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|  | **PUBS and IUT Testing**  BB.ROUTINE.1068 | **Dept:** | 324311 |
| **Dept Name:** | Blood Bank |
| **Effective Date:** | 8/15/2019 |
| **Revised Date:** |  |
| **Name & Title**: CLIA Laboratory Medical Director | | **Contact:** | Julie Simmons/  Christina Warren |
| **Signature: G. Pomper** | | **Date:** | **2/21/2020** |

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1. **General Procedure Statement:**
2. **Purpose:**

PUBS, Percutaneous Umbilical Cord Blood Sampling (also called cordocentesis), is a blood sample collected on an unborn infant. This is testing the infant’s ABO, Rh and DAT for potential blood transfusion. This test will be ordered on the mother’s MRN as the baby cannot be registered until it is born. These tests have been created so that they will not interfere with the mother’s history and that they are identified as testing on the unborn infant.

HDFN (Hemolytic Disease of the Fetus and Newborn) is caused by antibodies from the mother attaching and causing destruction to the infant’s red cells. The mother’s IgG antibody crosses the placenta, attaches to the antigen positive infant red cells and the red cells are destroyed by the infant’s spleen. The infant then responds by increasing red cell production (erythropoiesis). Excess red cell production causes “erythroblastosis fetalis” which in turn causes liver and spleen enlargement. If left untreated this can lead to “hydrops fetalis” causing death.

Treatment for the unborn infant with hemolytic anemia is IUT, Intrauterine Transfusion.

1. **Responsible Department/Scope:**

i. Procedure owner/Implementer: Julie H. Simmons/Christina S. Warren

ii. Procedure prepared by: Julie Jackson

iii. Who performs procedure: Department staff/management

1. **Definitions:**

PUBS: Percutaneous Umbilical Cord Blood Sampling (also called cordocentesis), is a blood sample collected on an unborn infant.

MRN: Medical Record Number

HDFN: Hemolytic Disease of the Fetus and Newborn

IUT: Intrauterine Transfusion

1. **Sections**:
2. PUBS Testing
3. IUT Testing
4. **Protocols**:
5. The provider orders the PUBS test on the mother’s MRN. The sample will be labeled with mother’s name and MRN.
   1. This test includes specially created tests that will not interfere with mother’s history:
   2. PABO, PRH, PDATG
   3. Other tests may be added on by Blood Bank staff as needed including titers and antigen testing specific for PUBS testing

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| **TEST TO BE DONE** | **TEST NAME IN SCC\*** |
| Rh System Antigen testing  (C, c, E, e, Cw, V) | PC, PE, PLC, PLE, PCW, PV |
| Kell System Antigen testing  (K, k, Jsa, Kpa) | PK, PLK, PJSA, PKPA |
| Duffy Antigen testing (Fya, Fyb) | PFYA, PFYB |
| Kidd Antigen Testing (Jka, Jkb) | PJKA, PJKB |
| MNS System Antigen testing  (M, N, S, LS) | PM, PN, PS, PLS |
| Other Antigens not listed above | POT |
| Titers (antibodies to: L, E, D, LC, LE, K, FYA, FYB, JKA, JKB, S, M, N, A, A1, B) | PTAB1 (first antibody)  PTAB2 (second antibody)  PTAB3 (third antibody) |

\*the P in front indicates it is for PUBS

1. A TSX will also be collected on the mother to identify any antibodies present and crossmatching the unit. The BBID used for this sample will be used for the IUT red cell unit.
2. The IUT red cell unit must be:
   1. Fresh (< 7 days old)
   2. Washed
   3. Irradiated
   4. CMV negative equivalent (leukoreduced)
   5. HGBS negative
   6. If mother has sickle cell, give Rh/Kell phenotypically matched blood (matching the mother’s type)
   7. O Negative (unless infant is O positive and O positive is needed to provide antigen negative units)
   8. Antigen negative for the offending antibody
   9. Crossmatch compatible with mother’s TSX sample
3. PUBS will be of limited quantity and normal reflex testing may not be possible.

1. **Procedure: I. PUBS Testing**

Chemical Risk Assessment: none

Biological Risk Assessment: none

Protective Equipment: Lab coat, gloves

Supplies: none

Reagents: none

Equipment: none

Specimen Requirements: EDTA (purple or pink top) – **Collected from the umbilical cord on unborn infant**

| **STEPS** | **INSTRUCTIONS** | **CHANGE/**  **APPROVAL** |
| --- | --- | --- |
| **1.0** | **Receive the PUBS sample in Beaker and SCC**  *Refer to:*  *Specimen Receipt in SCC and Epic: BB.FD.1006*  *Specimen Labeling Requirements and BBID Numbers:BB.FD.1001* |  |
| **2.0** | **Perform ABO and Rh testing on PUBS sample.**   1. Perform Weak D testing if immediate spin Rh is weak (<2+) or negative. The Weak D is built into the PRH test.   *Refer to:*  *ABORh Protocol:BB.Routine.1043*  *ABO Testing Manual method:BB.Routine.1001*  *Rh Testing and Weak D Typing:BB.Routine.1028* |  |
| **3.0** | **Perform DAT IgG testing on the PUBS sample.**   1. Perform a gel IgG DAT 2. If DAT is Positive notify Medical Director    1. Fill out a green *Antibody Identification Summary form, BB.FORMS.1195* 3. Elution will not be possible due to small quantity of sample   *Refer to:*  *Direct Antiglobulin Test: BB.Routine.102* |  |
| **4.0** | **Review mother’s TSX results and antibody history**   1. Identify the mother’s antibody 2. Document on the green *Antibody Identification Summary form, BB.FORMS.1195* from step 3.0 |  |
| **5.0** | **Antigen type PUBS sample**   1. Test the PUBS sample for the antigen that corresponds to the mother’s antibody 2. Add on the appropriate antigen test to the PUBS sample.    1. Go to Patient > Orders > Modify    2. The antigen test selected MUST be a PUBS antigen   (the code will start with a P)   * 1. Refer to the test naming convention in Protocol   *Refer to:*  *Antibody Identification: BB.Specials.1002* |  |
| **6.0** | **Perform a PUBS titer if requested by Medical Director or Blood Bank Management**   1. Add on the appropriate titer test to the PUBS sample.    1. Go to Patient > Orders > Modify    2. The titer test selected MUST be a PUBS titer (the code will start with a P)    3. Refer to the naming convention in Protocol   *Refer to:*  *Titrations: BB.SP.1004* |  |

**2. Procedure: II. Intrauterine Transfusion (IUT) Testing**

Chemical Risk Assessment: none

Biological Risk Assessment: none

Protective Equipment: Lab coat, gloves

Supplies: none

Reagents: none

Equipment: none

Specimen Requirements: EDTA (purple or pink top) – **Mother’s type and screen sample**

| **STEPS** | **INSTRUCTIONS** | **CHANGE/**  **APPROVAL** |
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| **1.0** | **Select red cell unit for Intrauterine Transfusion**   1. The unit must be:  * Fresh, < 7 days old * Leukoreduced * O Negative (Refer to protocol 3.f.) * HGBS negative   **Note:** After crossmatching, the unit is to be WASHED and IRRADIATED   1. Antigen type unit to find an antigen negative unit for the corresponding antibody identified in the mother’s sample.    1. Order unit from blood supplier if there is enough time to order before the procedure to insure a fresh unit that is antigen negative.   *Refer to:*  *Antibody Identification: BB.Specials.1002*  *Blood Product Inventory Protocol: BB.Protocol.1013* |  |
| **2.0** | **Perform full AHG crossmatch of unit with mother’s TSX sample**   1. Unit must be compatible with mother’s sample 2. The product order should be on the mother’s TSX: IRCW 3. Do not select to patient in SCC until the unit has been washed and irradiated   *Refer to:*  *Crossmatch Procedures: BB.R.1007* |  |
| **3.0** | **Wash and Irradiate the compatible red cell**   1. The unit must be washed and irradiated   *Refer to:*  *Washing Red Blood Cells: BB.COMP.1006*  *Irradiation of Blood and Blood Products. BB.COMP.1022* |  |
| **4.0** | **Add the instruction for pediatric filter in SCC**   1. A pediatric filter is to be given with the IUT unit and must be charged   *Refer to:*  *Neonatal Transfusion Practice Protocols and Splitting Procedure (Attachment 1: How to charge for a Pediatric Filter): BB.COMP.1016* |  |
| **5.0** | **Enter crossmatch results in SCC**   1. Select the unit to the mother in SCC 2. Enter crossmatch results   *Refer to:*  *Crossmatch Procedures: BB.R.1007* |  |

1. **Review/Revised/Implemented:**

All procedures must be reviewed according to the Document Change Protocol.

All new procedures that have major revisions must be signed by the CLIA Director.

All reviewed procedures with minor revisions can be signed by the designated section Medical

Director.

1. **Related Procedures:**

Crossmatch Procedures: BB.R.1007

Neonatal Transfusion Practice Protocols and Splitting Procedure (Attachment 1: How to charge for a Pediatric Filter): BB.COMP.1016

Washing Red Blood Cells: BB.COMP.1006

Irradiation of Blood and Blood Products. BB.COMP.1022

Antibody Identification: BB.Specials.1002

Blood Product Inventory Protocol: BB.Protocol.1013

Titrations: BB.SP.1004

Direct Antiglobulin Test: BB.Routine.102

ABORh Protocol:BB.Routine.1043

ABO Testing Manual method:BB.Routine.1001

Rh Testing and Weak D Typing:BB.Routine.1028

Specimen Receipt in SCC and Epic: BB.FD.1006

Specimen Labeling Requirements and BBID Numbers:BB.FD.1001

1. **References**:

AABB Technical Manual, revised periodically

1. **Attachments**:

NA

1. **Revised/Reviewed Dates and Signatures:**

See Archived Document Change Control