## TITLE: Neonatal Transfusion (Patients Less than 4 Months) and Neonatal Aliquots (LRBC and PLT)

**PURPOSE**

The neonatal period is generally considered from birth up to 4 months. Newborn infants present unique problems in transfusion therapy. Indications for transfusion of infants differ with weight, gestation, and circumstances of delivery and with subsequent maturation. Appropriate transfusion practice requires knowledge of neonatal physiology and careful clinical observation.

CLINICAL SIGNIFICANCE

Supplying blood banks should be capable of providing components tailored to satisfy the specific requirements of these tiny recipients whose small blood volumes and impaired organ functions provide little margin of safety. The fact that all newborn infants are more likely to receive transfusions than hospitalized patients of any other age testifies to the importance of this aspect of transfusion medicine. One major reason for this is that the amount of blood removed for laboratory samples may be quite substantial.

### PERSONNEL

All blood bank staff must be familiar with this procedure.

### SPECIMEN

### No sample necessary unless there is no previous record of ABO type, Rh type and Direct Coombs results on patient and/or maternal sample is not available. If sample is needed no special preparation of the patient is necessary. An EDTA sample collected in a small lavender microtainer. Sample must be less than 3 days old.

### EQUIPMENT REAGENT & PREPARATION

See Compatibility Test Procedure No. 4840-BB-312 and 4840-BB-308

Blood Bank Scale

Tube Heat Sealer

**QUALITY CONTROL**

SoftID provides positive patient and specimen identification at the point of care. This effective lab software solution enhances patient safety by accurately identifying the patient and the appropriate lab test and ensuring that patient lab specimens are correctly bar coded and labeled.

# STEPWISE PROCEDURE

1. **Maternal Profile**
2. Check record for a mother’s ABO, Rh typing and antibody screen done during the delivery hospital stay.
3. If no results are found order a Maternal Profile on the mother.

 See Procedure No. 4840-BB-610 for more information if needed.

1. **ABO, Rh typing and Direct Coombs Testing on the Infant.**
2. When the Blood Bank is notified that a transfusion may be indicated, check Blood Bank records for an ABO, Rh type and Direct Coombs result on the infant, if no record is found, have baby drawn for an ABO, Rh and Direct Coombs.

###### **Transfusion Order**

To notify the laboratory that a transfusion is needed, a neonatal red blood cell product order needs to be placed in the EHR.

1. **If maternal profile is not available**, 2 lavender micro-containers need to be drawn from the baby.
* IF YOU ARE DRAWING THE PATIENT, Go to the patient’s room.
* Draw patient in accordance with Procedure No. 4840-LCC-312, SoftID
* Send blood sample and all the paperwork to the Laboratory.
* ***Blood bank orders without appropriate documentation will not be accepted by the Blood Bank.***
* Perform an ABO and Rh typing, and Antibody Screen on this baby’s sample.
* If no cord blood results exist, perform a direct coombs test.
* Add on additional testing orders to the Neonatal RC Order as needed.
1. If the initial antibody screen on the mother or baby is negative, it is unnecessary to crossmatch donor red cells for the initial or subsequent transfusions, provided that the cells are O negative. Repeat testing may be omitted for the remainder of the neonatal period during the same hospital admission.
2. If the Type and Screen in negative on the baby and the antibody screen is positive on the maternal specimen due to Rhogam, an antiglobulin phase crossmatch is not indicated and the Type and Screen on the baby may be omitted for the remainder of the neonatal period during the same hospital admission.
3. If the initial antibody screen on mom or baby, demonstrates clinically significant unexpected red cell antibodies, these antibodies shall be identified and units shall be prepared for transfusion that do not contain the corresponding antigen and these units shall be crossmatched using a sample from the baby, using methods that include the antiglobulin crossmatch. If there is not enough plasma from baby, mom’s sample may be used for the anitglobulin crossmatch (only if mom’s sample is less than 72 hours old), just add comment “Sample from mother MR# 1234567 used for crossmatch”

NOTE: Crossmatching is necessary only once on the red blood cell unit, not on each pedi pack. If possible sequester the rest of the neonatal unit and order a new unit for other possible neonatal transfusions.

 When the unit is selected for baby, the order should change to a full AHG crossmatch, if it does not; an AHG (Coombs) crossmatch needs to be added to the Neonatal Transfusion. Report out the AHG crossmatch so that the tags contain the AHG results.

See Blood Bank Procedure Book #4848-BB-2006 for more information on antibody identification.

**NOTE: If the neonate(less than 4 months of age) leaves the hospital and is than readmitted, ABO & Rh typing and antibody screen testing must be done on the neonate. This would be considered a new admission. A new hospital chart is started for the neonate with a new financial number.**

1. If a neonatal unit is available in our blood bank, it may be used until it’s outdated.
2. If a neonatal unit is not available, place an order for a neonatal unit from Versiti via Blood Hub. Order:
	1. O Negative
	2. Leukoreduced
	3. CMV Negative
	4. Sickle Cell (HbS) Negative
	5. Irradiated
	6. Less than 5 days old (alternatively 7 days old)
	7. CPD anticoagulant (alternatively AS)
	8. Pedi-pack attached
3. Neonatal recipients **may not** be transfused with whole blood, plasma or other blood components that contain clinically significant unexpected antibodies.
4. **Making aliqouts for LRBCs:**
5. Remove neonatal unit from Blood Bank refrigerator when transfuse order is released by patient care team.
6. Ensure the unit fulfills all neonatal transfusion requirements (IRR+, HBS=, CMV=).
7. Gently mix the neonatal unit prior to making an aliquot.
8. Turn on blood bank scale, ensure the scale is set to grams/kg.
9. Place the empty pedi-bag onto the scale, tare the scaleby pressing the “zero” button.

Ensure the scale reads zero. Open the clip to allow the ordered volume plus 20 mL of blood to flow into the aliquot bag.

NOTE: If blood does not flow, check to see if the connection seal is opened. Pinch and roll the seal if necessary to allow blood flow.

1. Using a hemostat and the clip attached to the aliquot bag, stop the blood flows between the mother bag and the aliquot bag.
2. Seal off the aliquot bag between the hemostat and the clip.

Separate the aliquot bag and the mother bag. Inspect the tubing for breakage and/or leakage.

If breakage and/or leakage is discovered, additional hemostats can be placed depending on where the leakage is found. Re-seal the tubing and re-inspect the tubing.

If tubing is sealed off successfully, the expiration of the aliquot bags would be the same as the mother bag.

If tubing is NOT sealed off successfully, the unit should be treated as an open system. The expiration of the mother bag and the aliquot bag should be changed to 24 hours.

In SOFTBank, select INVENTORY > Edit > cr\_Product > Divide. Scan unit DIN and component code. Change how many products to 2. Press F12 to Accept. Modify product volume as needed. Select printer M59 to print unit full face label. Affix labels on corresponding aliquot bags. Perform label check on each unit.

In SOFTBank, select INVENTORY > Edit > Label. Scan unit DIN and component code of the unit to be allocated. Select priner M59 to print unit full face label for syringe labeling.

Affix required attribute labels on the ISBT full face label as needed.

1. **Making aliqouts for PLTs:**
2. Remove neonatal unit from Blood Bank platelet agitator when transfuse order is released by patient care team.
3. Ensure the platelet unit is ABO compatible and fulfills all neonatal transfusion requirements (IRR+ and CMV= OR pathogen reduced).
4. Gently mix the platelet unit prior to making an aliquot.
5. Turn on blood bank scale, ensure the scale is set to grams/kg.
6. Place the empty pedi-bag onto the scale, tare the scaleby pressing the “zero” button.

Ensure the scale reads zero. Open the clip to allow the ordered volume plus 20 mL of platelets to flow into the aliquot bag.

NOTE: If platelets does not flow, check to see if the connection seal is opened. Pinch and roll the seal if necessary to allow blood flow.

1. Using a hemostat and the clip attached to the aliquot bag, stop the platelet flows between the mother bag and the aliquot bag.
2. Seal off the aliquot bag between the hemostat and the clip.

Separate the aliquot bag and the mother bag. Inspect the tubing for breakage and/or leakage.

If breakage and/or leakage is discovered, additional hemostats can be placed depending on where the leakage is found. Re-seal the tubing and re-inspect the tubing.

If tubing is sealed off successfully, the expiration of the aliquot bags would be the same as the mother bag.

If tubing is NOT sealed off successfully, the unit should be treated as an open system. The expiration of the mother bag and the aliquot bag should be changed to 24 hours.

In SOFTBank, select INVENTORY > Edit > cr\_Product > Divide. Scan unit DIN and component code. Change how many products to 2. Press F12 to Accept. Modify product volume as needed. Select printer M59 to print unit full face label. Affix labels on corresponding aliquot bags. Perform label check on each unit.

In SOFTBank, select INVENTORY > Edit > Label. Scan unit DIN and component code of the unit to be allocated. Select priner M59 to print unit full face label for syringe labeling.

Affix required attribute labels on the ISBT full face label as needed.

**Allocation and Dispense:**

1. Aliquoted units are allocated in the same manner as routine crossmatches. Print Two (2) patient unit tags for each neonatal allocation for syringe labeling.
2. Prior to dispensing the unit, the instructions need to be confirmed under Patient>Orders>Results, double click on unit and confirm each instruction while verifying that the unit has that attribute.
3. At dispense, safe-T-Vue indicator is omitted for neonatal LRBCs due to quantitive in the neonatal aliquot bag not sufficient for safe-T-Vue to work properly.
4. An issue time stamped manila tag is attached to the unit.

# REPORTING RESULTS

1. All results are reported through the Laboratory Information System. See Blood Bank Computer Manual for more detail.
2. For STATS, call and notify the floor the estimated arrival of blood products
	1. Note on the product order person spoken to for clarification later, if necessary.
3. Cap patient sample if available, and place in the daily rack. Samples are saved for 21 days.

**NOTE:**

1. In a rare occasion of a non-group O neonate receiving non-Group O red cells (directed donor), the neonate’s serum/plasma must be screened for anti-A or anti-B to detect passively acquired maternal anti-A or Anti-B. The screening must include an antiglobulin phase and documented in a “Note to Tech” comment in SoftBank. If ABO antibody is present, maternally ABO compatible RBCs are transfused until the antibody is no longer present.
2. Before non-group O (ABO compatible red blood cells {as in a designated donor} can be issued an AHG crossmatch must be performed with a compatible result. If crossmatch is incompatible the unit cannot be used and only O negative neonatal units may be transfused. Crossmatch is necessary only once on the red blood cell unit, not each pedi-pack. All other requirements (CMV negative, Irradiated, sickle cell negative, leukoreduced ect. must be met).
3. Expiration of LRBCs and PLTs

**Close system:**

|  |  |  |
| --- | --- | --- |
|  | **Mother Bag** | **Aliquot Bag** |
| **LRBCs** | Original expiration | Original expiration of mother bag |
| **PLTs** | Original expiration | 4 hours from spike |

**Open system:**

|  |  |  |
| --- | --- | --- |
|  | **Mother Bag** | **Aliquot Bag** |
| **LRBCs** | 24 hours from spike | 24 hours from spike |
| **PLTs** | 4 hours from spike | 4 hours from spike |

***REFERENCES***

1. AABB, Standards for Blood Banks and Transfusion Services, *current edition*
2. AABB, Technical Manual, *current edition*
3. SoftBank II System Design 25.3.0.3