

Comparison of Interpretive Program Messages Determined by the XE-2100 Automated Hematology Analyzer and Manual White Blood Cell Counts. Introduction to Clinical Practice

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Abstract : Before applying an XE-2100 automated hematology analyzer to clinical practice, its performance characteristics were studied. The total nucleated cell counts of 4690 samples obtained by the XE-2100 were compared with those of manual white blood cell (WBC) differential counts.

The 83.4% of the samples that resulted in a no interpretive program message (IP message) by XE-2100 were also assessed as being normal by manual differential counts. The other 16.6% samples without IP message revealed certain abnormalities by manual methods. When the samples with less than 2.5% atypical lymphocytes or immature WBCs, and those with a left shift in the abnormal IP messages were removed, there were only 86 (2.3%) abnormal samples without an IP message. When patients with known hematological disorders were removed, 99.2% samples without an IP message were assessed as almost normal by manual differential counts.

A total of 343 samples (34.1%) with IP messages by the XE-2100 were normal and 633 samples (65.9%) of those were abnormal by manual methods. Although the concordance rates in atypical lymphocytes and immature WBCs were 86.4% and 90.5%, those for abnormal lymphocytes/lymphoblasts, blasts and left shift were 10.2%, 25.5% and 33.7%, respectively.

In order to use the XE-2100 in clinical practice, two abnormal IP messages, blast or abnormal WBC scattergrams were determined as criteria for a second examination by manual differential counts. A WBC $> 1000/\text{mL}$, lymphocytes $< 60\%$, monocytes $> 20\%$ or basophilic leukocytes $> 2.5\%$ were also determined as the criteria for the manual differential counts.

Using this system promoted not only an increase in the use of auto-analysis and a decrease in the total number of the manual analyses, but also made the process more rapid, while providing correct reports of the leukocyte differential counts.

Key words : Automated hematology analyzer, White blood cell differential counts, Interpretive program message; IP message, Abnormal cell, XE-2100