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This report contains:

- This letter
- Summary
- Individual results

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Next reporting period:
2025



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Cystatin C, Creatinine and eGFR EQA report no. 02, November 2024

Number of participants

There are 35 laboratories registered for this scheme.
31 laboratories have reported one or more set of results for P-Cystatin C, 23 laboratories for P-Creatinine and 22 laboratories have calculated eGFR in addition to P-Cystatin C.

Sample material

Sample material Gpql (03_2024)

A plasma pool from patients with a normal kidney function.
Expected levels of P-Cystatin C, P-Creatinine and eGFR, in the normal range. This pool has not been used before.

Sample material Hegb (04_2024)

A plasma pool from patients with a reduced kidney function.
Expected levels of P-Cystatin C and P-Creatinine in the high range, and eGFR in the lower range. This pool has not been used before.

Target values

The target values for P-Cystatin C and P-Creatinine are the overall mean values for the respective sample material.

The target values for eGFR for the different method groups are based on 50-year-old white male (85 kg) and are calculated from the overall mean value of P-Cystatin C and/or P-Creatinine for the respective sample material. The acceptance intervals ($\pm 11.4\%$) for the different method groups are shown in grey (Table 1):

Table 1. The target value and accept interval for eGFR in mL/min/1.73 m², for each sample material and the different method groups (formula variants).

Sample	Method group/formula	Target	Accept
03_2024 (Gpql)	2009 CKD-EPI (Crea)	99	(88.1 - 110.8)
	2012 CKD-EPI (Crea-CysC)	100	(88.4 - 111.1)
	2012 CKD-EPI (CysC)	99	(87.3 - 109.8)
	2021 CKD-EPI (Crea)	104	(92.3 - 116.1)
	2021 CKD-EPI (Crea-CysC)	105	(92.9 - 116.8)
	EKFC (Crea)	97	(86.1 - 108.3)
04_2024 (Hegb)	2009 CKD-EPI (Crea)	10	(9.2 - 11.5)
	2012 CKD-EPI (Crea-CysC)	9	(8.1 - 10.2)
	2012 CKD-EPI (CysC)	9	(8.3 - 10.4)
	2021 CKD-EPI (Crea)	11	(9.8 - 12.3)
	2021 CKD-EPI (Crea-CysC)	10	(8.4 - 10.6)
	EKFC (Crea)	12	(10.4 - 13)

Statistics

Mean, SD and CV% are calculated for all results as well as for the method groups. In the graphic part, the acceptance interval is calculated from the overall mean value (M), which assumes that the results are normally distributed. For each quantity, it is examined whether the results deviate to an unacceptable degree from the normal distribution, by looking at the difference between the overall mean and the median in relation to the width of the acceptance interval.

Outliers

Outliers are defined as results that deviate more than $3.6 \times \text{SD}$ relative to the target value. No outliers were found in this round.

Acceptance interval

The acceptance limit for P-Cystatin C is 11.4 %, calculated as total error from biological variation. The intra-individual variation is 8.6 % and the between-individuals variation is 15 % (ref. 1).

The acceptance limit for P-Creatinine of 8.9 % is calculated from biological variation based on the intra-individual variation being 6 % and the between-individuals variation 14.7 % (ref. 2).

The acceptance limit for eGFR is 11.4 % (the same as for P-Cystatin C).

Results and comments

Calculations of mean of all can be seen in the "Summary report for metodegruppe".

Method differences

P-Cystatin C

A total of 34 result sets from 2 different method groups have been reported.

There is a good agreement between the mean value of Nephelometry and Turbidimetry method groups for the normal sample *Gpql* (0.825 mg/L vs. 0.869 mg/L).

There is also good agreement between the mean value of Nephelometry and Turbidimetry method groups for sample *Hegb* (5,14 mg/L vs. 5,07 mg/L). The main bulk of participants' results comes from Turbidimetry.

For the normal sample *Gpql*, 1 result from Nephelometry and 4 results from Turbidimetry are outside the acceptance interval of the target value. All results for sample *Hegb* are within the acceptance interval of the target value.

P-Creatinine

A total of 26 result sets from 2 different method groups have been reported.

There is a good agreement between the mean value of Enzymatic and Jaffe method group for both sample materials. All results are within the acceptance interval of the target value.

eGFR

A total of 26 result sets from 5 different method groups/formulas have been reported. The results divided according to the method group/formula:

- 13 result sets used the 2009 CKD-EPI (Crea)
- 4 result sets used the 2012 CKD-EPI (CysC- Crea)
- 5 result sets used the 2012 CKD-EPI (CysC)
- 3 result sets used the 2021 CKD-EPI (Crea)
- 1 result sets used EKFC (Crea).

Scientific method

The Danish scientific societies recommend automatic reporting of eGFR whenever a P-Cystatin C or a P-Creatinine is ordered by the clinicians. This automatic reporting helps to identify asymptomatic kidney dysfunction at an earlier stage.

Interpretation of reports

You will find a guide for reading the graphic report at <https://deks.dk/en/products/information-about-the-deks-programs/interpretation-of-reports/>

Yours sincerely

Lisbeth Nielsen and Dår Kur



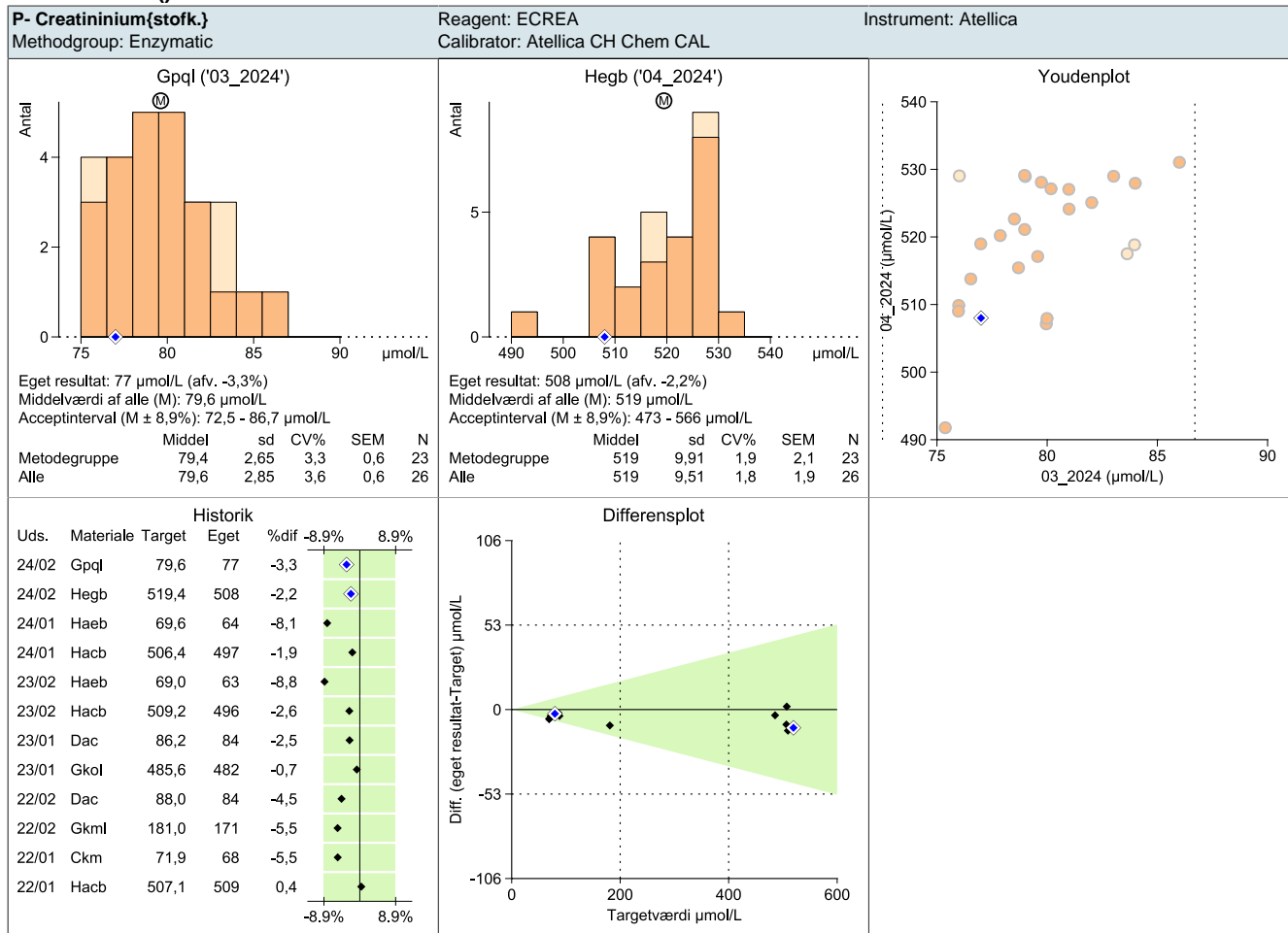
References

1. Reinhard M, Erlandsen EJ & Randers E. Biological variation of cystatin C and creatinine. *Scand J Clin Lab Invest* 2009;69(8):831-836.
2. Ricos C. *et al.* Current databases on biologic variation: pros, cons and progress. *Scand J Clin Lab Invest* 1999;59:491-500.

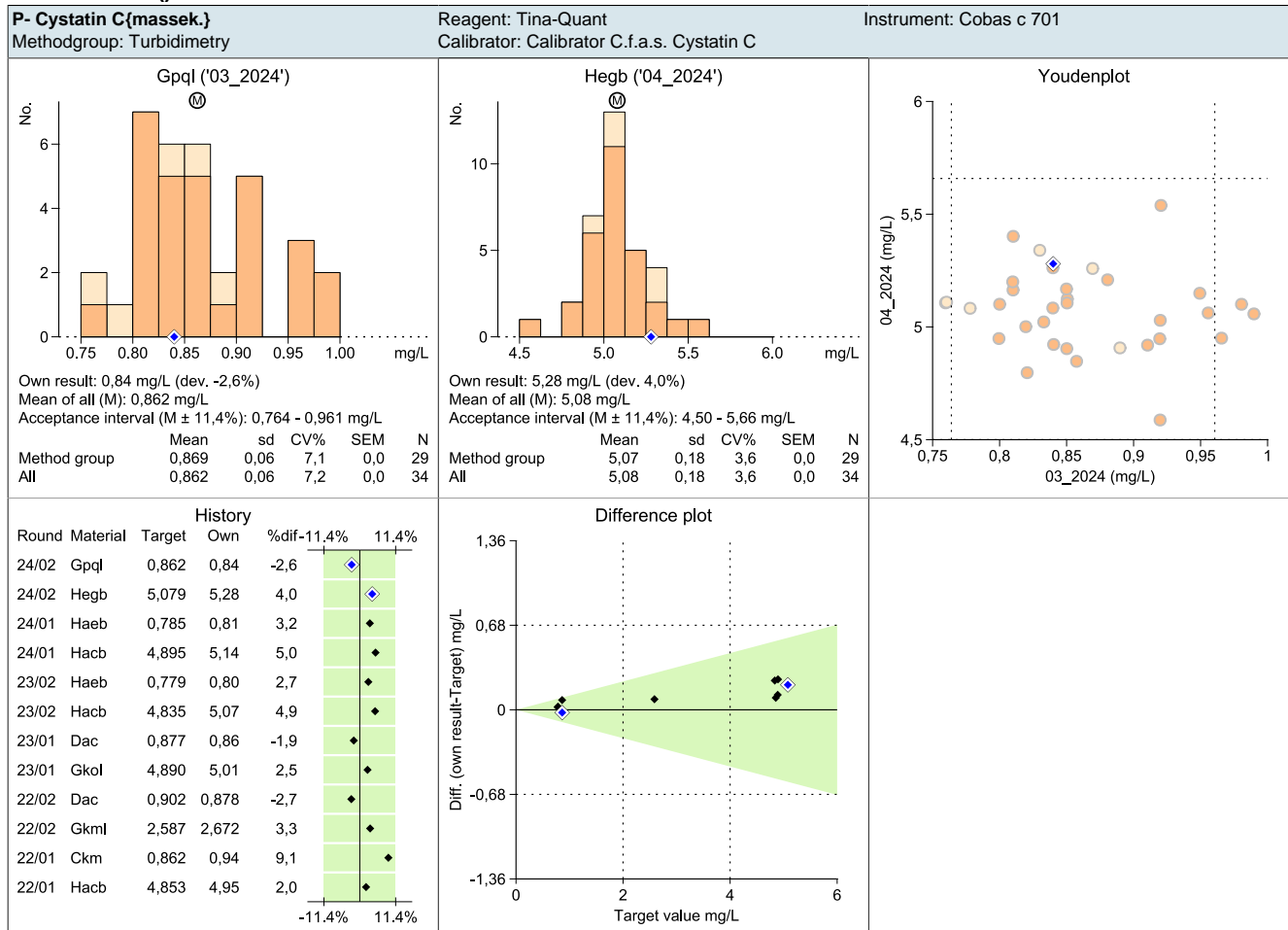


Component	Mean	Sd	CV	sem	N	Outliers
P- Creatininiumstofk. Sample 'Hegb'						
<i>Alle</i>	519	9,51	1,83	1,865	26	0
Enzymatic	519	9,91	1,91	2,07	23	0
Jaffe reaction	522	6,25	1,197	3,61	3	0
P- Creatininiumstofk. Sample 'Gpql'						
<i>Alle</i>	79,6	2,85	3,58	0,559	26	0
Enzymatic	79,4	2,65	3,33	0,552	23	0
Jaffe reaction	81,2	4,51	5,55	2,6	3	0
P- Cystatin Cmassek. Sample 'Hegb'						
<i>Alle</i>	5,08	0,1817	3,58	0,0312	34	0
Nephelometry immunoassay	5,14	0,1672	3,25	0,0748	5	0
Turbidimetry	5,07	0,1848	3,65	0,0343	29	0
P- Cystatin Cmassek. Sample 'Gpql'						
<i>Alle</i>	0,862	0,0618	7,17	0,0106	34	0
Nephelometry immunoassay	0,825	0,0562	6,8	0,0251	5	0
Turbidimetry	0,869	0,0614	7,06	0,01139	29	0
P- eGFR(Glomerular filtration)vol.hast. Sample 'Hegb'						
<i>Alle</i>	10,34	0,832	8,04	0,1632	26	0
2009 CKD-EPI (Crea)	10,65	0,622	5,84	0,1725	13	0
2012 CKD-EPI (CysC- Crea)	9,43	0,613	6,5	0,307	4	0
2012 CKD-EPI (CysC)	9,69	0,778	8,03	0,348	5	0
2021 CKD-EPI (Crea)	11	0	0	0	3	0
2021 EKFC (Crea)	11,4				1	0
P- eGFR(Glomerular filtration)vol.hast. Sample 'Gpql'						
<i>Alle</i>	98,8	6,41	6,49	1,257	26	0
2009 CKD-EPI (Crea)	99,1	5,03	5,08	1,396	13	0
2012 CKD-EPI (CysC- Crea)	99,6	10,57	10,62	5,29	4	0
2012 CKD-EPI (CysC)	95,8	8,1	8,45	3,62	5	0
2021 CKD-EPI (Crea)	102	4,36	4,27	2,52	3	0
2021 EKFC (Crea)	95,7				1	0

Metodesæt 1 ()



Metodesæt 1 ()



Metodesæt 2 ()

