



Massive Hemorrhage Protocol Quality Metrics

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Presented Work

Centre for Quality Improvement & Patient Safety (CQUIPS) - Toronto 2024

IGNITE Research Conference - RVH Barrie 2024

Institute for Healthcare Improvement(IHI)- Orlando Florida December 2024

Trauma Association of Canada Conference - Gatineau, QC March 2025

Redevelopment of the Massive Hemorrhage Protocol

- Interdisciplinary Team
- Overseen by Quality Improvement Lead
- Core MHP working group that engages with MHP Steering Committee on a monthly basis
- Ongoing development for Pediatric and Obstetrical Considerations

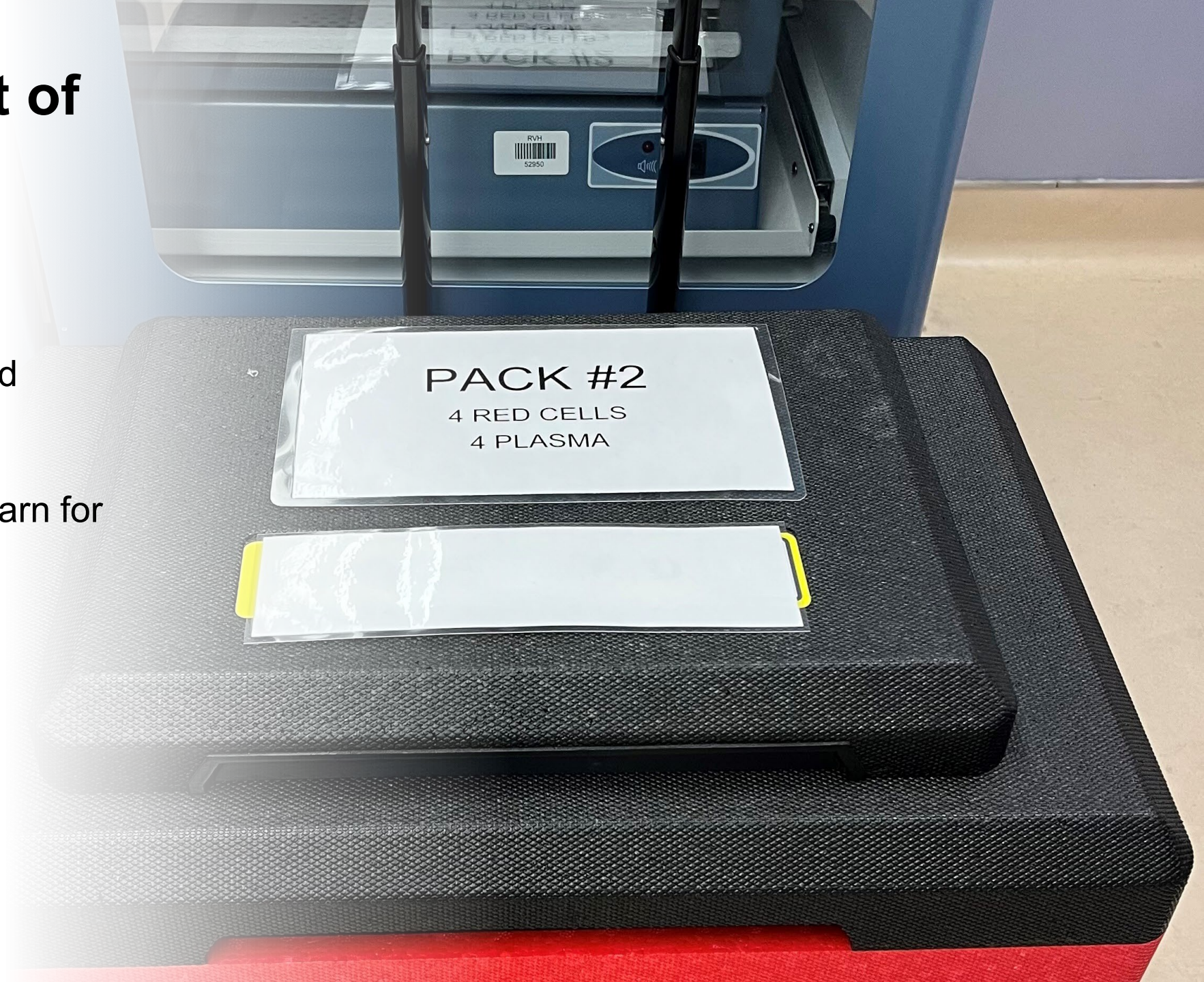
Massive Hemorrhage Protocol at RVH

- Level 3 Trauma Centre
- Meditech Expanse Hospital
- Overhead Code Activation
- Do not use TAR during an MHP
- Use of Hypercare Technology
- 1.5 to 2 hours to get blood from CBS
- Dedicated MHP “Runner” for blood products



Redevelopment of the Massive Hemorrhage Protocol

- Provided 4 hours of paid education to 311 nurses/AA/RRT
- Provided Lunch and Learn for 40 Laboratory staff

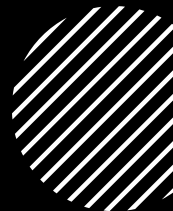


Order Set Build – Step 1

- IV Solutions
- Cardiac (continuous), Oximetry (continuous), Blood Pressure(Q5M) and Temperature Monitoring (Q15M)
- Urinary Catheter
- Laboratory Tests: initial bloodwork (to include a TS) and hourly X2
- Blood products for first four packs
- **Only three clicks needed to complete the order!**
 - TXA
 - Calcium
 - Choice of Arterial Blood Gas vs. Venous Blood Gas



Quality Metric 1 – TXA



QM 1- The proportion of patients receiving TXA within 1 hour of protocol activation



Achieve

-Built into Order Set
-Nursing educated to prompt physician



Measure

-Manual worksheet review



Improve

-Currently meeting metric

Quality Metric 1 TXA

Gyna, Anne Code Status Not Ordered No Hx Avail
 37 F 07/01/1988 Allergy/Adv: Not Recorded
 REG REF V.MEDICINE

Manage Order List

Associated Data	Result
Order	SCH Status
Massive Hemorrhage (MHP)	
Massive Hemorrhage Protocol Reminders	
Activate MHP BBK Notification	
<input checked="" type="checkbox"/> Order	New
*Provider	Price, Russell Gifford
*Source	Written Order
Medications	
CONSULT MRP TO DETERMINE IF TRANEXAMIC ACID TO BE ORDERED	
tranexamic acid 2,000 mg indicated within 3 hours of trauma injury	
<input type="checkbox"/> tranexamic acid 2,000 mg dose	
<input type="checkbox"/> 2,000 mg IV ONCE inj	ONE
tranexamic acid 1,000 mg indicated within 3 hours of obstetrical related hemorrhage	
<input type="checkbox"/> tranexamic acid 1,000 mg dose: obstetrical	
<input type="checkbox"/> 1,000 mg IV ONCE inj	ONE
GI bleed: tranexamic acid not recommended	

Transfusion Administration Record (TAR)

Can I ask you....?

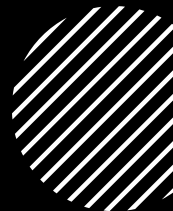
Does your facility use an electronic transfusion administration record (TAR) during an MHP?

- Yes
- No





Quality Metric 2 – Transfuse



QM 2- The proportion of patients in whom RBC transfusion is initiated within 15 minutes of protocol activation.



Achieve

- Employ Hypercare technology to enact the team and coordinate care
- Creation of Runner role



Measure

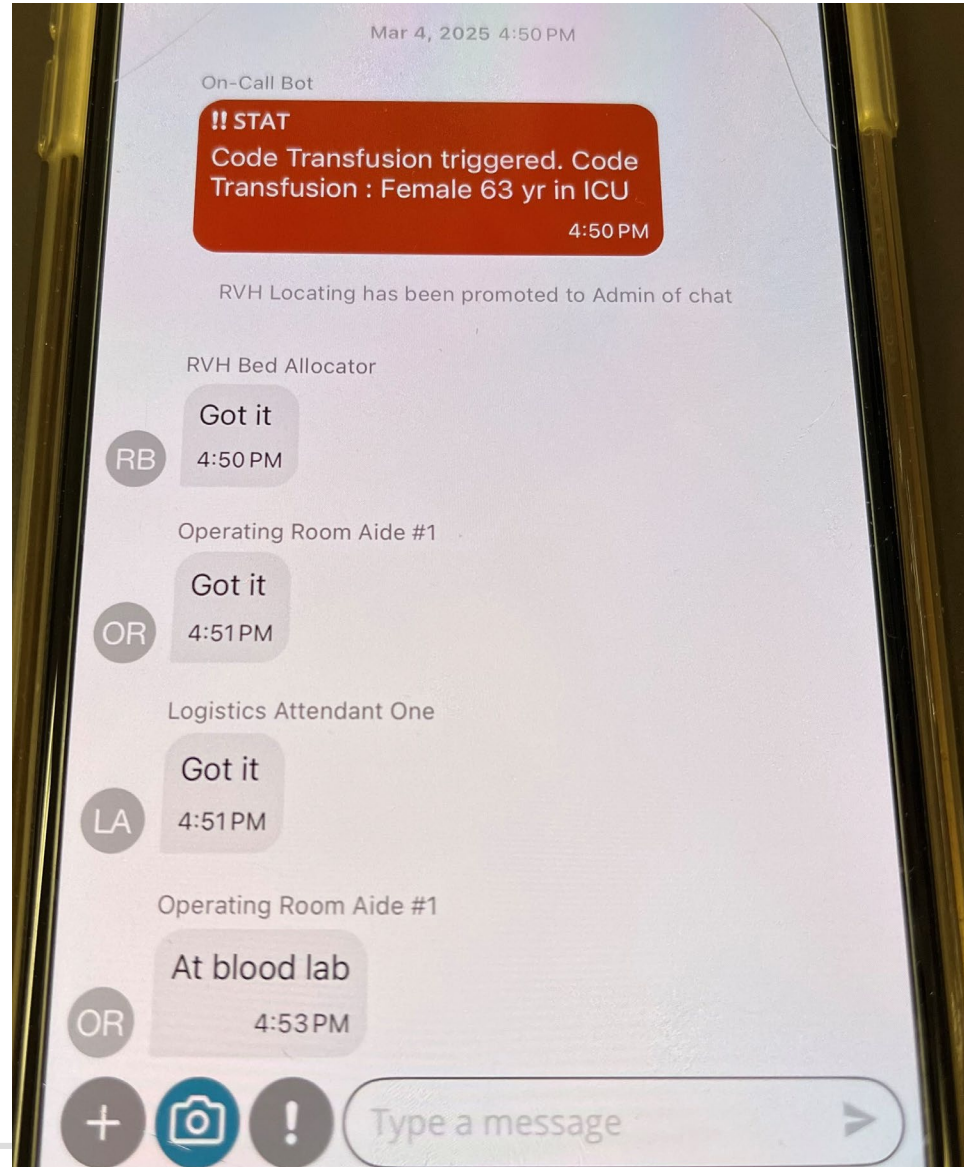
- Use of overhead page will provide official activation time
- Transfusion data is gathered manually via worksheets



Improve

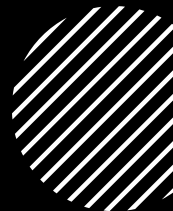
- Audit and evaluate response time using Hypercare record

Hypercare Chat





Quality Metric 3 – Transfer



QM 3- The proportion of patients (requiring transfer for definitive care) with initiation of call for transfer within 60 minutes of protocol activation.



Achieve

- Identify patient disposition with clinical team early in care
- Engage surgeons and Critical early



Measure

- Documentation found in nursing progress note or physician report

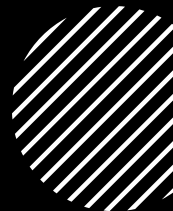


Improve

- Debrief with each case.
- Work collaboratively with Trauma Program



Quality Metric 4 – Temperature



QM 4- The proportion of patients achieving a temperature $> 35C$ at termination of the protocol.



Achieve

-built into order set



Measure

-Data is gathered manually via MHP worksheets

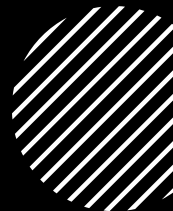


Improve

- Enlist Runner to retrieve Bair Hugger
- Educate nursing
 - Active warming
 - Remove wet clothing



Quality Metric 5 – Hemoglobin



QM 5- The proportion of patients with hemoglobin levels maintained between 60-100 g/L during protocol activation.



Achieve

- Bloodwork monitoring built into order set
- MLT verbally communicates laboratory values



Measure

- Data is gathered from the electronic health record

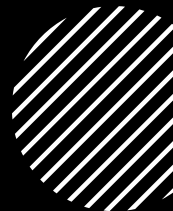


Improve

- Our data show that majority of patients are over transfused
- Physician education
- Switch to lab value guided transfusions



Quality Metric 6 – Group specific transfusions



QM 6- The proportion of patients transitioned to group specific RBCs and plasma within 90 minutes of arrival/onset of hemorrhage.



Achieve

-Collecting TS with PPID to eliminate need for confirmatory typing
-TS part of orderset



Measure

-Data is gathered via manual MHP worksheets



Improve

-Plebotomy to respond
-MLT to perform Hx search immediately

Quality Metric 6 – group specific transfusions



Patient Name: _____	Activating Location: _____
V#: _____	Activating MD: _____
Gender: M F Age: _____	Diagnosis: _____
History Check: _____	

Date/Time: _____	MHP Lead MLT: _____
	MHP Lead RN: _____
Time MHP Initiated: _____	Time Switched to Group Specific: _____
Time MHP terminated: _____	

Transfer Within Facility to: _____	Transfer Outside Facility to: _____
New Lead RN: _____	Product Sent with Patient: Yes No
New Treating MD: _____	

MHP Pack 1			
Blood Product	Product Unit Number	Time Picked Up	Final Status
1	RCC		
2	RCC		
3	RCC		
4	RCC		
Adjunct Product:			

plasma

Can I ask you....?

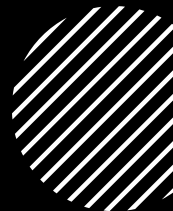
Does your facility use pre-thawed plasma during an MHP?

- Yes
- No





Quality Metric 7 – Wastage



QM 7- The proportion of patients without any blood component wastage (including plasma that is thawed and not used within the 5-day limit on another patient).



Achieve

-Purchased dedicted MHP transport coolers



Measure

-Data is gathered from manual worksheets



Improve

-Challenge: using pre-thawed plasma
-Comminucation from clinical team to Blood Bank

Quality Metric 7 – wastage



MASSIVE HEMORRHAGE PROTOCOL INFORMATION SHEET

Patient Name: _____	Activating Location: _____
V#: _____	Activating MD: _____
Gender: M F Age: _____	Diagnosis: _____
History Check: _____	

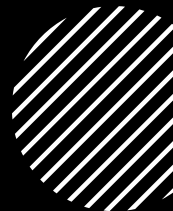
Date/Time: _____	MHP Lead MLT: _____
	MHP Lead RN: _____
Time MHP Initiated: _____	Time Switched to Group Specific: _____
Time MHP terminated: _____	

Transfer Within Facility to: _____	Transfer Outside Facility to: _____
New Lead RN: _____	Product Sent with Patient: Yes No
New Treating MD: _____	

MHP Pack 1			
Blood Product	Product Unit Number	Time Picked Up	Final Status
1	RCC		
2	RCC		
3	RCC		
4	RCC		
Adjunct Product:			



Quality Metric 8 – Activation



***QM 8- The proportion of patients
with appropriate activation***



Achieve

-Physician engagement



Measure

-TMC perform case
review



Improve

-Physician Champions
-Report quality metrics
and case review to MAC

How awesome are we today?

- An intervention within the electronic health record was built
- Allows for ongoing internal QI Evaluation
- This will supplement our REDCap entry

MHP Quality Metrics	
For patients have had Massive Hemorrhage (MHP) ordered between 2024-01-01 and 2024-12-31	
Report Generated: 2025-03-03 13:25:59	
Q1 The proportion of patients receiving TXA within 1 hour of protocol activation <small>Only include the patients with TXA Indicated = Yes</small>	66.67%
Q2 The proportion of patients in whom RBC transfusion is initiated within 15 minutes of protocol activation	46.15%
Q3 The proportion of patients (requiring transfer) with initiation of call for transfer within 60 minutes of protocol activation <small>Only include the patients with Transfer Indicated = Y</small>	100.00%
Q4 The proportion of patients achieving a temperature >35C at termination of the protocol	30.77%
Q5 The proportion of patients with hemoglobin levels maintained between 60-100g/L during protocol activation, excluding certain pediatric populations that may require higher hemoglobin values <small>Only include the patients with MHP Type NOT equaling to Paediatric</small>	8.33%
Q6 The proportion of patients transitioned to group specific RBC's and plasma within 90 minutes of protocol activation	69.23%
Q7 The proportion of patients without any blood component wastage (including plasma that is thawed and not used within the 5-day limit on another patient)	92.31%

Ongoing Work

- Ongoing work:
- Pediatric considerations
- Inpatient and Outpatient Clinic (not ICU, Emergency, Birthing Unit, OR) considerations



