# Summary statistics - quantitative results

## EQA round: AKS2/23 - Basic Clinical Chemistry - Serum

Deadline: 7.4.2023

Setup: groups - measurement principle; minimal size of the groups n = 5

| | | |
|---|---|---|
| RoM = robust average | AV = assigned value | $D_{max}$ = acceptable difference |
| SD = standard deviation | CRV = certified reference value | LL = lower limit |
| CV = coefficient of variation | CVP = consensus of all participants | UL = upper limit |
| $N_{tot}$ = total number of the results | CVPG = consensus of the participants' groups | $N_{eva}$ = number of the results assessed |
| $N_{out}$ = number of the results removed before calculation | $U_{AV}$ = expanded uncertainty of the assigned value (k = 2) | $N_{suc}$ = number of successful results |
| | | $S_{rel}$ = relative success |

| Test / Sample / Group | [unit] | RoM | SD | CV [%] | $N_{tot}$ | $N_{out}$ | Comparability AV | $U_{AV}$ | $D_{max}$ | LL | UL | $N_{eva}$ | $N_{suc}$ | $S_{rel}$ [%] | Traceability AV | $U_{AV}$ | $D_{max}$ | LL | UL | $N_{eva}$ | $N_{suc}$ | $S_{rel}$ [%] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (22) **α-amylase** | [µkat/L] | | | | 355 | | | | | | | 0 | | | | | | | | 352 | 348 | 99 |
| **Sample A** | | 3,35 | 0,17 | 5 | 355 | | | | | | | 0 | | | | | | | | 352 | 350 | 99 |
| (0) Not specified | | 3,35 | 0,16 | 4,9 | 352 | 0 | | | | | | | | | CRV 3,455 | 0,098 | 15% | 2,93 | 3,98 | 352 | | |
| Other | | | | | 3 | 0 | | | | | | 0 | | | | | | | | 0 | | |
| | | | | | | | 3x 0/149 | | | | | | | | 3x 0/149 | | | | | | | |
| **Sample B** | | 5,95 | 0,4 | 6,8 | 355 | | | | | | | 0 | | | | | | | | 352 | 349 | 99 |
| (0) Not specified | | 5,94 | 0,4 | 6,7 | 352 | 0 | | | | | | | | | CRV 5,98 | 0,16 | 15% | 5,08 | 6,88 | 352 | | |
| Other | | | | | 3 | 0 | | | | | | 0 | | | | | | | | 0 | | |
| | | | | | | | 3x 0/149 | | | | | | | | 3x 0/149 | | | | | | | |
| (35) **α-amylase pancreatic** | [µkat/L] | | | | 122 | | | | | | | 122 | 122 | 100 | | | | | | 0 | | |
| **Sample A** | | | | | | | | | | | | 122 | 122 | 100 | | | | | | 0 | | |
| (0) Not specified | | 2,5 | 0,085 | 3,4 | 122 | 0 | CVP 2,5 | 0,019 | 18% | 2,05 | 2,95 | 122 | | | | | | | | | | |
| **Sample B** | | | | | | | | | | | | 122 | 122 | 100 | | | | | | 0 | | |
| (0) Not specified | | 5,05 | 0,18 | 3,5 | 122 | 0 | CVP 5,05 | 0,039 | 18% | 4,14 | 5,96 | 122 | | | | | | | | | | |
| (32) **γ-globulin (elfo)** | [-] | | | | 81 | | | | | | | 81 | 79 | 98 | | | | | | 0 | | |
| **Sample A** | | | | | | | | | | | | 81 | 81 | 100 | | | | | | 0 | | |
| (0) Not specified | | 0,129 | 0,018 | 14 | 81 | 0 | CVP 0,129 | 0,005 | 30% | 0,09 | 0,168 | 81 | | | | | | | | | | |
| **Sample B** | | | | | | | | | | | | 81 | 79 | 98 | | | | | | 0 | | |
| (0) Not specified | | 0,127 | 0,011 | 8,9 | 81 | 0 | CVP 0,127 | 0,003 | 30% | 0,088 | 0,166 | 81 | | | | | | | | | | |
| (10) **Albumin** | [g/L] | | | | 355 | | | | | | | 355 | 342 | 96 | | | | | | 0 | | |
| **Sample A** | | 58 | 1,7 | 3 | 355 | | CVP 58 | 0,22 | 10% | 52,2 | 63,8 | 355 | 346 | 97 | | | | | | 0 | | |
| (1) BCG | | 58,1 | 1,6 | 2,8 | 332 | 0 | | | | | | 332 | | | | | | | | | | |
| (2) BCP | | 56,2 | 2,4 | 4,2 | 21 | 0 | | | | | | 21 | | | | | | | | | | |
| Other | | | | | 2 | 0 | | | | | | 2 | | | | | | | | | | |
| | | | | | | | 2x 0 | | | | | | | | | | | | | | | |
| **Sample B** | | 44,6 | 1,4 | 3,2 | 355 | | CVP 44,6 | 0,19 | 10% | 40,1 | 49,1 | 355 | 350 | 99 | | | | | | 0 | | |
| (1) BCG | | 44,7 | 1,3 | 3 | 332 | 0 | | | | | | 332 | | | | | | | | | | |
| (2) BCP | | 42,5 | 1,8 | 4,2 | 21 | 0 | | | | | | 21 | | | | | | | | | | |
| Other | | | | | 2 | 0 | | | | | | 2 | | | | | | | | | | |
| | | | | | | | 2x 0 | | | | | | | | | | | | | | | |
| (31) **Albumin (elpho)** | [-] | | | | 81 | | | | | | | 81 | 76 | 94 | | | | | | 0 | | |
| **Sample A** | | | | | | | | | | | | 81 | 76 | 94 | | | | | | 0 | | |
| (0) Not specified | | 0,617 | 0,058 | 9,5 | 81 | 0 | CVP 0,617 | 0,016 | 15% | 0,524 | 0,71 | 81 | | | | | | | | | | |
| **Sample B** | | | | | | | | | | | | 81 | 78 | 96 | | | | | | 0 | | |
| (0) Not specified | | 0,633 | 0,04 | 6,3 | 81 | 0 | CVP 0,633 | 0,011 | 15% | 0,538 | 0,728 | 81 | | | | | | | | | | |
| (21) **ALP** | [µkat/L] | | | | 374 | | | | | | | 363 | 339 | 93 | | | | | | 374 | 320 | 86 |
| **Sample A** | | 5,83 | 0,52 | 8,9 | 374 | | | | | | | 363 | 358 | 99 | CRV 6,28 | 0,18 | 18% | 5,14 | 7,42 | 374 | 343 | 92 |
| (3) IFCC method | | 5,83 | 0,52 | 8,9 | 371 | 0 | | | | | | | | | | | | | | 371 | | |
| (3) IFCC method; (1) Abbott | | 6,06 | 0,23 | 3,8 | 94 | 0 | CVPG 6,05 | 0,059 | 14% | 5,2 | 6,9 | 94 | | | | | | | | | | |
| (3) IFCC method; (46) Erba Lachema | | 6,18 | 0,28 | 4,6 | 15 | 0 | CVPG 6,31 | 0,27 | 14% | 5,42 | 7,2 | 15 | | | | | | | | | | |

# Summary statistics - quantitative results

## EQA round: AKS2/23 - Basic Clinical Chemistry - Serum

Deadline: 7.4.2023

Setup: groups - measurement principle; minimal size of the groups n = 5

| Test / Sample / Group | [unit] | RoM | SD | CV [%] | $N_{tot}$ | $N_{out}$ | Comparability | AV | $U_{AV}$ | $D_{max}$ | LL | UL | $N_{eva}$ | $N_{suc}$ | $S_{rel}$ [%] | Traceability | AV | $U_{AV}$ | $D_{max}$ | LL | UL | $N_{eva}$ | $N_{suc}$ | $S_{rel}$ [%] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (3) IFCC method; (58) Beckman Coulter (AU) | | 6,47 | 0,33 | 5,2 | 49 | 0 | CVPG | 6,47 | 0,12 | 14% | 5,56 | 7,38 | 49 | | | | | | | | | | | |
| (3) IFCC method; (60) Roche | | 5,46 | 0,28 | 5,2 | 141 | 0 | CVPG | 5,46 | 0,059 | 14% | 4,69 | 6,23 | 141 | | | | | | | | | | | |
| (3) IFCC method; (149) Siemens (Dade, BN, Dimension) | | 5,36 | 0,36 | 6,6 | 5 | 0 | CVPG | 5,36 | 1 | 14% | 4,6 | 6,12 | 5 | | | | | | | | | | | |
| (3) IFCC method; (162) Siemens (Atellica) | | 5,43 | 0,19 | 3,5 | 23 | 0 | CVPG | 5,43 | 0,097 | 14% | 4,66 | 6,2 | 23 | | | | | | | | | | | |
| (3) IFCC method; (177) Mindray | | 6,36 | 0,2 | 3,1 | 10 | 0 | CVPG | 6,36 | 0,15 | 14% | 5,46 | 7,26 | 10 | | | | | | | | | | | |
| (3) IFCC method; (178) DiaSys | | 5,88 | 0,44 | 7,5 | 10 | 0 | CVPG | 5,88 | 0,34 | 14% | 5,05 | 6,71 | 10 | | | | | | | | | | | |
| (3) IFCC method; (179) Siemens | | 5,5 | 0,24 | 4,4 | 13 | 0 | CVPG | 5,5 | 0,17 | 14% | 4,73 | 6,27 | 13 | | | | | | | | | | | |
| Other | | | | | 3 | 0 | | | | | | | 3 | | | | | | | | | 3 | | |
| | | | | | | | 2x 0/46, 1x 1/1, 4x 3/12, 1x 3/18, 1x 3/49, 1x 3/73, 1x 3/121, 3x 3/158 | | | | | | | | 2x 0, 1x 1 | | | | | | | | |
| **Sample B** | | 0,781 | 0,061 | 7,8 | 374 | | | | | | | | 363 | 342 | 94 | CRV | 0,828 | 0,035 | 18% | 0,678 | 0,978 | 374 | 351 | 94 |
| (3) IFCC method | | 0,781 | 0,061 | 7,8 | 371 | 0 | | | | | | | | | | | | | | | | 371 | | |
| (3) IFCC method; (1) Abbott | | 0,812 | 0,063 | 7,7 | 94 | 0 | CVPG | 0,811 | 0,016 | 14% | 0,697 | 0,925 | 94 | | | | | | | | | | | |
| (3) IFCC method; (46) Erba Lachema | | 0,814 | 0,069 | 8,5 | 15 | 0 | CVPG | 0,824 | 0,042 | 14% | 0,708 | 0,94 | 15 | | | | | | | | | | | |
| (3) IFCC method; (58) Beckman Coulter (AU) | | 0,701 | 0,059 | 8,4 | 49 | 0 | CVPG | 0,701 | 0,021 | 14% | 0,602 | 0,8 | 49 | | | | | | | | | | | |
| (3) IFCC method; (60) Roche | | 0,783 | 0,036 | 4,6 | 141 | 0 | CVPG | 0,783 | 0,008 | 14% | 0,673 | 0,893 | 141 | | | | | | | | | | | |
| (3) IFCC method; (149) Siemens (Dade, BN, Dimension) | | 0,785 | 0,022 | 2,8 | 5 | 0 | CVPG | 0,785 | 0,063 | 14% | 0,675 | 0,895 | 5 | | | | | | | | | | | |
| (3) IFCC method; (162) Siemens (Atellica) | | 0,769 | 0,047 | 6,1 | 23 | 0 | CVPG | 0,769 | 0,024 | 14% | 0,661 | 0,877 | 23 | | | | | | | | | | | |
| (3) IFCC method; (177) Mindray | | 0,734 | 0,059 | 8,1 | 10 | 0 | CVPG | 0,734 | 0,046 | 14% | 0,631 | 0,837 | 10 | | | | | | | | | | | |
| (3) IFCC method; (178) DiaSys | | 0,805 | 0,066 | 8,1 | 10 | 0 | CVPG | 0,805 | 0,051 | 14% | 0,692 | 0,918 | 10 | | | | | | | | | | | |
| (3) IFCC method; (179) Siemens | | 0,792 | 0,081 | 10 | 13 | 0 | CVPG | 0,792 | 0,055 | 14% | 0,681 | 0,903 | 13 | | | | | | | | | | | |
| Other | | | | | 3 | 0 | | | | | | | 3 | | | | | | | | | 3 | | |
| | | | | | | | 2x 0/46, 1x 1/1, 4x 3/12, 1x 3/18, 1x 3/49, 1x 3/73, 1x 3/121, 3x 3/158 | | | | | | | | 2x 0, 1x 1 | | | | | | | | |
| (24) **ALT** | [µkat/L] | | | | 378 | | | | | | | | 0 | | | | | | | | | 378 | 371 | 98 |
| **Sample A** | | | | | | | | | | | | | 0 | | | | | | | | | 378 | 375 | 99 |
| (0) Not specified | | 3,63 | 0,18 | 4,9 | 378 | 0 | | | | | | | | | | CRV | 3,649 | 0,081 | 15% | 3,1 | 4,2 | 378 | | |
| **Sample B** | | | | | | | | | | | | | 0 | | | | | | | | | 378 | 373 | 99 |
| (0) Not specified | | 1,75 | 0,096 | 5,5 | 378 | 0 | | | | | | | | | | CRV | 1,702 | 0,045 | 15% | 1,44 | 1,96 | 378 | | |
| (23) **AST** | [µkat/L] | | | | 379 | | | | | | | | 0 | | | | | | | | | 379 | 374 | 99 |
| **Sample A** | | | | | | | | | | | | | 0 | | | | | | | | | 379 | 376 | 99 |
| (0) Not specified | | 4,81 | 0,22 | 4,7 | 379 | 0 | | | | | | | | | | CRV | 4,66 | 0,1 | 15% | 3,96 | 5,36 | 379 | | |
| **Sample B** | | | | | | | | | | | | | 0 | | | | | | | | | 379 | 376 | 99 |
| (0) Not specified | | 1,52 | 0,069 | 4,5 | 379 | 0 | | | | | | | | | | CRV | 1,473 | 0,044 | 15% | 1,25 | 1,7 | 379 | | |
| (13) **Bilirubin total** | [µmol/L] | | | | 376 | | | | | | | | 0 | | | | | | | | | 376 | 370 | 98 |
| **Sample A** | | 65,4 | 5,3 | 8,1 | 376 | | | | | | | | 0 | | | CRV | 65 | 1,5 | 26% | 48,1 | 81,9 | 376 | 373 | 99 |
| (1) Jendrassik-Gróf | | 66,2 | 5,9 | 8,9 | 46 | 0 | | | | | | | | | | | | | | | | 46 | | |
| (2) DCA, DPD | | 64,8 | 5,1 | 7,8 | 288 | 0 | | | | | | | | | | | | | | | | 288 | | |
| (4) Oxidation-reduction methods | | 68,4 | 4,2 | 6,2 | 40 | 0 | | | | | | | | | | | | | | | | 40 | | |
| Other | | | | | 2 | 0 | | | | | | | | | | | | | | | | 2 | | |
| | | | | | | | | | | | | | | | | 2x 99 | | | | | | | | |
| **Sample B** | | 21,8 | 2,4 | 11 | 376 | | | | | | | | 0 | | | CRV | 21,42 | 0,57 | 26% | 15,8 | 27 | 376 | 371 | 99 |
| (1) Jendrassik-Gróf | | 22,1 | 2,6 | 12 | 46 | 0 | | | | | | | | | | | | | | | | 46 | | |
| (2) DCA, DPD | | 21,6 | 2,4 | 11 | 288 | 0 | | | | | | | | | | | | | | | | 288 | | |
| (4) Oxidation-reduction methods | | 22,8 | 1,5 | 6,4 | 40 | 0 | | | | | | | | | | | | | | | | 40 | | |

# Summary statistics - quantitative results

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Setup: groups - measurement principle; minimal size of the groups n = 5

| Test / Sample / Group | [unit] | RoM | SD | CV [%] | $N_{tot}$ | $N_{out}$ | Comparability | AV | $U_{AV}$ | $D_{max}$ | LL | UL | $N_{eva}$ | $N_{suc}$ | $S_{rel}$ [%] | Traceability | AV | $U_{AV}$ | $D_{max}$ | LL | UL | $N_{eva}$ | $N_{suc}$ | $S_{rel}$ [%] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Other | | | | | 2 | 0 | | | | | | | | | | 2x 99 | | | | | | 2 | | |
| (9) **Total protein** | [g/L] | | | | 357 | | | | | | | | 0 | | | | | | | | | 357 | 347 | 97 |
| **Sample A** | | | | | | | | | | | | | 0 | | | | | | | | | 357 | 348 | 97 |
| (0) Not specified | | 92,7 | 2,6 | 2,8 | 357 | 0 | | | | | | | | | | CRV | 95,4 | 2,8 | 9% | 86,8 | 104 | 357 | | |
| **Sample B** | | | | | | | | | | | | | 0 | | | | | | | | | 357 | 356 | 100 |
| (0) Not specified | | 69,8 | 1,6 | 2,3 | 357 | 0 | | | | | | | | | | CRV | 69,9 | 1,5 | 9% | 63,6 | 76,2 | 357 | | |
| (26) **CK** | [µkat/L] | | | | 335 | | | | | | | | 0 | | | | | | | | | 335 | 319 | 95 |
| **Sample A** | | | | | | | | | | | | | 0 | | | | | | | | | 335 | 323 | 96 |
| (0) Not specified | | 3,69 | 0,27 | 7,2 | 335 | 0 | | | | | | | | | | CRV | 4,007 | 0,096 | 20% | 3,2 | 4,81 | 335 | | |
| **Sample B** | | | | | | | | | | | | | 0 | | | | | | | | | 335 | 329 | 98 |
| (0) Not specified | | 5,72 | 0,39 | 6,8 | 335 | 0 | | | | | | | | | | CRV | 6 | 0,17 | 20% | 4,8 | 7,2 | 335 | | |
| (2) **Potassium** | [mmol/L] | | | | 374 | | | | | | | | 0 | | | | | | | | | 374 | 366 | 98 |
| **Sample A** | | 7 | 0,13 | 1,8 | 374 | | | | | | | | 0 | | | CRV | 6,94 | 0,11 | 7% | 6,45 | 7,43 | 374 | 367 | 98 |
| (2) Indirect ISE | | 7 | 0,11 | 1,6 | 331 | 0 | | | | | | | | | | | | | | | | 331 | | |
| (3) Direct ISE | | 7,1 | 0,29 | 4,1 | 43 | 0 | | | | | | | | | | | | | | | | 43 | | |
| **Sample B** | | 5,71 | 0,091 | 1,6 | 374 | | | | | | | | 0 | | | CRV | 5,621 | 0,084 | 7% | 5,22 | 6,02 | 374 | 369 | 99 |
| (2) Indirect ISE | | 5,71 | 0,086 | 1,5 | 331 | 0 | | | | | | | | | | | | | | | | 331 | | |
| (3) Direct ISE | | 5,74 | 0,15 | 2,7 | 43 | 0 | | | | | | | | | | | | | | | | 43 | | |
| (5) **Inorganic phosphate** | [mmol/L] | | | | 334 | | | | | | | | 334 | 329 | 99 | | | | | | | 0 | | |
| **Sample A** | | 2,03 | 0,056 | 2,7 | 334 | | CVP | 2,03 | 0,008 | 10% | 1,82 | 2,24 | 334 | 330 | 99 | | | | | | | 0 | | |
| (1) UV-molybdate method | | 2,03 | 0,054 | 2,7 | 325 | 0 | | | | | | | 325 | | | | | | | | | | | |
| (3) Molybdate-vanadate method | | 2,05 | 0,067 | 3,3 | 5 | 0 | | | | | | | 5 | | | | | | | | | | | |
| Other | | | | | 4 | 0 | | | | | | | 4 | | | | | | | | | | | |
| | | | | | | | 4x 2 | | | | | | | | | | | | | | | | | |
| **Sample B** | | 1,22 | 0,034 | 2,8 | 334 | | CVP | 1,22 | 0,005 | 10% | 1,09 | 1,35 | 334 | 333 | 100 | | | | | | | 0 | | |
| (1) UV-molybdate method | | 1,22 | 0,034 | 2,7 | 325 | 0 | | | | | | | 325 | | | | | | | | | | | |
| (3) Molybdate-vanadate method | | 1,25 | 0,022 | 1,8 | 5 | 0 | | | | | | | 5 | | | | | | | | | | | |
| Other | | | | | 4 | 0 | | | | | | | 4 | | | | | | | | | | | |
| | | | | | | | 4x 2 | | | | | | | | | | | | | | | | | |
| (27) **gamma-GT** | [µkat/L] | | | | 376 | | | | | | | | 0 | | | | | | | | | 376 | 374 | 99 |
| **Sample A** | | | | | | | | | | | | | 0 | | | | | | | | | 376 | 376 | 100 |
| (0) Not specified | | 3,25 | 0,11 | 3,5 | 376 | 0 | | | | | | | | | | CRV | 3,352 | 0,082 | 21% | 2,64 | 4,06 | 376 | | |
| **Sample B** | | | | | | | | | | | | | 0 | | | | | | | | | 376 | 374 | 99 |
| (0) Not specified | | 0,974 | 0,032 | 3,3 | 376 | 0 | | | | | | | | | | CRV | 1,053 | 0,027 | 21% | 0,831 | 1,28 | 376 | | |
| (16) **Glucose** | [mmol/L] | | | | 380 | | | | | | | | 0 | | | | | | | | | 380 | 365 | 96 |
| **Sample A** | | 6,6 | 0,17 | 2,6 | 380 | | | | | | | | 0 | | | CRV | 6,818 | 0,068 | 8% | 6,27 | 7,37 | 380 | 367 | 97 |
| (1) GOD photometry | | 6,66 | 0,23 | 3,5 | 65 | 0 | | | | | | | | | | | | | | | | 65 | | |
| (3) Method with hexokinase | | 6,59 | 0,16 | 2,4 | 314 | 0 | | | | | | | | | | | | | | | | 314 | | |
| Other | | | | | 1 | 0 | | | | | | | | | | | | | | | | 1 | | |
| | | | | | | | | | | | | | | | | 1x 2 | | | | | | | | |
| **Sample B** | | 4,59 | 0,12 | 2,6 | 380 | | | | | | | | 0 | | | CRV | 4,656 | 0,047 | 8% | 4,28 | 5,03 | 380 | 373 | 98 |
| (1) GOD photometry | | 4,65 | 0,15 | 3,3 | 65 | 0 | | | | | | | | | | | | | | | | 65 | | |
| (3) Method with hexokinase | | 4,58 | 0,11 | 2,4 | 314 | 0 | | | | | | | | | | | | | | | | 314 | | |
| Other | | | | | 1 | 0 | | | | | | | | | | | | | | | | 1 | | |
| | | | | | | | | | | | | | | | | 1x 2 | | | | | | | | |

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Setup: groups - measurement principle; minimal size of the groups n = 5

| Test / Sample / Group | [unit] | RoM | SD | CV [%] | $N_{tot}$ | $N_{out}$ | Comparability | | | | | | | | | Traceability | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | AV | $U_{AV}$ | $D_{max}$ | LL | UL | $N_{eva}$ | $N_{suc}$ | $S_{rel}$ [%] | | AV | $U_{AV}$ | $D_{max}$ | LL | UL | $N_{eva}$ | $N_{suc}$ | $S_{rel}$ [%] |
| (7) **Magnesium** | [mmol/L] | | | | 330 | | | | | | | | 0 | | | | | | | | | 330 | 330 | 100 |
| **Sample A** | | 1,03 | 0,029 | 2,9 | 330 | | | | | | | | 0 | | | CRV | 1,008 | 0,02 | 15% | 0,856 | 1,16 | 330 | 330 | 100 |
| (2) Photometry | | 1,03 | 0,028 | 2,7 | 246 | 0 | | | | | | | | | | | | | | | | 246 | | |
| (4) UV enzyme method | | 1,01 | 0,031 | 3,1 | 83 | 0 | | | | | | | | | | | | | | | | 83 | | |
| Other | | | | | 1 | 0 | | | | | | | | | | | | | | | | 1 | | |
| | | | | | | | | | | | | | | | | 1x 99 | | | | | | | | |
| **Sample B** | | 1,51 | 0,045 | 3 | 330 | | | | | | | | 0 | | | CRV | 1,499 | 0,029 | 15% | 1,27 | 1,73 | 330 | 330 | 100 |
| (2) Photometry | | 1,5 | 0,042 | 2,8 | 246 | 0 | | | | | | | | | | | | | | | | 246 | | |
| (4) UV enzyme method | | 1,53 | 0,053 | 3,4 | 83 | 0 | | | | | | | | | | | | | | | | 83 | | |
| Other | | | | | 1 | 0 | | | | | | | | | | | | | | | | 1 | | |
| | | | | | | | | | | | | | | | | 1x 99 | | | | | | | | |
| (3) **Chloride** | [mmol/L] | | | | 374 | | | | | | | | 374 | 371 | 99 | | | | | | | 0 | | |
| **Sample A** | | 132 | 3,5 | 2,6 | 374 | | CVP | 132 | 0,44 | 7% | 122 | 142 | 374 | 373 | 100 | | | | | | | 0 | | |
| (3) Indirect ISE | | 132 | 3,3 | 2,5 | 333 | 0 | | | | | | | 333 | | | | | | | | | | | |
| (4) Direct ISE | | 134 | 4 | 3 | 41 | 0 | | | | | | | 41 | | | | | | | | | | | |
| **Sample B** | | 116 | 2,9 | 2,5 | 374 | | CVP | 116 | 0,37 | 7% | 107 | 125 | 374 | 371 | 99 | | | | | | | 0 | | |
| (3) Indirect ISE | | 116 | 3 | 2,6 | 333 | 1 | | | | | | | 333 | | | | | | | | | | | |
| (4) Direct ISE | | 117 | 2,5 | 2,1 | 41 | 0 | | | | | | | 41 | | | | | | | | | | | |
| (15) **Cholesterol** | [mmol/L] | | | | 363 | | | | | | | | 0 | | | | | | | | | 360 | 343 | 95 |
| **Sample A** | | 5,8 | 0,17 | 3 | 363 | | | | | | | | 0 | | | | | | | | | 360 | 346 | 96 |
| (0) Not specified | | 5,8 | 0,17 | 2,9 | 360 | 0 | | | | | | | | | | CRV | 5,933 | 0,066 | 9% | 5,39 | 6,47 | 360 | | |
| Other | | | | | 3 | 0 | | | | | | | 0 | | | | | | | | | 0 | | |
| | | | | | | | 3x 0/149 | | | | | | | | | 3x 0/149 | | | | | | | | |
| **Sample B** | | 4,38 | 0,13 | 3 | 363 | | | | | | | | 0 | | | | | | | | | 360 | 349 | 97 |
| (0) Not specified | | 4,39 | 0,13 | 3 | 360 | 0 | | | | | | | | | | CRV | 4,483 | 0,045 | 9% | 4,07 | 4,89 | 360 | | |
| Other | | | | | 3 | 0 | | | | | | | 0 | | | | | | | | | 0 | | |
| | | | | | | | 3x 0/149 | | | | | | | | | 3x 0/149 | | | | | | | | |
| (30) **Cholinesterase** | [µkat/L] | | | | 116 | | | | | | | | 112 | 106 | 95 | | | | | | | 0 | | |
| **Sample A** | | 168 | 8,2 | 4,9 | 116 | | | | | | | | 112 | 106 | 95 | | | | | | | 0 | | |
| (0) Not specified | | 167 | 7,5 | 4,5 | 112 | 0 | CVP | 167 | 1,7 | 12% | 146 | 188 | 112 | | | | | | | | | | | |
| Other | | | | | 4 | 0 | | | | | | | 0 | | | | | | | | | | | |
| | | | | | | | 4x 0/162 | | | | | | | | | | | | | | | | | |
| **Sample B** | | 135 | 5,9 | 4,4 | 116 | | | | | | | | 112 | 106 | 95 | | | | | | | 0 | | |
| (0) Not specified | | 134 | 5,4 | 4 | 112 | 0 | CVP | 134 | 1,3 | 12% | 117 | 151 | 112 | | | | | | | | | | | |
| Other | | | | | 4 | 0 | | | | | | | 0 | | | | | | | | | | | |
| | | | | | | | 4x 0/162 | | | | | | | | | | | | | | | | | |
| (19) **Creatinine** | [µmol/L] | | | | 379 | | | | | | | | 0 | | | | | | | | | 379 | 334 | 88 |
| **Sample A** | | 150 | 7,3 | 4,8 | 379 | | | | | | | | 0 | | | CRV | 146,7 | 1,5 | 13% | 127 | 166 | 379 | 364 | 96 |
| (1) Jaffe | | 155 | 8,3 | 5,4 | 168 | 0 | | | | | | | | | | | | | | | | 168 | | |
| (3) Enzyme | | 147 | 4,5 | 3,1 | 211 | 0 | | | | | | | | | | | | | | | | 211 | | |
| **Sample B** | | 59,7 | 3,9 | 6,5 | 379 | | | | | | | | 0 | | | CRV | 58,14 | 0,58 | 13% | 50,5 | 65,7 | 379 | 338 | 89 |
| (1) Jaffe | | 61,8 | 4,5 | 7,2 | 168 | 0 | | | | | | | | | | | | | | | | 168 | | |
| (3) Enzyme | | 58,2 | 2,9 | 5,1 | 211 | 1 | | | | | | | | | | | | | | | | 211 | | |
| (17) **Uric acid** | [µmol/L] | | | | 375 | | | | | | | | 0 | | | | | | | | | 375 | 373 | 99 |
| **Sample A** | | | | | | | | | | | | | 0 | | | | | | | | | 375 | 373 | 99 |
| (0) Not specified | | 202 | 6,3 | 3,1 | 375 | 0 | | | | | | | | | | CRV | 203,1 | 2 | 12% | 178 | 228 | 375 | | |

# Summary statistics - quantitative results

## EQA round: AKS2/23 - Basic Clinical Chemistry - Serum

Deadline: 7.4.2023

Setup: groups - measurement principle; minimal size of the groups n = 5

| Test / Sample / Group | [unit] | RoM | SD | CV [%] | $N_{tot}$ | $N_{out}$ | Comparability | AV | $U_{AV}$ | $D_{max}$ | LL | UL | $N_{eva}$ | $N_{suc}$ | $S_{rel}$ [%] | Traceability | AV | $U_{AV}$ | $D_{max}$ | LL | UL | $N_{eva}$ | $N_{suc}$ | $S_{rel}$ [%] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample B** | | | | | | | | | | | | | 0 | | | | | | | | | 375 | 375 | 100 |
| (0) Not specified | | 398 | 11 | 2,8 | 375 | 0 | | | | | | | | | | CRV | 391,8 | 3,9 | 12% | 344 | 439 | 375 | | |
| (12) **Lactate** | [mmol/L] | | | | 157 | | | | | | | | 157 | 155 | 99 | | | | | | | 0 | | |
| **Sample A** | | 4,67 | 0,17 | 3,7 | 157 | | CVP | 4,67 | 0,033 | 15% | 3,96 | 5,38 | 157 | 155 | 99 | | | | | | | 0 | | |
| (1) UV enzyme method | | 4,66 | 0,17 | 3,7 | 60 | 0 | | | | | | | 60 | | | | | | | | | | | |
| (2) Enzyme electrodes | | 4,87 | 0,34 | 6,9 | 11 | 0 | | | | | | | 11 | | | | | | | | | | | |
| (3) Photometric enzyme method | | 4,66 | 0,14 | 3 | 86 | 0 | | | | | | | 86 | | | | | | | | | | | |
| **Sample B** | | 3,98 | 0,13 | 3,3 | 157 | | CVP | 3,98 | 0,025 | 15% | 3,38 | 4,58 | 157 | 155 | 99 | | | | | | | 0 | | |
| (1) UV enzyme method | | 3,98 | 0,14 | 3,6 | 60 | 0 | | | | | | | 60 | | | | | | | | | | | |
| (2) Enzyme electrodes | | 4,14 | 0,23 | 5,6 | 11 | 0 | | | | | | | 11 | | | | | | | | | | | |
| (3) Photometric enzyme method | | 3,97 | 0,1 | 2,6 | 86 | 0 | | | | | | | 86 | | | | | | | | | | | |
| (28) **LD** | [µkat/L] | | | | 275 | | | | | | | | 0 | | | | | | | | | 275 | 273 | 99 |
| **Sample A** | | | | | | | | | | | | | 0 | | | | | | | | | 275 | 273 | 99 |
| (0) Not specified | | 4,63 | 0,16 | 3,5 | 275 | 0 | | | | | | | | | | CRV | 4,6 | 0,12 | 18% | 3,77 | 5,43 | 275 | | |
| **Sample B** | | | | | | | | | | | | | 0 | | | | | | | | | 275 | 273 | 99 |
| (0) Not specified | | 3,37 | 0,11 | 3,3 | 275 | 0 | | | | | | | | | | CRV | 3,368 | 0,086 | 18% | 2,76 | 3,98 | 275 | | |
| (29) **Lipase** | [µkat/L] | | | | 188 | | | | | | | | 175 | 172 | 98 | | | | | | | 0 | | |
| **Sample A** | | 2,81 | 0,25 | 8,8 | 188 | | | | | | | | 175 | 175 | 100 | | | | | | | 0 | | |
| (0) Not specified; (1) Abbott | | 2,65 | 0,16 | 6 | 37 | 0 | CVPG | 2,65 | 0,064 | 24% | 2,01 | 3,29 | 37 | | | | | | | | | | | |
| (0) Not specified; (58) Beckman Coulter (AU) | | 2,79 | 0,11 | 4 | 29 | 0 | CVPG | 2,79 | 0,051 | 24% | 2,12 | 3,46 | 29 | | | | | | | | | | | |
| (0) Not specified; (60) Roche | | 2,82 | 0,13 | 4,6 | 73 | 0 | CVPG | 2,82 | 0,037 | 24% | 2,14 | 3,5 | 73 | | | | | | | | | | | |
| (0) Not specified; (116) Sentinel Diagnostics | | 2,55 | 0,27 | 11 | 10 | 0 | CVPG | 2,55 | 0,21 | 24% | 1,93 | 3,17 | 10 | | | | | | | | | | | |
| (0) Not specified; (162) Siemens (Atellica) | | 3,39 | 0,087 | 2,6 | 19 | 0 | CVPG | 3,39 | 0,049 | 24% | 2,57 | 4,21 | 19 | | | | | | | | | | | |
| (0) Not specified; (179) Siemens | | 3,46 | 0,23 | 6,7 | 7 | 0 | CVPG | 3,46 | 0,22 | 24% | 2,62 | 4,3 | 7 | | | | | | | | | | | |
| Other | | | | | 13 | 0 | | | | | | | 0 | | | | | | | | | | | |
| | | | | | | | 2x 0/12, 2x 0/46, 3x 0/49, 1x 0/149, 2x 0/177, 3x 0/178 | | | | | | | | | | | | | | | | | |
| **Sample B** | | 1,01 | 0,072 | 7,2 | 188 | | | | | | | | 175 | 172 | 98 | | | | | | | 0 | | |
| (0) Not specified; (1) Abbott | | 1,03 | 0,066 | 6,4 | 37 | 0 | CVPG | 1,03 | 0,027 | 24% | 0,782 | 1,28 | 37 | | | | | | | | | | | |
| (0) Not specified; (58) Beckman Coulter (AU) | | 1,02 | 0,043 | 4,2 | 29 | 0 | CVPG | 1,02 | 0,02 | 24% | 0,775 | 1,27 | 29 | | | | | | | | | | | |
| (0) Not specified; (60) Roche | | 0,98 | 0,042 | 4,2 | 73 | 0 | CVPG | 0,98 | 0,012 | 24% | 0,744 | 1,22 | 73 | | | | | | | | | | | |
| (0) Not specified; (116) Sentinel Diagnostics | | 0,866 | 0,16 | 18 | 10 | 0 | CVPG | 0,866 | 0,12 | 24% | 0,658 | 1,08 | 10 | | | | | | | | | | | |
| (0) Not specified; (162) Siemens (Atellica) | | 1,1 | 0,03 | 2,8 | 19 | 0 | CVPG | 1,1 | 0,017 | 24% | 0,836 | 1,37 | 19 | | | | | | | | | | | |
| (0) Not specified; (179) Siemens | | 1,12 | 0,067 | 6 | 7 | 0 | CVPG | 1,12 | 0,065 | 24% | 0,851 | 1,39 | 7 | | | | | | | | | | | |
| Other | | | | | 13 | 0 | | | | | | | 0 | | | | | | | | | | | |
| | | | | | | | 2x 0/12, 2x 0/46, 3x 0/49, 1x 0/149, 2x 0/177, 3x 0/178 | | | | | | | | | | | | | | | | | |
| (8) **Lithium** | [mmol/L] | | | | 43 | | | | | | | | 0 | | | | | | | | | 43 | 35 | 81 |
| **Sample A** | | 0,916 | 0,063 | 6,9 | 43 | | | | | | | | 0 | | | CRV | 0,947 | 0,014 | 12% | 0,833 | 1,07 | 43 | 37 | 86 |
| (3) ISE | | 1,03 | 0,096 | 9,4 | 8 | 0 | | | | | | | | | | | | | | | | 8 | | |
| (4) Photometry | | 0,905 | 0,056 | 6,2 | 27 | 0 | | | | | | | | | | | | | | | | 27 | | |
| Other | | | | | 8 | 0 | | | | | | | | | | | | | | | | 8 | | |
| | | | | | | | | | | | | | | | | 4x 1, 4x 2 | | | | | | | | |
| **Sample B** | | 0,833 | 0,065 | 7,9 | 43 | | | | | | | | 0 | | | CRV | 0,857 | 0,013 | 12% | 0,754 | 0,96 | 43 | 36 | 84 |
| (3) ISE | | 0,89 | 0,1 | 12 | 8 | 0 | | | | | | | | | | | | | | | | 8 | | |
| (4) Photometry | | 0,824 | 0,055 | 6,7 | 27 | 0 | | | | | | | | | | | | | | | | 27 | | |
| Other | | | | | 8 | 0 | | | | | | | | | | | | | | | | 8 | | |
| | | | | | | | | | | | | | | | | 4x 1, 4x 2 | | | | | | | | |

# Summary statistics - quantitative results

## EQA round: AKS2/23 - Basic Clinical Chemistry - Serum

Deadline: 7.4.2023

Setup: groups - measurement principle; minimal size of the groups n = 5

| Test / Sample / Group | [unit] | RoM | SD | CV [%] | $N_{tot}$ | $N_{out}$ | Comparability | AV | $U_{AV}$ | $D_{max}$ | LL | UL | $N_{eva}$ | $N_{suc}$ | $S_{rel}$ [%] | Traceability | AV | $U_{AV}$ | $D_{max}$ | LL | UL | $N_{eva}$ | $N_{suc}$ | $S_{rel}$ [%] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (18) **Urea** | [mmol/L] | | | | 379 | | | | | | | | 0 | | | | | | | | | 379 | 375 | 99 |
| **Sample A** | | 19,9 | 0,7 | 3,5 | 379 | | | | | | | | 0 | | | CRV | 20,01 | 0,2 | 15% | 17 | 23,1 | 379 | 376 | 99 |
| (1) UV enzymatic m.(GMD) | | 19,9 | 0,7 | 3,5 | 375 | 0 | | | | | | | | | | | | | | | | 375 | | |
| Other | | | | | 4 | 0 | | | | | | | | | | 2x 0, 2x 2 | | | | | | 4 | | |
| **Sample B** | | 12,8 | 0,5 | 3,9 | 379 | | | | | | | | 0 | | | CRV | 12,97 | 0,13 | 15% | 11 | 15 | 379 | 377 | 99 |
| (1) UV enzymatic m.(GMD) | | 12,8 | 0,5 | 3,9 | 375 | 0 | | | | | | | | | | | | | | | | 375 | | |
| Other | | | | | 4 | 0 | | | | | | | | | | 2x 0, 2x 2 | | | | | | 4 | | |
| (11) **Osmolality** | [mmol/kg] | | | | 133 | | | | | | | | 133 | 131 | 98 | | | | | | | 0 | | |
| **Sample A** | | | | | | | | | | | | | 133 | 132 | 99 | | | | | | | 0 | | |
| (0) Not specified | | 343 | 7,4 | 2,2 | 133 | 0 | CVP | 343 | 1,6 | 5% | 325 | 361 | 133 | | | | | | | | | | | |
| **Sample B** | | | | | | | | | | | | | 133 | 132 | 99 | | | | | | | 0 | | |
| (0) Not specified | | 304 | 4,9 | 1,6 | 133 | 0 | CVP | 304 | 1 | 5% | 288 | 320 | 133 | | | | | | | | | | | |
| (1) **Sodium** | [mmol/L] | | | | 374 | | | | | | | | 0 | | | | | | | | | 374 | 364 | 97 |
| **Sample A** | | 151 | 2,1 | 1,4 | 374 | | | | | | | | 0 | | | CRV | 152,8 | 2,3 | 5% | 145 | 161 | 374 | 365 | 98 |
| (2) Indirect ISE | | 151 | 1,9 | 1,3 | 330 | 0 | | | | | | | | | | | | | | | | 330 | | |
| (3) Direct ISE | | 154 | 5,4 | 3,5 | 44 | 0 | | | | | | | | | | | | | | | | 44 | | |
| **Sample B** | | 138 | 1,8 | 1,3 | 374 | | | | | | | | 0 | | | CRV | 138,3 | 2,1 | 5% | 131 | 146 | 374 | 372 | 99 |
| (2) Indirect ISE | | 138 | 1,7 | 1,2 | 330 | 0 | | | | | | | | | | | | | | | | 330 | | |
| (3) Direct ISE | | 139 | 2,5 | 1,8 | 44 | 0 | | | | | | | | | | | | | | | | 44 | | |
| (20) **Triacylglycerols** | [mmol/L] | | | | 362 | | | | | | | | 0 | | | | | | | | | 362 | 359 | 99 |
| **Sample A** | | 1,52 | 0,078 | 5,1 | 362 | | | | | | | | 0 | | | CRV | 1,546 | 0,015 | 18% | 1,26 | 1,83 | 362 | 359 | 99 |
| (1) Photometric enzyme (GPO-PAP) | | 1,52 | 0,078 | 5,1 | 350 | 0 | | | | | | | | | | | | | | | | 350 | | |
| (2) Enzymatic UV method | | 1,56 | 0,045 | 2,8 | 10 | 0 | | | | | | | | | | | | | | | | 10 | | |
| Other | | | | | 2 | 0 | | | | | | | | | | 2x 0 | | | | | | 2 | | |
| **Sample B** | | 2,1 | 0,076 | 3,6 | 362 | | | | | | | | 0 | | | CRV | 2,104 | 0,021 | 18% | 1,72 | 2,49 | 362 | 362 | 100 |
| (1) Photometric enzyme (GPO-PAP) | | 2,1 | 0,076 | 3,6 | 350 | 0 | | | | | | | | | | | | | | | | 350 | | |
| (2) Enzymatic UV method | | 2,13 | 0,051 | 2,4 | 10 | 0 | | | | | | | | | | | | | | | | 10 | | |
| Other | | | | | 2 | 0 | | | | | | | | | | 2x 0 | | | | | | 2 | | |
| (4) **Calcium** | [mmol/L] | | | | 349 | | | | | | | | 0 | | | | | | | | | 349 | 339 | 97 |
| **Sample A** | | 2,97 | 0,068 | 2,3 | 349 | | | | | | | | 0 | | | CRV | 2,993 | 0,045 | 8% | 2,75 | 3,24 | 349 | 346 | 99 |
| (2) Phot. with o-cresolftalexon | | 2,96 | 0,053 | 1,8 | 27 | 0 | | | | | | | | | | | | | | | | 27 | | |
| (3) Photom. with arsenazo III | | 2,96 | 0,078 | 2,6 | 203 | 0 | | | | | | | | | | | | | | | | 203 | | |
| (4) Photomet. with NM-BAPTA | | 2,98 | 0,055 | 1,8 | 118 | 0 | | | | | | | | | | | | | | | | 118 | | |
| Other | | | | | 1 | 0 | | | | | | | | | | 1x 99 | | | | | | 1 | | |
| **Sample B** | | 2,11 | 0,049 | 2,3 | 349 | | | | | | | | 0 | | | CRV | 2,076 | 0,031 | 8% | 1,9 | 2,25 | 349 | 341 | 98 |
| (2) Phot. with o-cresolftalexon | | 2,11 | 0,051 | 2,4 | 27 | 0 | | | | | | | | | | | | | | | | 27 | | |
| (3) Photom. with arsenazo III | | 2,1 | 0,058 | 2,8 | 203 | 0 | | | | | | | | | | | | | | | | 203 | | |
| (4) Photomet. with NM-BAPTA | | 2,11 | 0,038 | 1,8 | 118 | 0 | | | | | | | | | | | | | | | | 118 | | |
| Other | | | | | 1 | 0 | | | | | | | | | | 1x 99 | | | | | | 1 | | |

# Summary statistics - quantitative results

## EQA round: AKS2/23 - Basic Clinical Chemistry - Serum

Deadline: 7.4.2023

Setup: groups - measurement principle; minimal size of the groups n = 5

| Test / Sample / Group | [unit] | RoM | SD | CV [%] | $N_{tot}$ | $N_{out}$ | Comparability | AV | $U_{AV}$ | $D_{max}$ | LL | UL | $N_{eva}$ | $N_{suc}$ | $S_{rel}$ [%] | Traceability | AV | $U_{AV}$ | $D_{max}$ | LL | UL | $N_{eva}$ | $N_{suc}$ | $S_{rel}$ [%] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (36) **Calcium ionised** | [mmol/L] | | | | 65 | | | | | | | | 65 | 62 | 95 | | | | | | | 0 | | |
| **Sample A** | | 1,7 | 0,068 | 4 | 65 | | CVP | 1,7 | 0,021 | 10% | 1,53 | 1,87 | 65 | 62 | 95 | | | | | | | 0 | | |
| (2) Direct ISE | | 1,7 | 0,065 | 3,8 | 60 | 0 | | | | | | | 60 | | | | | | | | | | | |
| Other | | | | | 5 | 0 | | | | | | | 5 | | | | | | | | | | | |
| | | | | | | | 2x 0, 3x 1 | | | | | | | | | | | | | | | | | |
| **Sample B** | | 1,35 | 0,05 | 3,7 | 65 | | CVP | 1,35 | 0,015 | 10% | 1,21 | 1,49 | 65 | 63 | 97 | | | | | | | 0 | | |
| (2) Direct ISE | | 1,35 | 0,047 | 3,5 | 60 | 0 | | | | | | | 60 | | | | | | | | | | | |
| Other | | | | | 5 | 0 | | | | | | | 5 | | | | | | | | | | | |
| | | | | | | | 2x 0, 3x 1 | | | | | | | | | | | | | | | | | |
| (6) **Iron** | [µmol/L] | | | | 322 | | | | | | | | 322 | 321 | 100 | | | | | | | 0 | | |
| **Sample A** | | 40 | 1,1 | 2,8 | 322 | | CVP | 40 | 0,15 | 15% | 34 | 46 | 322 | 321 | 100 | | | | | | | 0 | | |
| (2) Method with ferrozine/ferene | | 40,1 | 1,2 | 3 | 277 | 0 | | | | | | | 277 | | | | | | | | | | | |
| (4) Method with TPTZ | | 39,8 | 0,8 | 2 | 44 | 0 | | | | | | | 44 | | | | | | | | | | | |
| Other | | | | | 1 | 0 | | | | | | | 1 | | | | | | | | | | | |
| | | | | | | | 1x 99 | | | | | | | | | | | | | | | | | |
| **Sample B** | | 23,8 | 0,75 | 3,2 | 322 | | CVP | 23,8 | 0,1 | 15% | 20,2 | 27,4 | 322 | 321 | 100 | | | | | | | 0 | | |
| (2) Method with ferrozine/ferene | | 23,9 | 0,8 | 3,3 | 277 | 0 | | | | | | | 277 | | | | | | | | | | | |
| (4) Method with TPTZ | | 23,6 | 0,5 | 2,1 | 44 | 0 | | | | | | | 44 | | | | | | | | | | | |
| Other | | | | | 1 | 0 | | | | | | | 1 | | | | | | | | | | | |
| | | | | | | | 1x 99 | | | | | | | | | | | | | | | | | |