Use of patient data in calculation of reference intervals for complete blood count parameters; how reliable?

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Abstract

Calculation of reference intervals (RI) for each quantitative test for the population served is mandatory in clinical care. Standard method of calculation of RI is costly and tedious. Literature show success in using patient data in calculating RI for some tests but, those related to complete blood count (CBC) are sparse. Therefore, this study was conducted to assess the applicability of stored patient data of CBC in calculating RI as a less costly and reliable method. A retrospective cross-sectional study was performed using a large database of CBC reports of adults (18–60 years) in a hospital laboratory. Data were grouped in to patients and routine health checkup category and then partitioned according to gender. Data were refined using clinically relevant criteria and statistical tools to harness reference data sets for each parameter. RI were calculated using standard statistical methods. Obtained values were compared with those in the literature and of the manufacturer. All data sets showed Gaussian distribution. The RI calculated using patient data showed no clinically significant differences when compared with those of the healthy subjects, manufacturer and literature. When appropriate selection criteria and statistical tools are applied, large patient databases can be used to calculate RI for CBC parameters.