Massive Haemorrhage - Full Clinical Guideline

Reference no.: CG-HAEM/2017/005

1. Summary

It is imperative to recognise major blood loss early and a successful outcome requires prompt action and good communication between clinical specialities, diagnostic laboratories, hospital transfusion laboratory staff and NHS Blood and Transplant (NHSBT).

Although there is limited evidence on best management of massive transfusion there is some evidence that the early transfusion of fresh frozen plasma (FFP) and platelets leads to improved patient outcomes.

2. Introduction

Massive blood loss can be defined as the loss of total blood volume within a 24hr period. Alternate definitions that may be more helpful in the acute situation include a 50% blood volume loss within 3hr or a rate of loss of 150 ml/min.

In circumstances of massive haemorrhage clearly defined protocols and Standard Operating Procedures supported by laboratory testing, may facilitate timely transfusion support and lower the incidence of significant coagulopathies.

3. Aim and Purpose

To offer guidance for all clinical staff managing patients during a massive haemorrhage episode at the Royal Derby Hospital.

4. Definitions

NHSBT – National Health Service Blood and Transplant

FFP – fresh frozen plasma

Cryo - cryoprecipitate

TRALI – transfusion related acute lung injury

ED – Emergency Department

5. Guideline –

The clinician in charge has the responsibility of initiating a Massive Haemorrhage Alert and contacting Blood Bank (see Appendix 1). Urgency should be assessed as soon as possible and a sample sent to the transfusion laboratory for ABO / RhD typing, antibody screening and serological crossmatching (where indicated).

In addition samples for baseline haematology and coagulation screen should also be requested to assess haemostasis.

BLOOD COMPONENTS

In acute bleeding consideration must be given to therapeutic platelets, fresh frozen plasma and cryoprecipitate to allow prompt action; this is especially important for platelets (short shelf life and delivery time from Sheffield NHSBT).

Red cells

If possible cell salvage should be used to minimise allogenic blood use. Up to 4 units of blood group O red cells can be issued prior to the ABO and RhD group being identified.

ABO group specific can be issued following receipt of a sample and a rapid emergency ABO /RhD test within 5 minutes.

Platelet Concentrates

It can be anticipated that after 2 x blood volume replacements platelet counts can drop to below 50 x 10^9/l. Platelet count should therefore be maintained above 50 x 10^9/l where possible and if multiple or CNS trauma it is advisable to keep platelet count above 100 x 10^9/l.

Consideration should be given to delivery times from the NHSBT.

The laboratory aims to keep at least one unit of group A Positive platelets on standby for urgent cases. Early consultation with the hospital transfusion laboratory provides an opportunity to check blood stock, reschedule non-urgent work and anticipate blood component requirements.

Fresh Frozen Plasma

In the massive transfusion situation coagulation factors are diluted following volume replacements with red cells/crystalloid and/or colloids. It is anticipated that FFP will be required after 1 -1.5 x blood volume replacement.

There is evidence that early transfusion of FFP with Red cells reduces the risk of coagulopathy and can decrease mortality in massive bleeding.

Ensure sufficient quantity is given 15ml /kg weight (1 litre usually 3 units).

Fresh frozen plasma, once thawed, may be stored at 4ºC for up to 120 hours. Pre thawing a therapeutic dose of FFP may minimise delay as soon as aware of a massive transfusion situation.

Clear consultation with senior medical staff and haematology is essential and the importance of good communication and co-operation in this situation cannot be over-emphasised.

Cryoprecipitate

Cryoprecipitate (cryo) is rarely needed, but if the fibrinogen level is not corrected by FFP (to a level above 1.5 g/l) then cryoprecipitate is recommended. An adult dose comprises of two units of pooled cryoprecipitate. Cryo is available on site but allow for 20 minutes thawing time.

It is essential that laboratory tests for coagulation are monitored frequently throughout the massive transfusion episode as a guide to the most appropriate blood component.

Recombinant factor VIIa (rVIIa) Novoseven

This haemostatic agent is used to reduce blood loss in exceptional high risk situations where control of bleeding has not occurred using standard FFP, Cryo and platelets. Permission to release this product must be obtained from a Consultant Haematologist before use. Note: all Novoseven is stored and issued by Pharmacy.

RISKS OF MASSIVE TRANSFUSION

Positive Patient ID not performed

The most frequently reported adverse event associated with blood transfusion is the giving of the wrong blood to the patient and this risk is particularly high in emergency situations. Strict adherence to Trust checking procedures at collection and administration must be maintained. Minimum patient details include unique ED number and gender checked against patient wrist band.

Atypical antibodies

In a patient with known red cell antibodies or positive antibody screen, the risk of a haemolytic transfusion reaction will need to be assessed against the risk of withholding transfusion until compatible blood can be provided.

TRALI

Transfusion Related Acute Lung Injury (TRALI) and other immunologically mediated reactions are uncommon, but occur 5-6 times more frequently following the administration of platelets and FFP than red cells.

IMPORTANT POINTS TO REMEMBER

Maintain communication with the Transfusion. Inform the Haematologist on duty of the situation if necessary.

Red cells can be returned to the satellite fridge if no longer required (providing that they are correctly signed back in). All other blood components MUST be returned to the transfusion laboratory ASAP if no longer required.

Unused ampoules of rVIIa may be returned to Pharmacy if not needed.

Completion of Traceability documentation (Blue Tags) is a legal requirement following the transfusion of blood and blood components and must be followed up if not done.

6. Communication

Summary guideline (appendix 1) is available in ED, MAU, Theatres, ward 304 and ward 305. It is also accessible on the guidelines site: Massive Haemorrhage Summary Guideline

7. References

British Society for Haematology Guidelines on the Management of Major Haemorrhage July 2015 (http://www.b-s-h.org.uk/guidelines/guidelines/haematological-management-of-major-haemorrhage)

Rapid Response Report NPSA/2010/017 The transfusion of blood and blood components in an emergency October 2010 (https://docplayer.net/55405797-Rapid-response-report-npsa-2010-017.html)

Trust Policy for Transfusion of Blood and Blood Components POL-CL/1776/05

8. Documentation Controls

Reference Number CG-HAEM/2017/005	**Version:** 2.0.0		**Status** Final	**Author:** Heather Rankin **Job Title:** Transfusion Practitioner In consultation with Hospital Transfusion Committee
Version / Amendment History	Version	Date	Author	Reason
	2.0.0	16/07/2020	K Kacinova – Transfusion Practitioner	Amendment following review
Intended Recipients: State who the Clinical Guideline is aimed at – staff groups etc.				
Training and Dissemination: How will you implement the Clinical Guideline, cascade the information and address training				
Linked Documents: State the name(s) of any other relevant documents				
Keywords:				
Business Unit Sign Off			**Group:**HTC **Date:**20/10/20	
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EIRA Stage One Completed Yes / No *Delete as appropriate* Stage Two Completed Yes / No *Delete as appropriate*				
Date of Approval			Oct 2020	
Review Date and Frequency			Jun 2023, every 3 years	
Contact for Review			Transfusion Practitioner	
Lead Executive Director Signature				

9. Appendices

Appendix 1 Massive Haemorrhage Action Card (summary guideline)

Appendix 1

Massive Haemorrhage - Summary Clinical Guideline

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MASSIVE HAEMORRHAGE ACTION CARD

Activate when Patient bleeding / collapses, on-going severe bleeding e.g.: 150 mls/min, Clinical shock

Contact Blood Bank via #3090 or Ext. 88532 or 07384914100

1. Clinician in Charge (Consultant/SPR) declares a Massive Haemorrhage situation
2. Designates named person to liaise with Blood Bank and a designated "runner" to collect ALL blood products
3. Nominated Clinician contacts Blood Bank and states: ❖ "Massive Haemorrhage Alert"❖
4. Give details of Patient (if ID available)
5. Provide location including contact number

Initial Requests:

1. If no Group & Save Sample available:
   a. 4 x Group O Red Cells uncrossmatched (ready immediately)
      (note. 2 x O Neg red cells ready in Level 5 issue fridge at all times)
   b. 3 x Group A Fresh Frozen Plasma (ready 30 minutes)

2. If Group & Save Sample available:
   a. 4 x Type Specific Red Cells (ready 5 minutes)
   b. 3 x Group A Fresh Frozen Plasma (ready 30 minutes)

3. 1 x Dose suitable Platelets available when required
4. 2 x Cryoprecipitate units if required (ready 20 minutes)

Fully compatible (cross-matched) red cells can be available after 45 minutes. If the patient is eligible for Electronic Issue then for subsequent orders red cells can be ready in 5 minutes

Considerations:

- Collection of Red Cells and Blood components must be undertaken by a dedicated runner who is provided with appropriate patient identification details.
- Frequent monitoring of Full Blood Count/Platelets/INR/APTT AND Fibrinogen should be undertaken:
  - Aim for Platelets >50 x10^9/l, INR <1.5, APTTR, <1.5, Fibrinogen >1.5 g/l.
- Contact on-call Haematology Consultant for advice on Transfusion management.
  - Ext 87573/83376 during working hours or via switchboard out of hours
- Contact Haematology Consultant if considering using Novoseven (rFVIIa)

Remember that all checking procedures must still be undertaken and that it is a legal requirement that the Blue Traceability Tags must be completed.

Transfusion Management of Massive Haemorrhage