HIL index and interference more important than you think

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Introduction

Sample quality can impact results and hence treatment of the patient. A part of the preanalytical step is drawing blood, where most errors occur [1].

Preanalytical conditions, with the actual determination of the Hemolysis, Icteric and Lipemic index (HIL index) is the first sample assessment made in the laboratory by preanalytical modules. Most components are accredited or validated, but quality assurance of the HIL index is more uncertain [2]

Therefore, DEKS has developed an External Quality Assurance (EQA) scheme for the HIL index and interference, which examines both preanalytical, analytical and postanalytical handling:

In the *preanalytical* phase the participants analyse results for the specific H, I and L index.
For the *analytical* phase 6 additional components are measured to investigate if there is an effect of the HIL interference on the results.
Postanalytical in the form of sharing comments accompanying a result to the clinician had this been a patient sample.

In this poster we will focus on the preanalytical phase in terms of the HIL index and show results obtained in our EQA-scheme.

Materials

A pool of human serum is prepared and subsequently divided into two, Sample A and Sample B.

Sample A remains unmodified (only added the same amount of buffer as in Sample B).

Sample B is modified differently in 3 separate rounds with the addition of the interfering agent:

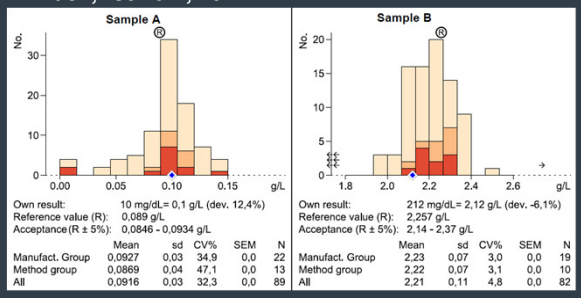
- Round 1: Lysed erythrocytes is added to imitate hemolysis (H)
- Round 2: Bilirubin is added to imitate icterus (I)
- Round 3: Intralipid is added to imitate lipemia (L)

Picture of the different prepared samples
From left: Sample A, Sample B (H), Sample B (I) and Sample B (L)

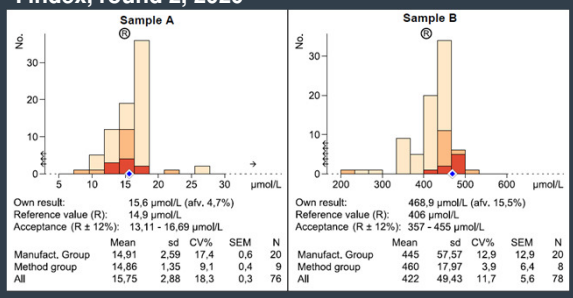
Results

Results from the 3 rounds of the respective index are shown below.
An average of 60 laboratories from Europe, participate in this scheme and report from multiple instruments from Abbott, Roche and Siemens.

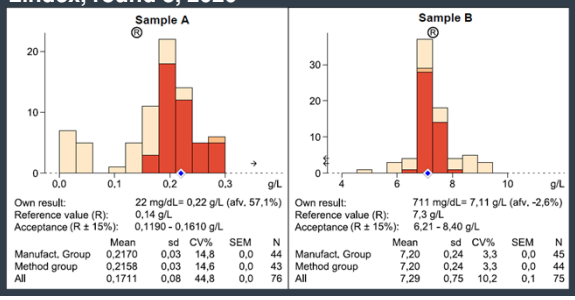
H index, round 1, 2021



I index, round 2, 2020



Lindex, round 3, 2020



Histograms for all 3 index;
We have the unmodified Sample A to the left and the modified Sample B to the right.
® indicating the calculated mean of means for all manufactures with more than 3 participants.
The colors red, orange and beige indicating the different manufacture groups.
N indicates number of results reported in each round.
Blue dot indicates where your own results are for easy comparison with other participants.

Conclusion

The H, I and L index are important preanalytical factors, which provides significant information about the quality of the sample, where interference can affect the outcome for the patient.

In this EQA scheme for the HIL index and interference, we compare different instruments after unit conversion.

We find differences throughout the HIL index for the different manufactures which can affect the later outcome on the result of the given components. Thus this scheme shows that EQA is needed to illustrate differences on the road to harmonization.

References

1. Lippi and Simundic: EFLM strategy for harmonization of preanalytical phase, Clin Chem Lab Med 2018; 56(10): 1660-1666
2. Charlotte Gils, Henrik Frederiksen, Mads Nybo J Appl Lab Med. 2017 Jan 1;1(4):450-452. Hemolysis-Icterus-Lipemia Index Analysis: A National Survey on the Validation and Use on Automated Equipment