

MHP 2.0 Challenges and Successes

Collingwood General and Marine Hospital

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Objectives

1. Discuss challenges, barriers and successes of MHP standardization in a community hospital setting.
2. Review select MHP 2.0 standardization recommendations for both nursing and laboratory practice.
3. Discuss helpful strategies for implementing change in a restrictive environment.

Serving South Georgian Bay

CGMH serves more than 74,000 permanent residents and 3.5 million annual visitors to the communities of Wasaga Beach, Collingwood, Clearview and the Blue Mountains.

South Georgian Bay is home to some of **Canada's fastest growing communities** with the population expected to grow by 45% by 2043.

- Hospital admissions are expected to increase by 84% within the next 20 years
- Emergency department visits are expected to increase by 20% by 2028/29



By the Numbers



EMPLOYEES

675+



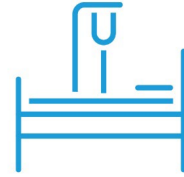
PHYSICIANS,
MIDWIVES & DENTISTS

250+



VOLUNTEERS

235+



BEDS

84

By the Numbers



PATIENT DAYS

30,800



ADMISSIONS

5,400



OUTPATIENT
CLINIC VISITS

43,150



BIRTHS

560



EMERGENCY VISITS

39,700



SURGICAL
PROCEDURES

6,300



CARDIO-PULMONARY
PROCEDURES

3,335



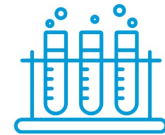
IMAGING
TESTS

66,300



MENTAL HEALTH
CLINIC VISITS

9,400



LABORATORY TESTS

533,200

History of MHP at CGMH

- Previously termed 'Massive Transfusion Protocol'.
- Many updates required including pack content revisions, updated bloodwork requirements, LIS order set implementation.
- SOP updates required for both nursing and lab.
- Use of PCCs needed to be updated to reflect the latest National Advisory Committee recommendations.
- Fibrinogen SOP required.
- Emergency issue procedure to be updated to reflect the appropriate use of Oneg units.
- Updates required to meet recommendations within the MHP 2.0 Toolkit.

Challenges



Human resources



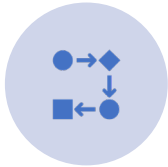
Sustainability



Training



Space



Change process
(workload)



Electronic Health
Record (Meditech)

Challenge Accepted



Adjunct therapies
(Prothrombin Complex
concentrate (PCC) and
Fibrinogen concentrate)



Demo kits for product
reconstitution training



Process revision,
creation of SOP



The use of electronic
health records



MHP order set within
Hospital Information
System



Trained MLAs on packing
CBS transport boxes,
arranging OPP runs



New equipment,
decreased transit time.



Recruitment strategy for
MLTS – unregistered
technologists

CGMH Blood Bank



Words to Reflect On

“Understanding the nature of policy implementation is important because international experience show that policies, once adopted, are not always implemented as envisioned and do not necessarily achieve intended results.”

(Bhuyan et al, 2010)

https://www.healthpolicyproject.com/pubs/272_ImplementationBarriersResourceGuide.pdf

Menti Question

Examples for simplification for smaller/remote sites include:

- A) Administration of Prothrombin Complex Concentrate (PCC) and fibrinogen concentrate in place of plasma and cryoprecipitate.
- B) Cross training hospital personnel from other patient care areas.
- C) Administration of a single bolus of tranexamic acid rather than an infusion.
- D) All of the above.

Examples for simplification for smaller/remote sites include:

Administration of Prothrombin Complex Concentrate (PCC) and fibrinogen concentrate in place of plasma and cryoprecipitate.

0%

Cross training hospital personnel from other patient care areas.

0%

Administration of a single bolus of tranexamic acid rather than an infusion.

0%

All of the above.

0%

Barriers



Resources – upskilling interdisciplinary staff



Dosing of PCC – standardized dosing (500IU vs 1000IU)



Logistics – utilizing all team members, MHP activation



Access to equipment – maintenance of training



Platelets – not available onsite



Limited testing in core lab – no Fibrinogen level, no ionized calcium

Menti Question

What are the minimum laboratory protocol resuscitation targets during an MHP?

- A. INR <1.5, HGB >70g/L, fibrinogen >1.0g/L, ionized calcium >1.10 mmol/L, platelets >10x10⁹/L.
- B. INR >1.5, HGB >60g/L, fibrinogen >1.5g/L, ionized calcium >1.15 mmol/L, platelets >75x10⁹/L.
- C. INR <1.8, HGB >80g/L, fibrinogen >1.5g/L, ionized calcium >1.15 mmol/L, platelets >50x10⁹/L.
- D. INR <1.2, HBG >80g/L, fibrinogen >1.5g/L, ionized calcium >1.10mmol/L, platelets >50x10⁹/L.

What are the minimum laboratory protocol resuscitation targets during an MHP?

INR <1.5, HGB >70g/L, fibrinogen >1.0g/L, ionized calcium >1.10 mmol/L, platelets >10x10⁹/L.

0%

INR >1.5, HGB >60g/L, fibrinogen >1.5g/L, ionized calcium >1.15 mmol/L, platelets >75x10⁹/L.

0%

INR <1.8, HGB >80g/L, fibrinogen >1.5g/L, ionized calcium >1.15 mmol/L, platelets >50x10⁹/L.

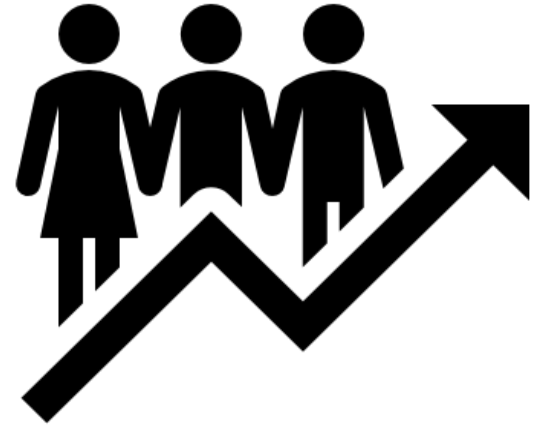
0%

INR <1.2, HBG >80g/L, fibrinogen >1.5g/L, ionized calcium >1.10mmol/L, platelets >50x10⁹/L.

0%

Successes

- MHP has now been built into our nursing orientation to create more awareness.
- Earlier, more frequent activation occurring.
- Streamlined process based on feedback from simulation and real time activation.
- Development of cognitive aids empowering staff and creating a better workflow, improving team dynamics.
- Collaborative efforts to simulate with electronic health record to create a more familiarity workflow.



Successes (continued)

Four sims to date,
working to have
sims two per year in
different areas.

Work with EHR,
ensuring standards of
reporting and
documentation are
met.

Developed a more
efficient process to
issue, pack and
transport blood and
blood products.

Competency – hold
mock MHPs for new
MLTs.

Process revision
contributed to
Accreditation Canada
Diagnostics
Requirements.

Successes (continued)

TM110

The evaluation of staff skills of those performing transfusion medicine testing may include, but is not limited to:

- (a) direct observation of performance;
- (b) monitoring of recording and reporting;
- (c) written tests to assess problem-solving skills;
- (d) assessment of knowledge of procedures and theory;
- (e) assessment of performance in proficiency tests. [1209]

II.D.4

Laboratory management shall ensure that opportunities for improvement identified through the quality improvement procedures are addressed regardless of where they occur. Improvement plans shall be communicated to staff.[61]

ISO 15189:2022 clause 8.6.1.

What to look for: Does the laboratory management react to opportunities for quality improvement? Does the laboratory monitor trends in occurrences and other opportunities for improvement to help in the early identification of problems? Are improvement plans communicated?

Explanation Assessors will look for evidence such as reports or records.

REFERENCE: Accreditation Canada Diagnostics, *Medical Laboratory Accreditation Requirements*, Version 9, June 2023.

Successes (continued)



**ACCREDITATION
AGRÉMENT
CANADA**

Diagnostics

ISO 15189 *Plus*TM / MC

Accredited / Agréé

Medical Laboratory /
Laboratoire médical



Streamlined Order Entry

Current Orders | Transfer/Admit Orders | Hold Queue | History

New Orders | New Meds | New Sets | 0 Queued

Favorites | Category | Name

Order Sets by Name

a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z
1	2	3	4	5	6	7	8	9	0	-	=	[]	\	/	.	,	'	;	`					List

Del Clear Shift Starts With Any Word

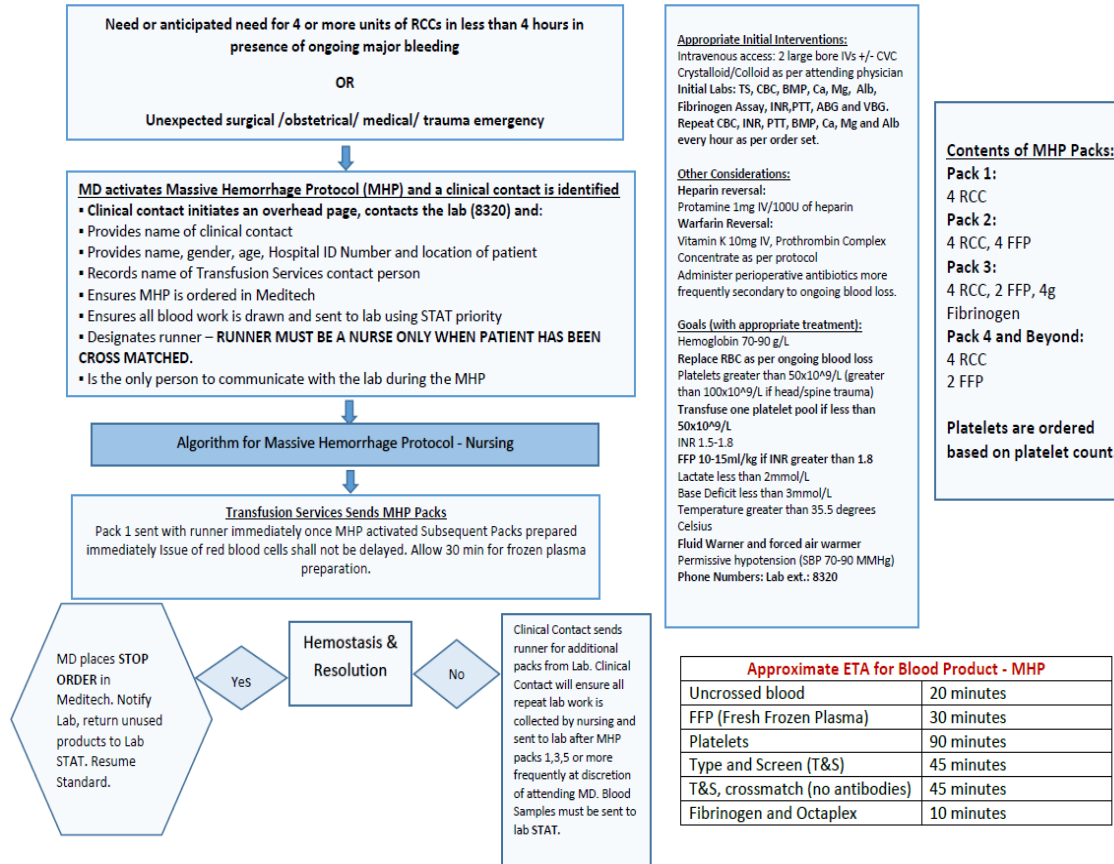
Order Set **MHP**

	Order Sets	Specialty
<input type="checkbox"/>	GEN MHP Pack 1-4	
<input type="checkbox"/>	GEN MHP Pack 1-4	
<input checked="" type="checkbox"/>	GEN MHP Pack 1-4 (RVH)	
<input type="checkbox"/>	MHP Adjunct Medications	
<input type="checkbox"/>	MHP Adjunct Medications	
<input type="checkbox"/>	MHP Initial Bloodwork	
<input checked="" type="checkbox"/>	MHP [GEN MHP Pack 1-4 (RVH)]	
<input type="checkbox"/>	MHP [GEN MHP Pack 1-4]	

Order Set **MASS**

	Order Sets	Specialty
<input type="checkbox"/>	massive hemorrhage protocol [GEN MHP Pack 1-4]	
<input type="checkbox"/>	Massive Hemorrhage Protocol [GEN MHP Pack 1-4]	
<input type="checkbox"/>	Massive Hemorrhage Protocol [MHP Adjunct Medications]	
<input type="checkbox"/>	massive [GEN MHP Pack 1-4]	
<input type="checkbox"/>	Massive [GEN MHP Pack 1-4]	

CGMH MHP Algorithm



Appropriate Initial Interventions:
 Intravenous access: 2 large bore IVs +/- CVC
 Crystalloid/Colloid as per attending physician
 Initial Labs: TS, CBC, BMP, Ca, Mg, Alb, Fibrinogen Assay, INR,PTT, ABG and VBG.
 Repeat CBC, INR, PTT, BMP, Ca, Mg and Alb every hour as per order set.

Other Considerations:
 Heparin reversal:
 Protamine 1mg IV/100U of heparin
 Warfarin Reversal:
 Vitamin K 10mg IV, Prothrombin Complex Concentrate as per protocol
 Administer perioperative antibiotics more frequently secondary to ongoing blood loss.

Goals (with appropriate treatment):
 Hemoglobin 70-90 g/L
 Replace RBC as per ongoing blood loss
 Platelets greater than 50x10⁹/L (greater than 100x10⁹/L if head/spine trauma)
 Transfuse one platelet pool if less than 50x10⁹/L
 INR 1.5-1.8
 FFP 10-15ml/kg if INR greater than 1.8
 Lactate less than 2mmol/L
 Base Deficit less than 3mmol/L
 Temperature greater than 35.5 degrees Celsius
 Fluid Warner and forced air warmer
 Permissive hypotension (SBP 70-90 MMHg)
 Phone Numbers: Lab ext.: 8320

Contents of MHP Packs:

- Pack 1:**
4 RCC
- Pack 2:**
4 RCC, 4 FFP
- Pack 3:**
4 RCC, 2 FFP, 4g Fibrinogen
- Pack 4 and Beyond:**
4 RCC
2 FFP

Platelets are ordered based on platelet count.

Approximate ETA for Blood Product - MHP

Uncrossed blood	20 minutes
FFP (Fresh Frozen Plasma)	30 minutes
Platelets	90 minutes
Type and Screen (T&S)	45 minutes
T&S, crossmatch (no antibodies)	45 minutes
Fibrinogen and Octaplex	10 minutes

Final Stages

Moving towards
code activation,
LMS development
(Code Transfusion)

Onboarding of
PSW, EVS and
security (in
progress)

Addition of MHP to
skills days

Auditing (refining
missing process
pieces)

In house testing
(ionized calcium
and fibrinogen)

Onboarding a
paediatric MHP
process

Key Takeaways

Continuous improvement process (recommendation to review every 3 years)

Continuing to work on increasing staff skills (familiarity with equipment, ongoing through team huddles and roadshows)

Simulation maintenance schedule to remain competent (soliciting feedback for process improvement)

Working relationships with product suppliers, keeping up to date on product changes, roadshows to increase staff confidence and competency with demo kits and training videos

Equipment attestations

References

1. Ontario Regional Blood Coordinating Network, *Provincial Massive Hemorrhage Toolkit*, Transfusion Ontario, April 30, 2021.
2. Accreditation Canada Diagnostics, *Medical Laboratory Accreditation Requirements*, Version 9, June 2023.

Thank You

