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| **Grading and Interpretation of Gel Card Reactions** |
| **Purpose** | This procedure provides instruction for the manual reading, grading of reactions, and interpretation of test reactions in IH-Card gel. |
| **Policy Statements** | * The grading of reactions will be standardized among all members of the Transfusion Service staff.
* For best results, reactions should be read immediately following centrifugation. Gel cards should not be interpreted if there are any signs of drying. If a delay in reading is over 6 hours, cover the microtube wells securely with tape and store in the refrigerator (2 to 8°C) up to 24 hours.
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| **Related** **Documents** | Interpretation Chart: IH-Gel  |
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| **Materials** | **Equipment** | **Supplies** |
| * IH-Centrifuge L
* IH-Incubator
* IH-Reader 24
* IH-COM
 | * IH Gel cards:
	+ IH-Card AHG Anti-IgG
	+ IH-Card AHG Anti-IgG,-C3d
	+ IH-Card ABO/RhD(DVI+) (Newborn Card)
	+ IH-Card ABO/D(DVI-)+Rev A1,B
	+ IH-Card ABD (DVI+)-Conf
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| **Procedure** |  |
|  | **Step** | Action |
|  | 1 | Perform testing per procedure.  |
|  | 2 | After centrifugation, remove gel cards from centrifuge and observe for signs of improper centrifugation.

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| **If** | **Then** |
| * Un-agglutinated cells are observed in the gel
* A line of cells streams down one side forming a J
* The card shows the above signs of improper centrifugation
 | * The centrifuge cycle may have been interrupted.
* The card was not properly seated
* Repeat the test. DO NOT re-centrifuge the card
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|  | 3 | Observe and read macroscopically the front or back of each microtube for agglutination or hemolysis.  |
|  | 4 | Grading of reactions.

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| **Well Reaction Grade** | **Result Interpretation** | **Reaction Description** |
| 4+ | * For Blood Grouping including Anti-D Blend=**Positive**
* For Reverse ABO Testing = **Positive**
* For Antibody Detection and DAT **= Positive**
* For Crossmatching = **Incompatible**
 | Agglutinated RBCs concentrated as a line on the top of the gel column with a few agglutinated RBCs just underneath the gel surface. |
| 3+ | * For Blood Grouping including Anti-D Blend=**Positive**
* For Reverse ABO Testing = **Positive**
* For Antibody Detection and DAT **= Positive**
* For Crossmatching = **Incompatible**
 | Most agglutinated RBCs concentrated at the top of the gel or upper half of the gel column. |
| 2+ | * For Blood Grouping including Anti-D Blend=**Positive**
* For Reverse ABO Testing = **Positive**
* For Antibody Detection and DAT **= Positive**
* For Crossmatching = **Incompatible**
 | Agglutinated RBCs distributed throughout the entire length of the gel column, with no line of RBCs on the top of the well. |
| 1+ | * For Blood Grouping including Anti-D Blend=**Not Interpretable-Retest in tube.**
* For Reverse ABO Testing = **Positive**
* For Antibody Detection and DAT **= Positive**
* For Crossmatching = **Incompatible**
 | A pellet of RBCs at the bottom of the well with agglutinated RBCs visible in the lower half of the gel column |
| +/- | * For Blood Grouping including Anti-D Blend=**Not Interpretable-Retest in tube.**
* For Reverse ABO Testing = **Positive**
* For Antibody Detection and DAT **= Positive**
* For Crossmatching = **Incompatible**
 | A pellet of RBCs at the bottom of the well with a very few agglutinated RBCs visible above the pellet or an irregular pellet. |
| 0 (negative) | Negative | A compact pellet of RBCs with a smooth surface at the bottom of the well with no visible agglutination. |
| MF (mixed field) | * For Blood Grouping including Anti-D Blend=**Not Interpretable-Retest in tube.**
* For Reverse ABO Testing = **Positive**
* For Antibody Detection and DAT **= Positive**
* For Crossmatching = **Incompatible**
 | Agglutinated RBCs as a line at the top of the gel or dispersed in upper part of the gel and non-agglutinated RBCs forming a pellet at the bottom of the well. The instrument interpretation software displays “DP” (double population for a mixed result. |
| Negative: if the RBC button is of normal size and original sample is hemolyzed.H: if the RBC button size is decreased and the original sample is free of hemolysis. | Hemolysis in the liquid portion above the gel or just into the gel will appear pink or red. | In case of complete or partial hemolysis (pinkish supernatant and/or gel) in microtubes, the interpretation should be positive if there is no problem of cell collection and/or handling of the sample. |

Note: The following may be attempt for resolution if “sticky” reactions are observed in gel:1. Repeat with fresh 0.6% screening cells if the screening cells in use are approaching outdate.
2. Repeat the testing using tube methodology if the reactions may be due to the gel matrix. If tube testing is negative report the gel testing as inconclusive.
3. Repeat testing after re-spinning the patient specimen for 10 minutes if reaction may be due to fibrin or platelet rich plasma.
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|  | 5 | Record strength/grade reaction immediately following the reading. |
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| **Interpretation** | Negative Result – No agglutination and no hemolysis of the red blood cells is a negative test result. A compact button of red cells at the microtube bottom is a negative test resultPositive Result –Agglutinates (on the surface of or dispersed through the gel) or hemolysis (in case of serum test) with a very few or no red blood cells in the gel column. Report as a positive test result if hemolysis is present in the microtube but not in the sample column. Red blood cells may remain suspended on the top of the gel or are dispersed throughout the gel in varying degrees. A few cells may form a button in the microube bottom in some positive reactions.  |
| **References** | IH-Gel Card Interpretation Guide, Bio-Rad Medical diagnostics GmbH Current revision.  |
| **Appendices** | Appendix A: Interpretation Chart: IH-Gel |
| **Approval****Workflow** | Transfusion Service/Laboratory Director |
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| **Historical Record** | **Version** | **Written/Revised by:** | **Effective Date:** | **Summary of Revisions** |
| 1 | J Wenzel | 2/08/08 | Initial Version |
| 2 | J Wenzel | 4/10/2012 | Added statement regarding MF to Positive Interpretation section.Added Notes a-d under step 4. |
|  | 3 | S. Cassidy | 02/17/2023 | Updated for new reagents. |

**Appendix A:**



