Peer Group Report (data from March 2014)

CONTENT

Data selection

Currently (April 14) 82 laboratories participate with 144 instruments. From those, we selected peer groups with n ≥5 instruments for preliminary data investigation (see Table below).

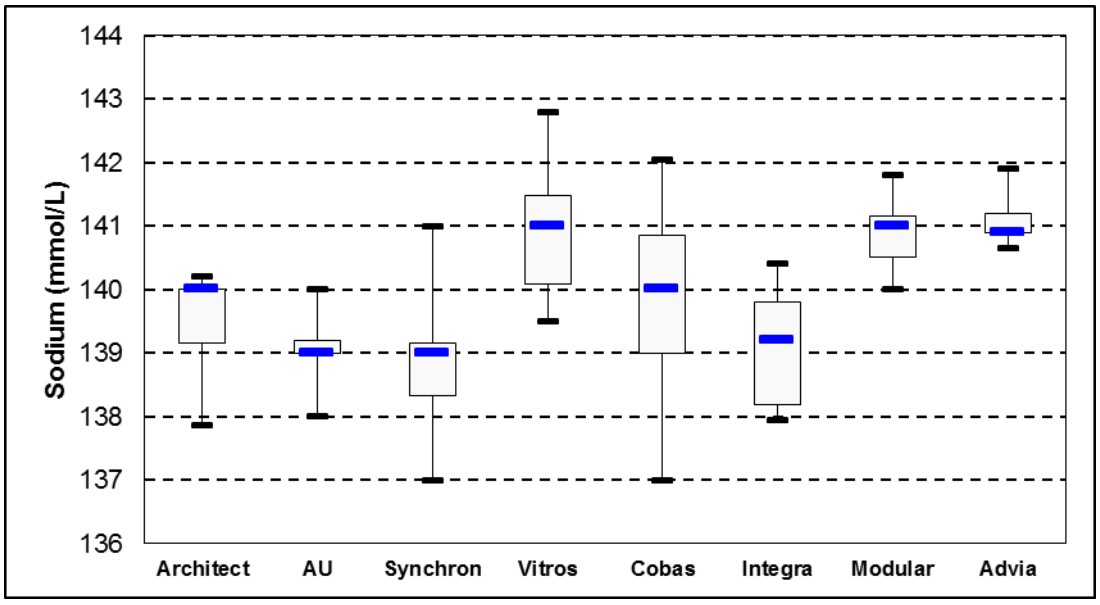
Typical number of instruments in a peer group (only groups with n ≥5)

Abbott	Beckman		Ortho	Roche			Siemens
Architect	AU	Synchron	Vitros	Cobas	Integra	Modular	Advia
11	7	10	20	66	6	9	5

We made no further distinction according to instrument type. The main peer groups are Roche Cobas, Ortho Vitros, and Abbott Architect.

Data presentation

Data are presented as box-and whisker plots with indication of the peer group median. The box represents laboratories within the 25th to 75th percentile; the whiskers extend to the minimum and maximum results.



Example: March 2014 peer group data for sodium.

Overview

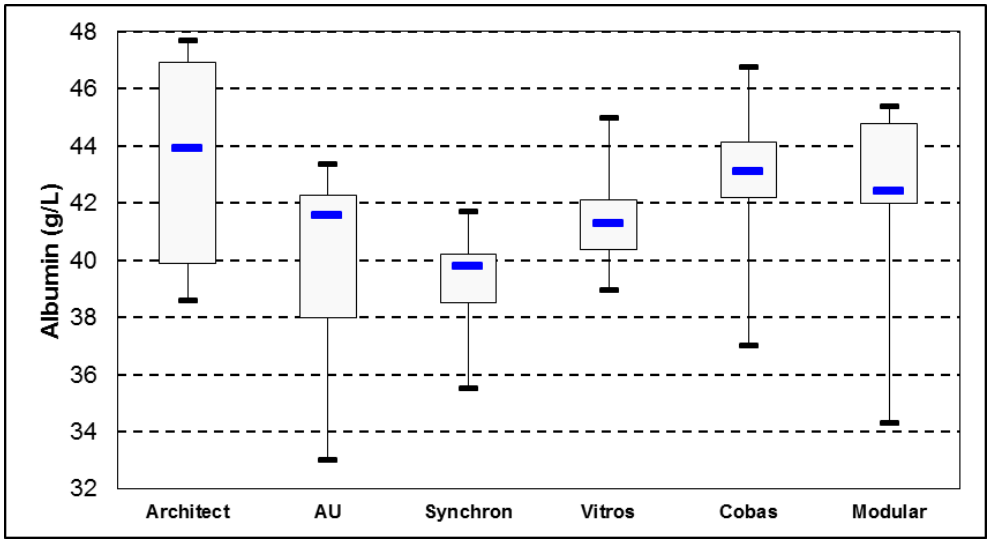
The Table gives a qualitative overview about peer group comparability and considerably deviating peer groups.

Analyte	Comparability	Note
Albumin	☹	Architect ↑
Alk. Phosphatase	😐	Integra ↑ (requires confirmation, n = 6)
ALT	😐	Vitros ↑
AST	☹	Challenging bias limit (1 U/L)
Calcium	☺	
Chloride	☹	Challenging bias limit (1 mmol/L); Cobas ↓
Creatinine	😐	Method variants not distinguished
CRP	[😐]	Depends on outpatient stratification
GGT	😐/☹	May depend on outpatient stratification
Glucose	☹	Challenging bias limit (0.2 mmol/L)
Phosphate	😐/☹	Vitros ↑
LDH	☹	2 method principles; Vitros ↑
Magnesium	😐	
Potassium	😐/☹	Cave preanalytics ↑
Sodium	☺	
total-Bilirubin	☹	
total-Cholesterol	😐	
total-Protein	😐	
Urea	☺	
Uric acid	☺	

Note: This report addresses ONLY the peer group data and not the results of the individual laboratories! The results are for preliminary information only because of the low number of instruments in certain peer groups.

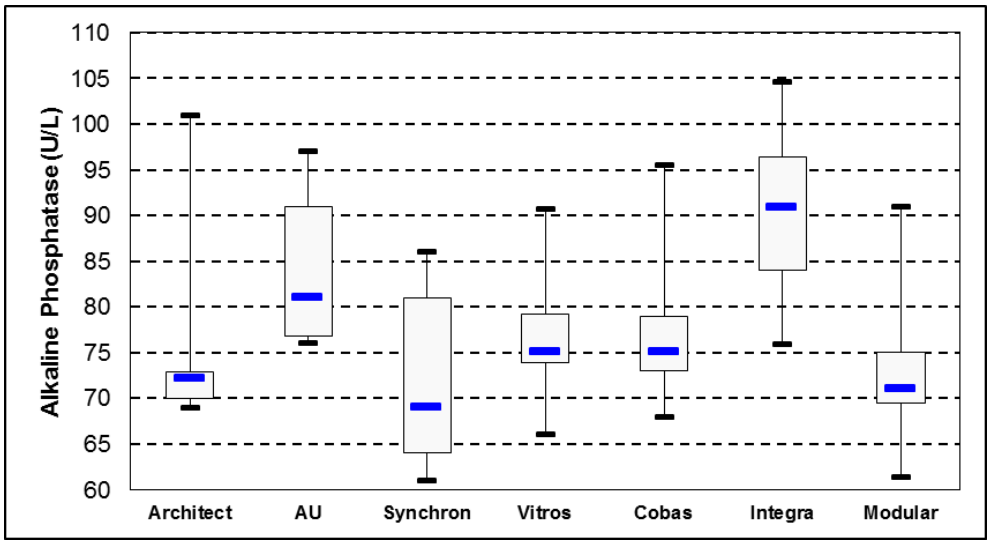
Individual results

Albumin



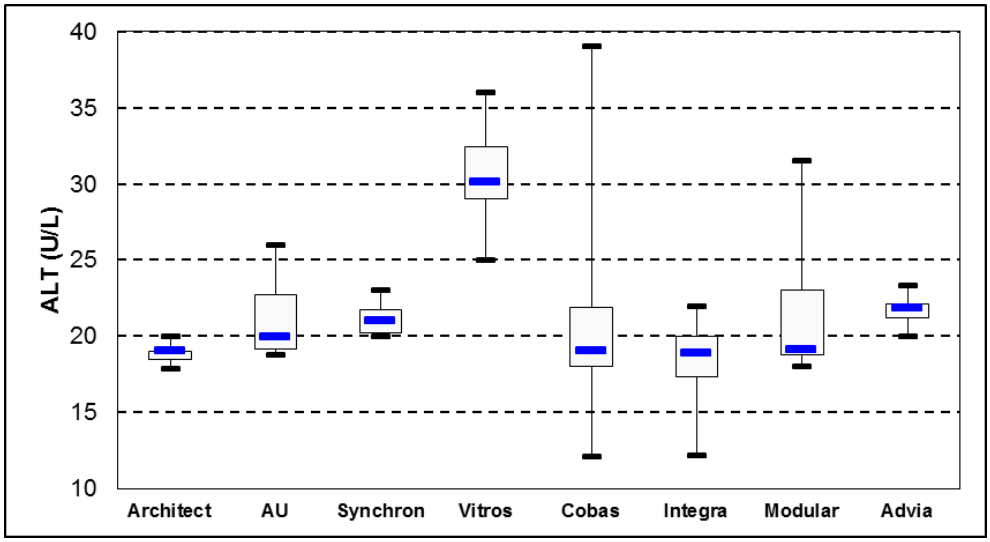
Peer group medians range from 39.8 g/L (Synchron) to 43.9 g/L (Architect). Note the broad "box" for the Architect group, which requires longer observation times to confirm the high median. Given a potential common target value of 42 g/L, the dispersion of the peer group medians is somewhat high considering the low bias limit of 2.3% (1 g/L).

Alkaline phosphatase



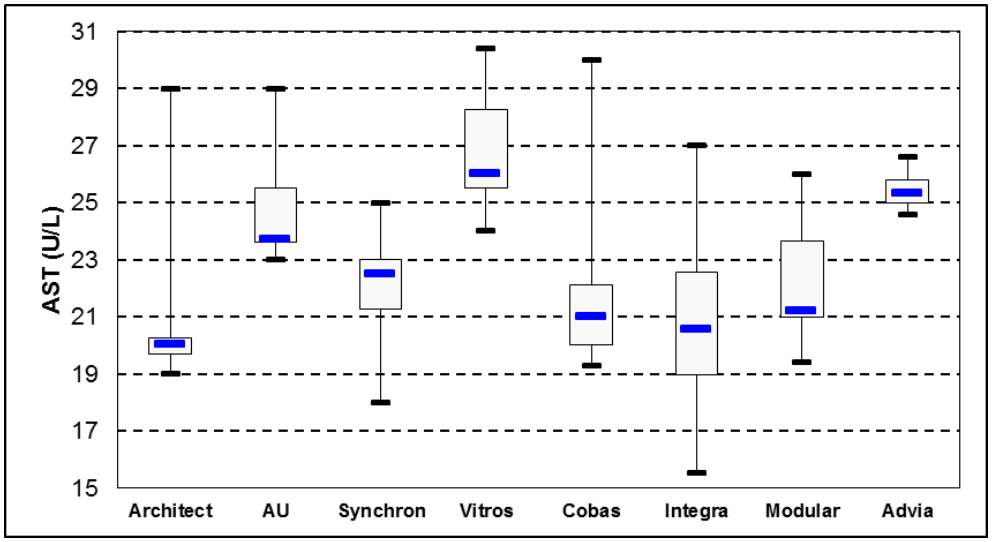
The overall median is 75 U/L, with a minimum of 69 U/L (Synchron) and a maximum of 90.9 U/L (Integra). The Integra value requires future confirmation (n = 6). Otherwise, the dispersion is reasonable when compared to the bias limit of 7% (5 U/L).

ALT



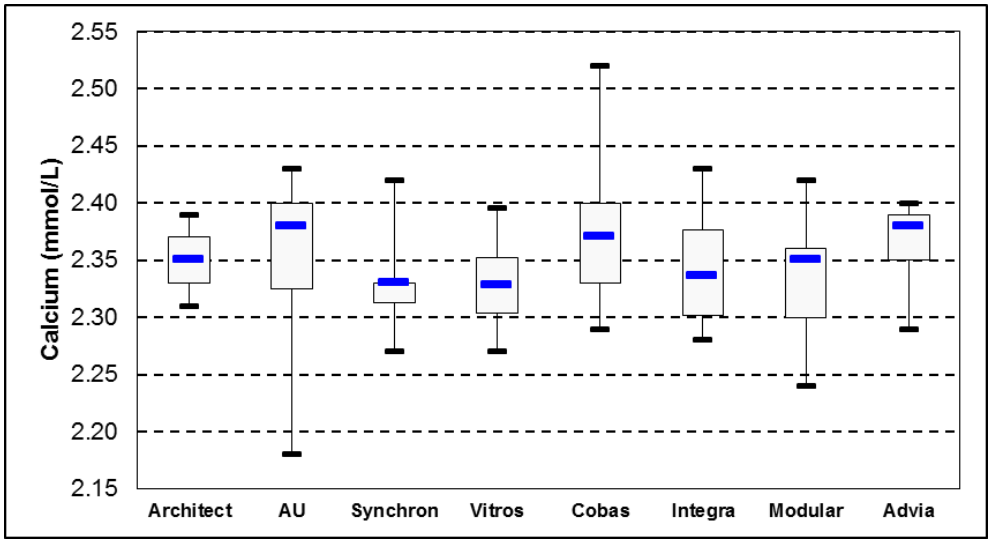
The overall median is 19.5 U/L, with a minimum of 18.9 U/L (Integra) and a maximum (apart from Vitros) of 21.8 U/L (Advia). The Vitros peer group shows a distinctly higher median of 30.1 U/L. The dispersion (except Vitros) is moderate compared to the bias limit of 11% (2 U/L).

AST



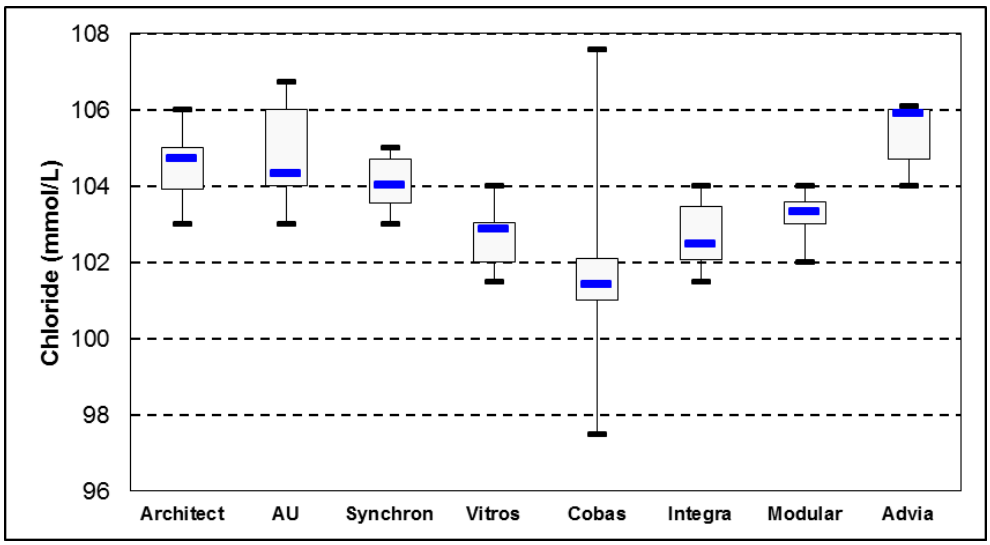
The overall median is 21.9 U/L, with a minimum of 20.0 U/L (Architect) and a maximum of 26.0 U/L (Vitros). The dispersion is high considering the bias limit of 4.9% (1 U/L).

Calcium



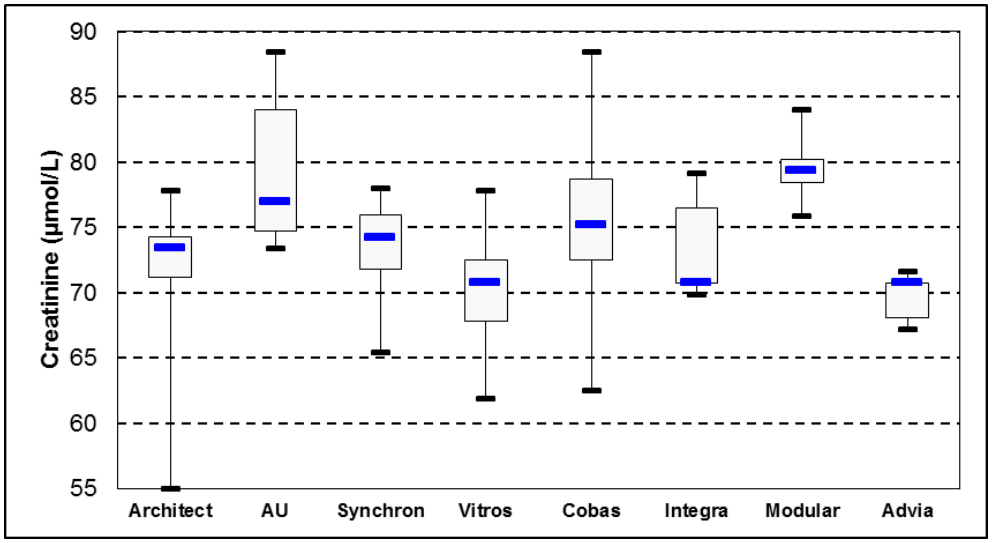
The overall median is 2.35 mmol/L (close to the potential target value of 2.34 mmol/L), with a minimum of 2.33 mmol/L (Synchron & Vitros) and a maximum of 2.38 mmol/L (AU & Advia). The dispersion is low compared to the small bias limit of 2.1% (0.05 mmol/L).

Chloride



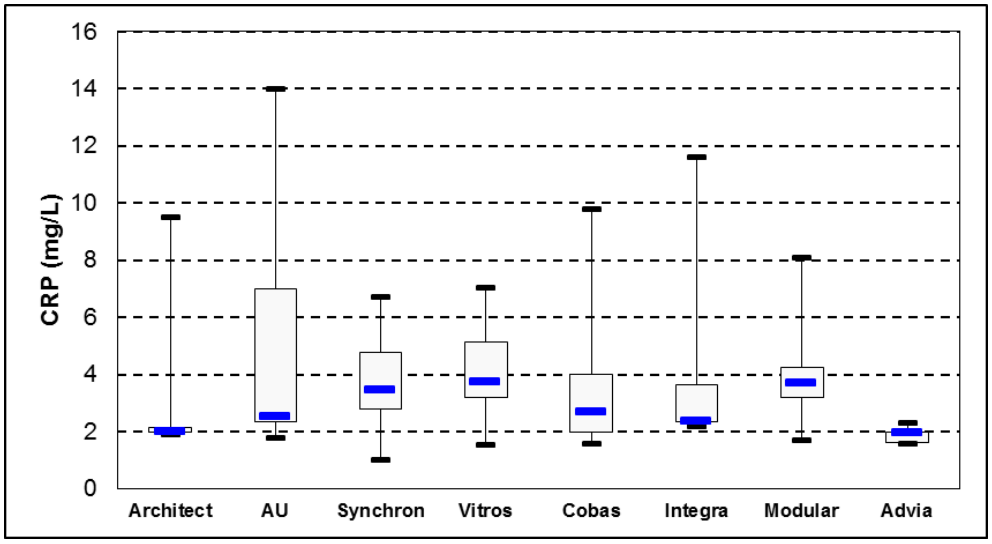
The overall median is 103.7 mmol/L, with a minimum of 101.4 mmol/L (Cobas) and a maximum of 105.9 mmol/L (Advia). The Advia value requires future confirmation (n = 5). The dispersion is high in view of the small bias limit of 1% (1 mmol/L).

Creatinine



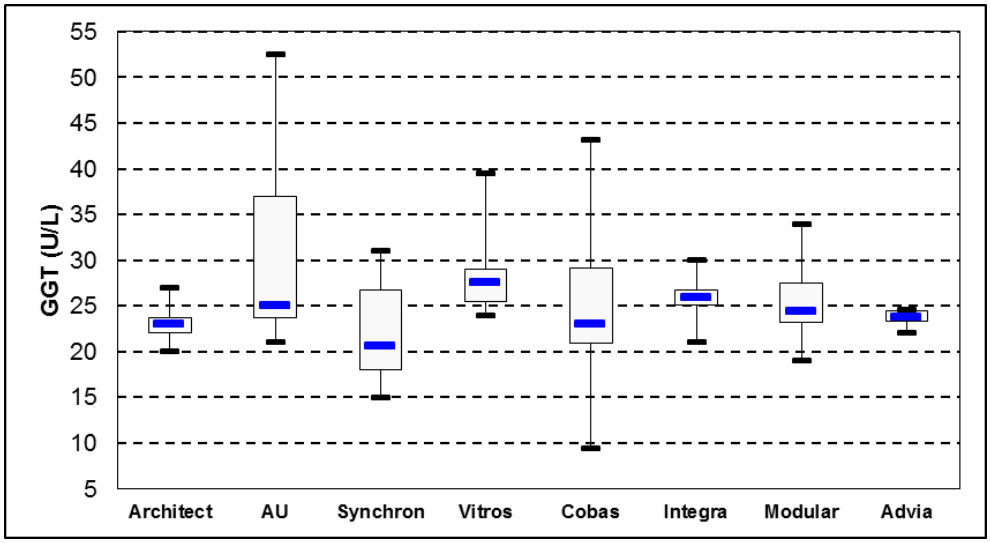
The overall median is 73.8 µmol/L, with a minimum of 70.7 µmol/L (Vtros, Integra & Advia) and a maximum of 79.3 µmol/L (Modular). The dispersion is moderate seen the bias limit of 4.1% (3 µmol/L) and the different procedure variants in the market (note: we do not distinguish between Jaffe & enzymatic procedures).

CRP



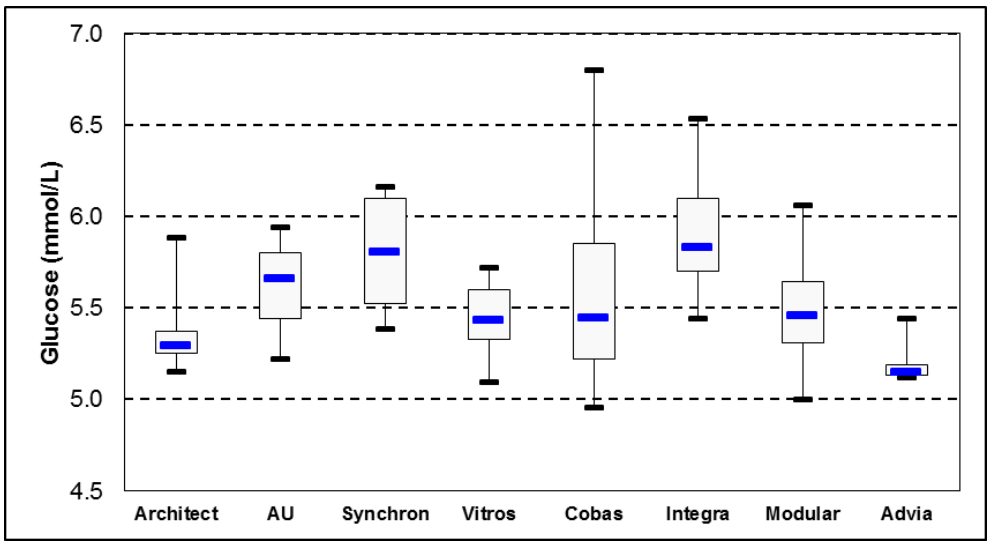
The overall median is 2.59 mg/L, with a minimum of 1.9 mg/L and a maximum of 3.7 mg/L (purposely no manufacturers indicated). These data are for information only as CRP is highly dependent on the success of outpatient stratification in the laboratories.

GGT



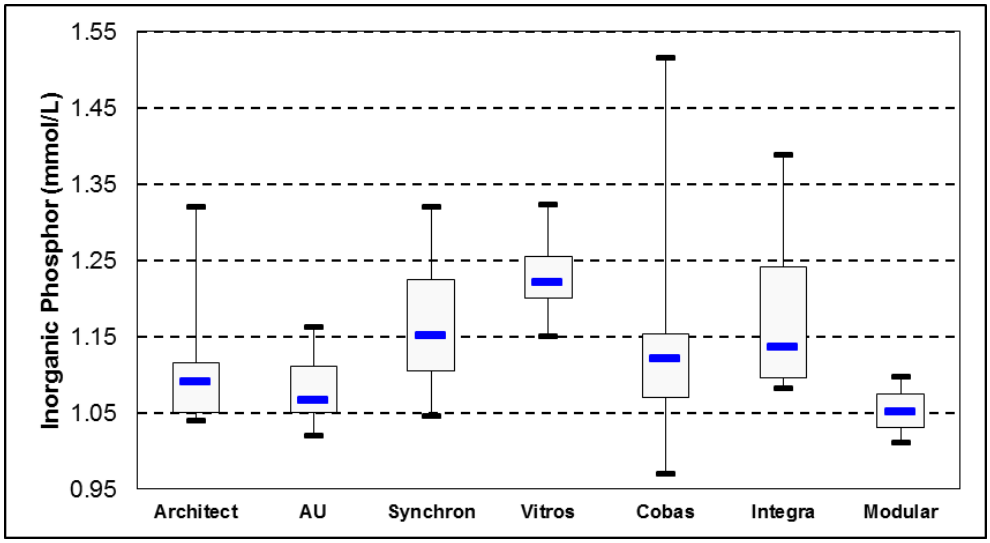
The overall median is 24.0 U/L, with a minimum of 20.5 U/L (Synchron) and a maximum of 27.5 U/L (Vitros). The dispersion is moderate-high when compared to the bias limit of 9.5% (2 U/L). Results may be influenced by the success of outpatient stratification.

Glucose



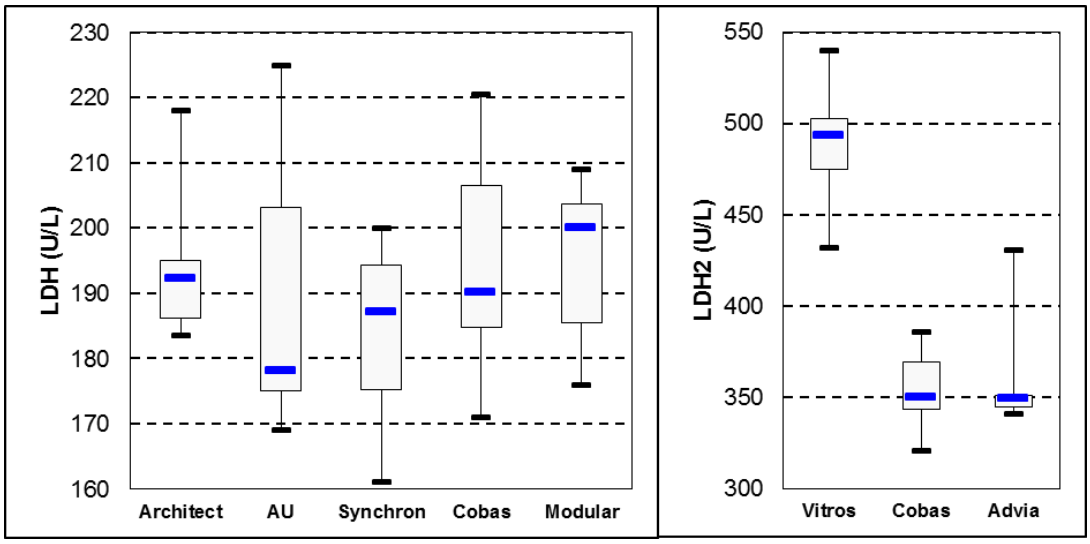
The overall median is 5.45 mmol/L, with a minimum of 5.19 mmol/L (Advia) and a maximum of 5.80/5.83 mmol/L (Advia/Integra). The Advia/Integra values require future confirmation (n = 5/6). The dispersion is somewhat high when compared to the bias limit of 3.8% (0.2 mmol/L).

Phosphate



The overall median is 1.11 mmol/L (close to the potential target of 1.13 mmol/L), with a minimum of 1.05 mmol/L (Modular) and a maximum of 1.22 mmol/L (Vitros) (note: without Vitros 1.15 mmol/L, Synchron). Without Vitros, the dispersion is moderate-high compared to the bias limit of 3.6% (0.04 mmol/L).

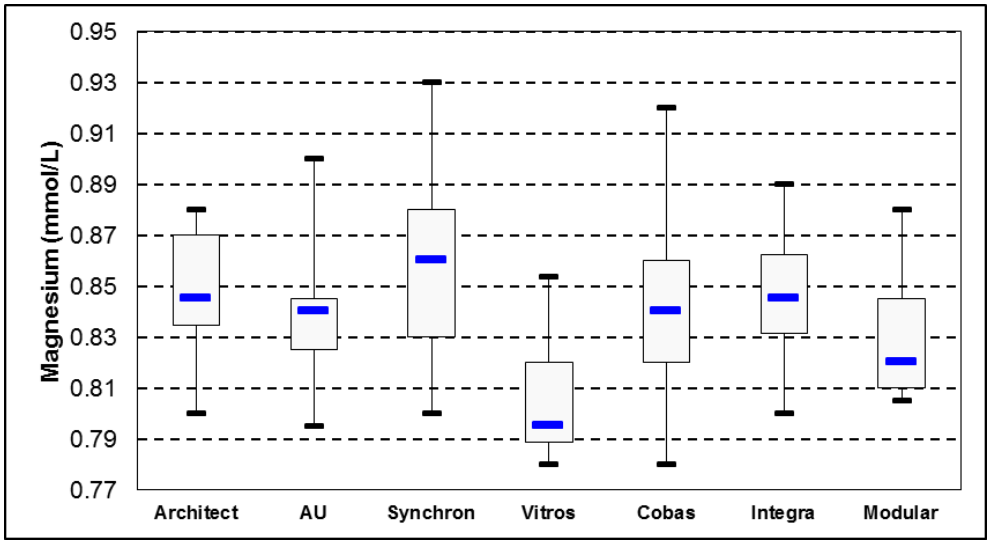
LDH



We distinguish 2 method principles (LDH = lactate>pyruvate; LDH2 = pyruvate>lactate). LDH2 gives ~2 x higher results than LDH. The overall median for LDH is 190 U/L, with a minimum of 178 U/L (AU) and a maximum of 200 U/L (Modular). The dispersion is acceptable compared to the bias limit of 5.4% (10 U/L).

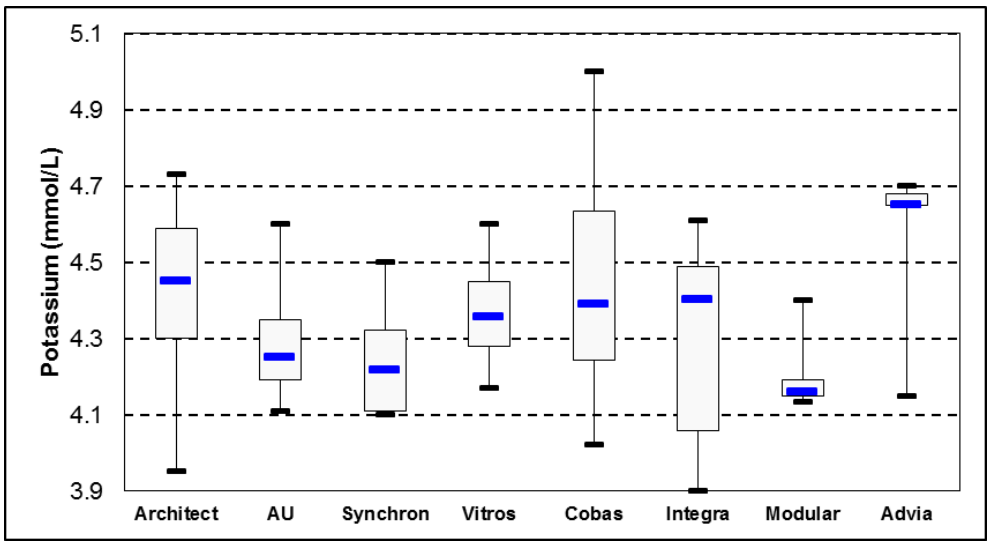
For LDH2, Vitros gives considerably higher results than the other 2 assays.

Magnesium



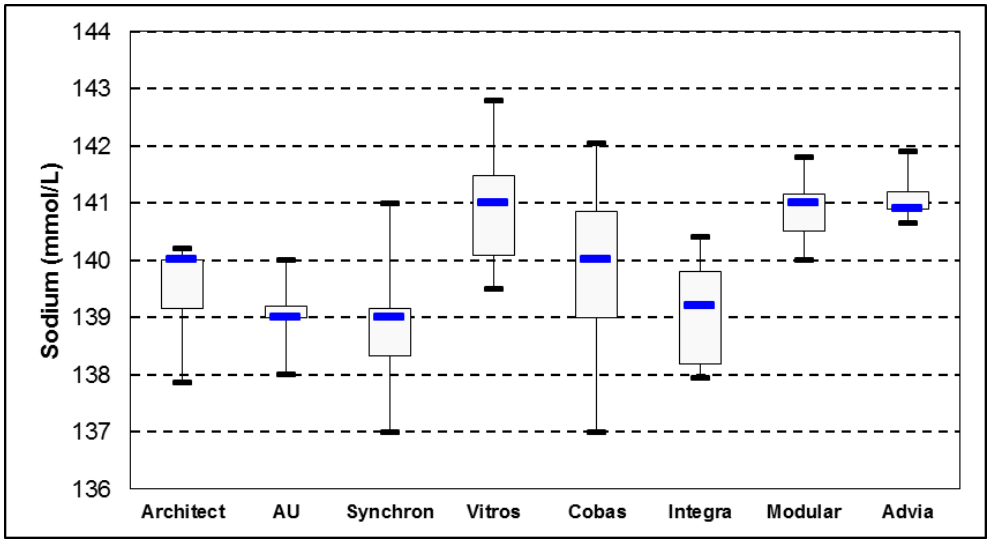
The overall median is 0.84 mmol/L (close to the potential target of 0.83 mmol/L), with a minimum of 0.80 mmol/L (Vitros) and a maximum of 0.86 mmol/L (Synchron). The dispersion is acceptable compared to the bias limit of 3.5% (0.03 mmol/L).

Potassium



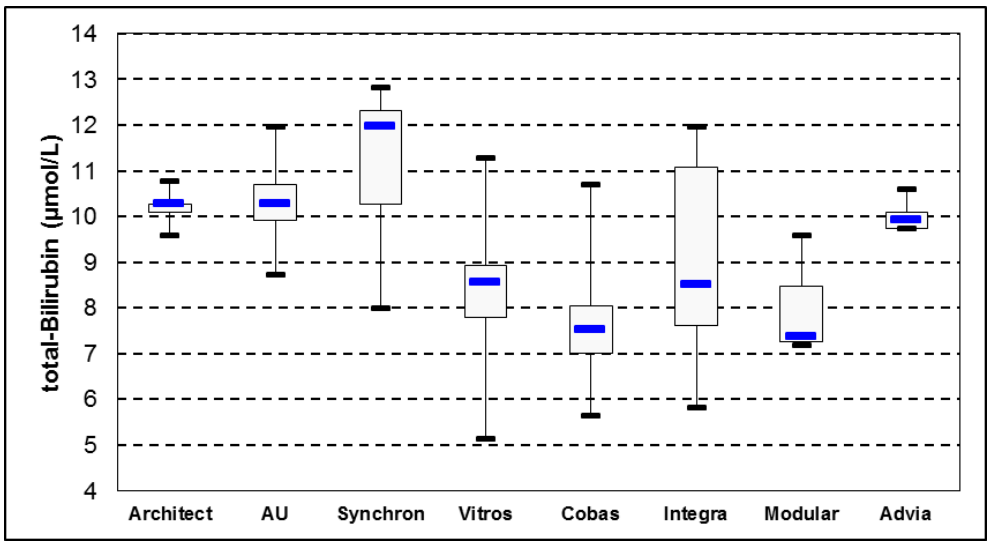
The overall median is 4.37 mmol/L, with a minimum of 4.16 mmol/L (Modular) and a maximum of 4.65 (Advia, n = 5). The dispersion is high compared to the bias limit of 3.4% (0.015 mmol/L). However, high potassium values may be due to pre-analytics for private laboratories; low potassium values may be due to good pre-analytics (undelayed serum separation).

Sodium



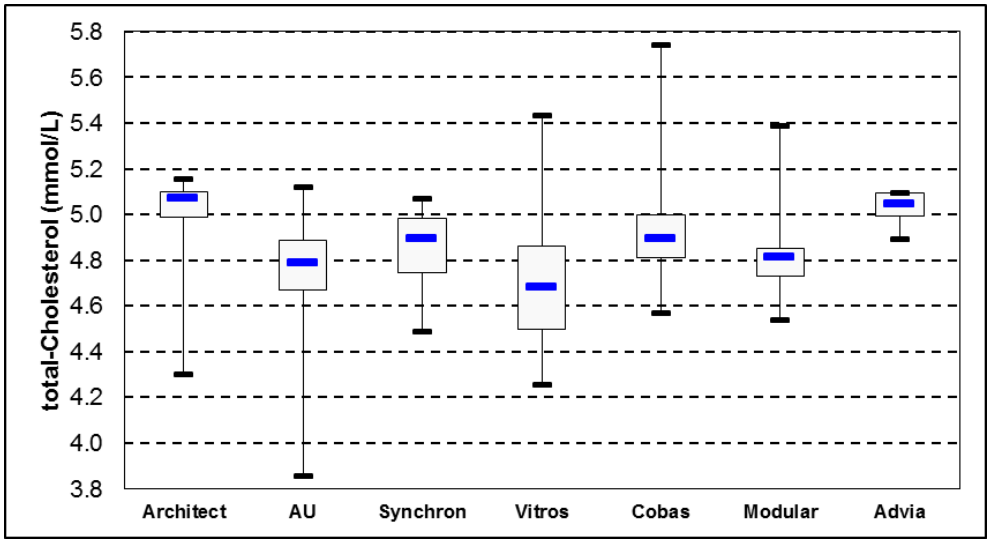
The overall median is 140.0 mmol/L (close to the potential target of 141 mmol/L), with a minimum of 139 mmol/L (AU & Synchron) and a maximum of 141.0 (Vitros & Modular). The dispersion is low in view of the tight bias limit of 0.7% (1 mmol/L).

total-Bilirubin



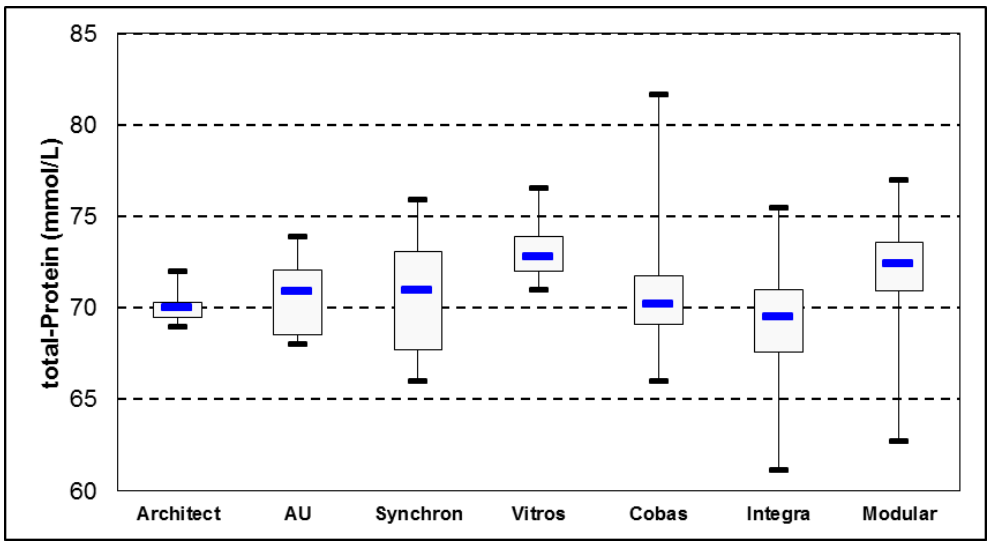
The overall median is 9.2 µmol/L, with a minimum of 7.4/7.5 µmol/L (Modular/Cobas) and a maximum of 12.0 µmol/L (Synchron). The dispersion is high when compared to the bias limit of 12.2% (1 µmol/L).

total-Cholesterol



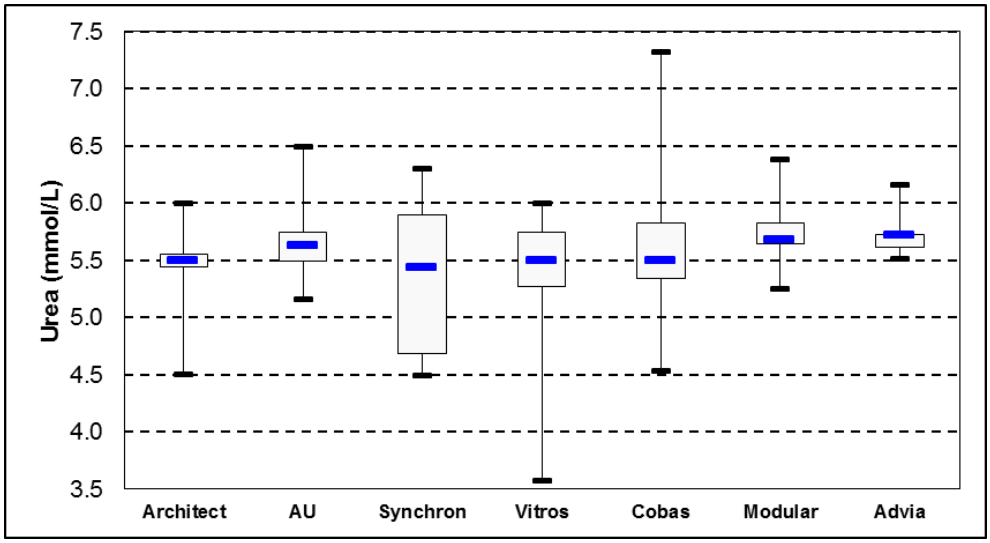
The overall median is 4.9 mmol/L, with a minimum of 4.7 mmol/L (Vitros) and a maximum of 5.1 mmol/L (Architect). The dispersion is acceptable considering the bias limit of 4.1% (0.2 mmol/L).

total-Protein



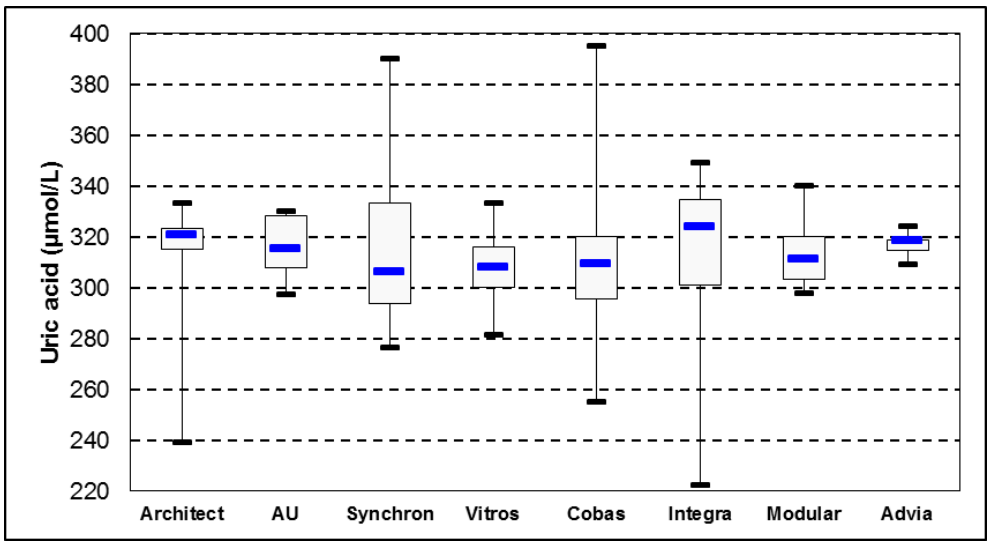
The overall median is 70.9 g/L (close to the potential target of 69.8 g/L), with a minimum of 69.5 g/L (Integra, n = 6) and a maximum of 72.8 g/L (Vitros). The dispersion is acceptable in view of the tight bias limit of 1.4% (1 g/L).

Urea



The overall median is 5.6 mmol/L, with a minimum of 5.4 mmol/L (Synchron) and a maximum of 5.7 mmol/L (Modular & Advia). The dispersion is quite small in view of the bias limit of 5.5% (0.3 mmol/L).

Uric acid



The overall median is 313 µmol/L, with a minimum of 306 µmol/L (Synchron) and a maximum of 324 µmol/L (Integra, n = 6). The dispersion is small in view of the bias limit of 4.7% (15 µmol/L).