# Applicable Laboratory(s)):

[x]  North Carolina Baptist Hospital (NCBH)

[ ]  Lexington Medical Center (LMC)

[ ]  Davie Medical Center (DMC)

[ ]  Wilkes Medical Center (WMC)

[ ]  High Point Medical Center (HPMC)

[ ]  Westchester

[ ]  Clemmons

# Procedure Statement

The purpose of this procedure is to determine if the titer of isohemagglutinins (anti-A and anti-B) in group O negative Whole Blood are <50 and suitable to be utilized by the pediatric trauma team.

# Scope

i. Procedure Owner/Implementer: Julie H. Simmons/Christina Warren

ii. Procedure Prepared by: Christina Warren

iii. Who Performs Procedure: Blood Bank Staff/management

# Definitions

1. Procedure: A process or method for accomplishing a specific task or objective.
2. WFBH Lab System: Wake Forest Baptist Lab System 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), Lab at Westchester and Lab at Clemmons.

# Sections

1. Blood Product Entry, Preparation of Dilution and Testing
2. Interpretation and Resulting in SCC
3. Placing units in Peds ED

# Policy Guidelines

1. Low titer leukocyte reduced group O negative whole blood will be received on a weekly standing order.
2. Whole blood has been tested to ensure that the titer is ≤ 200.
3. Blood Bank will test group O negative whole blood upon receipt to determine if the titer is < 50 according to the procedure below.
4. Group O negative whole blood will be placed in the Pediatric ED fridge for use as the initial round when indicated by patient’s age and clinical status.
5. 1 Group O negative whole blood will be made into an “MTP pack” and placed into the PED fridge
6. Whole Blood testing
7. Group O negative whole blood should be placed into quarantine status in SCC pending titration result.
8. If titer ≥ 50 unit should be for adult trauma use only
9. The attribute “≥50” will be added to the unit
10. If titer < 50 unit should be tagged with “Titer < 50, suitable for pediatric trauma” flag.
11. The attribute “<50” will be added to the unit
12. Unit will be taken out of quarantine status and made available in SCC after unit has been appropriately tagged and appropriate attribute added.
13. Units suitable for pediatric trauma use should be placed on the appropriate shelf.
14. Issuing Whole Blood to pediatrics
15. Traumatically injured children 3 years and older weighing 15kg or more are eligible to receive group O negative whole blood. Age range 3-18 years can receive low titer group O whole blood. Age 14-18 years included based on these patients being admitted to the pediatric trauma unit.
16. By age 3 years, children have full expression of A/B antigens that can adsorb anti-A

and/or anti-B antibodies in the group O WB unit.

1. Children weighing 15 kg or more have a sufficient blood volume to dilute these antibodies.
2. A maximum volume of 20 mL/kg of group O negative whole blood which is nearly equivalent to 2 units of WB in adults can be transfused during MTP which has been proven safe in the adult population.
3. If < 3 years old, packed O negative RBCs, AB plasma, and platelets should be selected as per Emergency Blood Protocol.
4. Whole Blood packing

*Refer to Packing Whole Blood by Sedimentation and Centrifugation:BB.COMP.1012*

# Procedure

1. Preparation of Dilution

| **STEPS** | **INSTRUCTIONS** | **CHANGE/****APPROVAL** |
| --- | --- | --- |
| **1.0** | **Bring unit into inventory.** *Refer to Blood Product Entry*  |  |
| **2.0** | **Place unit in Quarantine Status.** * In SCC: Inventory>Edit>Status>Q
* Enter reason: “Tpend” WB Titer Pending
 |  |
| **3.0** | **Order WB titer.** * In SCC: Inventory>Orders>New Add
* Scan unit
* Tests: “TWB50” Titer WB 1:50
 |  |
| **4.0** | **Place unit on appropriately labeled shelf in fridge while testing is in progress.**  |  |
| **5.0** | **Label a 12x75 tube with unit number and dilution to be prepared (1:50)** |  |
| **6.0** | **Retrieve MLA pipette and adjust setting to 490. Add 490 ul of saline to the tube labeled with the unit number and dilution, 1:50.**  |  |
| **7.0** | **Label 2 12x75 tubes with unit number. Obtain 2 segments from unit and dispense into one of the tubes.** |  |
| **8.0** | **Centrifuge for 60 seconds to separate red cells from plasma. Carefully remove plasma from red cell sediment into the properly labeled tube.**  |  |
| **9.0** | **Add 10ul of well mixed plasma into tube labeled 1:50 and mix well.** |  |
| **10.0** | **Using a new pipette tip, add 10ul of well mixed plasma from unit into tube labeled 1:50 from step 2 and mix well.**  |  |
| **11.0** | **Label 2 10x75 tubes:**

|  |  |
| --- | --- |
| Tube | Label |
| Tube 1 | Unit #, 1:50, A1 |
| Tube 2 | Unit #, 1:50, B |

 |  |
| **12.0** | **Add two drops of 1:50 plasma dilution to tubes 1 and 2 labeled with unit number, 1:50, and A1 and B** |  |
| **13.0** | **Add one drop of A1 cells to tube 1 labeled with unit number, dilution, and A1.** |  |
| **14.0** | **Add one drop of B cells to tube 2 labeled with unit number, dilution and B.**  |  |
| **15.0** | **Mix and centrifuge at 3500-3700rpm for the required number of seconds for immediate spin (IS) calibrated time as noted on centrifuge.** |  |
| **16.0** | **Carefully remove tubes from centrifuge and observe for hemolysis**12.1 Only one unit’s tubes may be removed from the centrifuge at a time for reading.12.2 Hemolysis may: 1. Indicate a positive test result in the presence of an antigen/antibody reaction
2. Be the consequence of hemolyzed reagent red cells or patient red cell suspension

12.3 Make note of any hemolysis present in the absence of hemolyzed red cell suspension on titration form.12.4 Complete or partial hemolysis must be interpreted as a positive reaction if the original serum/plasma and/or reagent red cell suspension was free of hemolysis. |  |
| **17.0** | **Resuspend cell button from bottom of tubes gently over an agglutination lamp and interpret agglutination strength macroscopically only.** |  |

1. Interpretation and Resulting in SCC

|  |  |  |
| --- | --- | --- |
| **STEPS** | **INSTRUCTIONS** | **CHANGE/****APPROVAL** |
| **1.0** | **Result titer for units tested: In SCC: Inventory>Orders>Results select Test: TWB50 and enter results of titer. See table below:**

|  |  |  |
| --- | --- | --- |
| Tube | Agglutination strength | Result |
| 1:50 A1 | ≥ wk+ | Pos \* |
| 1:50 B | ≥ wk+ | Pos \* |
| 1:50 A1 | 0 | Neg \* |
| 1:50 B | 0 | Neg \* |

\* Note: Both A1 and B titers must be nonreactive to be labeled < 50.  |  |
| **2.0** | **Add attribute to units tested: In SCC: Inventory>Edit>Attribute**

|  |  |
| --- | --- |
| Code | Attribute |
| WB<50 | WB Titer < 50, OK for PEDs use |
| WB>50 | WB titer > 50, ADULT use ONLY |

 |  |
| **3.0** | **Label units with Titers <50 with flag for pediatric use.**  |  |
| **4.0** | **Change status of units to available. In SCC: Inventory>Edit>Status>A** |  |
| **5.0** | **Store units on appropriately labeled shelves in blood bank refrigerator.**  |  |
| **6.0** | ***Refer to Blood Cooler Protocol* for placing O negative WB in Peds ED.**  |  |

# References

Leeper CM, Yazer MH, Cladis FP, Saladino R, Triulzi DJ, Gaines BA. Use of Uncrossmatched Cold-Stored Whole Blood in Injured Children With Hemorrhagic Shock. JAMA Pediatr. 2018 May 1;172(5):491-492. doi: 10.1001/jamapediatrics.2017.5238. PMID: 29554175; PMCID: PMC5875385.

Leeper CM, Yazer MH, Cladis FP, Saladino R, Triulzi DJ, Gaines BA. Cold-stored whole blood platelet function is preserved in injured children with hemorrhagic shock. J Trauma Acute Care Surg. 2019 Jul;87(1):49-53. doi: 10.1097/TA.0000000000002340. PMID: 31033893.

Yazer MH, Jackson B, Sperry JL, Alarcon L, Triulzi DJ, Murdock AD. Initial safety and feasibility of cold-stored uncrossmatched whole blood transfusion in civilian trauma patients. J Trauma Acute Care Surg. 2016 Jul;81(1):21-6. doi: 10.1097/TA.0000000000001100. PMID: 27120323.

# Related procedures/policies

# Attachments/Linked documents (title 21)

# Revision Dates: Review Change Summary as represented in Title 21.