1.0 Title
Blood Products – Massive Transfusion

2.0 Background
Critical bleeding may be defined as major haemorrhage that is life threatening and likely to result in the need for massive transfusion\(^1\).

Massive transfusion in adults may be defined as a transfusion of half of one blood volume in 4 hours, or more than one blood volume in 24 hours (adult blood volume is approximately 70mL/kg)\(^1\). An alternative definition more sensitive to the acute situation is 4 units PRBC over 1 hour, with anticipation of continued need for blood product support in an unstable patient with severe or uncontrolled haemorrhage\(^8\).

Critical bleeding in pregnancy
Obstetric haemorrhage, including postpartum haemorrhage (PPH) can rapidly become life threatening, requiring massive transfusion. There is potential for concealed haemorrhage and early development of disseminated intravascular coagulation (DIC) in these patients\(^2\). Target Fibrinogen > 2.5g/L in massive PPH.


Critical bleeding in children
There is a marked variation in blood volume with age. Paediatric massive transfusion may be defined as transfusion of more than 50% total blood volume (TBV) in 3 hours, transfusion of more than 100% TBV in 24 hours or transfusion support to replace ongoing blood loss of more than 10% TBV per minute\(^3\).

A PBM Guideline: Module 6 Neonatal and Paediatrics is now available from the National Blood Authority, at https://www.blood.gov.au/pbm-module-6\(^3\). Appendix 4 of this policy provides a guide for healthcare professionals making clinical decisions about blood management in the setting of critical bleeding in paediatric patients\(^3\).
3.0 Purpose
To assist and guide healthcare professionals in making clinical decisions, when managing patients with critical bleeding who require massive transfusion and to ensure that patients with massive blood loss receive appropriate safe and effective treatment through implementation of evidence based guidelines.

4.0 Policy Statement
Risk Governance

- There remains a risk of transfusion related harm due to administrative error during a massive transfusion scenario. Such errors have the potential to result in acute haemolytic reaction from ABO incompatibility which may be fatal\(^1\).
- The physiological response to haemorrhage may also vary with underlying conditions, presence of medication, patient’s age and presence of hypothermia\(^1\).
- Aggressive volume resuscitation with crystalloid solution can cause serious problems\(^1\): Oedema, compartment syndrome, acute lung injury, Exacerbation of anaemia, thrombocytopenia and coagulopathy due to haemodilution Clot disruption causing exacerbation of bleeding
- In the maternity population, activate Massive Transfusion Protocol (MTP) early as obstetric haemorrhage is often underestimated or concealed. DIC may develop rapidly and early\(^2\).
- Treating clinicians should be mindful that anticoagulant preservative solutions affect acid-base status and can cause hypocalcaemia\(^3\).
- Hypothermia impairs global coagulation including platelet function\(^3\).
- **Beware the ‘lethal triad’ or ‘bloody vicious cycle’**. Mortality is highest where acidosis and hypothermia occur with coagulopathy. Management strategies should be directed at avoiding or reducing the extent of these complications\(^1\).

Governance Structures

- Management of critical bleeding should focus on early recognition of blood loss, rapid control of the source of bleeding and restoration of circulating blood volume\(^1\).
- In patients with critical bleeding requiring massive transfusion, early assessment and evaluation and the use of an MTP to facilitate timely and appropriate use of red blood cells (RBC) and other blood components may reduce the risk of morbidity and mortality\(^1\).

Recommendations and practice points from the NBA PBM Guideline: Module 1 Critical Bleeding Massive Transfusion is incorporated into massive transfusion flowcharts to guide practice during massive transfusion\(^1\).

**Appendix 1:** The Tweed Hospital  
**Appendix 2:** Grafton Base Hospital  
**Appendix 3:** Lismore Base Hospital
• The MTP should be applicable for maternity patients. Fibrinogen levels approaching 2g/L are indicative of critical physiological derangement and are associated with severe haemorrhage. All MTPs in the NNSW LHD aim for a Fibrinogen > 2.5g/L in massive PPH.

• Permissive hypotension and minimal volume resuscitation are generally preferable to aggressive volume resuscitation while active bleeding is being controlled.

• **Permissive hypotension is contraindicated in patients with traumatic brain injury.**

• Damage control surgery may be indicated for patients with severe haemorrhagic shock. The decision to switch over to damage control mode should be made early.

• In patients with critical bleeding requiring massive transfusion, haemoglobin concentration should be interpreted in the context of haemodynamic status, organ perfusion and tissue oxygenation.

• The MTP includes advice on the administration of rFVIIa when conventional measures, including surgical haemostasis and component therapy, have failed to control critical bleeding.

• When rFVIIa is administered to patients with critical bleeding requiring massive transfusion, an initial dose of 90μg/kg is reasonable.

**Governance Responsibilities, Education and Training**

**Organisational Responsibility**

• To ensure that management of massive blood transfusions follows evidence-based principles.

• Ensure that local MTPs are reviewed regularly.

• Endorse new and reviewed evidence based policies and guidelines that align with national authorities and NSW Health policy.

• Monitor and evaluate clinical performance of massive transfusion through local PBM or other relevant committees.

• Put in place improvement or actions plans as required.

**Management Responsibility**

• Ensure all relevant staff are aware of the MTP guidelines included in this policy and local procedure.

• Ensure mandatory education is adhered to.

• Identify the need for and organize in-service as appropriate.

• Escalate to relevant committees any problems identified during a MTP.

**Employee Responsibility**

• Compliance with this policy and local procedure are mandatory.

• Maintain compliance with mandatory education.

• Improve self-knowledge through education on critical bleeding and PPH, available through HETI or at [https://bloodsafelearning.org.au](https://bloodsafelearning.org.au).
5.0 Monitoring and Evaluation
- This policy shall be reviewed every 5 years; OR as the PBM Guideline on Critical Bleeding Massive Transfusion currently under review by the National Blood Authority, is updated\(^1\).
- All massive transfusions shall be reviewed by local relevant transfusion committees and at departmental morbidity and mortality meetings.
- Use of the MTP should be audited, using the NBA Massive Transfusion Protocol clinical audit tool, found at [https://www.blood.gov.au/massive-transfusion-protocol-mtp-clinical-audit-tool]\(^6\).

6.0 Definitions
Standards Australia and virtually all national standards bodies around the world including the American Association of Blood Banks are following the rules set down by the international standards body International Organisation for Standardisation (ISO) for the use of the terms ‘shall’, and ‘should’.
- The term ‘shall’ indicates a mandatory requirement; however this does not imply a mandatory legal requirement in an Australian standard.
- The term ‘should’ implies a recommendation where guidance is intended and does not preclude other acceptable practices.
- The term ‘may’ is used to indicate an acceptable alternative or addition to the prescribed practice.

7.0 References
7 GL2017_018 Maternity - Prevention, Detection, Escalation and Management of Post Partum Haemorrhage (PPH)
8 Pham,H & Shaz, B, 2013. Update on Massive Transfusion. British Journal of Anaesthesia, [Online]. 111(1), i71-i82. Available at:
8.0 Appendices

Appendix 1: The Tweed Hospital Massive Transfusion Protocol.
Appendix 2: Grafton Base Hospital Massive Transfusion Protocol.
Appendix 3: Lismore Base Hospital Massive Transfusion Protocol.
Appendix 4: Critical Bleeding Protocol for Infants and Children.
MASSIVE TRANFUSION PROTOCOL

The Tweed Hospital

TRANSFUSION LAB call 7576 (24 hours)

MTP Indications
- Actual or anticipated blood loss 4 units RBC within <4 hours + haemodynamic instability
- Severe thoracic, abdominal, pelvic or multiple long bone trauma
- Major surgical, obstetric or gastrointestinal bleeding

Massive Transfusion can only be activated by a CONSULTANT

Initial measures
- Early consultant involvement
- Identify source
- Mobilise resources
  - Warmers
  - IV pump sets
  - Level 1 infuser

Stop the Bleeding
- Compression
- Packing
- Tourniquet (max 2 hours)

Involve specialties ASAP
- Anaesthetics
- Surgery, Gastroenterology
- ICU
- Cell Saver

Patient with Haemorrhage AND Haemodynamic Instability OR Coagulopathy

Send Baseline Bloods
- Labelled crossmatch
- FBC
- Coagulation profile (INR, APTT)
- Fibrinogen
- Biochemistry
- Venous Blood Gas

Call Transfusion lab 7576
- Notify them of patient’s condition
- Request 2 units 0 Neg or Group specific blood

Continuing instability
- CONSULTANT to authorise MTP
- CALL Transfusion Lab 7576
- ACTIVATE MTP

MTP Pack 1
- 4 units RBC
- 2 units FFP
- apheresis Cryoprecipitate 5 units*
- 1 Adult dose platelets

MTP Pack 2
- 4 units RBC
- 2 units FFP

MONITOR
- Every 30-60min
  - FBC
  - Coagulation profile (INR, APTT)
  - Fibrinogen
  - Ionised Ca++
  - ABG

TARGETS
- Temp > 35°C
- pH > 7.2
- Base Excess > -6
- Lactate < 4mmol/L
- Ca++ > 1.1mol/L
- Platelets > 50 x 10^9/L
- PT/APTT < 1.5 x normal
- INR ≤ 1.5
- Fibrinogen > 1.5g/L

Fibrinogen Concentrate (RiaStap©) (ICU)
- Consider early in severe time-critical haemorrhage whereby clinically fibrinogen deemed deficient (eg. massive and sudden blood loss)
- Consider recombinant factor VIIa if indicated

Tranexamic Acid (Within 3 hours of trauma)
- 1g IV over 10 min
- then 1g over 8 hours

Recombinant Factor VIIa (ICU)
- Consider eligibility
  - 90mcg/kg

Special circumstances

Warfarin
- Vitamin K 5-10mg IV
- Prothrombinex 25-50 IU/Kg

Aspirin/Clopidogrel
- Early platelets

Dabigatran
- Consult Haematologist, See ED protocol

Rivaroxiban/Apixaban
- Consult Haematologist

Obstetrics
- Early DIC
- Consider cryoprecipitate empirically
- Aim for Fibrinogen > 2.5g/L

Head and spinal injury
- Aim for Platelets >100 x 10^9/L
- Permissive hypotension contraindicated

CONTACT NUMBERS
- Transfusion lab 7576 (24hours)
- Anaesthetic Reg 7395
- ICU Reg 7255
- ED FACEM 7739
- ED Nurse 7445
- Theatre Coordinator 7441
- Cell Saver 0411617612
- Australian Red Cross 24hr
- Transfusion Specialist
  - 1300 669 054 OR 07 3838 9223

Massive Transfusion Protocol - Page 6 of 14
PATIENT WITH HAEMORRHAGE AND HAEMODYNAMIC INSTABILITY AND/OR KNOWN COAGULOPATHY

SEND BASELINE BLOODS
FBC, CROSS MATCH, COAGS, FIBRINOGEN, BIOCHEMISTRY, VBG, LACTATE

NOTIFY PATHOLOGY ON 28775 (0800 – 2045)
Notify AHNM on 28455 after 2045
ORDER 2 UNITS OF O NEGATIVE BLOOD (OR GROUP SPECIFIC)

ONGOING UNCONTROLLED BLEEDING
SENIOR TREATING DOCTOR
ACTIVATE MTP
Pathology (Transfusion) VIA 28775
4 U PRBC, 4 U FFP

BLEEDING CONTROLLED AND PATIENT HAEMODYNAMICALLY STABLE

NOTIFY PATHOLOGY (phone 28775)
CEASE MTP

STOP THE BLEEDING
Identify source
Initial measures
Compression
Packing
Tourniquet (max 2 hrs)
EARLY SPECIALTY CONSULT
Emergency
ICU
Surgeon
Anaesthetics
Pathology (transfusion)
Interventional radiology

FLUID RESUSCITATION
Avoid hypothermia
Active warming
Avoid excessive crystalloid
Permissive hypotension
(SBP 80-100 until bleeding controlled)

TRANEXAMIC ACID
Trauma & PPH (consider in GI bleed)
<3 hours
1g over 10 minutes
(in 100mL N Saline)
Followed by
1g over 8 hours
(in 100mL N Saline)

CONSIDER
Cryoprecipitate
10U if fibrinogen <1g/L or < 2.5g/l post partum

Further blood products determined by senior treating doctor

SPECIAL CONSIDERATIONS
EG Obstetric Haemorrhage (PPH)
Warfarin reversal
See over

ROLE OF PATHOLOGY
Notify ARCBS
Phone number 28775
Order additional Blood products as required
Source additional staff as required.

TARGETS
Temp >35 C
pH < 7.2
Base excess >-6
Lactate <4mmol/L
Calcium > 1.1mmol/L
Platelets >50 x 10^9/L
PT/APTT < 1.5 x normal
INR ≤ 1.5
Fibrinogen >1.0g/L
Fibrinogen >2.5g/L(post partum)
Do not use Hb as a transfusion trigger alone

MONITOR
Every 30 -60 minutes:
FBC
Coagulation profile
Ionised Calcium
ABG

HAEMODYNAMIC INSTABILITY
3 out of 6 from:
Heart rate >110 bpm
SBP <90mmHg
Hb<90g/L
pH < 7.2
INR > 1.5
Temp <35 C
### SPECIAL CLINICAL SITUATIONS

#### OBSTETRIC HAEMORRHAGE (PPH)
- Early DIC often present, request Coagulation studies and D-Dimer
- Consider Cryoprecipitate, Fibrinogen concentrate

#### WARFARIN- FOLLOW WARFARIN REVERSAL GUIDELINES
- Vitamin K, Prothrombinex, FFP

#### ASPIRIN / CLOPIDOGREL
- Early / additional platelets

#### ORAL ANTICOAGULANTS
- Consider Praxbind for Dabigatran (direct thrombin or Factor Xa inhibitors)- NOAC
- Ascertained time of last dose
- Withhold.
- Consult haematologist

#### HEPARIN
- Protamine sulfate

#### HEAD INJURY
- Permissive hypotension contraindicated
- If platelets < 100 x 10^9/L, consult a haematologist

### SPECIFIC PRODUCTS

<table>
<thead>
<tr>
<th>Product</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>FFP</td>
<td>Thaw time = 16 min. Notify Pathology</td>
</tr>
<tr>
<td>CRYOPRECIPITATE</td>
<td>Thaw time 8 min. Notify Pathology</td>
</tr>
<tr>
<td></td>
<td>Average replacement = 1 unit / 5 kg of bodyweight. Use if Fibrinogen &lt; 1g/L.</td>
</tr>
<tr>
<td>rFVIIa</td>
<td>Routine use not recommended. Consult haematologist. Available from LBH Pharmacy</td>
</tr>
<tr>
<td>PROTHROMBINEX-VF</td>
<td>500 IU. Contains Factor II, IX and X. Available from Massive Bleeding tray (OT, ICU &amp; ED fridges) Dose 20-50 IU/kg</td>
</tr>
<tr>
<td>DESMOPRESSION (DDAVP)</td>
<td>Available on massive bleeding tray. Dose 0.3 mcg/kg in 50 mL of saline over 30 minutes IV</td>
</tr>
</tbody>
</table>
PATIENT WITH HAEMORRHAGE AND
HAEMODYNAMIC INSTABILITY
AND/OR
KNOWN COAGULOPATHY

SEND BASELINE BLOODB
FBC, CROSS MATCH, COAGS,
BIOCHEMISTRY, FIBRINOGEN,
VBG, LACTATE

NOTIFY PATHOLOGY ON 2911
ORDER 2 UNITS OF O NEGATIVE BLOOD
(OR GROUP SPECIFIC)

ONGOING UNCONTROLLED BLEEDING
SENIOR TREATING DOCTOR TO PHONE PATHOLOGY
(TRANSFUSION) VIA 2911
ACTIVATE MTP
4 U PRBC, 4 U FFP, 8 CRYOPRECIPITATE
1 POOLED PLATELET (IF AVAILABLE)

BLEEDING CONTROLLED
AND
PATIENT HAEMODYNAMICALLY STABLE

NOTIFY PATHOLOGY – 2911
CEASE MTP

STOP THE BLEEDING
IDENTIFY SOURCE
INITIAL MEASURES
COMPRESSION
PACKING
TOURNIQUET (MAX 2 HRS)
EARLY SPECIALTY
CONSULT
EMERGENCY SURGEON
ANAESTHETICS
PATHOLOGY - TRANSFUSION
INTERVENTIONAL RADIOLOGY
VASCULAR SURGEON
GASTROENTEROLOGY

FLUID RESUSCITATION
AVOID HYPOTERMIA
ACTIVE WARMING
AVOID EXCESSIVE CRYSTALLOID
PERMISSIVE HYPOTENSION
(SBP 80-100 UNTIL BLEEDING CONTROLLED)

CONSIDER
TRANEXAMIC ACID IN TRAUMA
1G OVER 10 MINUTES
(IN 100ML N SALINE)
1G OVER 8 HOURS
(IN 100ML N SALINE)

NO
FURTHER BLOOD PRODUCTS
DETERMINED BY SENIOR TREATING DOCTOR

SPECIAL CONSIDERATIONS
SEE OVER

NOTE-
Two Units of O negative red cell
in ED blood storage fridge

HAEMODYNAMIC INSTABILITY
3 OUT OF 6 FROM:
Heart rate > 110 bpm
SBP < 90mmHg
Hb < 90g/L
pH < 7.25
INR > 1.5
Temp < 35 C

MONITOR
EVERY 30 - 60 MINUTES:
FBC
COAGULATION PROFILE
IONISED CALCIUM

ROLE OF PATHOLOGY
NOTIFY HEMATOLOGIST
NOTIFY ARCBS
ORDER ADDITIONAL BLOOD PRODUCTS AS REQUIRED
SOURCE ADDITIONAL STAFF AS REQUIRED

TARGETS
TEMP > 35 C
PH > 7.2
BASE EXCESS > -6
LACTATE < 4MMOL/L
CALCIUM > 1.1MMOL/L
PLATELETS > 50 X 10^9/L
PT/APTT < 1.5 X NORMAL
INR < 1.5
FIBRINOGEN > 2.0G/L
FIBRINOGEN > 2.5G/L (POST-PARTUM)

DO NOT USE HB AS A TRANSFUSION TRIGGER ALONE
OBSTETRIC HAEMORRHAGE (PPH)
Early DIC often present.
Request coagulation studies and D-Dimer
Consider Cryoprecipitate, fibrinogen concentrate

WARFARIN – FOLLOW WARFARIN REVERSAL GUIDELINES
Vitamin K, Prothrombinex, FFP

ASPIRIN / CLOPIDOGREL
Early / additional platelets

ORAL ANTICOAGULANTS
(direct thrombin or factor XA inhibitors) – NOAC
Ascertain last dose.
Withhold.
Consult haematologist

HEAD INJURY
Permissive hypotension contraindicated
Aim for platelets >100 x 10^9/L

CELL SALVAGE
Consider use of cell salvage where appropriate

SPECIFIC PRODUCTS
FFP Thaw time = 16 min. Lab can provide 2 INITS at a time

CRYOPRECIPITATE Thaw time 8 min. Average replacement = 1 unit / 5 kg of bodyweight. Use if Fibrinogen < 1g/L.

rFVIIA routine use not recommended. Consult haematologist.

PROTHROMBINEX – VF 500 IU. CONTAINS FACTOR II, IX, AND X. Available from LBH pharmacy
Patient Blood Management Guidelines: Module 6 Neonatal and Paediatrics

NNSWLHD Paediatric Critical Bleeding Flowchart

Critical bleeding protocol for infants and children

Senior clinician determines that patient meets criteria for critical bleeding protocol activation

‘Activate critical bleeding protocol’

Baseline Bloods
Full blood count, blood group and cross match, coagulation screen (PT, APTT and fibrinogen), biochemistry, arterial blood gas and POC testing (if available)

Notify transfusion laboratory
Lismore 2911  24 hours /  Grafton  28775  0800 – 2045 After 2045 ring AHNM 28971
Tweed 7576  24 hours
ARCBS for transfusion specialist  07 38389223      After hours  07 38389010

Roles

Senior clinician
- Coordinate team and allocate roles
- Determine volume and type of product, guided by clinical findings, estimated weight laboratory results and, if available, POC testing
- Consult haem/trans as needed

Laboratory staff
- Notify haematologist or transfusion specialist
- Prepare and issue blood components
- Anticipate testing and blood component requirements
- Minimize test turnaround times
- Consider staff resources

Haematologist or transfusion specialist
- Support the clinical and laboratory staff as required

Senior clinician to request critical bleeding protocol - products according to estimated weight
- Pack 1 RBC 20mL/kg
  FFP 20mL/kg
- Consider tranexamic acid in trauma patients (see dose overleaf)

Consider: (see doses overleaf) Cryoprecipitate if Fibrinogen < 1g/L Platelets if < 80 x 10^9/L Calcium 20mg/kg if ionised < 1.15mmol/L Cell salvage Subspecialty involvement Factor VIIa (see instructions overleaf)

Bleeding controlled?

Yes

No

Notify transfusion laboratory to:
‘Cease critical bleeding protocol’

OPTIMISE:
- oxygenation
- cardiac output
- tissue perfusion
- metabolic state

MONITOR (every 30–60 mins):
- full blood count
- coagulation screen
- ionised calcium
- arterial blood gases

AIM FOR:
- temperature >36°C
- pH >7.2
- lactate <4 mmol/L
- ionised calcium >1.1 mmol/L
- platelets >50 x 10^9/L
- PT/APTT <1.5 x normal
- fibrinogen >2 g/L
### Suggested criteria for activation of critical bleeding protocol

- Actual or anticipated losses of $>35-40$ mL/kg of RBC in $<4$ hours, ± haemodynamically unstable, ± anticipated ongoing bleeding
- Severe thoracic, abdominal, pelvic or multiple long bone trauma, and head trauma
- Major gastrointestinal or surgical bleeding

### Damage control resuscitation

- Identify cause and aggressively control bleeding
  - Compression, packing and tourniquet
  - Early surgical assessment and intervention
  - Angiography as needed
- Restore or maintain normal coagulation
- Avoid hypothermia (use active warming measures)
- Avoid excess crystalloid
- Tolerate permissive hypotension until bleeding is actively controlled
- Do not use haemoglobin alone as transfusion trigger

### Prevention of hypofibrinogenenaemia

- Fibrinogen levels are reduced to a greater degree than other factors in large-volume bleeding. Dilution and hyperfibrinolysis (e.g. in trauma) further exacerbate low levels.
- In critical bleeding, maintaining fibrinogen at levels $>2$ g/L is suggested.
- Include guidance for the use and timing of fibrinogen replacement in the protocol; this may include viscoelastometric POC testing.

### Special clinical situation

**Warfarin:**
- Add vitamin K, prothrombinex/FFP

**Head injury:**
- Aim for platelet count $>100 \times 10^9/L$
- Permissive hypotension contraindicated

### Cell salvage

- Consider use of cell salvage where appropriate

### Dosage

<table>
<thead>
<tr>
<th>Component</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>RBC</td>
<td>20–25 mL/kg</td>
</tr>
<tr>
<td>Platelets</td>
<td>10–15 mL/kg</td>
</tr>
<tr>
<td>FFP</td>
<td>15 mL/kg</td>
</tr>
<tr>
<td>Cryoprecipitate</td>
<td>5 mL/kg</td>
</tr>
</tbody>
</table>

- **Fibrinogen <2 g/L**
- **Tranexamic acid**
  - Loading dose $15$ mg/kg (max $1$ g) over $10$ min, then infusion $2$ mg/kg/hour for $8$ or more hours, or until bleeding ceases

*Local transfusion laboratory to advise dose of locally available preparation

### Considerations for use of rFVIIa

Based on evidence from studies in adults, the routine use of rFVIIa in trauma patients is not recommended. However, institutions may choose to develop a process for the use of rFVIIa where the following apply:

- Uncontrolled haemorrhage in salvageable patient, and
- Failed surgical or radiological measures to control bleeding, and
- Adequate blood component replacement, and
- pH $>7.2$, temperature $>34^\circ C$.

Discuss dose with haematologist or transfusion specialist

*FVIIa is not licensed for use in this situation; all use must be part of practice review.*

APTT, activated partial thromboplastin time; FFP, fresh frozen plasma; INR, international normalised ratio; POC, point of care; PT, prothrombin time; RBC, red blood cell; rFVIIa, activated recombinant factor VII
### 9.0 NNSW LHD Clinical Policy Cover Sheet

<table>
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<th><strong>Cover Sheet</strong></th>
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<tr>
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<td><strong>CLINICAL Policy Framework</strong></td>
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<tr>
<td><strong>Name Of Document</strong></td>
<td>Blood Products – Massive Transfusion</td>
</tr>
<tr>
<td><strong>Type of Document</strong></td>
<td>Policy</td>
</tr>
<tr>
<td><strong>Document Number</strong></td>
<td>NC-NNSW-POL-6890-13</td>
</tr>
<tr>
<td><strong>Superseded Document</strong></td>
<td>NC-AREA-POL-3285-08</td>
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<tr>
<td><strong>Sites/Services where compliance with this Policy is mandatory.</strong></td>
<td>All NNSW LHD</td>
</tr>
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</table>
| **Related Ministry of Health PDs, LHD Documents or Australian Standards:** | • PD2013_049 Recognition and Management of Patients who are Clinically Deteriorating  
• NSW Health Risk Matrix |
| **Risk Management** | In the absence of appropriate and safe multidisciplinary care, critical bleeding may result in significant morbidity and ultimately, loss of life. |
| **Current Risk Rating** | K – Moderate/Likely |
| **Targeted Risk Rating** | M – Moderate/Possible |
| **Date Created** | 22 August 2007 |
| **Date of Publication** | 14 April 2018 |
| **Next Review Date** | 14 April 2023 |
| **Aboriginal Health Advisory Committee Registration Number** | CG/2013/39 |
| **Author** | Tracy Schipp, Best Practice Project Officer  
**Reviewed by:** Beverley Hiles, RCHSG Blood and Blood Products CNC |
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<thead>
<tr>
<th>Clinical Authority</th>
<th>NNSW LHD Health Care Quality Committee</th>
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<tr>
<td>Management Authority</td>
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<tr>
<td>Executive Sponsor</td>
<td>Director Clinical Governance</td>
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<td>Key Words</td>
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<tr>
<td>Summary</td>
<td>Appropriate use of blood products in patients requiring massive transfusion.</td>
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<tr>
<td>Date Approved for Electronic Distribution by NNSW LHD Chief Executive</td>
<td>14 April 2018</td>
</tr>
<tr>
<td>Signature NNSW LHD Chief Executive</td>
<td>Wayne Jones</td>
</tr>
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NC-NNSW-POL-6890-13

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