Pre-analytical EQA-scheme a pilot study

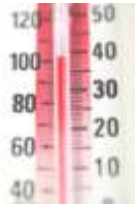
How to assess haemolysis and stability of patient samples before they are analyzed

The questionnaire had eight questions with several items

Hemolysis: 5 questions linked to a case history:

Your laboratory has received a centrifuged serum-gel tube from a practitioner's office where the following analyses were ordered: ***Sodium, Potassium, LD, Creatinine, Bilirubin, ALT, CRP, Mg, TSH and free T4****. The sample arrives on the sampling day and the receiver suspects some hemolysis in the sample. On the request form it is stated that a quick reply is wanted.*

Stability : 2 questions



Evaluation of the scheme: 1 question

NKK
Norsk Klinisk-kjemisk Kvalitetssikring

Practical issues

- The questionnaire was distributed to all participants in NKK
  - an electronic questionnaire
  - returned by e-mail
- 59 laboratories returned the questionnaire

NKK
Norsk Klinisk-kjemisk Kvalitetssikring

Results

- How do the participants deal with the sample when hemolysis is suspected?

Analyze all components	Analyze no components	Analyze selected components
49 %	**29 %**	**22 %**

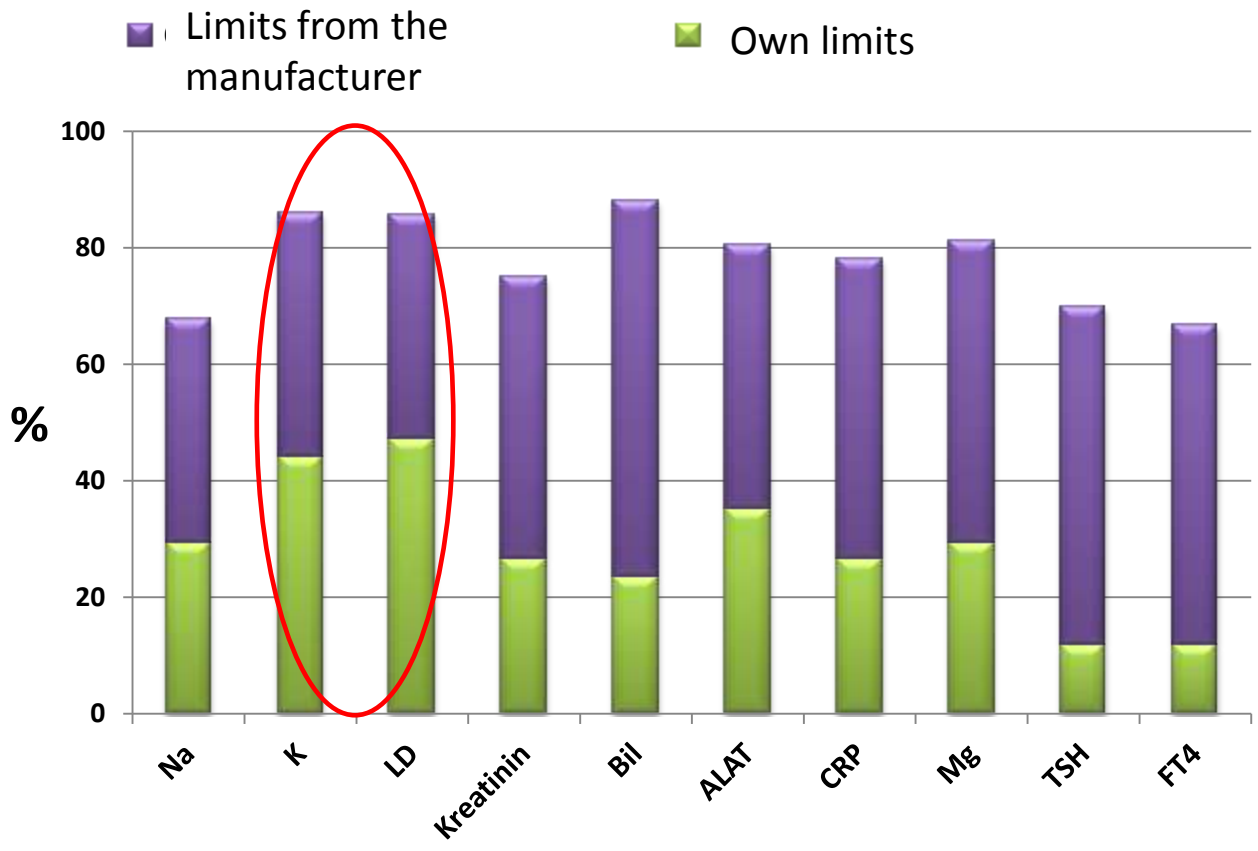
NKK
Norsk Klinisk-kjemisk Kvalitetssikring

Results

- Do you have any limits for rejecting the sample due to hemolysis?
  - 6 % had no limits
  - 7 % had limits based on a color scale on a picture
  - 22 % had limits based on approximate assessment
  - 63 % had limits based on hemolytic index

NKK
Norsk Klinisk-kjemisk Kvalitetssikring

Do you use your own limits or limits from the manufacturer?



NKK
Norsk Klinisk-kjemisk Kvalitetssikring

Which limits do you use for rejection due to hemolysis based on hemolytic index? (some examples) 34 of 54 participants stated that they had specific limits for each component

Component	Limits for no analysis Median (Range) Hb g/dL	n
Potassium	**0.1 (0.04-3.0)**	**29**
LD	**0.05 (0.015-1.6)**	**23**
CRP	**0.875 (0.5-1.0)**	**16**
Mg	**0.55 (0.04-1.0)**	**15**

NKK
Norsk Klinisk-kjemisk Kvalitetssikring

Results

- Do you have any limits regarding stability of patient samples?
  - 7 % used an approximate assessment dependent on time and temperature
  - 6 % had fixed limits independent of component
  - 89 % had specific limits for each component

NKK
Norsk Klinisk-kjemisk Kvalitetssikring

Which limits do you have for rejecting the sample due to stability? (a few examples) 48 of 54 participants (89 %) stated that they had specific limits for each component

Component	n	Room temp. Median (Range) hour	n	4˚C Median (Range) hour
Potassium serum-gel	**16**	**72** (8-168)	**37**	**96** (24-336)
Potassium plasma-gel	**14**	**36** (12-168)	**22**	**24** (8-336)
Glucose serum-gel	**17**	**48** (8-168)	**38**	**120** (72-168)
Glucose plasma-gel	**13**	**8** (4-168)	**23**	**24** (4-168)

Feedback

- One report summarized the results of all participants and one presented their own results compared to the results of all
- The participants did not receive any scoring concerning their performance
  - *The scheme was meant to be of an educational type, allowing the participants to define the underlying problems for their deviating result and find an appropriate way to improve the procedures*

NKK
Norsk Klinisk-kjemisk Kvalitetssikring

Summary

- Evaluation
  - Half of the participants had comments
    - *"The part concerning hemolysis was OK. The other part concerning stability was more difficult to answer properly. Many analyses have much longer stability than the number of days we are keeping the sample material."*
- Challenges
  - Large variation
  - Need for standardization

NKK
Norsk Klinisk-kjemisk Kvalitetssikring

Future plans

- Continue with the pre-analytical EQA-scheme once a year
- Next time
  - Pre-analytical conditions concerning measurement of glucose and the most common coagulation analyses

NKK
Norsk Klinisk-kjemisk Kvalitetssikring


Thank you