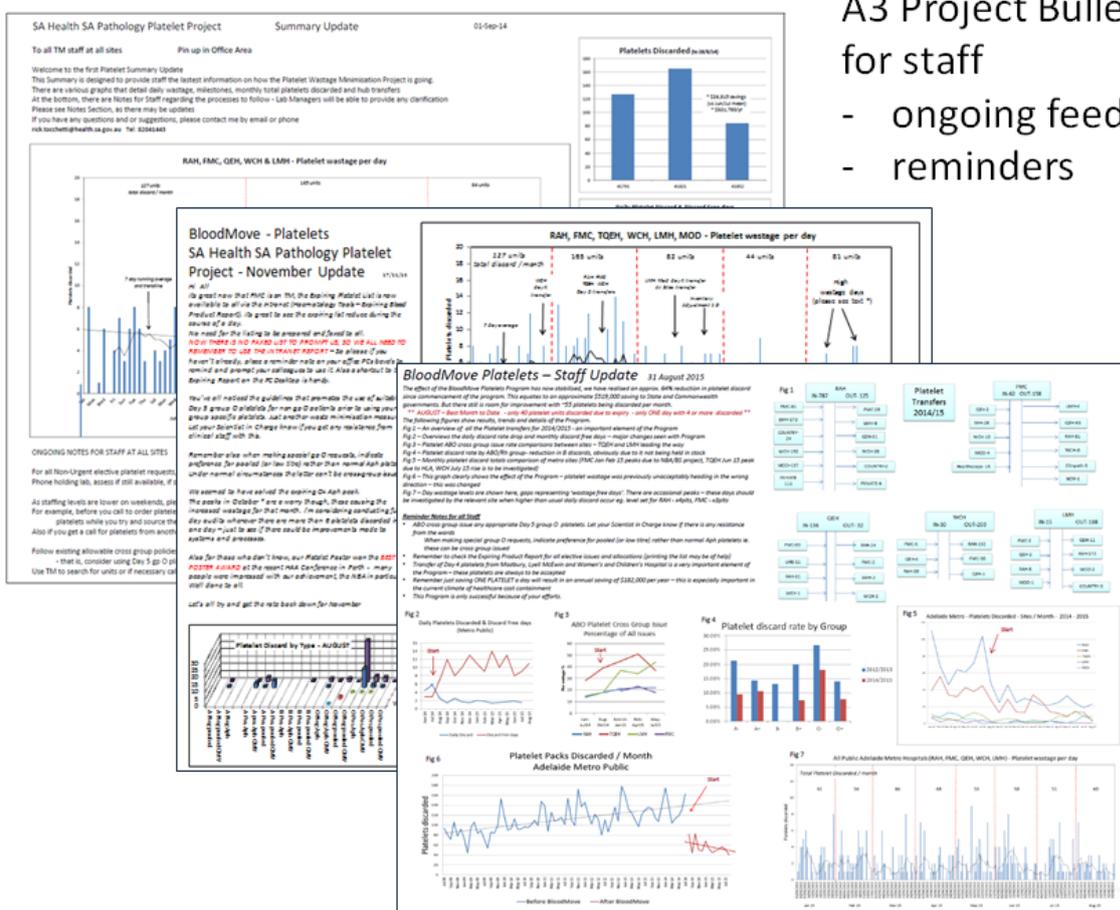
Stakeholder Engagement and Staff Feedback – Project progress

During the project it was found to be very important to provide ongoing feedback and information to all stakeholders.

The Project was facilitated by regular meetings between SA Pathology transfusion service laboratory managers and stakeholders. The Project utilised clear and ongoing communication and education between all stakeholders; such as staff from transfusion service laboratories, clinical units (especially haematology/oncology wards), couriers and the SA Pathology IT programmers. This supportive network has been established to ensure that inventory management best practice is maintained across SA Pathology transfusion service network of laboratories.

The BloodMove Team made regular health network site visits and conducted in-service educational sessions to nursing, midwifery, medical and specialist practitioners covering all aspects of the Project. Stakeholder feedback and suggestions were actively sought and acted upon by the Project Team. The Team regularly presented at stakeholder management meetings to ensure that information was disseminated and that all identified issues were discussed and addressed.

Figure 6 -Staff Bulletins providing ongoing feedback and project reminders



A3 Project Bulletins for staff

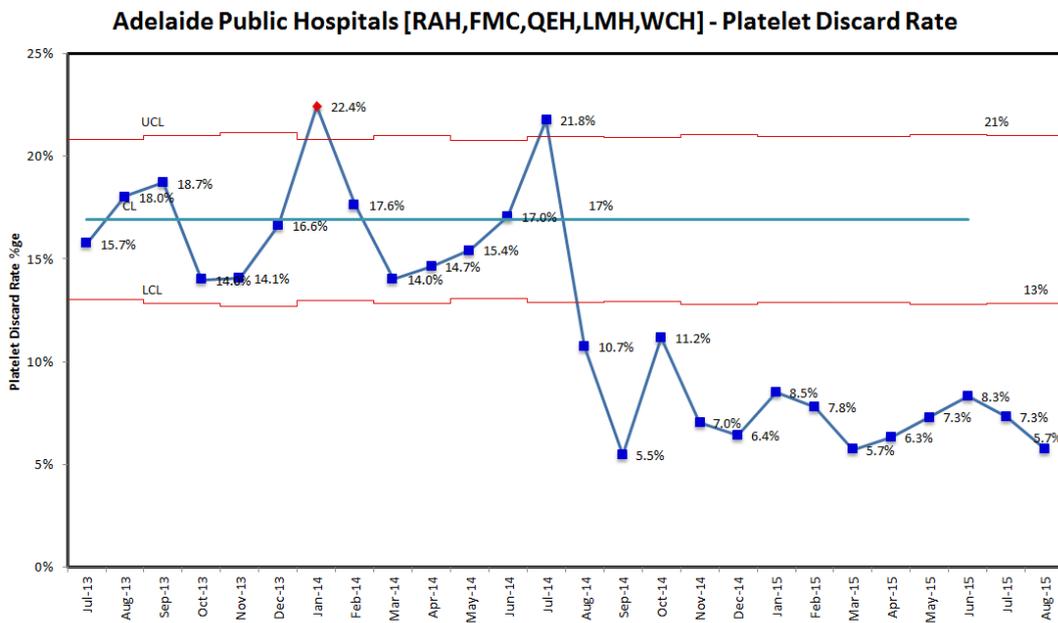
- ongoing feedback
- reminders

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Results

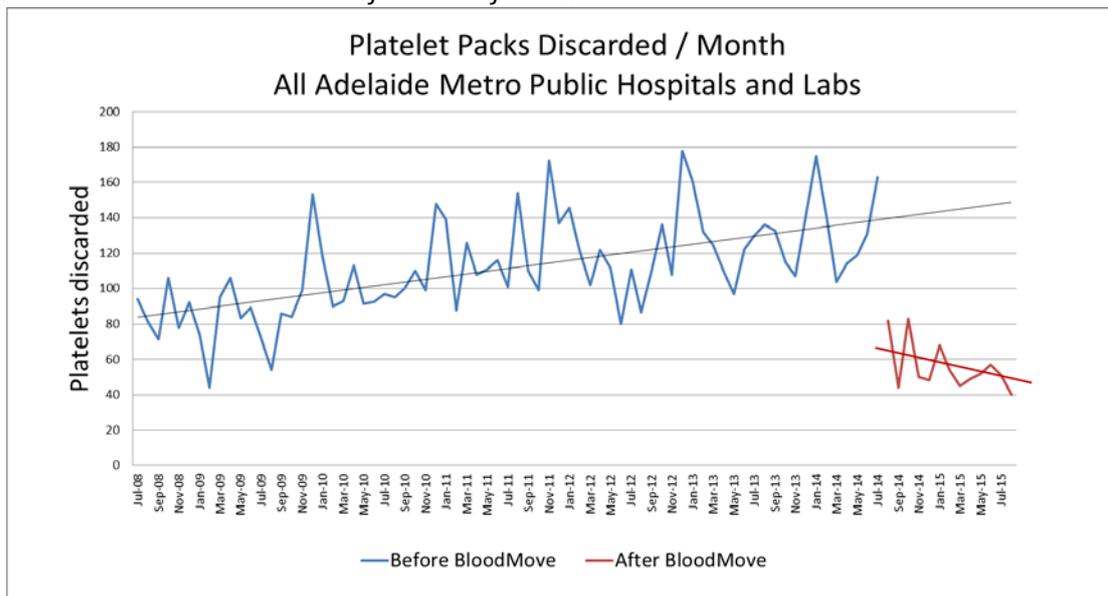
Within the first two months of operation, BloodMove Platelets achieved a significant decrease in the platelet wastage rate for metropolitan public hospitals from a previous high of 21.8% in July 2014 to 5.5% in September 2014. This decrease has been sustained for 12 months, with the average rate post-BloodMove of 7.8% including a number of months achieving rates below 6% (Figure 7). Compared to the 12 month pre-BloodMove average platelet wastage rate of 17%, this represents an approximate 54% reduction in the wastage rate. An annual cost saving of approximately \$500,000 is being realised due to implementation of BloodMove Platelets. This is a conservative estimate as previously the wastage rate was trending upwards beyond 17%. Without the Program, wastage may have been greater.

Figure 7 - Platelet discard rate before and after BloodMove Platelets



The absolute number of platelets discarded due to expiry by all metropolitan Adelaide hospitals was dramatically decreased by BloodMove as shown in Figure 8. The previous increasing trend of platelet wastage was not sustainable and necessitated implementation of BloodMove Platelets.

Figure 8 - Platelet units discarded before and after BloodMove Platelets



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Table 2 -Projected savings due to BloodMove Platelets Program

Pre BloodMove platelet average month discarded (July 2013-Jun 2014)	132
Pre BloodMove platelet discard rate (July 2013-June 2014)	16.5%
Post BloodMove running average discard number (July 2014 – Jun 2015)	56
Post BloodMove running average discard rate	7.8%
Difference in average platelet monthly discard	76
Projected monthly cost saving	~\$38,000
Projected annual cost saving	~\$494,000

The daily average of platelets discarded per month decreased from an approximate of 5 to a low of less than 2. The number of days per month without any discards also increased (from 3 to 8-14 days), making it more commonplace. Both improvements are shown in Figure 9.

Daily Platelets Discarded & Discard Free days
All Adelaide Public Sites (BloodMove start Aug14)

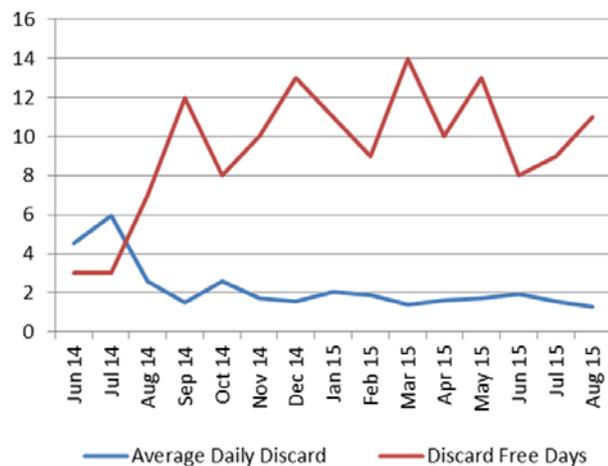
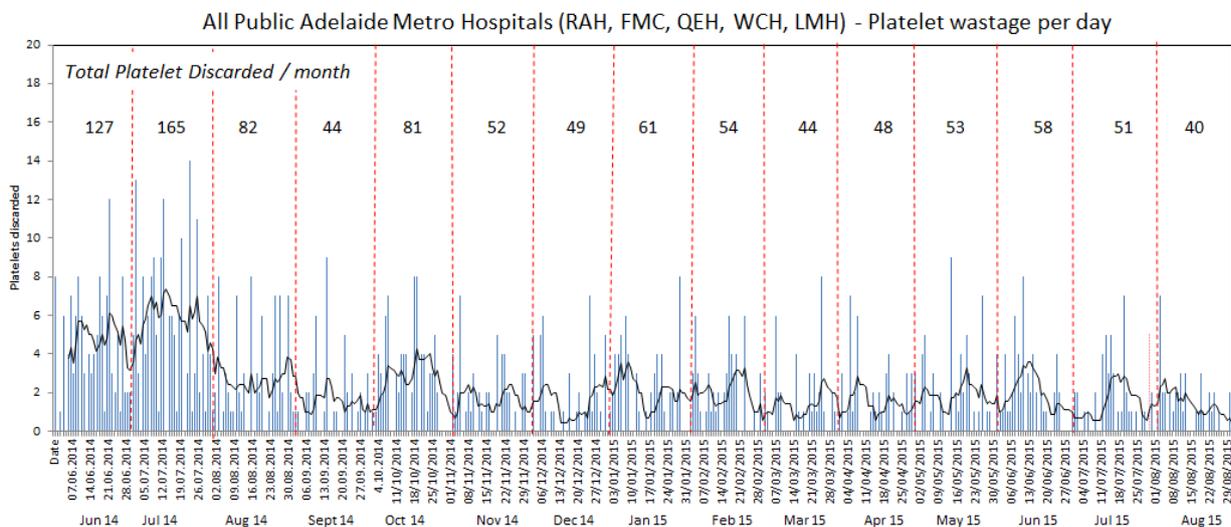


Figure 9 Daily average platelets discarded and number of discard free days per month

Wastage per day (Figure 10) was used as a Key Performance Indicator for staff and graphically showed high wastage days as peaks and zero wastage days as gaps. Platelet wastage figures were generally provided to staff in absolute numbers rather than as a percentage. Absolute numbers were considered a more reflective and real indicator of wastage and provided a tangible value to the product, whereas percentage was a calculated number which was dependent on other parameters such as platelet issue volumes.

Figure 10 - Platelets discarded per day for Adelaide Metropolitan Labs and Hospitals, together with month total discards



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Future Initiatives

Increased use of CMV safe platelets

The adoption of policies regarding the use of leucodepleted Cytomegalovirus (CMV) safe products in place of CMV seronegative blood products, for some patient groups, is being considered at a local and national level.

Further flexibility regarding the use of products will potentially allow for more optimal use of inventory and result in discard reductions.

Improved Inventory Modelling and Inventory Adjustments

Further modelling of platelet inventory levels at large sites is being considered for days with historically high wastage rates. For example, weekends/long weekends/public holidays are to be targeted for lower platelet inventory holdings because of reduced elective surgery performed during those periods, whilst still maintaining a sufficient emergency standby inventory. Determination of a safe base level for emergency standby inventory will need to be assessed as well as response time for Blood Service supply and/or replenishment.

Ongoing Daily Reporting

Ongoing automated reporting to senior operational laboratory staff is being considered. These reports will detail each platelet issued the previous day, providing information regarding its age and whether there were any suitable discarded platelets in the metropolitan network that could have been used instead.

Ongoing monitoring will assist in ensuring staff engagement with the multi-site day 5 platelet inventory concept and minimise the need for further BloodMove Platelets project oversight.

For more information

To see this case study in full or for information on other case studies visit www.blood.gov.au/case-studies

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Acknowledgements

Thank you to the following people without whom this case study would not have been possible:

- > SA Pathology Transfusion Laboratory Staff
- > SA Pathology Couriers
- > Private Pathology Laboratories
- > SA Pathology Information and Communications Technology Staff

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