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 **3 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
•SBP < 90 mmHg •HR > 120 BPM •Shock Index >1 (HR/SBP)	•+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

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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.