# Summary statistics - quantitative results

## EQA round: TDM2/26 - Therapeutic Drugs

Deadline: 9.10.2026

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

RoM = robust average
SD = standard deviation
CV = coefficient of variation
$N_{tot}$ = total number of the results
$N_{out}$ = number of the results removed before calculation
AV = assigned value
CVP = consensus of all participants
CVPG = consensus of the participants' groups
$U_{AV}$ = expanded uncertainty of the assigned value (k = 2)
$D_{max}$ = acceptable difference
LL = lower limit
UL = upper limit
$N_{eva}$ = number of the results assessed
$N_{suc}$ = 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 | $N_{eva}$ | $N_{suc}$ | $S_{rel}$ [%] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Set 1** | | | | | | | | | | | | | | | |
| (81) **Digoxin** | [µg/L] | | | | 124 | | | | | | | | 124 | 113 | 91 |
| **Sample A1** | | 0,963 | 0,13 | 13 | 124 | | CVP | 0,963 | 0,028 | 30% | 0,674 | 1,26 | 124 | 113 | 91 |
| (2) EIA (EMIT, CEDIA) | | 0,982 | 0,1 | 11 | 12 | 0 | | | | | | | 12 | | |
| (4) LIA, ILMA | | 0,984 | 0,12 | 12 | 58 | 0 | | | | | | | 58 | | |
| (6) Immunoturbidimetry, KIMS | | 0,946 | 0,13 | 13 | 52 | 0 | | | | | | | 52 | | |
| Other | | | | | 2 | 0 | | | | | | | 2 | | |
| | | | | | | | 2x 99 | | | | | | | | |
| **Sample B1** | | 1,13 | 0,12 | 11 | 124 | | CVP | 1,13 | 0,027 | 30% | 0,791 | 1,47 | 124 | 121 | 98 |
| (2) EIA (EMIT, CEDIA) | | 1,18 | 0,12 | 9,9 | 12 | 0 | | | | | | | 12 | | |
| (4) LIA, ILMA | | 1,12 | 0,15 | 13 | 58 | 0 | | | | | | | 58 | | |
| (6) Immunoturbidimetry, KIMS | | 1,12 | 0,11 | 9,5 | 52 | 0 | | | | | | | 52 | | |
| Other | | | | | 2 | 0 | | | | | | | 2 | | |
| | | | | | | | 2x 99 | | | | | | | | |
| (87) **Ethosuximide** | [mg/L] | | | | 6 | | | | | | | | 6 | 6 | 100 |
| **Sample A1** | | 42,3 | 3,1 | 7,4 | 6 | | CVP | 42,3 | 4,4 | 24% | 32,1 | 52,5 | 6 | 6 | 100 |
| Other | | | | | 6 | 0 | | | | | | | 6 | | |
| | | | | | | | 3x 3, 3x 5 | | | | | | | | |
| **Sample B1** | | 56,8 | 4,6 | 8,2 | 6 | | CVP | 56,8 | 6,5 | 24% | 43,1 | 70,5 | 6 | 6 | 100 |
| Other | | | | | 6 | 0 | | | | | | | 6 | | |
| | | | | | | | 3x 3, 3x 5 | | | | | | | | |
| (84) **Phenobarbital** | [mg/L] | | | | 21 | | | | | | | | 21 | 19 | 90 |
| **Sample A1** | | 28,5 | 2,5 | 8,7 | 21 | | CVP | 28,5 | 1,3 | 20% | 22,8 | 34,2 | 21 | 19 | 90 |
| (6) Immunoturbidimetry, KIMS | | 27,8 | 1,9 | 6,7 | 7 | 0 | | | | | | | 7 | | |
| Other | | | | | 14 | 0 | | | | | | | 14 | | |
| | | | | | | | 1x 1, 3x 2, 4x 3, 3x 4, 3x 5 | | | | | | | | |
| **Sample B1** | | 19,1 | 1,3 | 6,6 | 21 | | CVP | 19,1 | 0,68 | 20% | 15,2 | 23 | 21 | 20 | 95 |
| (6) Immunoturbidimetry, KIMS | | 18,7 | 0,77 | 4,1 | 7 | 0 | | | | | | | 7 | | |
| Other | | | | | 14 | 0 | | | | | | | 14 | | |
| | | | | | | | 1x 1, 3x 2, 4x 3, 3x 4, 3x 5 | | | | | | | | |
| (85) **Phenytoin** | [mg/L] | | | | 26 | | | | | | | | 26 | 25 | 96 |
| **Sample A1** | | 6,95 | 0,57 | 8,1 | 26 | | CVP | 6,95 | 0,27 | 20% | 5,56 | 8,34 | 26 | 26 | 100 |
| (2) EIA (EMIT, CEDIA) | | 6,91 | 0,87 | 13 | 5 | 0 | | | | | | | 5 | | |
| (4) LIA, ILMA | | 6,94 | 0,41 | 5,9 | 5 | 0 | | | | | | | 5 | | |
| (6) Immunoturbidimetry, KIMS | | 7,15 | 0,37 | 5,2 | 9 | 0 | | | | | | | 9 | | |
| Other | | | | | 7 | 0 | | | | | | | 7 | | |
| | | | | | | | 2x 1, 3x 3, 2x 5 | | | | | | | | |
| **Sample B1** | | 23 | 1,6 | 7,1 | 26 | | CVP | 23 | 0,79 | 20% | 18,4 | 27,6 | 26 | 25 | 96 |
| (2) EIA (EMIT, CEDIA) | | 22,1 | 3,1 | 14 | 5 | 0 | | | | | | | 5 | | |
| (4) LIA, ILMA | | 22,8 | 1 | 4,6 | 5 | 0 | | | | | | | 5 | | |
| (6) Immunoturbidimetry, KIMS | | 23,6 | 1 | 4,2 | 9 | 0 | | | | | | | 9 | | |
| Other | | | | | 7 | 0 | | | | | | | 7 | | |
| | | | | | | | 2x 1, 3x 3, 2x 5 | | | | | | | | |
| (86) **Carbamazepin** | [mg/L] | | | | 42 | | | | | | | | 42 | 41 | 98 |
| **Sample A1** | | 13 | 0,87 | 6,6 | 42 | | CVP | 13 | 0,33 | 20% | 10,4 | 15,6 | 42 | 41 | 98 |
| (2) EIA (EMIT, CEDIA) | | 13,1 | 0,78 | 6 | 11 | 0 | | | | | | | 11 | | |
| (4) LIA, ILMA | | 12,7 | 1,1 | 8,5 | 12 | 0 | | | | | | | 12 | | |
| (6) Immunoturbidimetry, KIMS | | 13,1 | 1 | 7,6 | 15 | 0 | | | | | | | 15 | | |
| Other | | | | | 4 | 0 | | | | | | | 4 | | |
| | | | | | | | 2x 3, 2x 5 | | | | | | | | |
| **Sample B1** | | 10,4 | 0,59 | 5,7 | 42 | | CVP | 10,4 | 0,22 | 20% | 8,32 | 12,5 | 42 | 42 | 100 |
| (2) EIA (EMIT, CEDIA) | | 10,6 | 0,61 | 5,7 | 11 | 0 | | | | | | | 11 | | |
| (4) LIA, ILMA | | 10,2 | 0,73 | 7,1 | 12 | 0 | | | | | | | 12 | | |
| (6) Immunoturbidimetry, KIMS | | 10,3 | 0,66 | 6,5 | 15 | 0 | | | | | | | 15 | | |
| Other | | | | | 4 | 0 | | | | | | | 4 | | |
| | | | | | | | 2x 3, 2x 5 | | | | | | | | |
| (88) **Valproic acid** | [mg/L] | | | | 83 | | | | | | | | 83 | 80 | 96 |
| **Sample A1** | | 59,4 | 3,7 | 6,3 | 83 | | CVP | 59,4 | 1 | 20% | 47,5 | 71,3 | 83 | 81 | 98 |
| (2) EIA (EMIT, CEDIA) | | 59,8 | 4,5 | 7,5 | 30 | 0 | | | | | | | 30 | | |
| (4) LIA, ILMA | | 58,9 | 2,9 | 4,9 | 21 | 0 | | | | | | | 21 | | |
| (6) Immunoturbidimetry, KIMS | | 59,6 | 3,8 | 6,4 | 29 | 0 | | | | | | | 29 | | |
| Other | | | | | 3 | 0 | | | | | | | 3 | | |
| | | | | | | | 2x 1, 1x 5 | | | | | | | | |

# Summary statistics - quantitative results

## EQA round: TDM2/26 - Therapeutic Drugs

Deadline: 9.10.2026

Setup: groups - M (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 | $N_{eva}$ | $N_{suc}$ | $S_{rel}$ [%] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample B1** | | 97,9 | 5,2 | 5,3 | 83 | | CVP | 97,9 | 1,4 | 20% | 78,3 | 118 | 83 | 82 | 99 |
| (2) EIA (EMIT, CEDIA) | | 97,3 | 6 | 6,2 | 30 | 0 | | | | | | | 30 | | |
| (4) LIA, ILMA | | 98,8 | 4,9 | 4,9 | 21 | 0 | | | | | | | 21 | | |
| (6) Immunoturbidimetry, KIMS | | 97,9 | 3,9 | 4 | 29 | 0 | | | | | | | 29 | | |
| Other | | | | | 3 | 0 | | | | | | | 3 | | |
| | | | | | | | 2x 1, 1x 5 | | | | | | | | |
| (91) **Lithium** | [mmol/L] | | | | 22 | | | | | | | | 22 | 21 | 95 |
| **Sample A1** | | 1,09 | 0,038 | 3,5 | 22 | | CVP | 1,09 | 0,02 | 12% | 0,959 | 1,23 | 22 | 22 | 100 |
| (5) Spectrophotometry | | 1,1 | 0,035 | 3,2 | 18 | 0 | | | | | | | 18 | | |
| Other | | | | | 4 | 0 | | | | | | | 4 | | |
| | | | | | | | 1x 2, 1x 3, 1x 4, 1x 6 | | | | | | | | |
| **Sample B1** | | 0,518 | 0,031 | 5,9 | 22 | | CVP | 0,518 | 0,016 | 12% | 0,455 | 0,581 | 22 | 21 | 95 |
| (5) Spectrophotometry | | 0,519 | 0,031 | 6 | 18 | 0 | | | | | | | 18 | | |
| Other | | | | | 4 | 0 | | | | | | | 4 | | |
| | | | | | | | 1x 2, 1x 3, 1x 4, 1x 6 | | | | | | | | |
| (83) **Primidone** | [mg/L] | | | | 8 | | | | | | | | 8 | 7 | 88 |
| **Sample A1** | | 10,1 | 0,93 | 9,3 | 8 | | CVP | 10,1 | 0,71 | 24% | 7,67 | 12,6 | 8 | 7 | 88 |
| Other | | | | | 8 | 0 | | | | | | | 8 | | |
| | | | | | | | 1x 2, 3x 3, 4x 5 | | | | | | | | |
| **Sample B1** | | 3,32 | 0,34 | 10 | 8 | | CVP | 3,32 | 0,26 | 24% | 2,52 | 4,12 | 8 | 8 | 100 |
| Other | | | | | 8 | 0 | | | | | | | 8 | | |
| | | | | | | | 1x 2, 3x 3, 4x 5 | | | | | | | | |
| (82) **Theophylline** | [mg/L] | | | | 75 | | | | | | | | 75 | 74 | 99 |
| **Sample A1** | | 15 | 0,83 | 5,5 | 75 | | CVP | 15 | 0,23 | 19% | 12,1 | 17,9 | 75 | 74 | 99 |
| (2) EIA (EMIT, CEDIA) | | 15,2 | 0,93 | 6,1 | 19 | 0 | | | | | | | 19 | | |
| (4) LIA, ILMA | | 14 | 1,2 | 8,7 | 12 | 0 | | | | | | | 12 | | |
| (6) Immunoturbidimetry, KIMS | | 15,2 | 0,72 | 4,8 | 40 | 0 | | | | | | | 40 | | |
| Other | | | | | 4 | 0 | | | | | | | 4 | | |
| | | | | | | | 3x 1, 1x 99 | | | | | | | | |
| **Sample B1** | | 16,5 | 0,85 | 5,1 | 75 | | CVP | 16,5 | 0,24 | 19% | 13,3 | 19,7 | 75 | 75 | 100 |
| (2) EIA (EMIT, CEDIA) | | 16,8 | 1,1 | 6,5 | 19 | 0 | | | | | | | 19 | | |
| (4) LIA, ILMA | | 15,5 | 1 | 6,8 | 12 | 0 | | | | | | | 12 | | |
| (6) Immunoturbidimetry, KIMS | | 16,7 | 0,62 | 3,7 | 40 | 0 | | | | | | | 40 | | |
| Other | | | | | 4 | 0 | | | | | | | 4 | | |
| | | | | | | | 3x 1, 1x 99 | | | | | | | | |

## Set 2

| Test / Sample / Group | [unit] | RoM | SD | CV [%] | $N_{tot}$ | $N_{out}$ | Comparability | AV | $U_{AV}$ | $D_{max}$ | LL | UL | $N_{eva}$ | $N_{suc}$ | $S_{rel}$ [%] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (89) **Amicacin** | [mg/L] | | | | 46 | | | | | | | | 46 | 43 | 93 |
| **Sample A2** | | 7,01 | 0,58 | 8,3 | 46 | | CVP | 7,01 | 0,21 | 20% | 5,6 | 8,42 | 46 | 43 | 93 |
| (2) EIA (EMIT, CEDIA) | | 7,19 | 0,44 | 6,2 | 13 | 0 | | | | | | | 13 | | |
| (6) Immunoturbidimetry, KIMS | | 6,92 | 0,59 | 8,6 | 32 | 0 | | | | | | | 32 | | |
| Other | | | | | 1 | 0 | | | | | | | 1 | | |
| | | | | | | | 1x 1 | | | | | | | | |
| **Sample B2** | | 14,2 | 0,7 | 5 | 46 | | CVP | 14,2 | 0,25 | 20% | 11,3 | 17,1 | 46 | 46 | 100 |
| (2) EIA (EMIT, CEDIA) | | 13,6 | 0,82 | 6 | 13 | 0 | | | | | | | 13 | | |
| (6) Immunoturbidimetry, KIMS | | 14,4 | 0,65 | 4,5 | 32 | 0 | | | | | | | 32 | | |
| Other | | | | | 1 | 0 | | | | | | | 1 | | |
| | | | | | | | 1x 1 | | | | | | | | |
| (90) **Gentamicin** | [mg/L] | | | | 70 | | | | | | | | 70 | 69 | 99 |
| **Sample A2** | | 3,91 | 0,56 | 14 | 70 | | | | | | | | 70 | 69 | 99 |
| (2) EIA (EMIT, CEDIA) | | 4,47 | 0,37 | 8,3 | 17 | 0 | CVP | 4,21 | 0,13 | 31% | 2,9 | 5,52 | 17 | | |
| (4) LIA, ILMA | | 4,17 | 0,36 | 8,6 | 10 | 0 | CVP | 4,21 | 0,13 | 31% | 2,9 | 5,52 | 10 | | |
| (6) Immunoturbidimetry, KIMS | | 3,99 | 0,18 | 4,6 | 18 | 0 | CVP | 4,21 | 0,13 | 31% | 2,9 | 5,52 | 18 | | |
| (6) Immunoturbidimetry, KIMS; (60) Roche | | 3,35 | 0,16 | 4,7 | 24 | 0 | CVPG | 3,35 | 0,079 | 21% | 2,64 | 4,06 | 24 | | |
| Other | | | | | 1 | 0 | | | | | | | 1 | | |
| | | | | | | | 1x 1 | | | | | | | | |
| **Sample B2** | | 6,99 | 1,1 | 16 | 70 | | | | | | | | 70 | 70 | 100 |
| (2) EIA (EMIT, CEDIA) | | 8,08 | 0,68 | 8,4 | 17 | 0 | CVP | 7,6 | 0,24 | 31% | 5,24 | 9,96 | 17 | | |
| (4) LIA, ILMA | | 7,62 | 0,8 | 11 | 10 | 0 | CVP | 7,6 | 0,24 | 31% | 5,24 | 9,96 | 10 | | |
| (6) Immunoturbidimetry, KIMS | | 7,21 | 0,3 | 4,1 | 18 | 0 | CVP | 7,6 | 0,24 | 31% | 5,24 | 9,96 | 18 | | |
| (6) Immunoturbidimetry, KIMS; (60) Roche | | 5,82 | 0,17 | 2,9 | 24 | 0 | CVPG | 5,82 | 0,085 | 21% | 4,59 | 7,05 | 24 | | |
| Other | | | | | 1 | 0 | | | | | | | 1 | | |
| | | | | | | | 1x 1 | | | | | | | | |
| (93) **Methotrexate** | [µmol/L] | | | | 12 | | | | | | | | 12 | 11 | 92 |
| **Sample A2** | | 0,083 | 0,008 | 9,7 | 12 | | CVP | 0,083 | 0,006 | 30% | 0,058 | 0,108 | 12 | 11 | 92 |
| (4) LIA, ILMA | | 0,084 | 0,006 | 7 | 7 | 0 | | | | | | | 7 | | |
| Other | | | | | 5 | 0 | | | | | | | 5 | | |
| | | | | | | | 3x 2, 1x 5, 1x 6 | | | | | | | | |
| **Sample B2** | | 3,54 | 0,28 | 7,8 | 12 | | CVP | 3,54 | 0,2 | 30% | 2,47 | 4,61 | 12 | 12 | 100 |
| (4) LIA, ILMA | | 3,48 | 0,27 | 7,7 | 7 | 0 | | | | | | | 7 | | |

# Summary statistics - quantitative results

## EQA round: TDM2/26 - Therapeutic Drugs

Deadline: 9.10.2026

Setup: groups - M (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 | $N_{eva}$ | $N_{suc}$ | $S_{rel}$ [%] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Other | | | | | 5 | 0 | | | | | | | 5 | | |
| | | | | | | | 3x 2, 1x 5, 1x 6 | | | | | | | | |
| (94) **Paracetamol** | [mg/L] | | | | 15 | | | | | | | | 15 | 14 | 93 |
| **Sample A2** | | 18,6 | 1,1 | 5,9 | 15 | | CVP | 18,6 | 0,69 | 20% | 14,8 | 22,4 | 15 | 14 | 93 |
| (2) EIA (EMIT, CEDIA) | | 18,6 | 0,92 | 4,9 | 9 | 0 | | | | | | | 9 | | |
| Other | | | | | 6 | 0 | | | | | | | 6 | | |
| | | | | | | | 1x 0, 3x 6, 2x 99 | | | | | | | | |
| **Sample B2** | | 34,4 | 1,7 | 4,9 | 15 | | CVP | 34,4 | 1,1 | 20% | 27,5 | 41,3 | 15 | 14 | 93 |
| (2) EIA (EMIT, CEDIA) | | 34,4 | 2,4 | 6,9 | 9 | 0 | | | | | | | 9 | | |
| Other | | | | | 6 | 0 | | | | | | | 6 | | |
| | | | | | | | 1x 0, 3x 6, 2x 99 | | | | | | | | |
| (92) **Vankomycin** | [mg/L] | | | | 77 | | | | | | | | 77 | 77 | 100 |
| **Sample A2** | | 12,8 | 1 | 7,9 | 77 | | CVP | 12,8 | 0,28 | 28% | 9,21 | 16,4 | 77 | 77 | 100 |
| (2) EIA (EMIT, CEDIA) | | 11,9 | 1 | 8,4 | 19 | 0 | | | | | | | 19 | | |
| (4) LIA, ILMA | | 14 | 0,72 | 5,2 | 11 | 0 | | | | | | | 11 | | |
| (6) Immunoturbidimetry, KIMS | | 12,9 | 0,59 | 4,6 | 44 | 0 | | | | | | | 44 | | |
| Other | | | | | 3 | 0 | | | | | | | 3 | | |
| | | | | | | | 2x 1, 1x 5 | | | | | | | | |
| **Sample B2** | | 29,7 | 2,5 | 8,4 | 77 | | CVP | 29,7 | 0,69 | 28% | 21,3 | 38,1 | 77 | 77 | 100 |
| (2) EIA (EMIT, CEDIA) | | 26,9 | 1,9 | 7 | 19 | 0 | | | | | | | 19 | | |
| (4) LIA, ILMA | | 32,5 | 1,2 | 3,6 | 11 | 0 | | | | | | | 11 | | |
| (6) Immunoturbidimetry, KIMS | | 30,2 | 1,4 | 4,6 | 44 | 0 | | | | | | | 44 | | |
| Other | | | | | 3 | 0 | | | | | | | 3 | | |
| | | | | | | | 2x 1, 1x 5 | | | | | | | | |