

# EVALUATION OF SIGMA METRIC APPROACH FOR MONITORING THE PERFORMANCE OF AUTOMATED ANALYZERS IN HEMATOLOGY UNIT OF ALEXANDRIA MAIN UNIVERSITY HOSPITAL

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## INTRODUCTION

- The dependence of patient management on laboratory data raised the requirement for ensuring the quality of this service.
- Sigma-metric offers a quantitative framework for evaluating process performance in clinical laboratories.

## AIM OF THE WORK

- This study aimed to evaluate the analytical performance of automated analyzers in hematology unit of Alexandria Main University Hospital using sigma metric approach.

## MATERIALS AND METHODS

- Quality control data were collected for 6 months and Sigma value was calculated from hematology analyzers SYSMEX (XN 1000, XT 1800i), ADVIA (2120i, 2120) and coagulation analyzers SYSMEX CA 1500 (3610, 6336).

## RESULTS

- For the normal control level, satisfactory mean sigma value  $\geq 3$  was observed for all of the studied parameters by all analyzers.
- For the high control level, Red blood cell count by ADVIA 2120, and hematocrit by ADVIA (2120i and 2120) performed poorly with a mean sigma value  $< 3$ .
- For the low control level, Red blood cell count by ADVIA (2120i and 2120), hemoglobin by ADVIA 2120, hematocrit by ADVIA (2120i and 2120) and SYSMEX XN 1000, Platelet count by the SYSMEX XT 1800i, also performed poorly with a mean sigma value  $< 3$ .

- Satisfactory mean sigma value of  $\geq 3$  was observed for Prothrombin time and activated partial thromboplastin time for both normal and pathological control levels and analyzers.

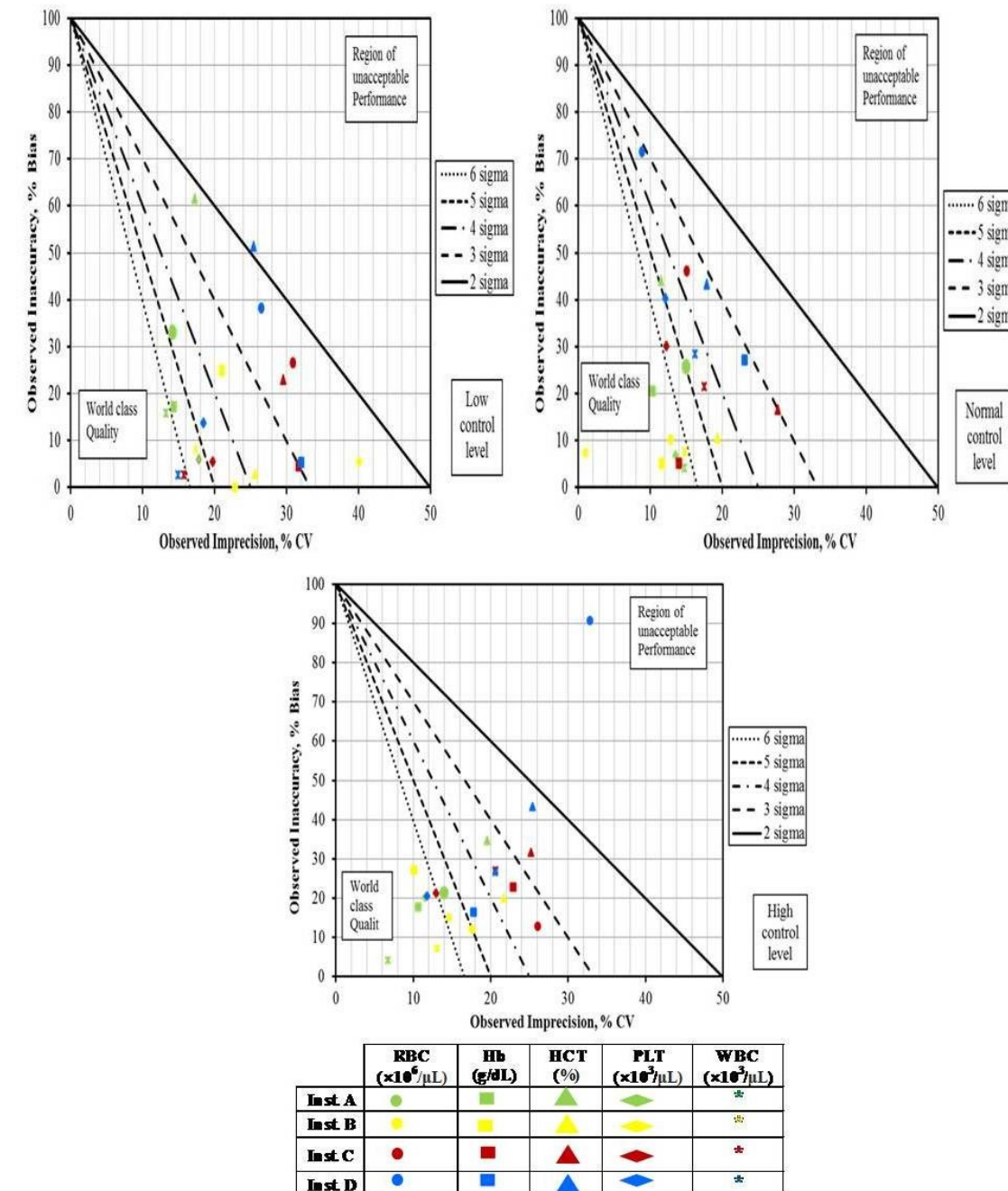


Figure 1: Normalized method decision chart for CBC parameters.

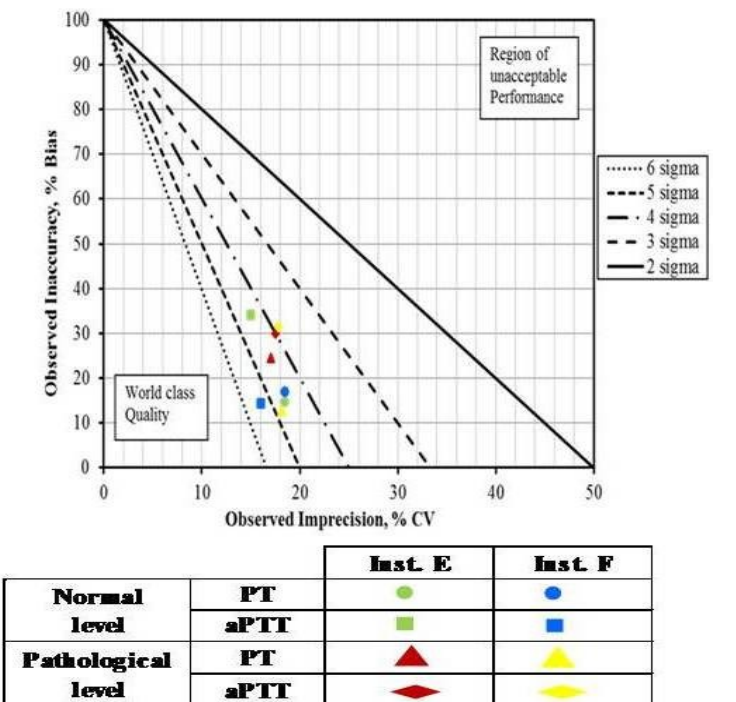


Figure 2: Normalized method decision chart for coagulation parameters

## CONCLUSION

- Sigma-metrics can be used as a guide to make QC strategy and plan QC frequency. As well as, facilitates the comparison of the same assay performance across multiple systems.

## RECOMMENDATIONS

- Harmonization for TEa source is recommended to standardize sigma value calculation.