

Clinical Pathway Low Titer O + Whole Blood Transfusion and WinRho Dosing

Patient Population & Scope: Patients 14 and older meeting ED Exsanguinating Protocol

Purpose: To outline a standardized, evidence-based management plan for the transfusion of whole blood in patients that identifies the appropriate sequence of clinical interventions, timeframes, milestones and expected outcomes.

Protocol:

- Adolescents (age 14-17)
- Adult (age 17+)
- Hemorrhagic shock **without** cross-matched products already **immediately** available
- Request release 2 units whole blood using WHOLE blood emergency form
- Uncrossmatched, Low Titer, type O, Leukoreduced (per supplier)

Transfusion Inclusion Criteria

1. Confirm age 14+
2. Must meet one or more criteria from each column for presumed hemorrhagic shock:

Vitals	Degree of Injury
<ul style="list-style-type: none">• SBP < 90 mmHg• HR > 120 BPM• Shock Index >1 (HR/SBP)	<ul style="list-style-type: none">• +FAST• Penetrating trauma• Received blood prior to arrival (en-route or at outside facility) to maintain SBP >90• High clinical suspicion of hemorrhage*

* High clinical suspicion of hemorrhage includes:

- Active external hemorrhage
 - Limb tourniquet
 - Massive hemothorax
 - Pelvic binder
 - Significant soft tissue defect requiring packing
 - Long bone (femur fracture)
 - Other
3. Based on ED/trauma attending discretion, activate mass transfusion protocol (MTP) or TEG directed component resuscitation
 - a. MTP -1:1:1 component resuscitation
 - i. 4 PRBC, 4 FFP, 1 PLT
 - ii. 4 PRBC, 4 FFP, 1 CRYO
 - iii. Repeat i and ii as needed

- iv. TXA utilization based on time from injury/insult and attending discretion (consider waiting until 2 units whole blood transfused to see if patient responds before giving TXA)
- v. Obtain TEG for further resuscitation guidance
- b. TEG Directed Component Resuscitation
 - i. PRBC, FFP, Platelet resuscitation directed by physiology and TEG data
 - ii. TEG data available in ED, OR, and ICU

Additional Considerations for Females of Child-Bearing Age (14-45 years old)

- Females of child-bearing age should be evaluated for utilization of Rh(D) immune globulin
- **ALL** conditions must be met before consulting blood bank:
 - Received LWOTB within the past 3 days
 - Female
 - Child-bearing age (14-45 years old)
 - Rh- negative
 - Does not have antibody to D-antigen
 - Patient desires future pregnancy
 - Good clinical condition
 - Good prognosis
- If all criteria are met, blood bank is consulted to perform testing to assess presence or absence of D+ cells
 - If D+ cells are NOT detected, patient receives 1 standard dose of RhOGAM (300 mcg)
 - If D+ cells are detected, Pharmacy performs evaluation for WinRho

WinRho Dosing

- WinRho dose = 9 mcg/mL of whole blood administered
- 1 unit LTOWB = 9 mcg/mL x 500 mL = 4500 mcg
- 2 unit LTOWB = 9 mcg/mL x 1000mL = 9000 mcg
- Products stocked:
 - WinRho 2500 IU (500 mcg) 2.2 mL vial
 - Win Rho 5000 IU (1000 mcg) 4.4 mL vial
- Contact the inventory team if product is used to replenish
- Administered dose must be within 25% of calculated dose per blood bank policy
- Administration should not exceed 8 mL/minute

Example WinRho Calculation

35 year old female with blood type A-negative received 1 unit of O-negative whole blood and 1 unit of O-positive whole blood

- Rosette test was positive
- Patient desired future pregnancy
- Decision was made to administer WinRho

WinRho dose = 9 mcg/mL of whole blood

9 mcg/mL x 570 mL = 5130 mcg

Patient received 5000 mcg total dose

- 2500 mcg IV q8 hours x 2 doses

- 3 vials of WinRho 5000 IU (1000 mcg) 4.4 mL used for each of the administrations
- <25% variance from calculated dose
- 11 mL was administered over 2 minutes to not exceed 8 mL/minute

References

1. Newberry, et al. Prehospital Transfusion of Low-Titer O + Whole Blood for Severe Maternal Hemorrhage: A Case Report. Prehospital Emergency Care. 2019; 00:000-000.
2. McGinity, et al. Prehospital low-titer cold-stored whole blood: Philosophy for ubiquitous utilization of O-positive product for emergency use in hemorrhage due to injury. J Trauma. 2018; 84:S115-S119.
3. Ayache S, Herman J. Prevention of D sensitization after mismatched transfusion of blood components: toward optimal use of RhIG. Transfusion. 2008;48:1990-1999.
4. WinRho package insert:
https://www.baxter.com.pr/downloads/healthcare_professionals/products/WinRho_PI.pdf

Author(s): Christina Deusenberry

Approved by:

Disclaimer: Clinical Pathways are developed to assist clinicians by providing a framework for the evaluation, treatment, and/or monitoring of patients. This Clinical Pathway outlines the preferred or recommended approach for most patients and is not intended to replace a clinician's judgment or to establish a protocol for all patients.

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