

Adult Massive Haemorrhage Protocol for ALL Hospital Sites

Background/ Overview

The Adult Massive Haemorrhage Protocol (MHP) is an algorithm which guides transfusion for patients with massive bleeding. It has been written using best available evidence and expert consensus with a view to providing a standardised approach to management of massive bleeding in adults across all hospitals in New Zealand. The protocol has been pragmatically adapted to suit the specifics of local practice. The purpose of this document is to explain, and provide evidence to support components of the Adult Massive Haemorrhage Protocol.

As different bleeding causes require different blood component volumes and types the MHP has been separated into 3 pathways:

CODE CRIMSON (Trauma)

Not all Code Crimson/Code Red activations will require activation of the MHP.

The ABC score AND senior clinician approval is used to guide activation of the MHP code crimson/red pathway. One point scored for each:

- Positive FAST (intra-abdominal free-fluid on ultrasound)
- Penetrating mechanism
- Systolic BP ≤ 90 in ED
- HR ≥ 120 in ED

ABC scores < 2 are unlikely to require massive transfusion (negative predictive value $> 95\%$). The most powerful predictor of the four individual components is positive FAST scan, the accuracy of which relies heavily upon the skill of the practitioner.

While the score can aid decision-making, senior clinician judgement should always be used to initiate the massive haemorrhage protocol, as the process can quickly stretch the limits of the hospital blood supply. The score tends to over-triage towards massive transfusion; the need to terminate the MHP should be constantly reassessed and immediately relayed to blood bank.

Standard

The standard MHP pathway is for non-trauma, non-obstetric massively bleeding patients such as: gastrointestinal bleeding, massive surgical bleeding and ruptured abdominal aortic aneurysm. There is no widely accepted scoring system to guide the activation of the non-trauma pathway. The following has been accepted as a consensus.

MHP activation requires at least two of the three main indicators below, in addition to senior clinician judgement:

- Massive bleeding
- Systolic BP ≤ 90 mmHg
- HR ≥ 120 /min (or bradycardia)

Other signs of shock/hypoperfusion: sweating, pallor, collapsed veins, air hunger, altered mental status, low or falling end-tidal CO₂.

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| Document ID: | A1647310 | CMH Revision No: | 10.0 |
| Service : | Laboratory - Transfusion Service | Last Review Date : | 3/10/2022 |
| Document Owner: | Transfusion Nurse Specialist | Next Review Date: | 3/10/2025 |
| Approved by: | Transfusion Committee | Date First Issued: | 3/10/2022 |

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Obstetric

Obstetric patients with massive bleeding have important differences in their bleeding, coagulation state and physiology and the MHP obstetric pathway reflects this.

Tranexamic Acid

A 1g bolus of TXA as a slow IV injection is recommended in obstetric massive haemorrhage. A second dose should be given after 30 minutes if the patient is still bleeding, or, if bleeding restarts within 24 hours of the first dose.

Give stat pack then review the need for ongoing products

Coagulation deficits are uncommon in PPH, with an incidence of 1-2 per 1000 deliveries. Placental abruption, pre-eclampsia and amniotic fluid embolism can be associated with low fibrinogen levels due to consumptive coagulopathies. Access to point of care testing may be useful to determine the need for coagulation products that come in the MHP packs.

Fibrinogen replacement and avoidance of early FFP

The contents of the 'Obstetric Pack 1' are different to the 'standard pack 1'. During a PPH, fibrinogen falls before other coagulation factors. At term, the haemostatic system is prothrombotic with fibrinogen concentrations of 4-6g/L. Fibrinogen replacement is required if the plasma level falls below 2g/L.

The concentration of fibrinogen in FFP is low (1-3g/L) so early use of FFP can dilute the recipient's fibrinogen levels. Unnecessary use of FFP can lead to complications so the product focus of the MHP obstetric pathway is early fibrinogen.

Purpose

A **Massive Haemorrhage Protocol** encompasses all aspects of managing major haemorrhage, *one aspect* of this being *massive transfusion*. Hence, the abbreviation MHP now replaces the previous 'MTP'.

The emphasis is on stopping bleeding by the use of tourniquets and pelvic binders as well as the importance of an expedited transfer to either the operating theatre or interventional radiology suite.

There is now a stronger focus on communication between the MHP coordinator, Blood Bank and treating clinicians to achieve definitive care.

The use of adjuncts of care as well as maintaining a normal physiological target is also important. The standardised packs of blood products are based on the latest evidence and resources available.

Scope of Use

This guideline is applicable to all CMH employees, full-time, part-time and casual (temporary) including contractors, visiting health professionals and students working in any CMH facility who are able to administer blood components.

Roles and Responsibilities

See the MHP flow chart page two for individual roles and responsibilities

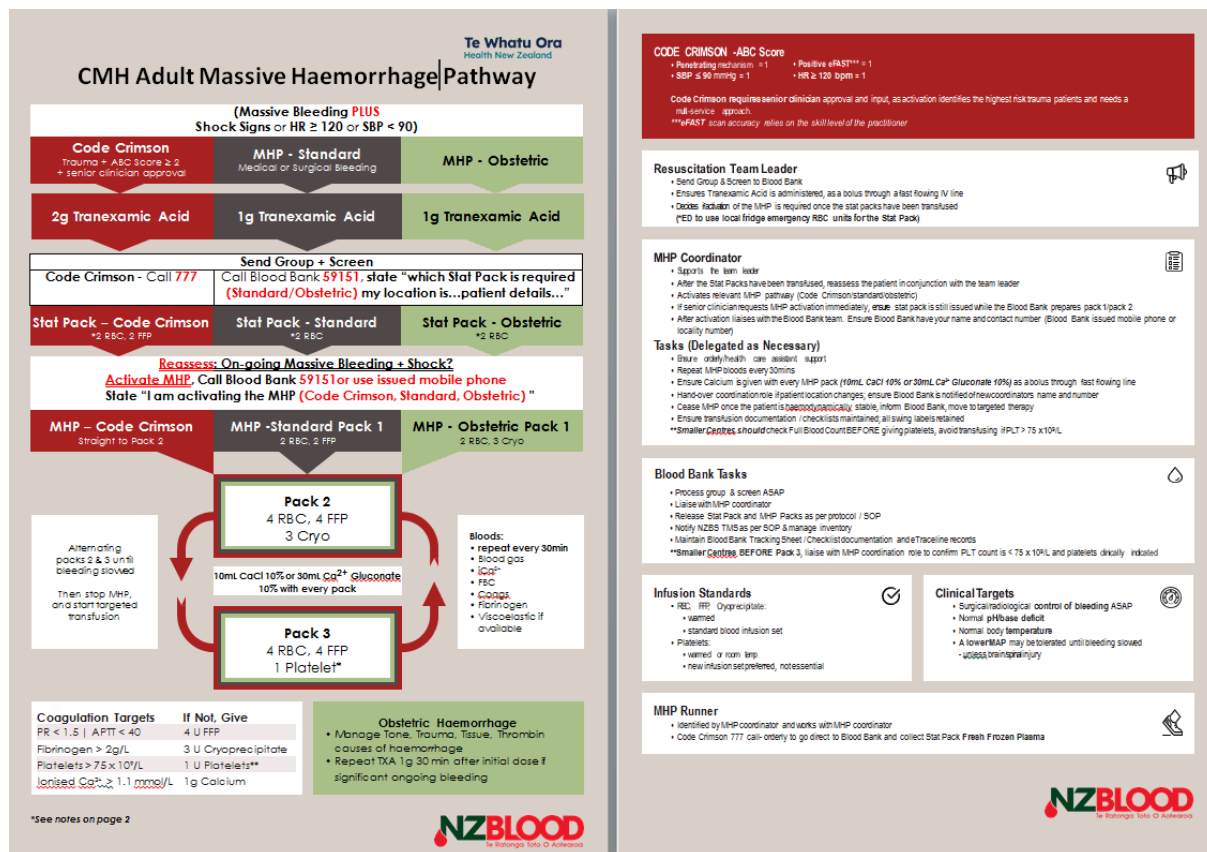
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Guideline

The below picture is a clickable link to a two page MHP flowchart (available on the Transfusion website)

Page 1 shows the way an MHP should be activated as well as the order and contents of the Stat and MHP packs

Page 2 lists individual tasks and responsibilities



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Definitions/Description

Terms and abbreviations used in this document are described below:

| Term/Abbreviation | Description |
|-------------------|---|
| ED | Emergency Department |
| FAST | Focused assessment with sonography for trauma |
| FFP | Fresh frozen plasma |
| MHP | Massive Haemorrhage Protocol |
| MTP | Massive Transfusion Protocol |
| NZBS | New Zealand Blood Service |
| PPH | Post-partum haemorrhage |
| RBC | Red blood cells |

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Associated Documents

Other documents relevant to this guideline are listed below:

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| NZ Legislation & Standards | New Zealand Blood Service Health Practitioners Competency Assurance Act (2003). Nursing Council of New Zealand Competencies for Registered Nurses Scope of Practice (2007). |
| CM Health Documents | Informed Consent Tikanga Best Practice Hand Hygiene Policy Informed Consent (Children and Youth) Policy Documentation In the Clinical Record Procedure Management of Transfusion Reactions Formal Patient Identification |
| Other related documents | Transfusion Website (Paanui) |

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