

## **Abstract – Remote Allocation at Sunnybrook**

### **Remote release of red blood cells by electronic crossmatch in the operating room at a large, academic trauma center: improving the speed of blood delivery while decreasing workload.**

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**Background:** Provision of blood for the operating room consumes a substantial proportion of blood bank workload. Furthermore, the prepared blood which goes unused by a surgical patient contributes to unproductive workload, ties up blood inventory unnecessarily, and wastes blood if improperly stored outside of the blood bank. In addition, patients often have unexpected blood needs that are not met by the units crossmatched in advance of surgery, requiring the preparation and transport of additional units to the operating room. In these emergency situations, delays in delivery of blood could result in patient harm.

**Methods:** The HemoNine® remote release refrigerator and the Neoteric BloodTrack® Kiosk were implemented after validation and interfacing with our information system (Hemocare®, Mediware). Utilization and workload data were collected before and after implementation. The project was funded in its entirety by the Ministry of Health and Long-term Care, Ontario and was approved by the Sunnybrook Research Ethics Board.

**Results:** In the one-month pre-implementation period a total of 443 red blood cells were prepared for 947 patients undergoing operative procedures in the operating room (0.47 units per patient). In this period, the total workload for blood preparation and delivery for the operating room was 2704 minutes (OR list review 581 min, blood preparation for elective patients 384 min, same day blood preparation on demand 909 min, porter time for pick-up of red blood cells 280 min, returning unused blood to inventory 347 min, and OR fridge inventory maintenance 203 min). In the one-month period after implementation, 212 red blood cells were prepared for 1090 patients undergoing operative procedures (0.19 units per patient). In this period, the total workload for blood preparation and delivery for the operating room was 1841 minutes (OR list review 1032 min, blood preparation for elective patients with special needs 105 min, same day blood preparation on demand 36 min, porter time for pick-up of red blood cells 56 min, returning unused blood to inventory 39 min, and OR fridge inventory maintenance 573 min). Between February 12, 2008 and April 18, 2008 (2 months), 361 RBC were issued from the HemoNine fridge to 128 patients. The median issue time was 78 seconds (range 26, 456). Overall, 361 units were remotely allocated by 125 users (porters, nurses, and anesthesiologists; range 1, 35 units per user). The number of units issued per patient was a median of 2 (range 1, 15). The institutional crossmatch to transfusion ratio dropped from 1.68 to 1.37 after implementation, with operating room blood use representing 17% of RBC demand for the institution.

**Conclusion:** Remote release of blood by electronic crossmatch reduces total transfusion workload for the operating room by 32% and the number of RBC units prepared by 52%.

For a 1 month period before and after the implementation of BloodTrack:

<b>BloodTrack OnDemand Results</b>	<b>Before</b>	<b>After</b>	<b>Change</b>
Patients	947	1090	15%
Red Cells	443	212	-52%
Units per Patient	0.47	0.19	-60%
C/T Ratio (entire hospital)	1.68	1.37	-18%

<b>BloodTrack OnDemand Time (minutes)</b>	<b>Before</b>	<b>After</b>	<b>Change</b>
OR List Review	581	1032	77%
Blood Prep for Elective Patients	384	105	-73%
Same Day Blood Prep	909	36	-96%
Porter Pickup	280	56	-80%
Return Unused Blood	347	39	-89%
OR Fridge Inventory Maintenance	203	573	182%
Total Time	2704	1841	-32%

Additional Data:

Median Time to Issue Units using BloodTrack OnDemand: 78 seconds  
 Minimum Time to Issue Units using BloodTrack OnDemand: 26 seconds  
 Total Number of Users: 125  
 Total units issued by BloodTrack OnDemand to present: 800

Presentation:

Presenter: Dr. Jeannie Callum  
 Date: Monday, October 6 at 4:00 pm  
 Location: AABB Conference Center in Montreal - Room 510 AC