

	Pediatric and Adult Clinical Massive Transfusion	Type	Policy
		Effective Date:	3/08
		Revised Date:	12/19
		Contact:	Blood Bank

1) Applicability:

Click all entities where the policy is applicable:

- | | |
|--|--|
| <input checked="" type="checkbox"/> North Carolina Baptist Hospital (NCBH) | <input type="checkbox"/> Davie Medical Center (DMC) |
| <input type="checkbox"/> Lexington Medical Center (LMC) | <input type="checkbox"/> Wilkes Medical Center (WMC) |
| <input type="checkbox"/> Wake Forest University Health Sciences (WFUS) | <input type="checkbox"/> High Point Medical Center (HPMC) |
| <input type="checkbox"/> NCBH Outpatient Endoscopy | <input type="checkbox"/> Wake Forest Imaging (WFBI) |
| <input type="checkbox"/> Premier Surgery Center | <input type="checkbox"/> Wake Forest Health Network (WFHN) |

Click where the policy is applicable:

- | | | |
|---|--|--|
| <input checked="" type="checkbox"/> Inpatient | <input checked="" type="checkbox"/> Emergency Department | <input checked="" type="checkbox"/> Ambulatory |
|---|--|--|

2) Originator: Blood Bank Director and Trauma Committee

3) Scope: All WFBMC employees, faculty and staff are responsible for complying with this policy.

4) General Policy Statement (Entities Affected / Responsible Party for Implementation)

It is the policy of Wake Forest Baptist Health (WFBH) to provide blood products to patients in the safest and efficient manner possible.

5) Policy Guidelines:

A. Upon initiation of the Clinical Massive Transfusion Protocol by the physician, the following will be released

- Up to 4 units of Group O whole blood (for males \geq 17 years old or women \geq 51 years old)

(Exception: patient types as Group O, more than 4 units of Group O whole blood can be issued)

- Or
- 4 units Group O red blood cells (RBCs)
4 Units Group A plasma/liquid plasma
1 unit Plateletpheresis

(Verbal orders may be given, complete the verbal order form)

B. Up to 4 units of whole blood can be given to patients that qualify without Medical Director's approval.

(**Exception:** patient types as Group O, more than 4 units of Group O whole blood can be issued)

C. Neonatal/pediatric patients should not receive liquid plasma. One unit of thawed Group AB fresh frozen plasma will be available in the Blood Bank and Peds ED fridge.

D. If there is **NO** specimen on the patient or blood type cannot be verified:

Patient	Blood	Plasma **	Plateletpheresis
Females up to 50 yrs.	O neg RBC	A liquid plasma/A plasma	any
Males up to 16 yrs. Or Age/gender unknown	O neg RBC	A plasma	any
Pediatrics	O neg RBC	AB plasma	AB neg or Group specific/Group compatible
Neonates	RBC O neg	AB plasma	AB neg or Group specific/Group compatible
Females > 50 years	Up to 4 whole bloods* and then O RBC	A liquid plasma/A plasma	any
Males > 16 years	Up to 4 whole bloods* and then O RBC	A liquid plasma/A plasma	any

*If whole blood units available. If not available, Group O RBC units will be issued.

** Group AB plasma units are low in inventory and it is common practice to substitute Group A plasma^{3,4,5}

- E. If there is a specimen received, and the patient's ABO/RH is known:
- 4 units ABO group/Rh type specific or compatible RBCs
 - 4 units of ABO specific or compatible plasma/liquid plasma
(Depending on age and gender, patients Group AB may be switched to Group A)
 - 1 unit of Plateletpheresis
- F. When the patient has been transfused over 10 units within 24 hour period or infused >4 units RBC in an hour, anticipate activating the MTP protocol. This information often is communicated by:
- The handoff of the nurse-physician to the OR
 - Clinical team communicating with Blood Bank regarding patient getting multiple units of RBC
 - Blood Bank recognizing multiple RBCs issued (>4 units) within an hour on the same patient, and notifying the anesthesiologist/OR/MICU if they want an MTP.
- G. The clinical team will provide a **STOP ORDER** for MTP by notifying the Blood Bank as soon as they determine that blood products are not needed.
- H. When no stop order is received for a MTP, the blood bank will record information on blood bank MTP form: Tracking Pediatric & Adult massive Trauma Protocol Patients to be reviewed monthly by the Medical Director and Trauma Service.

6) Definitions:

- a) **WFBH:** Wake Forest Baptist Health (WFBH) is a health system that includes Wake Forest Baptist Medical Center and all affiliated organizations including Wake Forest University Health Sciences (WFUHS), North Carolina Baptist Hospital (NCBH), Lexington Medical Center (LMC), Davie Medical Center (DMC), Wilkes Medical Center (WMC), High Point Medical Center (HPMC), Wake Forest Imaging (WFBI), NCBH Outpatient Endoscopy, Wake Forest Health Network (WFHN), and Premier Surgery Center.
- b) **Policy:** As defined in the Policy on Creating and Amending Policy, a statement of principle that is developed for the purpose of guiding decisions and activities related to governance, administration, or management of care, treatment, services or other activities of WFBH. A policy may help to ensure compliance with applicable laws and regulations, promote one or more of the missions of WFBH, contain guidelines for

governance, and set parameters within which faculty, staff, students, visitors and others are expected to operate.

- c) **Massive transfusion:** The transfusion or anticipated transfusion, within a 24 hour period, of a volume of blood approximating the recipient's total blood volume.
- d) **Neonatal: Patients ≤ 4 months.** See Pediatric Trauma Massive Transfusion Guide.
- e) **Pediatric: Patients > 4 month old to 16 years.** See Pediatric Trauma Massive Transfusion Guide.
- f) **Adult: Patient ≥ 17 years old.** Massive transfusion is defined clinically in the literature as the transfusion of more than 10 units of red blood cells in 24 hours for an adult or adult-sized patient.

7) Review/Revision/Implementation

Review Cycle: This policy shall be reviewed by the Blood Bank Department at least every two (2) years from the effective date.

8) Related Policies

None

9) Governing Law/Regulations/References

- Urgent Notice regarding availability of Group AB plasma products” from Richard Benjamin MD PhD FRCPath. American Red Cross Letter dated: February 25, 2014.
- TRALI Risk Mitigation for Plasma and Whole Blood for Allogeneic Transfusion – Alleviating the Potential Impact of Standard 5.4.1.2 on Group AB Plasma Availability.” *Advancing Transfusion and Cellular Therapies Worldwide*. Association Bulletin #14-02 dated: January 29, 2014
- Is Group A thawed plasma suitable as the first option for emergency release transfusion? Chhibber, et.al. *Transfusion*, 2014. Jul, 54(7); 1751-5.
- Balancing risk and benefit: maintenance of a thawed group A Plasma inventory for trauma patients requiring massive transfusion. Mehr, et al. *Trauma Acute Care Surgery*, 2013; 74:1425-31.
- “Safety of the Use of Group A Plasma in Trauma: the STAT Study”. *Transfusion*, 2017; 57; 1879-1884.
- “Better hemostatic profiles of never-frozen liquid plasma compared with thawed fresh frozen plasma” from Matijevic, Nena et al. *Trauma Acute Care Surg*, 2012;74, 1: 84-91.
- “Coagulation Profile of Liquid-state Plasma” from Gosselin, Robert C. et al. *Transfusion*, 2013. March; 3:579-590.

10) Attachments

Pediatric Trauma Massive Transfusion Guide

11) Keywords

None

12) Review/Revise Dates:

3/08, 9/09, 1/13, 6/14, 2/17, 2/18, 12/19

13) Signatures:

Gregory Pomper, MD, Medical Director – Pathology (signature on file)

Emmanuel A. Fadeyi, MD, Medical Director – Blood Bank (signature on file)

Attachment A - Pediatric Trauma Massive Transfusion Guide

- Activation of MTP-- call blood bank 6-2736. Indications:
 - Severe clinical bleeding
 - Anticipated blood loss of $\geq 50\%$ circulating blood volume in 24h
 - Transfusion of 40 mL/ kg of ALL blood products in 24h

- Establish adequate vascular access

- Blood warmer for administration of blood products

- Transport cooler from blood bank containing:
 - 4U PRBCs
 - 4U FFP
 - 1U apheresis Platelets

- Transfuse to patient (goal ratio 1: 1: 0.5)
 - PRBCs 20 ml/ kg (up to 4 Units)
 - FFP 20 ml/ kg (up to 4 Units)
 - Platelets 10 ml/kg (up to one apheresis Unit)

- Surveillance after each transfusion cycle +/- every 1-2 hours:
 - CBC, PT/PTT, Fibrinogen, FDPs, ionized calcium, potassium

- Consider adjunct therapies:
 - Surgical hemorrhage control
 - Active warming
 - Cryoprecipitate 1 Unit/ 10 kg (call blood bank)
 - Tranexamic Acid (TXA): 20 mg/kg bolus followed by 10 mg/kg/h infusion
 - Hematology consultation (pharmacologic adjuncts)

- Consider call to blood bank:
 - Assess availability of type specific blood products
 - Need for additional coolers of products to bedside

- Return to standard transfusion AND call blood bank to STOP Massive Transfusion Protocol when:
 - Clinical hemorrhage resolved
 - Temperature $\geq 36.0^{\circ} \text{C}$
 - INR < 1.5
 - Platelets $> 50,000$
 - Fibrinogen $> 100 \text{ mg/dl}$

Transfusion Tracking Sheet

Pre-arrival blood products?

PRBCs _____

FFP _____

Plt _____

Round 1

PRBCs _____

FFP _____

Plt _____

Labs sent? _____

Round 2

PRBCs _____

FFP _____

Plt _____

Labs sent? _____

Round 3

PRBCs _____

FFP _____

Plt _____

Labs sent? _____

Round 4

PRBCs _____

FFP _____

Plt _____

Labs sent? _____

Round 5

PRBCs _____

FFP _____

Plt _____

Labs sent? _____

To whom it may concern:

I have reviewed and authorize the Pediatric and Adult Clinical Massive Transfusion policy.



Signature

1/16/2020
Date

Gregory Pomper, MD
Medical Director – Pathology
Wake Forest Baptist Medical Center



Signature

1/16/20
Date

Emmanuel A. Fadeyi, MD
Medical Director – Blood Bank
Wake Forest Baptist Medical Center