

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 collectively achieved significant platelet wastage minimisation previously thought as unavoidable. The flow on substantial cost savings to State and Commonwealth Governments can be better utilised elsewhere in health. 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 further reductions are anticipated.

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 reduction in platelet component wastage due to expiry is readily achievable.



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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, a goal which requires conscientious efforts to achieve. Platelet inventory management and wastage minimisation forms part of this stewardship and poses significant challenges. Platelet wastage is almost exclusively due to product expiry and difficult to minimise primarily because of the short product expiry times. Financial year 2012/2013 platelet wastage rates in South Australia were 17% (equating to an approximate cost of \$0.9 million).

Aim

The aim of the BloodMove Platelets project was to minimise platelet wastage due to expiry. The historical acceptance that because of short platelet expiry high wastage could not be avoided is no longer deemed tolerable.

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 4 (or younger) 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’ analysis was 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)

Figure 1
Data collection template for all labs during city-wide audit of all platelet movements

SA Health – SA Pathology Platelet Wastage Minimisation Project
BloodMove-Platelet
SA PATHOLOGY DAY PLATELET AUDIT

This SA Pathology Day Platelet Audit is to be used for all platelet related orders and or stock requests that take place on the day nominated by your Manager, commencing at 0000 and finishing at 2400. Please refer to Manager, or Project Leads (Rick Tocchetti 0405021426 Romi Sinha 82261754) if assistance is required for completing.

Site:						Date: <small>(date of audit)</small>					
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Enter stock nos. in each box (leave blank for zero) complete at the indicated times.

Time (hr)	Blood Group	CMV Pooled	CMV Apheresis	Non CMV Pooled	Non CMV Apheresis	Total
0000	O Pos					
	O Neg					
	A Pos					
	A Neg					
	Other					
0700	O Pos					
	O Neg					
	A Pos					
	A Neg					
	Other					
1500	O Pos					
	O Neg					
	A Pos					
	A Neg					
	Other					
2400	O Pos					
	O Neg					
	A Pos					
	A Neg					
	Other					

Donation No.	Status	Type	Blood Group	Expiry	CMV Status	Allocation / Fate	Date Time Issue	Location	Date Time - Discard
	<small>Existing stock (ES), received new stock (NS), transferred stock (TS)</small>	<small>Apheresis (A) Pooled (P)</small>		<small>Date and time</small>	<small>Neg (N)</small>	<small>If dispatched to patient during the day, provide name and URN. If transferred, provide details.</small>		<small>Ward or transfer destination</small>	<small>If discarded, provide date, time and reason (ie. 2400 11/4/14 Expired)</small>

BloodNet Order(s)	Type of Order <small>(inventory Stock top up, other)</small>	Patient Specific <small>(provide details)</small>	Order details <small>(Group, Type, Special status)</small>
Time			
Time			

Comments (please write any comments and or observations regarding platelet inventory maintenance, clinical platelet orders and or platelet transfers. Use other side if required)

SAPLTMET #000001

Figure 2
Usage and wastage mapping to assess potential platelet savings

PLATELET AUDIT date: 13032014 A test of the SAPItNet model

TRANSFUSED								EXPIRING							
Site	Donation No	Group	Type	CMV	Expiry	Patient	REQUIREMENTS	Site	Donation No	Group	Type	CMV	Expiry		
WCH	7206084	O N	P	N	16.03.2014	HAEM-ONC									
WCH	6665781	A N	A	N		HAEM-ONC									
WCH	7206132	O N	P	N		HAEM-ONC									
WCH	7206087	O P	P	N		?									
WCH	7206091	O P	P	N		?									
QEH	7206032	O P	P	N	15.3.2104	SURGERY									
QEH	7186089	A P	A	N	15.3.2104	HAEM-ONC									
QEH	7206020	O P	P	N	15.3.2104	HAEM-ONC									
FMC	7052487	O P	A	N	13.3.2014	SURGERY		FMC	7205969	A P			13.3.2014		
FMC	7052491	O P	A	N	13.3.2014	NNU		FMC	7205973	A P			13.3.2014		
FMC	7206018	O P	P	N	15.3.2104	ICCU									
FMC	7190342	A P	A	N	15.3.2104	SG1									
FMC	7206030	A P	P	N	15.3.2104	SG1									
FMC	7193824	O P	A	N	13.3.2014	4A									
FMC	7206029	O P	P	N	15.3.2014	THEATRE									
RAH	7193824	O P	A	N	13.3.2014	RECOVERY		RAH	7298966	O P	A		13.3.2014		
RAH	7193827	O P	A		13.3.2014	ODC			7205988	O N	P				
RAH	7193873	A P	A		13.3.2014	ODC			7205988	O N	P				
RAH	7055621	A P	A	N	13.3.2014	C6			7298966	O P	A		13.3.2014		
RAH	7052471	A N	A		13.3.2014	ICU									
RAH	7206031	A N	P		15.3.2014	C/T									
RAH	6661964	A P	A		16.3.2014	B6									
RAH	6661947	O P	A	N	16.3.2014	C6									
RAH	7206085	O P	P	N	16.3.2014	C6									
RAH	7206110	O P	P	N	16.3.2014	C6									
RAH	6665655	O P	A	N	14.3.2014	ODC									

CONSIDERATIONS CMV status is affecting model check on necessity

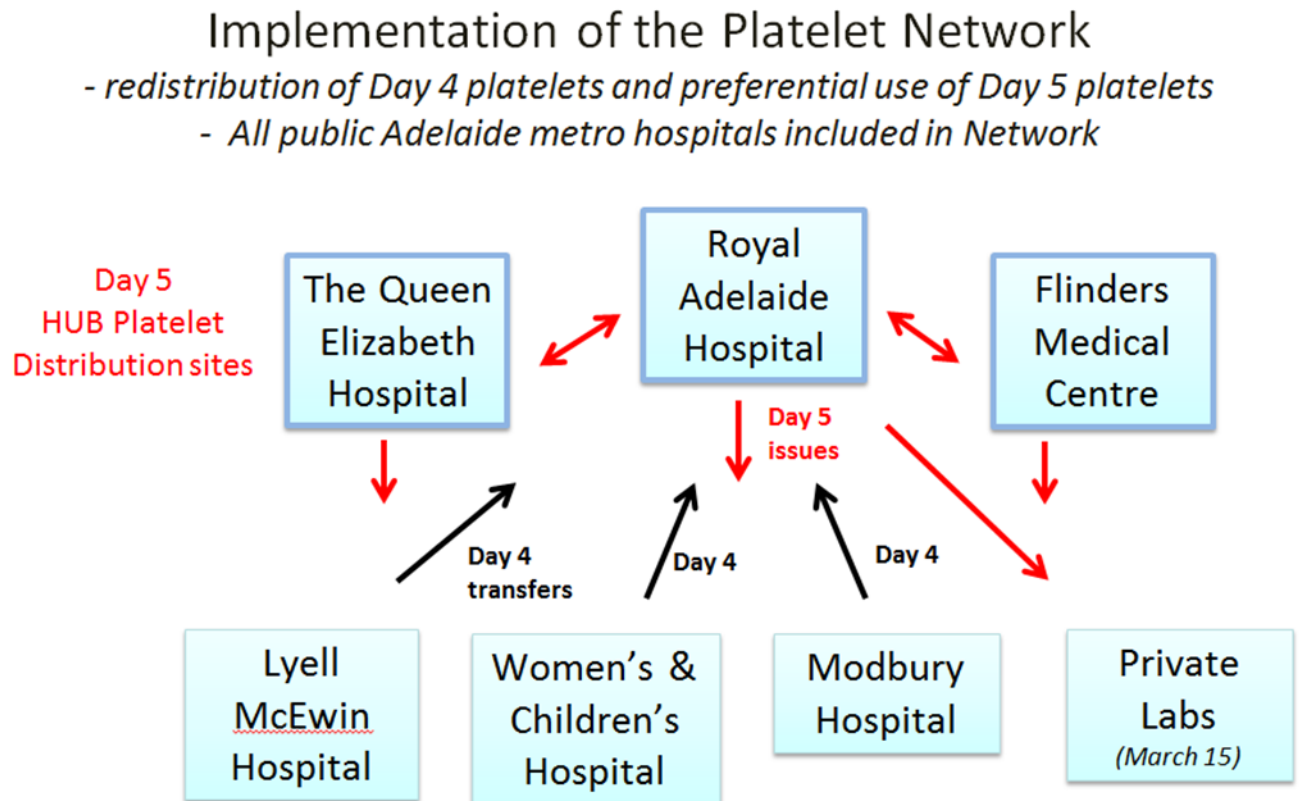
← possible transfer

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)



the concept: many labs but ONE Day 5 Inventory

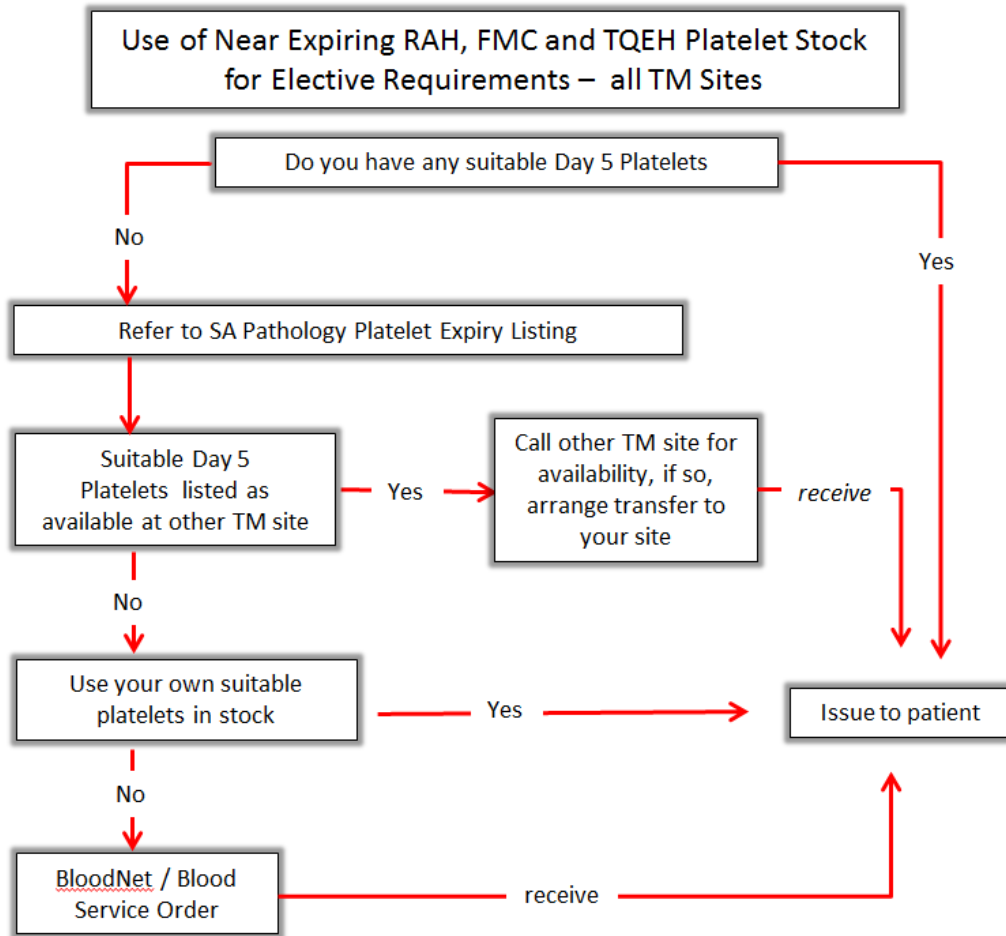
Preferentially Using a Common Day 5 Inventory

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 through BloodNet.

Initially, the *Day 5 Platelet Listing* was faxed daily to all stakeholder Transfusion Service sites, and then later when an IT network solution was available, an ongoing updated online Expiring Product Report (i.e. Day 5 report) was accessible by all public Transfusion Service sites through the SA Health intranet. Since early April 2015, two large private pathology Transfusion laboratories are now part of the State's *Day 5 Platelet Listing*.

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Figure 4 Flowchart detailing how to source platelets for elective transfusion



*Processes for Urgent Requests remains unchanged
Refer any queries to Senior Staff*



SA Platelet Project Stage 4.2

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			

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

Also increasing the inventory of group O low titre apheresis and pooled platelets instead of other ABO types was instituted 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 who 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 where 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

As the haematology / oncology wards at the large site were the biggest users of platelets in Adelaide, the BloodMove Project Team engaged this health unit to streamline platelet ordering practices with the BloodMove one inventory model. The staff on the wards were engaged to obtain their patient platelet counts earlier in the morning and thereby place any platelet unit orders early. This allowed the sourcing of Day 5 platelets from other sites in metropolitan Adelaide.

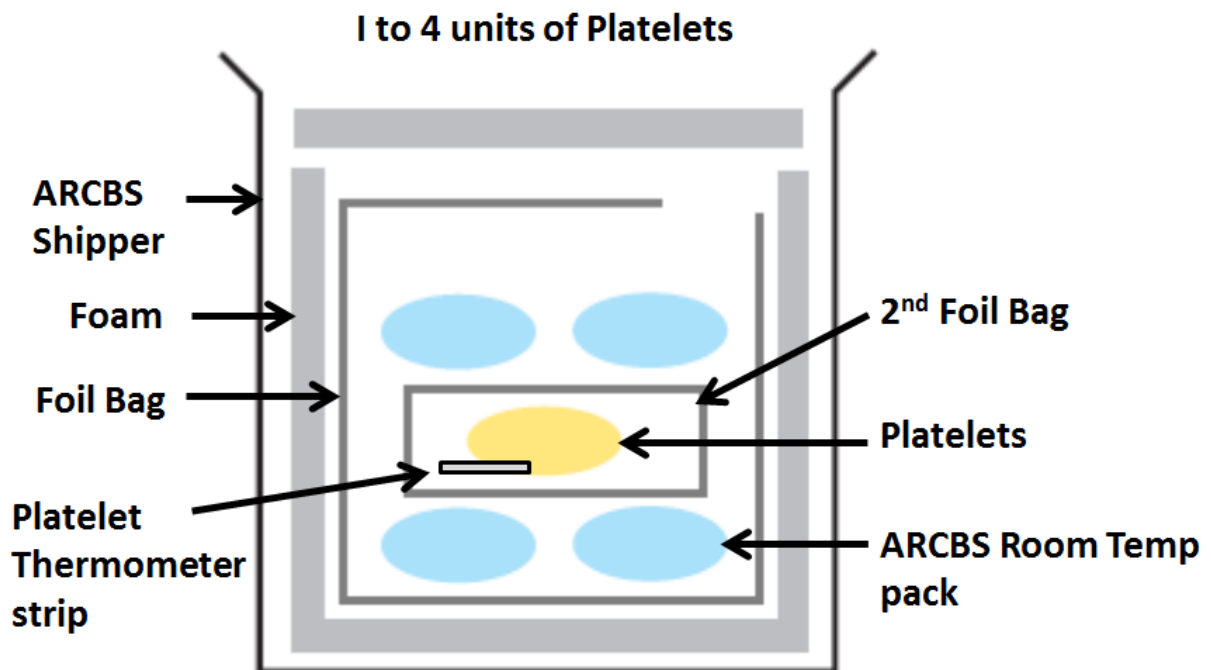
Additionally, all clinical units ordering platelets electively were asked if the order could be fulfilled within the period required to source from another metropolitan transfusion service laboratory.

Simplified Platelet Shipper Configuration

To facilitate quick platelet transfers across metropolitan sites, validation of an alternate shipper that was simple to pack and easy to use was performed. The available Blood Service platelet shipping configuration (P2) was generally regarded by operational staff as cumbersome and too heavy for routine simplified use. Initially a hard case polyurethane based shipper was used, but later the existing Blood Service shipper was adopted using an alternate validated configuration which was very simple and quick to pack.

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



Stakeholder Engagement and Staff Feedback – Project progress

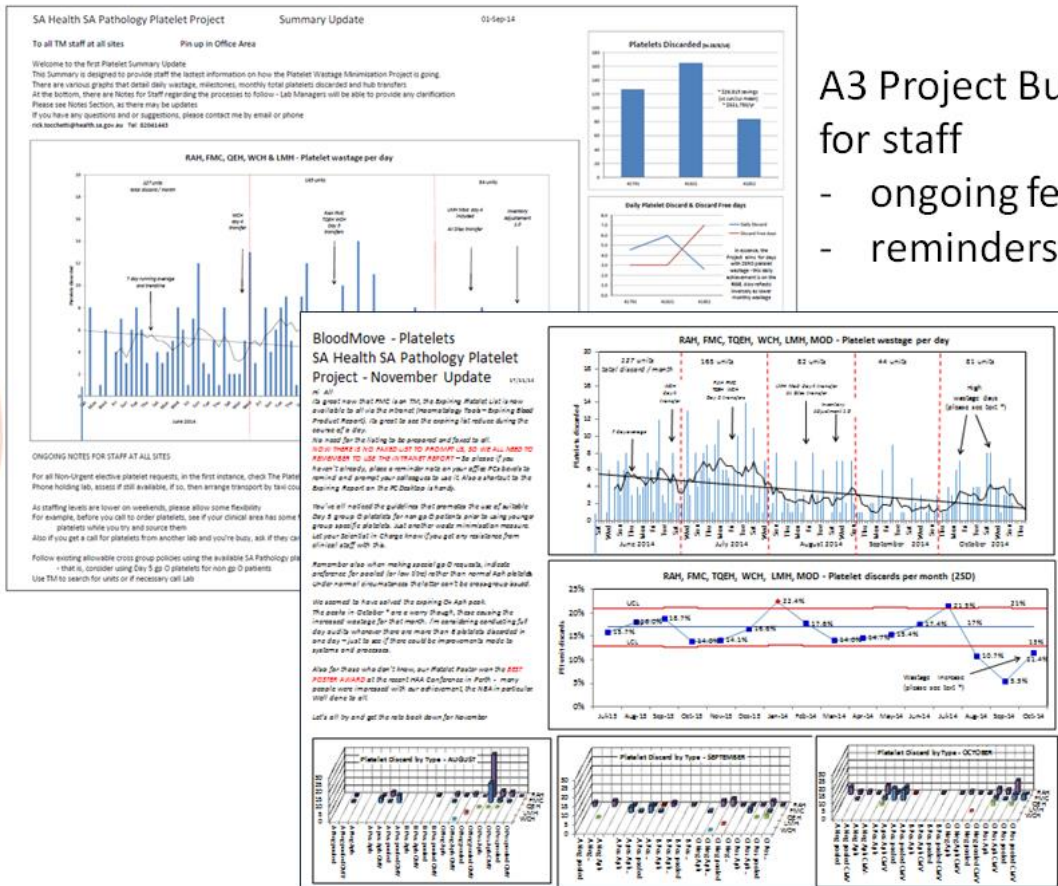
During the project it was found to be very important to provide ongoing feedback and information to all stakeholders.

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 issues raised were discussed and addressed.

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Figure 6 Staff Bulletins providing ongoing feedback and project reminders



A3 Project Bulletins for staff

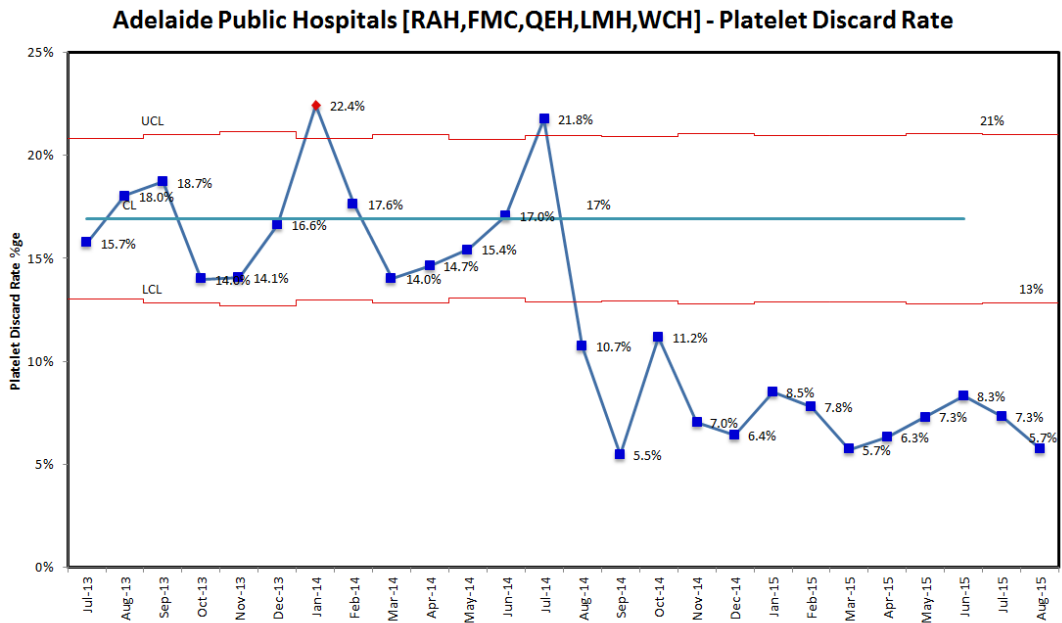
- ongoing feedback
- reminders

Results

Within the first two months of operation, BloodMove Platelets achieved a significant drop 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% with 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 the previously wastage trend was increasing and effectively without the Program, wastage may have been greater.

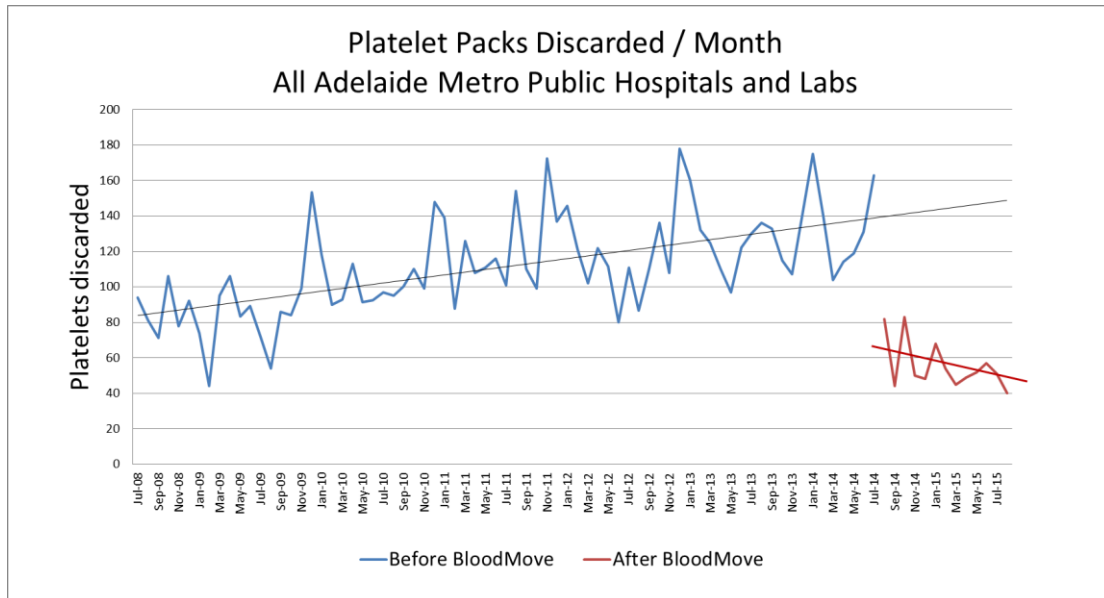
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Figure 7 Platelet discard rate before and after BloodMove Platelets



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 deemed unacceptable and necessitated implementation of BloodMove.

Figure 8 Platelet units discarded before and after BloodMove Platelets



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Table 2 Projected savings due to BloodMove Platelets Program

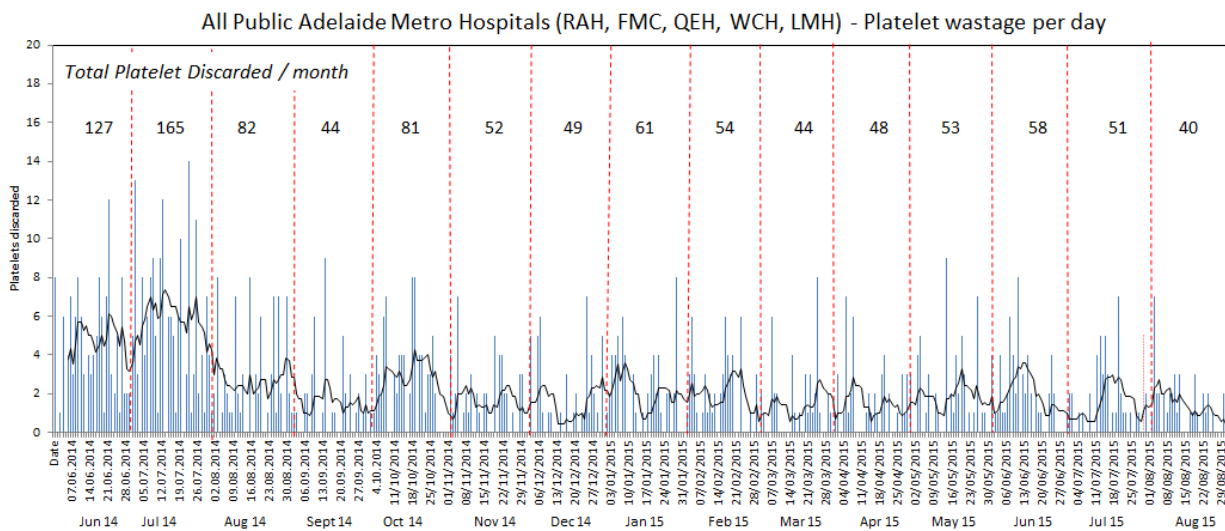
Pre BloodMove platelet average month discarded (July 2013-Jun 2014)	132
Pre BloodMove platelet discard rate (July 2013-June 2014)	16.5%
Post BloodMove running average discard number (July 2014 – Jun 2015)	56
Post BloodMove running average discard rate	7.8%
Difference in average platelet monthly discard	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. This together with the increase (from 3 to 8-14 days) in the number of days per month without any discards is shown in Figure 9. This indicates that previously there were only a few months per month when there was zero platelet waste, but now it's common.

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

Figure 10 was used as a KPI for staff and graphically showed high wastage days as peaks and zero wastage days as gaps. Platelets wastage figures were generally provided to staff in absolute numbers rather than 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 number.

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

Future area of improvement for BloodMove Platelets is local revision and adoption of the guidelines for the use of CMV negative blood components based on current scientific literature and the UK Advisory Committee on the Safety of Blood, Tissue and Organs (SaBTO) position statement. These indicate that leucodepleted (CMV safe) products are suitable for patient groups typically requiring CMV antibody negative products. Many platelets which are CMV safe are discarded because the clinical requester assumes platelets tested as CMV seronegative provide better patient outcomes. Adoption of a CMV Safe policy, already practiced by many centres around the world, would further significantly decrease platelet discard rates.

Improved Inventory Modelling and Inventory Adjustments

Further modelling of platelet inventory levels at large sites is being considered for days where there is historical high wastage. 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 metro network that could've been used instead. These reports would act as a KPI to assess staff compliance with the multi-site day 5 platelet inventory concept.

The automated daily reporting would assist with the continuance of the key elements of the project and as such be standard accepted practice across all sites negating 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

Contact Officers

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Acknowledgements

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

- > Rick Tocchetti, BloodMove Lead Scientist, Blood, Organ and Tissues Programs, SA Department for Health and Ageing
- > Romi Sinha, Senior Information Analyst, Blood, Organ and Tissues Programs, SA Department for Health and Ageing
- > David Roxby, Head of Transfusion Medicine, SA Pathology
- > Susan Ireland, Manager, Blood, Organ and Tissues Programs, SA Department for Health and Ageing

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