

## Summary statistics - quantitative results

(Groups: measurement principle)

Filter: minimal size of groups n = 5

## EQA round: AM1/19 - Basic Clinical Chemistry - Urine

Dead line: 12.04.2019

RoM = robust average	AV = assigned value	Dmax = acceptable percent difference
SD = standard deviation	CRV = certified reference value	LL = lower limit
CV = coefficient of variation	RV = reference value	UL = upper limit
Ntot = total number of participants	CVE = consensus value from experts	Neva = number of evaluated participants
Nout = number of results excluded before calculation	CVP = consensus value from all participants	Nsuc = number of successful participants
	CVPG = consensus value from participants groups	Srel = success (relative)
	U <sub>AV</sub> = expanded uncertainty of the assigned value (k = 2)	

Test	[unit]	Comparability						Traceability														
		RoM	SD	CV [%]	N <sub>tot</sub>	N <sub>out</sub>	AV	U <sub>AV</sub>	D <sub>max</sub>	LL	UL	N <sub>eva</sub>	N <sub>suc</sub>	S <sub>rel</sub>	AV	U <sub>AV</sub>	D <sub>max</sub>	LL	UL	N <sub>eva</sub>	N <sub>suc</sub>	S <sub>rel</sub>
<b>(61) Sodium</b>					264							264	263	100%								0
Samples and groups	[mmol/L]																					
<b>Sample A</b>		168	2,8	1,6	264		CVP	168	0,42	11%	149	187		264	263	100%					0	
(2) Indirect ISE		168	2,7	1,6	249	0								249								
(3) Direct ISE		166	3,9	2,4	14	0								14								
Other					1	0								1								
							Ix 99															
<b>Sample B</b>		66,7	1,4	2,0	264		CVP	66,7	0,21	11%	59,3	74,1		264	264	100%					0	
(2) Indirect ISE		66,7	1,4	2,0	249	0								249								
(3) Direct ISE		66,4	1,3	1,9	14	0								14								
Other					1	0								1								
							Ix 99															
<b>(62) Potassium</b>					264								264	262	99%							0
Samples and groups	[mmol/L]																					
<b>Sample A</b>		64,6	2,1	3,2	264		CVP	64,6	0,31	15%	54,9	74,3		264	262	99%					0	
(2) Indirect ISE		64,6	2,1	3,2	249	0								249								
(3) Direct ISE		64,8	1,5	2,4	14	0								14								
Other					1	0								1								
							Ix 99															
<b>Sample B</b>		25,0	0,66	2,6	264		CVP	25,0	0,099	15%	21,2	28,8		264	263	100%					0	
(2) Indirect ISE		25,0	0,66	2,7	249	0								249								
(3) Direct ISE		24,9	0,65	2,6	14	0								14								
Other					1	0								1								
							Ix 99															
<b>(63) Chloride</b>					262								262	253	97%							0
Samples and groups	[mmol/L]																					
<b>Sample A</b>		195	4,9	2,5	262		CVP	195	0,74	14%	167	223		262	262	100%					0	
(3) Indirect ISE		195	4,8	2,5	246	0								246								
(4) Direct ISE		194	7,6	3,9	15	0								15								
Other					1	0								1								
							Ix 2															
<b>Sample B</b>		66,8	3,2	4,8	262		CVP	66,8	0,48	14%	57,4	76,2		262	253	97%					0	
(3) Indirect ISE		66,8	3,1	4,7	246	0								246								
(4) Direct ISE		67,0	2,9	4,4	15	0								15								
Other					1	0								1								
							Ix 2															
<b>(64) Calcium</b>					265								265	262	99%							0
Samples and groups	[mmol/L]																					
<b>Sample A</b>		3,05	0,12	3,8	265		CVP	3,05	0,017	18%	2,5	3,6		265	262	99%					0	
(2) Phot. with o-cresol.		3,08	0,09	3,2	41	0								41								
(3) Phot. with arsenazo		3,02	0,12	4,0	147	0								147								

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Test	[unit]	Comparability					Traceability																
		RoM	SD	CV [%]	N <sub>tot</sub>	N <sub>out</sub>	AV	U <sub>AV</sub>	D <sub>max</sub>	LL	UL	N <sub>eva</sub>	N <sub>suc</sub>	S <sub>rel</sub>	AV	U <sub>AV</sub>	D <sub>max</sub>	LL	UL	N <sub>eva</sub>	N <sub>suc</sub>	S <sub>rel</sub>	
<b>(64) Calcium</b>	[mmol/L]				265							265	262	99%									0
Samples and groups																							
<b>Sample A</b>		3,05	0,12	3,8	265		CVP	3,05	0,017	18%	2,5	3,6	265	262	99%								0
(4) Photomet. with NM-BAPTA		3,10	0,06	2,2	68	0							68										
(6) ISE		2,80	0,04	1,6	6	0							6										
Other					3	0							3										
							1x 0, 2x 99																
<b>Sample B</b>		2,05	0,08	4,2	265		CVP	2,05	0,013	18%	1,68	2,42	265	263	99%								0
(2) Phot. with o-cresol.		2,06	0,07	3,8	41	0							41										
(3) Phot. with arsenazo		2,03	0,08	4,1	147	0							147										
(4) Photomet. with NM-BAPTA		2,11	0,04	2,2	68	0							68										
(6) ISE		1,89	0,01	0,78	6	0							6										
Other					3	0							3										
							1x 0, 2x 99																
<b>(73) Magnesium</b>	[mmol/L]				226								226	223	99%								0
Samples and groups																							
<b>Sample A</b>		4,85	0,21	4,4	226		CVP	4,85	0,035	20%	3,88	5,82	226	224	99%								0
(2) Photometry with coloured dyes		4,86	0,21	4,3	186	0							186										
(4) Enzymatic UV method		4,83	0,23	4,8	36	0							36										
Other					4	0							4										
							3x 1, 1x 99																
<b>Sample B</b>		2,55	0,13	5,1	226		CVP	2,55	0,021	20%	2,04	3,06	226	223	99%								0
(2) Photometry with coloured dyes		2,56	0,13	5,1	186	0							186										
(4) Enzymatic UV method		2,51	0,12	4,9	36	0							36										
Other					4	0							4										
							3x 1, 1x 99																
<b>(65) Inorganic phosphate</b>	[mmol/L]				259								259	256	99%								0
Samples and groups																							
<b>Sample A</b>		14,0	0,53	3,8	259		CVP	14,0	0,081	18%	11,4	16,6	259	257	99%								0
(1) UV-molybdate method		14,0	0,52	3,7	248	0							248										
(2) Reduction photometry		13,4	0,33	2,5	5	0							5										
(3) Molybdate-vanadate		14,0	0,42	3,0	5	0							5										
Other					1	0							1										
							1x 99																
<b>Sample B</b>		6,90	0,31	4,5	259		CVP	6,9	0,047	18%	5,65	8,15	259	257	99%								0
(1) UV-molybdate method		6,91	0,30	4,4	248	0							248										
(2) Reduction photometry		6,60	0,37	5,6	5	0							5										
(3) Molybdate-vanadate		6,74	0,27	4,1	5	0							5										
Other					1	0							1										
							1x 99																
<b>(66) Osmolality</b>	[mmol/kg]				129								129	126	98%								0
Samples and groups																							
<b>Sample A</b>		770	7,1	0,92	129		CVP	770	1,5	4%	739	801	129	127	98%								0
(1) Osmometer		771	7,0	0,91	127	0							127										
Other					2	0							2										
							1x 0, 1x 99																
<b>Sample B</b>		326	2,9	0,89	129		CVP	326	0,62	4%	312	340	129	127	98%								0
(1) Osmometer		326	2,9	0,88	127	0							127										

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Test	[unit]	Comparability						Traceability																
		RoM	SD	CV [%]	N <sub>tot</sub>	N <sub>out</sub>	AV	U <sub>AV</sub>	D <sub>max</sub>	LL	UL	N <sub>eva</sub>	N <sub>suc</sub>	S <sub>rel</sub>	AV	U <sub>AV</sub>	D <sub>max</sub>	LL	UL	N <sub>eva</sub>	N <sub>suc</sub>	S <sub>rel</sub>		
<b>(66) Osmolality</b>	[mmol/kg]				129							129	126	98%									0	
Samples and groups																								
<b>Sample B</b>		326	2,9	0,89	129		CVP	326	0,62	4%	312	340		129	127	98%							0	
Other					2	0								2										
							1x 0, 1x 99																	
<b>(67) Urea</b>	[mmol/L]				257									257	256	100%							0	
Samples and groups																								
<b>Sample A</b>		286	13	4,4	257		CVP	286	1,9	17%	237	335		257	256	100%							0	
(1) UV enzymatic m.(GMD)		286	13	4,4	251	0								251										
Other					6	0								6										
							4x 2, 2x 5																	
<b>Sample B</b>		136	6,4	4,7	257		CVP	136	0,97	17%	112	160		257	257	100%							0	
(1) UV enzymatic m.(GMD)		136	6,4	4,7	251	0								251										
Other					6	0								6										
							4x 2, 2x 5																	
<b>(68) Creatinine</b>	[mmol/L]				272									0								272	269	99%
Samples and groups																								
<b>Sample A</b>		12,6	0,57	4,5	272									0		RV	12,54	0,24	21%	9,9	15,2	272	270	99%
(1) Jaffe		12,6	0,56	4,4	137	0																		137
(3) Enzyme		12,7	0,56	4,4	134	0																		134
Other					1	0																		1
																1x 99								
<b>Sample B</b>		5,72	0,30	5,2	272									0		RV	5,74	0,11	21%	4,53	6,95	272	270	99%
(1) Jaffe		5,65	0,29	5,1	137	0																		137
(3) Enzyme		5,78	0,28	4,8	134	0																		134
Other					1	0																		1
																1x 99								
<b>(69) Uric acid</b>	[mmol/L]				253									253	243	96%								0
Samples and groups																								
<b>Sample A</b>		0,766	0,04	6,4	253		CVP	0,766	0,076	23%	0,589	0,943		253	249	98%								0
(2) Enzyme-photomet. m.		0,766	0,04	6,4	253	2								253										
<b>Sample B</b>		0,339	0,03	10	253		CVP	0,339	0,053	23%	0,261	0,417		253	243	96%								0
(2) Enzyme-photomet. m.		0,339	0,03	10	253	2								253										
<b>(70) Glucose</b>	[mmol/L]				248									248	246	99%								0
Samples and groups																								
<b>Sample A</b>		16,2	0,46	2,8	248		CVP	16,2	0,071	22%	12,6	19,8		248	248	100%								0
(1) GOD photometry		16,3	0,52	3,2	43	0								43										
(2) GOD electrochemical		16,0	0,40	2,5	12	0								12										
(3) Method with hexokinase		16,2	0,45	2,7	193	0								193										
<b>Sample B</b>		1,51	0,07	5,2	248		CVP	1,51	0,012	22%	1,17	1,85		248	246	99%								0
(1) GOD photometry		1,51	0,11	7,3	43	0								43										
(2) GOD electrochemical		1,51	0,17	11	12	0								12										
(3) Method with hexokinase		1,51	0,07	4,7	193	0								193										
<b>(71) Total protein</b>	[g/L]				237									227	212	93%								0
Samples and groups																								
<b>Sample A</b>		0,730	0,16	22	237									227	224	99%								0

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(Groups: measurement principle)

Filter: minimal size of groups n = 5

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Test	[unit]	Comparability					Traceability																
		RoM	SD	CV [%]	N <sub>tot</sub>	N <sub>out</sub>	AV	U <sub>AV</sub>	D <sub>max</sub>	LL	UL	N <sub>eva</sub>	N <sub>suc</sub>	S <sub>rel</sub>	AV	U <sub>AV</sub>	D <sub>max</sub>	LL	UL	N <sub>eva</sub>	N <sub>suc</sub>	S <sub>rel</sub>	
<b>(71) Total protein</b>					237							227	212	93%									0
Samples and groups	[g/L]																						
<b>Sample A</b>		0,730	0,16	22	237							227	224	99%									0
(1) Biuret; (58) Beckman Coulter (Olympus)		0,860	0,05	6,3	8	0	CVPG	0,865	0,079	30%	0,605	1,13			8								
(1) Biuret; (60) Roche		0,600	0,01	2,5	7	0	CVPG	0,616	0,013	30%	0,431	0,801			7								
(2) Pyrogallol red; (12) Beckman Coulter		0,788	0,11	14	9	0	CVPG	0,799	0,074	30%	0,559	1,04			9								
(2) Pyrogallol red; (49) BioVendor		0,723	0,01	2,6	6	0	CVPG	0,723	0,026	30%	0,506	0,94			6								
(2) Pyrogallol red; (58) Beckman Coulter (Olympus)		0,867	0,02	2,6	47	0	CVPG	0,865	0,079	30%	0,605	1,13			47								
(2) Pyrogallol red; (149) Siemens (Dade)		0,755	0,06	8,7	8	0	CVPG	0,755	0,050	30%	0,528	0,982			8								
(2) Pyrogallol red; (179) Siemens (Bayer)		0,381	0,03	9,9	19	0	CVPG	0,386	0,024	30%	0,27	0,502			19								
(4) Turbidimetry; (1) Abbott		0,885	0,02	3,3	32	0	CVPG	0,887	0,012	30%	0,62	1,16			32								
(4) Turbidimetry; (60) Roche		0,616	0,04	8,0	68	2	CVPG	0,616	0,013	30%	0,431	0,801			68								
(4) Turbidimetry; (77) Skalab		0,660	0,08	13	6	0	CVPG	0,66	0,086	30%	0,462	0,858			6								
Other					27	0									17								
								2x 1/1, 2x 1/12, 1x 1/178, 2x 2/1, 1x 2/46, 4x 2/60, 3x 2/75, 3x 2/158, 2x 2/178, 1x 3/60, 1x 3/77, 1x 3/179, 3x 4/58, 1x 4/179															
<b>Sample B</b>		0,217	0,08	40	237								227	212	93%								0
(1) Biuret; (58) Beckman Coulter (Olympus)		0,298	0,01	3,7	8	0	CVPG	0,302	0,032	30%	0,211	0,393			8								
(1) Biuret; (60) Roche		0,135	0,00	5,5	7	0	CVPG	0,143	0,050	30%	0,1	0,186			7								
(2) Pyrogallol red; (12) Beckman Coulter		0,260	0,05	23	9	0	CVPG	0,263	0,045	30%	0,184	0,342			9								
(2) Pyrogallol red; (49) BioVendor		0,240	0,01	6,2	6	0	CVPG	0,24	0,021	30%	0,168	0,312			6								
(2) Pyrogallol red; (58) Beckman Coulter (Olympus)		0,302	0,00	3,0	47	0	CVPG	0,302	0,032	30%	0,211	0,393			47								
(2) Pyrogallol red; (149) Siemens (Dade)		0,223	0,02	13	8	0	CVPG	0,223	0,021	30%	0,156	0,29			8								
(2) Pyrogallol red; (179) Siemens (Bayer)		0,116	0,01	15	19	0	CVPG	0,117	0,100	30%	0,081	0,153			19								
(4) Turbidimetry; (1) Abbott		0,281	0,01	6,0	32	0	CVPG	0,281	0,065	30%	0,196	0,366			32								
(4) Turbidimetry; (60) Roche		0,143	0,01	13	68	2	CVPG	0,143	0,050	30%	0,1	0,186			68								
(4) Turbidimetry; (77) Skalab		0,155	0,03	24	6	0	CVPG	0,155	0,036	30%	0,108	0,202			6								
Other					27	0									17								
								2x 1/1, 2x 1/12, 1x 1/178, 2x 2/1, 1x 2/46, 4x 2/60, 3x 2/75, 3x 2/158, 2x 2/178, 1x 3/60, 1x 3/77, 1x 3/179, 3x 4/58, 1x 4/179															
<b>(72) pH</b>					29								29	29	100%								0
Samples and groups	[-]																						
<b>Sample A</b>		6,77	0,09	1,5	29		CVP	6,77	0,045	5%	6,43	7,11			29	29	100%					0	
(1) Glass electrode		6,77	0,08	1,2	27	0									27								
Other					2	0									2								
								2x 99															
<b>Sample B</b>		6,78	0,11	1,7	29		CVP	6,78	0,052	5%	6,44	7,12			29	29	100%					0	
(1) Glass electrode		6,78	0,10	1,5	27	0									27								
Other					2	0									2								
								2x 99															