



**Marshfield Labs™**

A division of Marshfield Clinic

# Laboratory *News*

VOL. 38, NO. 4 - MAY 5, 2015

## Inside This Issue

CHANGE IN THE REPORTING  
OF LEUKOCYTE DIFFERENTIAL  
COUNTS ..... 1

### **CHANGE IN THE REPORTING OF LEUKOCYTE DIFFERENTIAL COUNTS**

*Kajal V. Sitwala, MD & Gene R. Shaw, MD, Clinical Pathology;  
Steven Mattila, Technical Manager, Hematology*

Effective May 5th, 2015, there will be a slight change in the way leukocyte differential counts are reported. The absolute and relative values for each white blood cell (WBC) type will still be available, but *normal ranges* and *high/low flagging* will only be present for the *absolute* count (cells/microliter). Normal ranges and flagging will not be listed for the relative counts (percentage) of normal peripheral white cells (i.e., neutrophils, lymphocytes, monocytes, eosinophils, and basophils). An abnormal flag will still be present for cell types not expected in peripheral blood, such as blasts, lymphoma cells, metamyelocytes, etc., which have a normal range of 0%; it will remain the case that these abnormal cells are flagged and quantified by percentage and not absolute count.

This change is being made to comply with new guidelines from the College of American Pathologists (CAP), an accrediting agency of Marshfield Labs.

If you are interested in the math and logic behind CAP's new guidelines, read on.

Patient 1 has a normal WBC of  $4.5 \times 10^3/\mu\text{L}$  with a differential count of 15% neutrophils, 75% lymphocytes, and 10% monocytes. The important clinical finding is neutropenia. There will be a LOW flag for the absolute neutrophil count of  $0.68 \times 10^3/\mu\text{L}$ . The absolute lymphocyte count is normal at  $3.4 \times 10^3/\mu\text{L}$  and will not flag. Before this reporting change, there would have been a "HIGH" flag in the 75% lymphocytes field since the "normal range" for adults is 12-50%. However, relative values do not take the patient's WBC into



**BEYOND numbers**

continued on page 2

account. It is not uncommon for Marshfield Labs to see clinicians order additional testing with an indication of “lymphocytosis” in these situations, even though there is no *absolute* lymphocytosis. As such, the new CAP guidelines do have the potential to improve cost-effective patient care.

Patient 2 has a high WBC of  $30 \times 10^3/\mu\text{L}$  with a differential count of 75% neutrophils, 10% lymphocytes, 12% monocytes, 1% eosinophils, and 2% basophils. The important clinical findings are neutrophilia, monocytosis, and basophilia. There will be a HIGH flag for each of the following: the absolute neutrophil count of  $22.5 \times 10^3/\mu\text{L}$ , the absolute monocyte count of  $3.6 \times 10^3/\mu\text{L}$ , and the absolute basophil count of  $0.6 \times 10^3/\mu\text{L}$ . The lymphocytes will not flag, since  $3 \times 10^3/\mu\text{L}$  is a normal adult absolute lymphocyte count. Before this reporting change, there would have been a series of somewhat misleading flags (or absent flags) in the percentage fields:

- the relative neutrophil range spans 39-78% so this patient would not flag,
- 10% lymphocytes would flag as LOW,
- both the 12% monocytes and 2% basophils would not flag, since those values are at the high end of the “normal” percent range. However, the monocytes and basophils have significant *absolute* elevations that should raise concern for the possibilities of certain myeloproliferative neoplasms.

To reiterate: the relative counts (percentage) of normal peripheral white cells will continue to be reported, but *normal ranges* and *high/low flags* will not be present for those fields. Relative (percent) values retain diagnostic utility in select cases (e.g.,  $\geq 20\%$  blasts identify an “acute” leukemia) and the percentage field is a convenient shortcut in many other situations as long as the user keeps the total WBC count in mind. However, as it is mathematically redundant to the absolute count and total WBC fields (absolute counts are derived from  $\text{WBC} \times \text{percent}$ ), the removal of reference ranges and flagging for percent values remains compliant with the general laboratory directive to provide normal reference values for every analyte tested.

## QUESTIONS

Questions about the new leukocyte reporting may be directed to:

Steve Matilla, Dr. Gene Shaw, or Dr. Kajal Sitwala, Hematology Lab at 800-222-5835.

## REFERENCES

1. College of American Pathologists' Accreditation Program. *Hematology and Coagulation Checklist, HEM.23050*. CAP, 04/21/2014. 