## TITLE: Newborn Testing

PRINCIPLE:

Rh typing, ABO group and direct antiglobulin test (Coombs test) are essential tests of the umbilical cord in suspected Erythroblastic babies. This testing may be performed on the specimens (newborn cord, heel stick or venipuncture) from babies less than 4 months old.

**CLINICAL SIGNIFICANCE:**

Evaluation of laboratory tests from the umbilical cord blood, heel stick or venipuncture in Erythroblastsis is important in deciding whether or not the baby may need an exchange transfusion. The evaluation involves blood bank, hematology and chemistry.

# PERSONNEL:

Medical Technologists

# EQUIPMENT:

See individual procedures for necessary equipment.

# COLLETION OF SAMPLE

Labor and delivery or NICU collect samples for testing. An order is placed via the EHR with the ordering provider choosing the source (cord, heel stick or venipuncture).

The floor should send one of the following:

1) A 6 mL red top and a 6 mL pink top

2) AN EDTA tube (purple top)

3) Two EDTA microtainer tubes.

 Perform ABORH and IgG DAT on specimen. If sample is not a cord blood, and is a heel stick or venipuncture on a baby less than 4 months old; comment sample type.

### STEPWISE PROCEDURE

1. Aliquot a sample from the pink top into a 10x12 test tube, check for clots. Spin the sample for 5 minutes to pack the red cells. Label with the PLANALIQ sticker that comes with the sample from LCC.
2. Perform ABO Typing.

 Perform Rh typing- If no agglutination is observed proceed to the Du Testing Procedure.

1. Perform a direct antiglobulin test using IgG Coombs reagent.
2. An eluate and antibody ID will be prepared from direct antiglobulin positive specimens a

ONLY if the physician requests it. Send testing to the reference laboratory of our current blood supplier.

1. Order a STAT neonatal total bilirubin when the direct antiglobulin testing is positive.

 **Collect and** **Receive** the order, deliver the labeled red top cord blood sample to Chemistry for STAT testing.

1. Order a STAT H&H and reticulocyte count on the non-clotted pink top tube (HH and RETA) when the direct antiglobulin testing is positive. **Collect & receive** the order and take the labeled pink top to Hematology for STAT testing.
2. If the pink top is clotted, request a new sample from the baby’s nurse for the H&H and reticulocyte count.
3. All positive direct coombs must be called to the patient’s (baby’s) nurse. Document this call in a comment on the order.
4. Store samples in the daily rack, allowing for 21 day storage.
5. Result testing using the Patient Test Verify option for ECHO results. Make sure to have the mother’s medical record number available for linking at the time of resulting.

 NOTE: When resulting babies born to a surrogate mom, manually result under Patient>Orders>Results, to bypass linking the baby to the surrogate mom.

NOTE: CORD BLOOD TESTING **MUST** BE COMPLETED WITHIN 6 HOURS OF THE BABY BEING BORN. In an effort to save resources when one cord blood is received the pending may be reviewed for any other pending cord bloods. You may call the floor requesting them to send down the pending cord blood. Never “batch test” cord bloods on your shift.

**INTERPRETATION**

1. In newborn infants, only forward grouping is done, as the expected Anti-A and/or Anti-B does not usually appear until infants are about 3 to 6 months of age.
2. Identification of the antibody in maternal serum may confirm the identity of the antibody eluted from the infant’s cord blood cells.
3. Specimens, which are direct antiglobulin positive, may also indicate antibodies other than Rh (D), or fetal-maternal ABO incompatibility.
4. The strength of positive direct antiglobulin test does not indicate the severity of the disease process. Hemoglobin, indirect serum bilirubin level, and reticulocyte count are better reflectors of the extent of red cell destruction and elimination.
5. Umbilical cord specimens contaminated with Wharton’s jelly must be washed four or more times with saline.

**NOTE: You may add an antibody screen to newborn blood testing that has been drawn by heel stick or venipuncture; if requested by a physician or if needed when no maternal testing has been done.**

**CALCULATIONS**

Not applicable

**REPORTING RESULTS**

Report all results through the Laboratory Information System.

**NOTE**: Positive weak D test results are valid only if it can be shown that red blood cells produce negative results in Direct Antiglobulin Testing (Anti-D product insert). When the DAT is positive and the Weak D is positive; Weak D results are invalid. Please reference the following table when resulting out RH typing on cord bloods:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **DAT** | **Rh** | **Mono Ctrl** | **Weak D** | **Weak D Ctrl** | **RESULT** |
| NEG | NEG | NEG | NEG | POS | **Rh negative** |
| POS | NEG | NEG | NEG | NEG | **Rh negative** |
| POS | NEG | NEG | POS | POS | **Rh INV** |
| NEG | POS | NEG | NT | NT | **Rh positive** |
| POS | POS | NEG | NT | NT | **Rh positive** |

* When the Rh is invalid add a comment stating: “The DAT is positive, weak D results are invalid due to the high probability of a false positive”
* If the mother is RH negative she would be a candidate for Rhogam.
* If the weak D is negative specimen can be resulted per policy.

 **REFERENCE:**

Technical Methods and Procedures of the Association of Blood Banks 2014

Soft Computer, Clearwater, Florida

Immucor Anti-D package insert