

## EQA round: AM1/24 - Basic Clinical Chemistry - Urine

Deadline: 5.4.2024

Setup: groups - R (manufacturer of kit); minimal size of the groups n = 5

|   |  |   |
|---|--|---|
| RoM = robust average  | AV = assigned value  | D <sub>max</sub> = acceptable difference          |
| SD = standard deviation   | CVPG = consensus of the participants' groups                         | LL = lower limit                                  |
| CV = coefficient of variation                                       | CVP = consensus of all participants                                  | UL = upper limit                                  |
| N <sub>tot</sub> = total number of the results                      | U <sub>AV</sub> = expanded uncertainty of the assigned value (k = 2) | N <sub>eva</sub> = number of the results assessed |
| N <sub>out</sub> = number of the results removed before calculation |  | N <sub>suc</sub> = number of successful results   |
|   |  | S <sub>rel</sub> = relative success               |

| Test<br>Sample<br>Group         | [unit]   | RoM   | SD    | CV<br>[%] | N <sub>tot</sub> | N <sub>out</sub> | Comparability                                |                 |                  |       |       | N <sub>eva</sub> | N <sub>suc</sub> | S <sub>rel</sub><br>[%] |     |
|---------------------------------|----------|-------|-------|-----------|------------------|------------------|--|-----------------|------------------|-------|-------|------------------|------------------|-------------------------|-----|
|                                 |          |       |       |           |                  |                  | AV   | U <sub>AV</sub> | D <sub>max</sub> | LL    | UL    |                  |                  |                         |     |
| <b>(71) Total protein</b>       | [g/L]    |       |       |           | 245              |                  |  |                 |                  |       |       | 232              | 228              | 98                      |     |
| <b>Sample A</b>                 |          | 0,587 | 0,082 | 14        | 245              |                  |  |                 |                  |       |       | 232              | 231              | 100                     |     |
| (1) Abbott                      |          | 0,621 | 0,016 | 2,6       | 59               | 0                | CVPG 0,621                                   | 0,005           | 24%              | 0,471 | 0,771 | 59               |                  |                         |     |
| (58) Beckman Coulter (AU)       |          | 0,629 | 0,019 | 3         | 37               | 0                | CVPG 0,629                                   | 0,008           | 24%              | 0,478 | 0,78  | 37               |                  |                         |     |
| (60) Roche                      |          | 0,501 | 0,02  | 4         | 92               | 0                | CVPG 0,501                                   | 0,005           | 24%              | 0,38  | 0,622 | 92               |                  |                         |     |
| (77) Skalab                     |          | 0,605 | 0,008 | 1,4       | 5                | 0                | CVPG 0,605                                   | 0,023           | 24%              | 0,459 | 0,751 | 5                |                  |                         |     |
| (162) Siemens (Atellica)        |          | 0,678 | 0,023 | 3,4       | 30               | 0                | CVPG 0,678                                   | 0,01            | 24%              | 0,515 | 0,841 | 30               |                  |                         |     |
| (179) Siemens                   |          | 0,659 | 0,016 | 2,5       | 9                | 0                | CVPG 0,659                                   | 0,02            | 24%              | 0,5   | 0,818 | 9                |                  |                         |     |
| Other                           |          |       |       |           | 13               | 0                |  |                 |                  |       |       | 0                |                  |                         |     |
|                                 |          |       |       |           |                  |                  | 3x 12, 2x 75, 2x 149, 2x 158, 1x 177, 3x 178 |                 |                  |       |       |                  |                  |                         |     |
| <b>Sample B</b>                 |          | 0,195 | 0,033 | 17        | 245              |                  |  |                 |                  |       |       | 232              | 229              | 99                      |     |
| (1) Abbott                      |          | 0,201 | 0,01  | 5,1       | 59               | 0                | CVPG 0,201                                   | 0,003           | 24%              | 0,152 | 0,25  | 59               |                  |                         |     |
| (58) Beckman Coulter (AU)       |          | 0,203 | 0,008 | 3,9       | 37               | 0                | CVPG 0,203                                   | 0,003           | 24%              | 0,154 | 0,252 | 37               |                  |                         |     |
| (60) Roche                      |          | 0,164 | 0,009 | 5,8       | 92               | 0                | CVPG 0,164                                   | 0,002           | 24%              | 0,124 | 0,204 | 92               |                  |                         |     |
| (77) Skalab                     |          | 0,195 | 0,007 | 3,4       | 5                | 0                | CVPG 0,195                                   | 0,019           | 24%              | 0,148 | 0,242 | 5                |                  |                         |     |
| (162) Siemens (Atellica)        |          | 0,252 | 0,02  | 7,9       | 30               | 0                | CVPG 0,252                                   | 0,009           | 24%              | 0,191 | 0,313 | 30               |                  |                         |     |
| (179) Siemens                   |          | 0,259 | 0,014 | 5,5       | 9                | 0                | CVPG 0,259                                   | 0,017           | 24%              | 0,196 | 0,322 | 9                |                  |                         |     |
| Other                           |          |       |       |           | 13               | 0                |  |                 |                  |       |       | 0                |                  |                         |     |
|                                 |          |       |       |           |                  |                  | 3x 12, 2x 75, 2x 149, 2x 158, 1x 177, 3x 178 |                 |                  |       |       |                  |                  |                         |     |
| <b>(62) Potassium</b>           | [mmol/L] |       |       |           | 269              |                  |  |                 |                  |       |       | 269              | 269              | 100                     |     |
| <b>Sample A</b>                 |          | 71,4  | 2,4   | 3,3       | 269              |                  | CVP  | 71,4            | 0,36             | 15%   | 60,6  | 82,2             | 269              | 269                     | 100 |
| (1) Abbott                      |          | 70,5  | 0,71  | 1         | 64               | 0                |  |                 |                  |       |       | 64               |                  |                         |     |
| (58) Beckman Coulter (AU)       |          | 72,4  | 2,1   | 2,9       | 43               | 0                |  |                 |                  |       |       | 43               |                  |                         |     |
| (60) Roche                      |          | 70,2  | 2,2   | 3,2       | 101              | 0                |  |                 |                  |       |       | 101              |                  |                         |     |
| (162) Siemens (Atellica)        |          | 76,1  | 0,77  | 1         | 30               | 0                |  |                 |                  |       |       | 30               |                  |                         |     |
| (179) Siemens                   |          | 72,6  | 2,4   | 3,3       | 19               | 0                |  |                 |                  |       |       | 19               |                  |                         |     |
| Other                           |          |       |       |           | 12               | 0                |  |                 |                  |       |       | 12               |                  |                         |     |
|                                 |          |       |       |           |                  |                  | 2x 12, 2x 77, 3x 149, 4x 177, 1x 178         |                 |                  |       |       |                  |                  |                         |     |
| <b>Sample B</b>                 |          | 30,9  | 0,77  | 2,5       | 269              |                  | CVP  | 30,9            | 0,12             | 15%   | 26,2  | 35,6             | 269              | 269                     | 100 |
| (1) Abbott                      |          | 30,6  | 0,32  | 1         | 64               | 0                |  |                 |                  |       |       | 64               |                  |                         |     |
| (58) Beckman Coulter (AU)       |          | 31,4  | 0,94  | 3         | 43               | 0                |  |                 |                  |       |       | 43               |                  |                         |     |
| (60) Roche                      |          | 30,7  | 0,71  | 2,3       | 101              | 0                |  |                 |                  |       |       | 101              |                  |                         |     |
| (162) Siemens (Atellica)        |          | 32    | 0,31  | 0,98      | 30               | 0                |  |                 |                  |       |       | 30               |                  |                         |     |
| (179) Siemens                   |          | 31    | 0,77  | 2,5       | 19               | 0                |  |                 |                  |       |       | 19               |                  |                         |     |
| Other                           |          |       |       |           | 12               | 0                |  |                 |                  |       |       | 12               |                  |                         |     |
|                                 |          |       |       |           |                  |                  | 2x 12, 2x 77, 3x 149, 4x 177, 1x 178         |                 |                  |       |       |                  |                  |                         |     |
| <b>(65) Inorganic phosphate</b> | [mmol/L] |       |       |           | 263              |                  |  |                 |                  |       |       | 263              | 262              | 100                     |     |
| <b>Sample A</b>                 |          | 16,1  | 0,7   | 4,3       | 263              |                  | CVP  | 16,1            | 0,11             | 18%   | 13,2  | 19               | 263              | 262                     | 100 |
| (1) Abbott                      |          | 15,6  | 0,37  | 2,4       | 60               | 0                |  |                 |                  |       |       | 60               |                  |                         |     |
| (58) Beckman Coulter (AU)       |          | 16,1  | 0,45  | 2,8       | 42               | 0                |  |                 |                  |       |       | 42               |                  |                         |     |
| (60) Roche                      |          | 16,2  | 0,61  | 3,8       | 97               | 0                |  |                 |                  |       |       | 97               |                  |                         |     |
| (162) Siemens (Atellica)        |          | 17,1  | 0,5   | 2,9       | 31               | 0                |  |                 |                  |       |       | 31               |                  |                         |     |
| (177) Mindray                   |          | 16,5  | 0,67  | 4,1       | 5                | 0                |  |                 |                  |       |       | 5                |                  |                         |     |
| (179) Siemens                   |          | 15,9  | 1,4   | 8,6       | 14               | 0                |  |                 |                  |       |       | 14               |                  |                         |     |
| Other                           |          |       |       |           | 14               | 0                |  |                 |                  |       |       | 14               |                  |                         |     |
|                                 |          |       |       |           |                  |                  | 3x 12, 3x 46, 3x 77, 3x 149, 2x 178          |                 |                  |       |       |                  |                  |                         |     |
| <b>Sample B</b>                 |          | 8,21  | 0,4   | 4,9       | 263              |                  | CVP  | 8,21            | 0,06             | 18%   | 6,73  | 9,69             | 263              | 263                     | 100 |
| (1) Abbott                      |          | 7,98  | 0,26  | 3,3       | 60               | 0                |  |                 |                  |       |       | 60               |                  |                         |     |
| (58) Beckman Coulter (AU)       |          | 8,16  | 0,31  | 3,8       | 42               | 0                |  |                 |                  |       |       | 42               |                  |                         |     |
| (60) Roche                      |          | 8,22  | 0,34  | 4,1       | 97               | 0                |  |                 |                  |       |       | 97               |                  |                         |     |
| (162) Siemens (Atellica)        |          | 8,74  | 0,28  | 3,2       | 31               | 0                |  |                 |                  |       |       | 31               |                  |                         |     |
| (177) Mindray                   |          | 8,3   | 0,15  | 1,8       | 5                | 0                |  |                 |                  |       |       | 5                |                  |                         |     |
| (179) Siemens                   |          | 8,25  | 0,63  | 7,7       | 14               | 0                |  |                 |                  |       |       | 14               |                  |                         |     |
| Other                           |          |       |       |           | 14               | 0                |  |                 |                  |       |       | 14               |                  |                         |     |
|                                 |          |       |       |           |                  |                  | 3x 12, 3x 46, 3x 77, 3x 149, 2x 178          |                 |                  |       |       |                  |                  |                         |     |
| <b>(70) Glucose</b>             | [mmol/L] |       |       |           | 249              |                  |  |                 |                  |       |       | 249              | 247              | 99                      |     |
| <b>Sample A</b>                 |          | 16,2  | 0,37  | 2,3       | 249              |                  | CVP  | 16,2            | 0,057            | 22%   | 12,6  | 19,8             | 249              | 249                     | 100 |
| (1) Abbott                      |          | 16,3  | 0,31  | 1,9       | 67               | 0                |  |                 |                  |       |       | 67               |                  |                         |     |
| (46) Erba Lachema               |          | 16,3  | 0,78  | 4,8       | 7                | 0                |  |                 |                  |       |       | 7                |                  |                         |     |
| (58) Beckman Coulter (AU)       |          | 16,3  | 0,46  | 2,8       | 37               | 0                |  |                 |                  |       |       | 37               |                  |                         |     |
| (60) Roche                      |          | 16,2  | 0,28  | 1,7       | 79               | 0                |  |                 |                  |       |       | 79               |                  |                         |     |
| (162) Siemens (Atellica)        |          | 16,1  | 0,37  | 2,3       | 27               | 0                |  |                 |                  |       |       | 27               |                  |                         |     |
| (177) Mindray                   |          | 16,5  | 0,3   | 1,8       | 5                | 0                |  |                 |                  |       |       | 5                |                  |                         |     |
| (179) Siemens                   |          | 16    | 0,43  | 2,7       | 12               | 0                |  |                 |                  |       |       | 12               |                  |                         |     |

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| Test<br>Sample<br>Group   | [unit]   | RoM  | SD    | CV<br>[%] | N <sub>tot</sub> | N <sub>out</sub> | Comparability   |                 |                  |     |       | N <sub>eva</sub> | N <sub>suc</sub> | S <sub>rel</sub><br>[%] |     |
|---------------------------|----------|------|-------|-----------|------------------|------------------|---|-----------------|------------------|-----|-------|------------------|------------------|-------------------------|-----|
|                           |          |      |       |           |                  |                  | AV  | U <sub>AV</sub> | D <sub>max</sub> | LL  | UL    |                  |                  |                         |     |
| Other                     |          |      |       |           | 15               | 0                |   |                 |                  |     |       | 15               |                  |                         |     |
|                           |          |      |       |           |                  |                  | 1x 5, 2x 12, 1x 29, 2x 49, 3x 149, 2x 178, 1x 187, 1x 188, 2x 199 |                 |                  |     |       |                  |                  |                         |     |
| <b>Sample B</b>           |          | 1,55 | 0,056 | 3,6       | 249              |                  | CVP   | 1,55            | 0,009            | 22% | 1,2   | 1,9              | 249              | 247                     | 99  |
| (1) Abbott                |          | 1,52 | 0,029 | 1,9       | 67               | 0                |   |                 |                  |     |       |                  | 67               |                         |     |
| (46) Erba Lachema         |          | 1,62 | 0,082 | 5         | 7                | 0                |   |                 |                  |     |       |                  | 7                |                         |     |
| (58) Beckman Coulter (AU) |          | 1,54 | 0,051 | 3,3       | 37               | 0                |   |                 |                  |     |       |                  | 37               |                         |     |
| (60) Roche                |          | 1,56 | 0,05  | 3,2       | 79               | 0                |   |                 |                  |     |       |                  | 79               |                         |     |
| (162) Siemens (Atellica)  |          | 1,59 | 0,039 | 2,5       | 27               | 0                |   |                 |                  |     |       |                  | 27               |                         |     |
| (177) Mindray             |          | 1,55 | 0,067 | 4,3       | 5                | 0                |   |                 |                  |     |       |                  | 5                |                         |     |
| (179) Siemens             |          | 1,54 | 0,068 | 4,4       | 12               | 0                |   |                 |                  |     |       |                  | 12               |                         |     |
| Other                     |          |      |       |           | 15               | 0                |   |                 |                  |     |       |                  | 15               |                         |     |
|                           |          |      |       |           |                  |                  | 1x 5, 2x 12, 1x 29, 2x 49, 3x 149, 2x 178, 1x 187, 1x 188, 2x 199 |                 |                  |     |       |                  |                  |                         |     |
| <b>(73) Magnesium</b>     | [mmol/L] |      |       |           | 238              |                  |   |                 |                  |     |       | 238              | 235              | 99                      |     |
| <b>Sample A</b>           |          | 3,6  | 0,12  | 3,4       | 238              |                  | CVP   | 3,6             | 0,02             | 20% | 2,88  | 4,32             | 238              | 236                     | 99  |
| (1) Abbott                |          | 3,66 | 0,13  | 3,4       | 58               | 0                |   |                 |                  |     |       |                  | 58               |                         |     |
| (58) Beckman Coulter (AU) |          | 3,65 | 0,084 | 2,3       | 35               | 0                |   |                 |                  |     |       |                  | 35               |                         |     |
| (60) Roche                |          | 3,58 | 0,1   | 2,9       | 86               | 0                |   |                 |                  |     |       |                  | 86               |                         |     |
| (162) Siemens (Atellica)  |          | 3,53 | 0,075 | 2,1       | 28               | 0                |   |                 |                  |     |       |                  | 28               |                         |     |
| (179) Siemens             |          | 3,49 | 0,15  | 4,2       | 14               | 0                |   |                 |                  |     |       |                  | 14               |                         |     |
| Other                     |          |      |       |           | 17               | 0                |   |                 |                  |     |       |                  | 17               |                         |     |
|                           |          |      |       |           |                  |                  | 4x 12, 1x 50, 4x 77, 3x 149, 4x 177, 1x 178                       |                 |                  |     |       |                  |                  |                         |     |
| <b>Sample B</b>           |          | 1,7  | 0,073 | 4,3       | 238              |                  | CVP   | 1,7             | 0,012            | 20% | 1,36  | 2,04             | 238              | 237                     | 100 |
| (1) Abbott                |          | 1,71 | 0,071 | 4,1       | 58               | 0                |   |                 |                  |     |       |                  | 58               |                         |     |
| (58) Beckman Coulter (AU) |          | 1,71 | 0,046 | 2,7       | 35               | 0                |   |                 |                  |     |       |                  | 35               |                         |     |
| (60) Roche                |          | 1,68 | 0,075 | 4,4       | 86               | 0                |   |                 |                  |     |       |                  | 86               |                         |     |
| (162) Siemens (Atellica)  |          | 1,68 | 0,05  | 3         | 28               | 0                |   |                 |                  |     |       |                  | 28               |                         |     |
| (179) Siemens             |          | 1,71 | 0,17  | 9,6       | 14               | 0                |   |                 |                  |     |       |                  | 14               |                         |     |
| Other                     |          |      |       |           | 17               | 0                |   |                 |                  |     |       |                  | 17               |                         |     |
|                           |          |      |       |           |                  |                  | 4x 12, 1x 50, 4x 77, 3x 149, 4x 177, 1x 178                       |                 |                  |     |       |                  |                  |                         |     |
| <b>(63) Chloride</b>      | [mmol/L] |      |       |           | 269              |                  |   |                 |                  |     |       | 269              | 267              | 99                      |     |
| <b>Sample A</b>           |          | 180  | 3,9   | 2,2       | 269              |                  | CVP   | 180             | 0,58             | 14% | 154   | 206              | 269              | 269                     | 100 |
| (1) Abbott                |          | 181  | 1,9   | 1         | 64               | 0                |   |                 |                  |     |       |                  | 64               |                         |     |
| (58) Beckman Coulter (AU) |          | 184  | 2,2   | 1,2       | 43               | 0                |   |                 |                  |     |       |                  | 43               |                         |     |
| (60) Roche                |          | 178  | 3,7   | 2,1       | 101              | 0                |   |                 |                  |     |       |                  | 101              |                         |     |
| (162) Siemens (Atellica)  |          | 177  | 2     | 1,1       | 30               | 0                |   |                 |                  |     |       |                  | 30               |                         |     |
| (179) Siemens             |          | 181  | 3,2   | 1,8       | 19               | 0                |   |                 |                  |     |       |                  | 19               |                         |     |
| Other                     |          |      |       |           | 12               | 0                |   |                 |                  |     |       |                  | 12               |                         |     |
|                           |          |      |       |           |                  |                  | 2x 12, 2x 77, 3x 149, 4x 177, 1x 178                              |                 |                  |     |       |                  |                  |                         |     |
| <b>Sample B</b>           |          | 79   | 4,2   | 5,4       | 269              |                  | CVP   | 79              | 0,63             | 14% | 67,9  | 90,1             | 269              | 267                     | 99  |
| (1) Abbott                |          | 80,2 | 0,97  | 1,2       | 64               | 0                |   |                 |                  |     |       |                  | 64               |                         |     |
| (58) Beckman Coulter (AU) |          | 81,1 | 0,97  | 1,2       | 43               | 0                |   |                 |                  |     |       |                  | 43               |                         |     |
| (60) Roche                |          | 74,7 | 3,4   | 4,5       | 101              | 0                |   |                 |                  |     |       |                  | 101              |                         |     |
| (162) Siemens (Atellica)  |          | 82,9 | 1,5   | 1,8       | 30               | 0                |   |                 |                  |     |       |                  | 30               |                         |     |
| (179) Siemens             |          | 81,8 | 0,8   | 0,98      | 19               | 0                |   |                 |                  |     |       |                  | 19               |                         |     |
| Other                     |          |      |       |           | 12               | 0                |   |                 |                  |     |       |                  | 12               |                         |     |
|                           |          |      |       |           |                  |                  | 2x 12, 2x 77, 3x 149, 4x 177, 1x 178                              |                 |                  |     |       |                  |                  |                         |     |
| <b>(68) Creatinine</b>    | [mmol/L] |      |       |           | 286              |                  |   |                 |                  |     |       | 286              | 285              | 100                     |     |
| <b>Sample A</b>           |          | 12,1 | 0,52  | 4,3       | 286              |                  | CVP   | 12,1            | 0,076            | 16% | 10,1  | 14,1             | 286              | 285                     | 100 |
| (1) Abbott                |          | 11,8 | 0,42  | 3,6       | 70               | 0                |   |                 |                  |     |       |                  | 70               |                         |     |
| (46) Erba Lachema         |          | 12,3 | 0,59  | 4,8       | 8                | 0                |   |                 |                  |     |       |                  | 8                |                         |     |
| (58) Beckman Coulter (AU) |          | 12,3 | 0,52  | 4,2       | 40               | 0                |   |                 |                  |     |       |                  | 40               |                         |     |
| (60) Roche                |          | 12,3 | 0,49  | 4         | 106              | 0                |   |                 |                  |     |       |                  | 106              |                         |     |
| (162) Siemens (Atellica)  |          | 12,1 | 0,33  | 2,7       | 31               | 0                |   |                 |                  |     |       |                  | 31               |                         |     |
| (179) Siemens             |          | 12,4 | 0,57  | 4,6       | 12               | 0                |   |                 |                  |     |       |                  | 12               |                         |     |
| Other                     |          |      |       |           | 19               | 0                |   |                 |                  |     |       |                  | 19               |                         |     |
|                           |          |      |       |           |                  |                  | 3x 5, 2x 12, 4x 149, 1x 158, 2x 166, 4x 177, 3x 178               |                 |                  |     |       |                  |                  |                         |     |
| <b>Sample B</b>           |          | 5,39 | 0,24  | 4,4       | 286              |                  | CVP   | 5,39            | 0,034            | 16% | 4,52  | 6,26             | 286              | 286                     | 100 |
| (1) Abbott                |          | 5,23 | 0,18  | 3,4       | 70               | 0                |   |                 |                  |     |       |                  | 70               |                         |     |
| (46) Erba Lachema         |          | 5,36 | 0,23  | 4,4       | 8                | 0                |   |                 |                  |     |       |                  | 8                |                         |     |
| (58) Beckman Coulter (AU) |          | 5,44 | 0,25  | 4,7       | 40               | 0                |   |                 |                  |     |       |                  | 40               |                         |     |
| (60) Roche                |          | 5,49 | 0,22  | 4         | 106              | 0                |   |                 |                  |     |       |                  | 106              |                         |     |
| (162) Siemens (Atellica)  |          | 5,41 | 0,17  | 3,1       | 31               | 0                |   |                 |                  |     |       |                  | 31               |                         |     |
| (179) Siemens             |          | 5,46 | 0,36  | 6,6       | 12               | 0                |   |                 |                  |     |       |                  | 12               |                         |     |
| Other                     |          |      |       |           | 19               | 0                |   |                 |                  |     |       |                  | 19               |                         |     |
|                           |          |      |       |           |                  |                  | 3x 5, 2x 12, 4x 149, 1x 158, 2x 166, 4x 177, 3x 178               |                 |                  |     |       |                  |                  |                         |     |
| <b>(69) Uric acid</b>     | [mmol/L] |      |       |           | 256              |                  |   |                 |                  |     |       | 256              | 254              | 99                      |     |
| <b>Sample A</b>           |          | 1,09 | 0,05  | 4,6       | 256              |                  | CVP   | 1,09            | 0,008            | 23% | 0,839 | 1,35             | 256              | 255                     | 100 |
| (1) Abbott                |          | 1,05 | 0,047 | 4,4       | 58               | 0                |   |                 |                  |     |       |                  | 58               |                         |     |
| (46) Erba Lachema         |          | 1,09 | 0,045 | 4,1       | 8                | 0                |   |                 |                  |     |       |                  | 8                |                         |     |
| (58) Beckman Coulter (AU) |          | 1,13 | 0,044 | 3,9       | 39               | 0                |   |                 |                  |     |       |                  | 39               |                         |     |



