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| **Newborn ABO/RH and DAT Manual Gel Card** |
| **Purpose** | This procedure provides instructions for performing ABO/Rh and DAT on a Newborn Card for patient’s <7 days old. |
| **Policy Statements** | * Testing includes determination of ABO (front group only), Rh, antibodies, and Direct Coombs using anti-IgG,-C3d reagent.
* Infants that test negative with Anti-D at immediate spin shall be tested for Weak D by carrying testing out through the AHG phase.
* Infants that test positive with Anti-D at AHG phase may receive Rh-positive red blood cells only if pre-approved by pathology.
* Cord blood will not be used for any testing.
* **Patients < 4 months old:** ABO group shall be determined by testing the patient’s red cells with anti-A and anti-B reagent. Testing the patient’s plasma/serum for antibodies with A1 or B cells shall not be performed.
* *Group O, Rh negative red cells and group AB platelets or plasma shall be selected for transfusion until confirmation of the patient’s ABO has been completed by a second technologis or tube method.*
1. Confirmatory testing may be performed using the same sample but with a new cell suspension.
2. Both technologists shall perform discrepancies resolution testing.
* This card is only used in Minneapolis
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| **Test Codes** | BN |
| **Related Documents** | TS 4.17.1 Weak D-Gel Method |
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| **Materials** | **Equipment** | **Reagents** | **Supplies** |
| * IH-Centrifuge L
* MLA 10 µL pipette
* MLA 50 µL pipette
* MLA 1000 µL pipette
 | * IH-LISS solution
* IH-Card ABO/RhD(DVI+),AKA Newborn Card
 | * Pipette tips
* 10 x 75 mm tubes
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| **Sample** | Fresh samples of EDTA anticoagulated whole blood collect following general blood sampling guidelines for collection of patient sample. The specimen should be tested as soon as possible after collection. If testing is delayed EDTA samples be stored at 2 to 8°C. Samples collected in EDTA may be tested within ten days from collection |
| **Quality Control** | Refer to TS 18.2 Performing Daily Reagent Quality ControlReagents must be evaluated each day of use with appropriate controls.  |
| **Before** **You Begin** | 1. Confirm sample acceptability and review patient history per procedure.
2. Label tubes per TS 4.7 Labeling Gel Cards.
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| **Procedure** |  |
|  | **Step** | Action |
|  | 1 | Prepare a 1% suspension of patient cells in IH-LISS solution by pipetting 1000 µL into an appropriately labeled test tube and adding 10 µL of patient/donor packed red blood cells. |
|  | 2 | Inspect the IH blood typing card for evidence of damage to the foil or drying of the gel. Do not use if such evidence is observed. Cards with splashes of gel in the reaction area may be centrifuged prior to use. |
|  | 3 | Label the gel card according to procedure TS 4.07 Inspection and Labeling of Gel Card |
|  | 4 | Carefully remove the foil strip from the gel card. Each sample will use an entire gel card. |
|  | 5 | Pipette 50 µL of the 1% patent red cell suspension into each of the gel microtube. Reaction chambers needed for the test being performed taking care to maintain an air gap between the upper reaction chamber containing cells and the gel column below containing the antisera. |
|  | 6 | Centrifuge the IH-Card(s) in the IH-Centrifuge L for the pre-programmed time and speed for the 24 card centrifuge head for 10 minutes at 85 x G. |
|  | 7 | When centrifugation cycle is complete, remove the cards and read the reactions according to procedure TS 4.09 Grading and Interpretation of Gel Cards. |
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| Use the table under Interpretation to determine the ABO.

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| **If**  | **Then** |
| an infant < 4 months old types as an O Rh negative and may be a transfer from another facility. Contact the patient care unit and determine if the patient was transported in from another facility | * Contact the other facility BB regarding the

 infant’s original blood type.* If a discrepancy is noted between infants

 current blood type and the initial blood type, transfuse the infant with group O Rh Neg. red cells, AB FFP/Cryo, and AB Rh Neg. platelets* Add problem comment PRTO to the

 patient’s BAD file. |

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| Use the following table to determine the next appropriate action.

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| If the DAT interpretation is | **Then** |
| Negative | Store the patient sample |
| Positive  | * Refer to TSf 03.01.01 Newborn Workup Resolution Worksheet.
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| Inconclusive | Repeat with testing by tube or Gel card. Forward to Reference lab as if unresolved.  |

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|  | 10 | Review the final record including a final clerical check of sample, label, request, and interpretation. |
|  | 11 | Dispose of all gel cards and pipettes used for the examinations in a biohazard waste container. |
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| **Interpretation** | Agglutination seen as clumps of red cells caught in the gel matrix is a positive result and indicates the presence of the corresponding antigen (forward test and D antigen) or antibody (reverse test). No agglutination is observed as a smooth surfaced button at the bottom of the gel column. This is a negative result and indicates the absence of the corresponding antigen (forward test and D antigen) or antibody (reverse test).Following centrifugation, IH-Cards should be read as soon as possible and results interpreted within 6 hours of processing. If unable to read within that time period, the IH-Cards can be sealed with tape and stored at 2-8°C for up to 24 hours. Further delays in reading and interpretations can lead to drying of the gel, which will interfere with an accurate reading of the results.

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| Unknown Cells With | Interpretation |
| Anti-A | Anti-B | Anti-A,B | Anti-D | Control | Group/Type |
| + | - | + | + | - | A+ |
| - | + | + | + | - | B+ |
| - | - | - | + | - | O+ |
| + | + | + | + | - | AB+ |
| + | - | + | - | - | A neg |
| - | + | + | - | - | B neg |
| - | - | - | - | - | O neg |
| + | + | + | - | - | AB neg |

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| **Limitations** | Erroneous and abnormal results may be caused by:* Bacterial or chemical contamination of the blood specimens, reagents, supplementary materials and/or equipment.
* Patient medication or disease yielding a cross-reaction.
* A red blood cell concentration or suspension medium different from that recommended.
* Incomplete re-suspension of the red blood cells.
* Sample or reagent red blood cell hemolysis prior to testing.
* Contamination between microtubes through pipetting errors.
* Grossly icteric blood samples, blood samples with abnormally high concentrations of protein or blood samples from patients who have received plasma expanders of high molecular weight may five false positive results.
* Fibrin, clots, particulates or other artifacts may cause some red blood cells to be trapped at the top of the gel and cause an anomalous result. They may appear as a pinkish layer. In a negative reaction, the false appearance of a mixed field could lead to misinterpretation.
* A weak reaction is not an expected result for antigen typing and may be indicative of a false positive or weak/partial expression of the antigen. Further investigations may be warranted per site–specific procedures.
* If red blood cells (pellet at the bottom of the microtube) are too low in concentration, they become difficult to visualize and in certain cases, a weak positive reaction can fail to be detected.
* Decreased ABO antibody reactivity may be seen in disease states, the elderly or infants, resulting in false negative reactions.
* Weak reactions may be obtained in ABO serum/plasma blood grouping and are valid results. Very weak ABO subgroup may not be detected with the Anti-A and Anti-B reagents used in this IH-Card
* The Anti-B reagent does not react with the acquired B antigen
* Very weak expressions of the D antigen may not be detected. If the detection of weak D samples is required, the samples producing negative results with this anti-D reagent should be further tested with and anti-D reagent known to detect weak D antigen expression (i.e. IH-Anti-D (RH1) Blend).
* The performance characteristics of this product with chemically modified frozen/thawed or enzyme-treated red blood cells have not been established.
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| **Alternate Procedure** | TS 4.16 ABO GroupingTS 4.17 Rh TypingTS 4.12 Direct Antiglobulin Test-Anti-IgG, Gel TestingTS 4.13 Direct Antiglobulin Test-Anti-IgG, Tube Testing |
| **Result Reporting** |  |
| TS 5.6 Entering Results for ABO/Rh testing or for ABO/Rh Recheck |
| **References** | 1. Package insert: IH-Card ABO/RhD(DVI+), Bio-Rad Medical Diagnostics GmbH, current version
2. Package insert: IH-LISS Solution, Bio-Rad Medical Diagnostics GmbH, current version
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| **Approval****Workflow** | Transfusion Service/Lab Director |
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| **Historical Record** | **Version** | **Written/Revised by:** | **Effective Date:** | **Summary of Revisions** |
| 1 | S. Cassidy | 02/17/2023 | Initial Version |