

Pilot Protocol – LOW TITER O+ WHOLE BLOOD (LTO+ WB) TRANSFUSION

14.5

1. Indications

Clinical suspicion for major blood loss WITH evidence of significant physiologic compromise

Clinical suspicion for major blood loss, such as:

- Penetrating trauma to the trunk
- Unstable pelvic fracture or multiple long bone fractures
- Blunt trauma mechanism consistent with major internal blood loss
- Observed major external blood loss
- Signs and symptoms of massive GI bleed, ruptured aortic aneurysm, or ruptured ectopic pregnancy

WITH

Evidence of significant physiologic compromise:

Age-defined hypotension* **PLUS** at least **one** of the following:

- Age-defined tachycardia**
- ETCO₂ less than 25
- Positive eFAST exam (if available)
- Lactate greater than 4 (if available)
- Capillary reperfusion greater than 3 sec
- Altered sensorium thought not secondary to intoxication or head trauma
- Witnessed PEA cardiac arrest less than 5 min duration

*Age-Defined Hypotension

Ages less than 10 Yrs: systolic BP less than $[70 + 2 \times \text{years}]$

Ages 10-65: systolic BP less than 90

Ages greater than 65: systolic BP less than 100

Any age: absent radial pulses

**Age-Defined Tachycardia

Age 1 year: greater than 190

Ages 2-12 yrs: greater than 140

Ages greater than 12 years: 120



On-line medical direction required for patients under 1 year of age.

2. Contraindications

- a) Patient indicates refusal to receive blood
- b) Medic alert tag indicating patient objection to receiving blood

3. Procedure

- a) Ensure applicable hemorrhage and shock interventions: tourniquet, wound-packing, pelvic binder, thoracic decompression
- b) Assess for contraindications to administration of LTO+ WB
- c) Obtain IV access (18 gauge or larger, if possible), and keep IV catheter hub accessible to allow direct connection of blood tubing. A large-bore IV extension set and large-bore stopcock may be utilized if available. Obtain pre-transfusion blood sample, if possible.
- d) IV infusion is preferable to IO infusion for optimal flow rates.
- e) Transfuse LTO+ WB

Pilot Protocol – LOW TITER O+ WHOLE BLOOD (LTO+ WB) TRANSFUSION (continued)

- (1) Patients less than 35 kg: Administer 10 mL/kg IV/IO
- (2) Patients greater than or equal to 35 kg: Administer 1 unit IV/IO
- f) Apply Whole Blood identification bracelet to patient's wrist or ankle
- g) Assess for signs of transfusion reaction***
- h) Assess for clinical improvement
 - For patients with non-compressible hemorrhage: Look for signs of improved perfusion with presence of central pulses, but use permissive hypotension approach. Target a systolic BP of:
 - 90 mmHg for patients less than 35 kg
 - 100 mmHg for patients greater than or equal to 35 kg
 - 110 mmHg for patients greater than or equal to 35 kg with significant TBI
- i) If inadequate clinical improvement, transfuse additional LTO+ WB
 - (1) Patients less than 35 kg: Administer 10 mL/kg IV/IO
 - (2) Patients greater than or equal to 35 kg: Administer 1 unit IV/IO
- j) If inadequate clinical improvement, also administer *calcium chloride* through a separate line or following the second LTO+ WB dose.
 - (1) Patients less than 35 kg: 20 mg/kg slow IV/IO
 - (2) Patients greater than or equal to 35 kg: 1 gram slow IV/IO
- k) Assess for signs of transfusion reaction***
- l) Upon hospital arrival, inform receiving team of patient's receipt of whole blood, and provide empty whole blood bags and pre-transfusion blood sample (if obtained) for hospital blood bank evaluation.

***Possible transfusion reaction signs and symptoms: Hives, wheezing, rigors, fevers, abdominal pain, vomiting, sudden worsening of hypotension or tachycardia that is not consistent with patient's underlying condition

If transfusion reaction is suspected:

- Immediately discontinue the transfusion
- Administer dexamethasone IV/IO AND diphenhydramine IV/IO in age appropriate doses

A new transfusion from a different unit of LTO+ WB may be initiated if patient reassessment indicates continued need for blood.