

Hemolysis rates in blood samples: differences between blood collected by clinicians and nurses and the effect of phlebotomy training

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Abstract

Background: Hemolytic samples are one of the most challenging preanalytical issues in laboratory medicine. Even causes leading to hemolytic specimen are various, including phlebotomy practices. Respective educational interventions as well as the reduction of the number of people involved in blood collections are claimed to influence the sample quality for the better. In our hospital 70 junior doctors were in charge of routine phlebotomy until 2012, when this task was shifted to 874 nurses, including a preceding training in phlebotomy and preanalytics. Our aim was to evaluate the impact of this training effect and the increase of people involved on sample quality.

Methods: The hemolysis index (HI) of 43,875 samples was measured before (n=21,512) and after (n=22,363) the switch of blood collection responsibilities. Differences in overall hemolysis rates and the amount of plasma samples with a concentration of free hemoglobin (fHb) above 0.5 g/L and 1 g/L were calculated.

Results: Overall HI as well as the percentage of samples with an fHb concentration >0.5 g/L decreased after the responsibility for phlebotomy changed. The rate of samples with an fHb concentration >1 g/L remained unchanged.

Conclusions: Hemolysis rates were reduced upon passing phlebotomy tasks from untrained physicians on to a trained nursing staff. We therefore conclude that the number of people performing phlebotomy seems to play a minor role, compared to the effect of a standardized training. However, whether a reduction in the number of people involved in blood collection could lead to further improvement of sample quality, remains to be investigated in future studies.