

National Haemovigilance Office Conference 2020

Major Haemorrhage – Blood Component Management



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- Definition of a Major Haemorrhage:
 - Actual or anticipated transfusion of 4 units RCC <1 hour</p>
 - > Ongoing blood loss in excess of 150 ml/minute
 - Transfusion of equivalent of one blood volume within 24 hours or 50% within 3 hours or more





British Journal of Haematology 6 JUL 2015 DOI: 10.1111/bjh.13580

SVUH Transfusion Management of a Major Haemorrhage

Senior Clinical Staff to call a Code Red if:

- Active haemorrhage with anticipated transfusion of 4 units or > within 1 hour
- Or /And ongoing transfusion requirement in an adult of more than 150 ml per minute
- Or /and the Systolic BP is < 90mmHg due to bleeding
- Or /And there is a poor response to initial fluid resuscitation

Call a Code Red directly to the Hospital Blood Bank on 4449 or out of hours –On call Haematology Scientist on bleep 465

Send samples Group & crossmatch, FBC, PT, APTT & Fibrinogen, U &E & Ca. Inform lab when sending urgent samples.

Near Patient testing: Check ABG (and TEG if available)

Transport samples: Ward Porter or Porter on Call Bleep 221 or Bleep 470 or by POD Phone Blood Bank ext 4449 (out of hours -bleep 465) to confirm receipt of samples sent by POD

Contact Key personnel

- Patient's Consultant or deputy
- Medical/Surgical Registrar on Duty
- On Call Consultant Anaesthetist / Anaesthetic Registrar via switch
- On Call Consultant Haematologist /Haematology Registrarvia switch

Immediate resuscitation

- Perform Appropriate Resuscitation and Haemostatic Measures
- Start blood component therapy
- Maintain or restore normothermia, use rapid infusion line and Blood Warmer.

Tranexamic Acid- Administer 1g as IV bolus over 10 minutes

If trauma give within 3 hours of injury and if the bleeding continues give further dose as infusion of 1 g over 8 hours.

Immediate Red cell transfusion

Check for crossmatched blood, if none available:

- 4 units Emergency O RhD Neg blood is located in Blood Bank Fridge or
- Request Issue of Ungrossmatched Group Specific as soon as patient group confirmed

Inform the hospital blood bank ext 4449 if the emergency O RhD Neg blood stock is removed

On receipt of the CODE RED alert, the Blood Transfusion Lab will issue Pack A (unless directed by

Requesting Clinician to Issue Pack B.e.g Massive Trauma/DIC/ fulminant liver failure) Pack A

Pack

- Red Cells x 4 units (to include any Emergency Bloodadministered)
- Plasma x 4 packs

On request for further blood and continued bleeding the Blood Transfusion Lab will issue Pack B, Pack B

Pack B

- Red Cells x 4 units,
- Plasma x 4 packs,
- Platelets x 1 pack/adult dose,
- Fibrinogen x 3g

These products will be repeated as long as the bleeding continues.

Send samples at 30 minutes then hourly for fbc, coagind fibrinogen, U&E& Ca until bleeding is controlled /code red is stood down. Replace Calcium if hypocal caemia. If bleeding persists seek advice from the Haematology Registrar /Consultant on call.

Stand down the Code Red, by contacting the Hospital Blood Bank, as soon as possible if the bleeding stops

Major Haemorrhage Protocol (MHP) Code Red



Haemovigilance Review



Criteria for Review

- Code Red activation
- Transfusion of 4 units RCC (50% blood volume) within 4 hours or 10 units within 24 hours

<u>Review</u>

- Haemovigilance Officer collates data
 - blood loss/cause, baseline BP etc, Hx anticoagulants, blood products transfused and timings (if available), haemostatic/Ca monitoring, TXA administration
- Review by Haematologist/ HWG meetings





- 80 Major Haemorrhage/Code Red activations (79 patients) reported in 2019
- Location : SVUH (75) & SVPH (4)
- Age range: 16-90yrs
- Code Red Activated: 52/80 (65%)
- Survival
 - 41/79 (52%) @ 24 hrs
 - 33/79 (42%) @ 4 weeks

Bleeding Source





Red Cell Usage



- Total Transfused 705 units Range (0-64, Mean 8, median 7) – 8% of RCC usage
- 5 were not transfused (1 RIP & others stood down)
- 64 transfused between 1 and 10 units
- 21 **(25%)** ≥10 units
- 1 Trauma case received Pre-Hospital transfusion (2RCC & 2 Plasma)
- 28 (35%) used Emergency ONeg
- 1 ANeg male patient transfused 5 APos RCC after 9 ANeg RCC

Plasma /Fibrinogen/Platelets Usage

- 41 Received Plasma
 - (range 1-41 units)
- 38 Received Fibrinogen
 - (range 1-32g)
- 29 Received Platelets
 (range 1-11 doses)





- 4 Patients received Prothrombin Complex Concentrate (reversal of oral anticoagulant – Warfarin x1, 3 DOAC)
- 3 Patients received Recombinant FVIIa
 - Massive Transfusions rAAA, GI/arterial bleed, penetrating trauma



- Overall 58/80 (72%)
- Trauma cases 9/11 (81%)
 - ? Higher as record (Pre-Hospital care) is not always available
- Non-trauma cases 49/69 (71%)
 - increased from previous year and increase particularly evident in 2nd half of the year and in GI bleeding





• 8 feedback reports issued

- Timeliness of Blood Product collection/transportation
- Timeliness of component administration
- Communication issues
- Lack of Monitoring seen in non OLT cases
- Lack of Calcium replacement
- Use of Tranexamic Acid encouraged

A Transfusion Prescription Template and other Human Factor Interventions to improve Balanced Transfusion Delivery in Major Haemorrhage due to Trauma





- Follow MH protocol
- · Monitor using laboratory tests and near-patient testing
- Do not omit components based on normal testing while bleeding continues
- Reduce waste by returning unused components on MH stand down



- Drills in Theatre/other wards where Code Reds likely (already in place in ED and desktop exercise in SVPH)
- **Major Haemorrhage Team** proposal sent to Surgical/Medical Subgroups – needs resourcing
- Code Red Porter for wards
- Scribe/Documentation
- Consider Specific protocols (Trauma, Vascular, GI)



- MOH is defined as loss >1.5L or any loss with signs of hypovolaemic shock
- 3rd highest direct cause of maternal mortality
 - Significant cause of morbidity in "Near Miss Audits"
- Antepartum or post partum often both



- Post Partum Haemorrhage a blood loss
 >500mls <u>or</u> maternal signs of hypovolaemic shock
- Massive PPH a cumulative blood loss >1,500mls or ongoing severe bleeding, clinical shock, patient unstable or consultant suspicion
- Primary PPH Occurs within 24hrs of delivery
- Secondary PPH Occurs following 24hrs & within 6 weeks of delivery

HSE Guidelines

National Maternity Hospital

- Need revision
- TXA upfront
- Fibrinogen not cryo





ROTEM® Guided Obstetric MOHP









 The ROTEM standard parameters can be used to determine a specific coagulopathy and guide targeted blood product replacement





SVUH Protocol Changes 2019

- Prompt to perform regular Haemostatic Monitoring including Ca++ (30 mins, then hourly)
- 2 doses of Emergency Platelets in stock
- 2 Units Thawed Plasma immediately available
- Pre-Hospital Transfusion transfusion

Pre-Thawed Plasma for Major Haemorrhage



- Octapharma[®] extended shelf life of thawed Plasma to 5 days
- SVUH reviewed feasibility of having pre-thawed Plasma available for use in Code Red/Major Haemorrhage situations
- Introduced this change in Summer 2019
 - 2 group AB/A pre-thawed Plasma available for Emergency release at all times in SVUH Blood Bank
- Code Red/Major Haemorrhage Pack A now has:
 - 4 RCC & 2 Plasma ready to go immediately

Plasma Wastage



- Plasma wastage to date is comparable to wastage prior to this change
- Requirement for stringent inventory management of the pre-thawed Plasma by Medical Scientists





Benefits:

- 2 Plasma available immediately for Code Red/Major Haemorrhage
- Plasma available in Pre-Hospital setting
- Plasma can be administered earlier

Difficulties:

- Stringent stock management of prethawed Plasma required
- Plasma thawed for <24 hours can be used for all patients</p>
- ➢ Plasma thawed ≥24 hours can only be used for bleeding patients
 - Requires segregation of Plasma
- LIMS unable to assign expiry date to Plasma – manually intervene

Management of Pre-Thawed Plasma

Yes



NO -Proceed to thaw Yes - Select & Issue to patients ABO group patient

Practical Based On-call Training



- Discussion at On-Call meetings
- Suggestion box for On-Call staff
 - Main area of concern is response to Code Red/Major Haemorrhage
- Blood Bank staff developed laboratory based practical sessions for On-Call staff





You receive a call to activate a Code Red. There is no historical group on file for the patient.

- What group do you select for **PACK A** and how do you result it:
 - RCCS (Emergency Release/EI/Suitable/Compatible)
 - Plasma
- If there are only 2 pre-thawed Plasma available:
 - What group do you defrost
 - How do you issue it

Scenario 2



You receive a call to activate a Code Red. There is one sample on file taken 4 days ago. Patient group is BPos. No units transfused in the last 3 months.

- What group do you select for **PACK A** and how do you result it:
 - RCCS (Emergency Release/EI/Suitable/Compatible)
 - Plasma
- If there are only 2 pre-thawed Plasma available:
 - What group do you defrost
 - How do you issue it

Future Plans



- User satisfaction survey planned
- Thorough review to be performed 1 year post implementation
- Switch to Lyoplas add Fibrinogen/PCC to Pre-Hospital Box
- Possible MSc project carrying out in-house review of factor levels throughout thawed Plasma storage period

We welcome any comments/suggestions from the audience

Acknowledgements



- SVUH Blood Bank staff
- Drs. Mark Coyne, Kieran Morris & SVHG Haemovigilance Officers
- SVUH ED Consultant Dr. David Menzies
- Natalie Sabine and the NMH Blood Bank

