CELL MORPHOLOGY GRADING

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PURPOSE

To provide standardization for grading of cellular morphology.

SPECIMEN

Slide prepared from EDTA-specimen and stained with Wright or Wright-Giemsa stain.

RELATED DOCUMENTS

R-W-HEM1326	Hematology Slide Review Procedure
J-W-HEM-2010	Cellavision – Reviewing and Editing Results

INSTRUCTIONS

1. Using 100X oil-immersion objective only, scan slide for cellular morphology. **Note:** If using the Cellavision, review morphology generated by the instrument and scan the digital fields for additional morphology.

2. Scan 10 microscopic fields in different areas of the slide with evenly dispersed red blood cells for erythrocyte morphology evaluation.

3. From the following tables, determine the grade to be reported.

CELL MORPHOLOGY GRADING TABLE

Grading for the following categories is based on the instrument result and is confirmed by slide review.

Anisocytosis: Most RBCs in an average oil-immersion field appear uniform in size, but have RBCs that are smaller or larger than the predominant cell line.

1+ :	4-10 cells/field	and	RDW: 15-19
2+ :	11-25 cells/field	and	RDW: 20-24
3+ :	26 cells/field or more	and	RDW: 25 or more

Microcytosis: Majority of RBCs appear smaller than normal.

1+ : MCV: 76-80 fL
2+ : MCV: 66-75 fL
3+ : MCV: 65 fL or less

Macrocytosis: Majority of RBCs appear larger than normal.

1+ : MCV: 95-108 fL
2+ : MCV: 109-120 fL
3+: MCV: 121 fL or more

Hypochromia: RBC's appear to have more central pallor than normal.

1+ : Some RBC's MCHC: 32-33
2+ : Majority of RBC's MCHC: 30-31
3+ : Ghost cell appearance MCHC: <30

Additional Cell Morphology grading reported by grading from Slide review.

Cells reported by Grade:

Report morphology as normal unless significant abnormal morphology (>1+) is present, except schistocytes or spherocytes (report these 1+ or greater).

Abnormal Cell	Normal	1+	2+	3+
Spherocyte	0	1-4	5-9	>10
Acanthocyte	0	1-4	5-9	>10
Tear Drop	0-1	2-4	5-9	>10
Basophilic Stipple	0-1	2-4	5-9	>10
Target cells	0-1	2-4	5-9	>10
Elliptocytes	0-1	2-4	5-9	>10
Ovalocytes	0-1	2-4	5-9	>10
Burr Cells	0-1	2-4	5-9	>10
Stomatocytes	0-1	2-4	5-9	>10
Giant Platelets	0-1	2-4	5-9	>10
Schistocytes	0-1	2-4	5-9	>10
(To include Blister cells, Bite Cells, Helmet cells, fragmented RBC's.)				
Smudge Cells	0-1	2-4	5-9	>10

Cells reported as Present:

Cell	Reported as:
Howell-Jolly	Present
Siderocytes	Present
Sickle Cells	Present
Auer Rods	Present
Rouleaux	Present
Platelet Clumps	Present
Platelet Satellites	Present
Cabot rings	Footnote - RBC MORPH: Cabot rings present
Hgb C crystals	Footnote - RBC MORPH: HGB C crystals present
Malaria Parasites	Footnote - RBC MORPH: Malaria parasite present
Megakaryocyte Fragments	Footnote - PLT EST: Megakaryocyte fragments present

Grade the following categories using the percentage of neutrophils:

Abnormal Cell	Normal	1+	2+	3+
Hypersegmented	None	0-4	5-9	>10
Vacuolated Neut.	None	0-4	5-9	>10
Dohle Bodies	None	0-4	5-9	>10

Grade the following using stain intensity of the neutrophilic granules**:**

Abnormal Cell	Normal	1+	2+	3+
Toxic Granulation	None	Slight	Mod	Marked

Abnormal Platelet Morphology: The presence of one or more of the following characteristics constitutes abnormality and should be noted in a footnote in LIS. Attach the footnote to the PLT MORPH parameter.

- Increased basophilia of cytoplasmic membrane
- Aggregation of granules
- Absent or decreased granules
- Pseudopod formation (bizarre shapes)
- Vacuolization of the cytoplasmic membrane

REPORTING RESULTS

1. For grades 1+, 2+ and 3+, enter the numeric value and a comma.

2. For grades which are resulted as PRESENT, enter PRE.

PROCEDURAL NOTE

Several Morphology categories do not have individual result fields.
Append footnote text to RBC MORPH or PLT MORPH.

REFERENCES

1. Shah, Kalpesh, Peripheral Blood Smear Evaluation, www.kalpesh.itgo.com

2. Wyckoff, Debbie, BS, MS, CLS(NCA), MT(ASCP), Review of White Blood Cell Morphology, lecture, www.jamaica.u.arizona.edu

3. Sacred Heart Hospital, Spokane, WA, RBC Morphology Grading.

4. O'Conner, Barbara H., A Color Atlas and Instruction Manual of Peripheral Blood Cell Morphology, 1984.

DOCUMENT APPROVAL **Purpose of Document / Reason for Change:**			
☐ *No significant change to process in above revision. Per CAP, this revision does not require further Medical Director approval.*			
Committee Approval Date	☐ Date: ☐ N/A – revision of department-specific document which is used at only one facility	**Medical Director Approval** *(Electronic Signature)*	Katie Wilkinson, MD 1/6/14