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Reference values for clinical chemistry tests

Analyte	**Age**	**Reference range**	**Units**	**Refe-rence**
Adrenocorticotropic hormone (P-ACTH)	≥ 18 y	Morning 7.00–10.00 a.m 1.6–13.9	pmol/L	1, 2
Alanine aminotransferase (S,P-ALAT)	< 1 y 1 y – < 4 y 4 y – < 7 y 7 y – < 13 y 13 y – < 18 y ≥ 18 y	< 71 < 31 < 36 < 44 < 45 M < 50 F < 35	U/L	1 1, 2
Albumin (S,P-Alb)	< 4 d 4 d – < 14 y 14 y – < 18 y ≥ 18 y	28–44 38–54 32–45 35–52	g/L	2, 5 2
Albumin (high sensitivity) (S,P-Alb-hs)	< 4 d 4 d – < 14 y 14 y – < 18 y ≥ 18 y	28–44 38–54 32–45 35–52	g/L	2
Albumin in cerebrospinal fluid CSF-Alb CSF-Alb/S-Alb-hs	 ≥ 18 y < 1 m 1 m – < 6 m 6 m – < 16 y 16 y – < 41 y 41 y – < 61 y	 110–350 < 0.025 < 0.015 < 0.005 < 0.007 < 0.008	 mg/L	 2 1 (2004) 1, 2
Albumin in urine U-Alb/U-Crea dU-Alb	< 1 m 1 m – < 1 y 1 y – < 6 y 6 y – < 11 y 11 y – < 16 y ≥ 16 y All age groups	< 21 < 3.8 < 3.3 < 2.7 < 2.1 M < 2.5 F < 3.5 < 30	g/moL mg/d µg/min	1 5 2
Alcohol surrogates (P-Alcohol surrogates) Metanol (P-MetOH) Etanol (P-EtOH) Isopropanol (P-Isopropanol) Propanol (P-Propanol) Acetone (P-Acetone) Etylenglycol (P-EG) Propylenglycol (P-PG)	 All age groups	 < 0,02 < 0,2 < 0,01 < 0,02 < 0,01 < 0,06 < 0,1	 g/L	
Aldosterone (S,P-Aldo)	4 d – < 8 d 1 m – < 1 y 1 y – < 2 y 2 y – < 10 y 10 y – < 15 y ≥ 15 y	supine 5.0–175.0 supine 5.0–90.0 supine 7.0–54.0 upright 5.0–80.0 upright 4.0–48.0 upright 3.7–43.2	ng/dL	5 42
Amylase (S,P-Amyl)	≥ 18 y	28–100	U/L	1, 2
Alpha-1-antitrypsin (S,P-AAT)	< 1 m	1.24–3.48	g/L	1

	1 m – < 7 m 7 m – < 3 y 3 y – < 20 y ≥ 20 y	1.11–2.97 0.95–2.51 1.10–2.80 0.90–2.00		 2
Alpha-fetoprotein (S-AFP)	6 m – < 1 y 1 y – < 19 y ≥ 19 y	2.9–57.3 ≤ 5.8 ≤ 5.8		44 2
Alkaline phosphatase (S,P-ALP)	< 15 d 15 d – < 1 y 1 y – < 10 y 10 y – < 13 y 13 y – < 15 y 15 y – < 17 y 17 y – < 19 y ≥ 19 y	83–248 122–469 142–335 129–417 M 116–468 F 57–254 M 82–331 F 50–117 M 55–149 F 45–87 M 40–129 F 35–104	U/L	 2
Alkaline phosphatase, isoenzymes, fraction activity (S-ALP-isoE)	≥ 18y	liver 1 < 71 bone < 69 liver 2 < 13 intestine < 13	U/L	
Amphetamines in urine (U-Amp)	All age groups	negative		
Amikacin (S,P-Amic)	All age groups	Pre-dose (trough) concentration: therapeutic range 5–10 toxic > 10	mg/L	2
Ammonia (P-NH4)	< 2 d 2 d – < 6 d 6 d – < 18 y ≥ 18 y	< 144 < 134 < 48 M 16–60 F 11–51	µmol/L	1 (2004) 2
Androstenedione (S,P-Androst)	< 2 y 2 y – < 4 y 4 y – < 6 y 6 y – < 8 y 8 y – < 10 y 10 y – < 12 y 12 y – < 14 y 14 y – < 16 y 16 y – < 18 y ≥ 18 y	M 3.4–22.2 F 1.1–19.9 M < 10.3 F < 11.1 M < 5.8 F < 11.3 M < 6.5 F < 8.7 M < 4.5 F < 5.3 M < 7.8 F < 12.4 M < 9.5 F 1.7–11.6 M 1.6–12.2 F 2.4–15.4 M 3.4–14.6 F 1.4–17.3 M 2.1–10.8 F 1.0–11.5	nmol/L	32 48
Angiotensin-converting enzyme (S,P-ACE)	6 m – < 18 y ≥ 18 y	29–112 20–70	U/L	 17
Anti-Myller Hormone (S,P-AMH)	≥ 18 y 20 y – < 25 y 25 y – < 30 y 30 y – < 35 y 35 y – < 40 y 40 y – < 45 y 45 y – < 51 y	M 0.8–14.5 F 1.2–11.7 F 0.9–9.9 F 0.6–8.1 F 0.1–7.5 F 0.03–5.5 F 0.01–2.7	µg/L	2
Antistreptolysin O (S,P-ASO)	< 6 y 6 y – < 18 y ≥ 18 y	< 150 < 240 < 200	kU/L	1 1, 2
Aripiprazole and dehydroaripiprazole (P-Aripiprazole+dehydroaripiprazole)	All age groups	Therapeutic range 150–500 Toxic > 1000	µg/L	11
Aspartate aminotransferase (S,P-ASAT)	< 2 d 2 d – < 6 d	< 122 < 110	U/L	1

	6 d – < 1 y 1 y – < 4 y 4 y – < 7 y 7 y – < 13 y 13 y – < 18 y ≥ 18 y	< 96 < 71 < 53 < 50 < 46 M < 50 F < 35		1, 2
Barbiturates in urine (U-Bar)	All age groups	negative		
Benzodiazepines (S,P-Bzd)	All age groups	Therapeutic and toxic concentrations of different benzodiazepines are different, ask comment from laboratory	µg/L	8
Benzodiazepines in urine (U-Bzd)	All age groups	negative		
Beta-2-microglobulin (S,P- β2-M)	1 d – < 1 m 1 m – < 6 m 6 m – < 1 y 1 y – < 4 y 4 y – < 7 y 7 y – < 10 y 10 y – < 13 y 13 y – < 16 y 16 y – < 19 y 19 y – 60 y ≥ 60 y	M 1603–4790 F 1722–4547 M 1423–3324 F 1024–3774 M 897–3095 F 999–2282 M 827–2228 F 742–2396 M 567–2260 F 546–2170 M 772–1712 F 736–1766 M 699–1836 F 704–1951 M 681–1954 F 787–1916 M 724–1874 F 555–1852 800–2400 ≤ 3000	µg/L	3 2
Betahydroxybutyrate (POCT) (B-BHB POCT)	All age groups	< 0,6	mmol/L	45
Bile acids (S,P-TBA)	≥ 18 y	< 10	µmol/L	2
Bilirubin (S,P-Bil)	< 2 d (full term) 2 d – < 3 d (full term) 3 d – < 4 d (full term) 4 d – < 7 d (full term) < 2 d (preterm) 2 d – < 3 d (preterm) 3 d – < 6 d (preterm) 1 m – < 18 y ≥ 18 y	< 150 < 193 < 217 < 216 < 140 < 205 < 410 < 17 < 21	µmol/L	1 2
Bilirubin (conjugated) (S,P-Bil-conj)	< 1 m ≥ 1 m	< 10 ≤ 5	µmol/L	1 2
B-type natriuretic propeptide, N-terminal fragment (S,P-NT-proBNP)	1 y – < 2 y 2 y – < 6 y 6 y – < 18 y ≥ 17 y	< 400 < 300 < 160 < 125 (cut-off value for excluding chronic heart failure) < 300 (cut-off value for excluding acute heart failure)	ng/L	25 2
Cocaine in urine (U-Coc)	All age groups	negative		
C-peptide (S,P-C-pept)	≥ 18 y	0.37–1.47	nmol/L	1, 2
C-reactive protein (S,P-CRP)	≥ 18 y	< 5	mg/L	1, 2

C-reactive protein, high sensitivity (S,P-CRP-hs)	< 3 w 2 m – < 16 y ≥ 18 y	< 4.1 < 2.8 For cardiovascular disease risk assessment: low risk < 1.0 medium risk 1.0–3.0 high risk > 3.0	mg/L	1 2
Dehydroepiandrosterone sulfate (S,P-DHEAS)	< 1 w 1 w – < 1 m 1 m – < 1 y 1 y – < 5 y 5 y – < 10 y 10 y – < 15 y 15 y – < 20 y 20 y – < 25 y 25 y – < 35 y 35 y – < 45 y 45 y – < 55 y 55 y – < 65 y 65 y – < 75 y ≥ 75 y	2.93–16.5 0.86–11.7 0.09–3.35 0.01–0.53 0.08–2.31 M 0.66–6.70 F 0.92–7.60 M 1.91–13.4 F 1.77–9.99 M 5.73–13.4 F 4.02–11.0 M 4.34–12.2 F 2.68–9.23 M 2.41–11.6 F 1.65–9.15 M 1.20–8.98 F 0.96–6.95 M 1.40–8.01 F 0.51–5.56 M 0.91–6.76 F 0.26–6.68 M 0.44–3.34 F 0.33–4.18	µmol/L	1, 2
Delta amino-levulinic acid in urine (U-DALA)	≥ 18 y	< 34,3	µmol/L	31
Delta amino-levulinic acid/creatinine in urine (U-DALA/U-Crea)	≥ 18 y	< 3,9	mmol/mol	36
Digoxin (S,P-Digox)	≥ 18 y	Therapeutic level 0.5–2.0 Toxic > 2.0	µg/L	5 2
Erythropoietin (S,P-EPO)	1 y – < 4 y 4 y – < 7 y 7 y – < 10 y 10 y – < 13 y 13 y – < 16 y 16 y – < 18 y ≥ 18 y	M 1.7–17.9 F 2.1–15.9 M 3.5–21.9 F 2.9–8.5 M 1.0–13.5 N 2.1–8.2 M 1.0–14.0 N 1.1–9.1 M 2.2–14.4 N 3.8–20.5 M 1.5–15.2 N 2.0–14.2 4.3–29.0	U/L	3 48
Ethanol (S,P-EtOH)	All age groups	< 0.2	g/L	23
Ecstasy in urine (U-Ecs)	All age groups	negative		
Phenobarbital (S,P-Phenobarb)	All age groups	Therapeutic range10–30 Toxic > 40	mg/L	2
Ferritin (S,P-Fer)	< 1 y 1 y – < 4 y 4 y – < 7 y 7 y – < 13 y 13 y – < 18 y 18 y – < 61 y	12–327 6–67 4–67 M 14–124 F 7–84 M 14–152 F 13–68 M 30–400 F 13–150	µg/L	1 2
Folate (S,P-Fol)	< 7 y 7 y – < 12 y 12 y – < 18 y 18 y – < 66 y	> 17.3 > 37.9 > 17.8 8.8–60.8	nmol/L	44 2
Follicle stimulating hormone (S,P-FSH)	< 1 y 1 y – < 9 y 9 y– < 12 y 12 y – < 18 y ≥ 18 y	M 0.1–3.2 N 1.6–19 M 0.2–2.1 N 0.7–5.8 M 0.4–4.2 N 0.5–7.6 M 0.9–7.1 N 0.9–9.1 M 1.5–12.4 F follic. 3.5–12.5 ovul 4.7–21.5 luteal 1.7–7.7	U/L	44 1, 2

		postmenop 25.8–134.8		
Phosphate (S,P-P)	<15 d 15 d – < 1 y 1 y – < 5 y 5 y – < 13 y 13 y – < 16 y 16 y – < 19 y ≥ 19 y	1.71–3.15 1.47–2.54 1.33–2.06 1.28–1.82 F 1.00–1.70 M 1.11–1.88 0.94–1.55 0.81–1.45	mmol/L	44 2
Phosphate in urine U-P (first morning urine) dU-P U-P/U-Crea	 ≥ 18 y 12 y – < 61 y 6 m – < 1 y 1 y– < 2 y 2 y – < 3 y 3 y – < 5 y 5 y – < 7 y 7 y – < 10 y 10 y – < 14 y 14 y – < 18 y	 13–44 13–42 1.2–19 1.2–14 1.2–12 1.2–8.0 1.2–5.0 1.2–3.6 0.8–3.2 0.8–2.7	 mmol/L mmol/d mol/mol	 1, 2 1, 2 4
Gamma glutamyltransferase (S,P-GGT)	< 2 d 2 d – < 6 d 6 d – < 7 m 7 m – < 1 y 1 y – < 4 y 4 y – < 7 y 7 y – < 13 y 13 y – < 18 y ≥ 18 y	< 151 < 185 < 204 < 34 < 18 < 23 < 17 M < 45 F < 33 M < 60 F < 40	U/L	1 1, 2
Gamma-hydroxybutyrate in urine (U-GHB)	All age groups	negative		
Gastrin (S,P-Gastr)	≥ 18 y	6.2–54.8	pmol/L	48
Gentamicin (S,P-Genta)	All age groups	Pre-dose (trough) concentration: therapeutic range 0.5–2 toxic > 2	mg/L	2
Glucose in serum/plasma, fasting (fS,fP-Gluc)	< 2 d 2 d – < 1 m 1 m – < 18 y ≥ 18 y	2.2–3.3 2.8–4.4 3.3–5.6 ≤ 6.0	mmol/L	5 15
Glucose in cerebrospinal fluid CSF-Gluc CSF-Gluc/S,P-Gluc	 < 18 y ≥ 18 y ≥ 18 y	 3.33–4.44 2.22–3.89 ~0.6	 mmol/L	 2 2 13
Glycated hemoglobin (B-HbA1c)	All age groups	4.8–5.9 29–42	% of total Hb mmol/mol	2
Glucose tolerance test (GTT): • Glucose in serum/plasma, fasting (fS,fP-Gluc 0 min) • Glucose in serum/plasma, 120 min after oral administration of glucose (S,P-Gluc 120 min)	All age groups	<u>Normal</u>: 0 min ≤ 6.0 120 min < 7.8 <u>Diabetes:</u> 0 min ≥ 7.0 120 min ≥ 11.1 <u>Impaired glucose tolerance (IGT):</u> 0 min < 7.0 120 min 7.8–11.0	mmol/L	15

		Impaired fasting glucose (IFG): 0 min 6.1–6.9 120 min < 7.8		
Glucose-6-phosphate dehydrogenase (RBC-G6PD/B-Hb)	≥ 18 y	6.4–10.4	U/g	33
Haloperidol (P-Haloperidol)	All age groups	Therapeutic range 1–10 Toxic > 15	µg/L	11
Acid-base balance (aB-ABB) pH (aB-pH) Oxygen, partial pressure (aB-pO_2) Carbon dioxide, partial pressure (aB-pCO_2) Bicarbonate (aB-HCO_3) Base excess (aB-BE)	 ≥ 1 d ≥ 1 d ≥ 18 y ≥ 18 y ≥ 18 y	 7.35–7.45 83–108 M 35–48 F 32–45 M 24–31 F 22–31 M (-2.7) –(+2.5) F (-3.4)–(+1.4)	 mmHg mmHg mmol/L	5 35
Haptoglobin (S,P-Hapto)	< 15 d 15 d – < 1 y 1 y– < 12 y 12 y – < 18 y ≥ 1 8y	< 0.1 0.1–2.2 0.1–1.6 0.1–1.8 0.3–2.0	g/L	5 2
Hemoglobin in plasma (P-Hb)	≥ 18 y	< 100	mg/L	5
Holotranscobalamin (S-HoloTC)	20 y – < 80 y	37.5–188	pmol/L	2
Homocysteine (S,P-Hcy)	5 d – < 1 y 1 y – < 7 y 7 y – < 12 y 12 y – < 15 y 15 y – < 19 y ≥ 19 y	< 10.0 < 7.6 < 8.4 < 10.4 N < 11.9 M < 13.4 < 12.0	µmol/L	44 2
Monoclonal immunoglobulines in serum (S-Monclon-Ig)	All age groups	Normal finding is negative for monoclonal immunoglobulines		
Monoclonal immunoglobulines in urine (U-Monoclon-Ig)	All age groups	Normal finding is negatiive for monoclonal immunoglobulines		
Immunoglobulin A (S,P-IgA)	< 1 y 1 y – < 3 y 3 y – < 6 y 6 y – < 14 y 14 y – < 19 y ≥ 19 y	3.2–12.0 1.5–6.3 3.2–9.9 5.0–11.7 6.0–13.1 0.70–4.00	g/L	44 2
Immunoglobulin G (S,P-IgG)	< 15 d 15 d – < 1 y 1 y – < 4 y 4 y – < 10 y 10 y – < 19 y ≥ 19y	3.2–12.0 1.5–6.3 3.2–9.9 5.0–11.7 6.0–13.1 7.00–16.00	g/L	44 2
Immunoglobulin G in cerebrospinal fluid (CSF-IgG)	≥ 18 y	10–30	mg/L	2
Immunoglobulin G index (CSF-S-IgG-ind)	≥ 18 y	< 0.6		7
Immunoglobulin M (S,P-IgM)	< 15 d 15 d – < 13 w 13 w – < 1 y 1 y – < 19 y	< 0.3 0.1–0.7 0.1–0.8 M 0.4–1.4 N 0.4–1.8	g/L	44

	≥ 19 y	0.40–2.30		2
Immunoglobulin free light chains: • kappa free light chains (S,P-IgKappa free) • lambda free light chains (S,P-IgLambda free) • ratio: kappa free light chains/lambda free light chains	≥ 20 y	3.30–19.40 5.71–26.30 0.26–1.65	mg/L	 2
Insulin (S,P-Ins)	 3 y – < 3.5 y 3.5 y – < 4 y 4 y – < 4.5 y 4.5 y – < 5 y 5 y – < 5.5 y 5.5 y – < 6 y 6 y – < 6.5 y 6.5 y – < 7 y 7 y – < 7.5 y 7.5 y – < 8 y 8 y – < 8.5 y 8.5 y – < 9 y 9 y – < 9.5 y 9.5 y – < 10 y 10 y – < 10.5 y 10.5 y – < 11 y ≥ 18 y	Women Men 0.5–8.4 0.4–7.0 0.6–8.7 0.4–7.7 0.6–9.0 0.5–8.3 0.7–9.3 0.6–8.8 0.8–9.6 0.7–9.2 0.9–9.7 0.8–9.5 1.0–9.8 0.9–9.8 1.1–10.0 1.0–10.0 1.3–10.3 1.1–10.2 1.4–10.8 1.2–10.5 1.6–11.4 1.3–10.9 1.9–12.2 1.5–11.4 2.2–13.1 1.7–12.1 2.5–14.1 1.9–12.9 2.8–15.1 2.1–13.5 3.2–16.1 2.4–14.2 2.6–24.9	mU/L	26 1, 2
Insulin-like growth factor 1 (S,P-IGF-1)	 < 1y 1 y 2 y 3 y 4 y 5 y 6 y 7 y 8 y 9 y 10 y 11 y 12 y 13 y 14 y 15 y 16 y 17 y 18 y 19 y 20 y 21 y – < 23 y 23 y – < 25 y 25 y – < 27 y 27 y – < 29 y 29 y – < 31 y 31 y – < 36 y 36 y – < 41 y	Women Men 16–143 13–138 19–160 18–176 22–178 23–212 25–198 28–247 29–219 34–282 34–244 40–316 39–271 46–349 45–302 53–382 52–336 60–414 59–371 68–443 67–407 75–469 75–440 83–490 82–467 90–505 89–488 96–514 94–501 101–516 98–505 104–512 101–502 107–502 102–493 109–488 103–478 109–472 102–461 109–453 100–441 108–432 95–419 105–411 89–376 100–369 83–336 94–330 78–303 89–297 74–278 84–270 69–260 77–250 65–236 72–225	µg/L	41

	41 y – < 46 y 46 y – < 51 y 51 y – < 56 y 56 y – < 61 y 61 y – < 71 y 71 y – < 81 y ≥ 81 y	59–215 65–210 54–199 59–200 48–187 54–197 43–176 48–194 37–170 43–195 34–168 38–194 31–176 35–183		
Interleukin 6 (S-IL-6)	≥ 18 y	< 7	ng/L	2
Potassium (S,P-K)	1 d – < 8 d 8 d – < 1 m 1 m – < 7 m 7 m – < 1 y 1y – < 18 y ≥ 18 y	3.2–5.5 3.4–6.0 3.5–5.6 3.5–6.1 3.3–4.6 3.4–4.8	mmol/L	1 5
Potassium in urine dU-K U-K (first morning urine)	6 y – < 10 y 10 y – < 15 y ≥ 15 y ≥ 18 y	M 17–54 F 8–37 M 22–57 F 18–58 25–125 20–80	mmol/d mmol/L	5 1, 2, 5 1
Calprotectin in stool (St-Calpro)	6 m – < 2 y 2 y – < 4 y ≥ 4 y	< 250 < 100 ≤ 50	µg/g	47
Calcitonin (S,P-CT)	< 3 m 3 m – < 6 m 6 m – < 9 m 9 m – < 18 m 18 m – < 3 y 3 y – < 17 y ≥ 17 y	≤ 10 ≤ 8.0 ≤ 6.4 ≤ 5.0 ≤ 3.0 ≤ 2.0 M ≤ 2.78 N ≤ 1.87	pmol/L	46 2
Calcium (S,P-Ca)	< 11 d 11 d – < 3 y 3 y – < 13 y 13 y – < 18 y 18 y – < 60 y 60 y – < 90 y ≥ 90 y	1.90–2.60 2.25–2.75 2.20–2.70 2.10–2.55 2.15–2.50 2.20–2.55 2.05–2.40	mmol/L	1 2
Calcium (ionized) (S,P-iCa)	≥ 18 y	1.16–1.32	mmol/L	1
Calcium in urine dU-Ca U-Ca/U-Crea	 < 18 y ≥ 18 y 6 m – < 1 y 1 y – < 2 y 2 y – < 3 y 3 y – < 5 y 5 y – < 7 y 7 y – < 18y	 < 0.15 2.5–7.5 0.09–2.2 0.07–1.5 0.06–1.4 0.05–1.1 0.04–0.8 0.04–0.7	 mmol/kg/d mmol/d mol/mol	 1 2 4
Cannabinoids in urine (U-THC)	All age groups	negative		
Carbamazepine (S,P-Carba)	All age groups	Therapeutic range 4–12 Toxic > 15	mg/L	2, 5
Carboxyhemoglobin (B-COHb)	≥ 18 y	0.5–1.5	% of total Hb	5
Carcinoembryonic antigen (S,P-CEA)	20 y – < 70 y	Non-smokers < 3.8 Smokers < 5.5	µg/L	1, 2
Carbohydrate antigen 15-3 (S,P-CA 15-3)	≥ 18 y	≤ 25	kU/L	1, 2
Carbohydrate antigen 19-9 (S,P-CA 19-9)	≥ 18 y	< 27	kU/L	1, 2
Carbohydrate antigen 72-4 (S,P-CA	≥ 18 y	< 6.9	kU/L	2

72-4)				
Carbohydrate antigen 125 (S,P-CA 125)	≥ 18 y	F < 35	kU/L	1, 2
HE4 (S,P-HE4) ROMA value	Premenopausal Postmenopausal Premenopausal Postmenopausal	< 70 < 140 < 11.4 low risk of finding epithelial ovarian cancer < 29.9 low risk of finding epithelial ovarian cancer	pmol/L %	2 2
S-100 (S-S-100)	≥ 18 y	≤ 0.105	µg/L	1, 2
Growth hormone (S,P-GH)	< 7 d 7 d – < 1 m 1 m – < 18 y ≥ 18 y	18.0–168.0 18.0–114.0 < 18.0 < 30.0	mU/L	32 42
Thyroid-stimulating hormone (S,P-TSH)	< 6 d 6 d – < 4 m 4 m – < 1 y 1 y – < 7 y 7 y – < 12 y 12 y – < 21 y ≥ 21 y	0.70–15.2 0.72–11.0 0.73–8.35 0.70–5.97 0.60–4.84 0.51–4.30 0.27–4.2	mU/L	1 1, 2
Thyroid stimulating antibodies (S,P-TSI)	≥ 18 y	< 0.1 > 0.55 cut off for Graves disease	U/L	48
Chloride (S,P-Cl)	1 d – < 7 m 7 m – < 1 y 1 y – < 18 y ≥ 18 y	97–108 97–106 97–107 98–107	mmol/L	1 1, 2
Chloride in sweat (Sw-Cl)		normal < 30 borderline 30–60 cystic fibrosis > 60	mmol/L	28
Chloride in urine dU-Cl U-Cl (first morning urine)	< 1 y 1 y – < 6 y 6 y – < 10 y 10 y – < 15 y ≥ 15 y ≥ 18 y	2–10 15–40 M 36–110 F 18–74 M 64–176 F 36–173 110–250 46–168	mmol/d mmol/L	5 1, 2, 5 1
Cholesterol (S,P-Chol)	1 d – < 1 m 1 m – < 6 m 6 m – < 1 y 1 y – < 4 y 4 y – < 7 y 7 y – < 10 y 10 y – < 13 y 13 y – < 16 y 16 y – < 18 y ≥18 y recommended	M 1.40–3.90 F 1.60–4.01 M 2.09–3.80 F 1.60–3.65 M 1.97–4.63 F 1.97–5.59 M 2.20–4.71 F 2.79–4.99 M 2.84–5.61 F 2.74–4.99 M 2.84–5.46 F 2.69–5.43 M 2.72–5.77 F 2.72–5.64 M 2.35–5.28 F 2.79–5.30 M 2.12–4.97 F 2.38–6.05 < 5.0	mmol/L	1 16
HDL-Cholesterol (S,P-HDL-Chol)		M > 1.0 N > 1.2	mmol/L	16
Non-HDL-Cholesterol (S,P-non-HDL-Chol)	≥18 y recommended	< 3.9	mmol/L	16
LDL-Cholesterol (S,P-LDL-Chol)	≥18 y recommended	< 3	mmol/L	16
Complement component 3 (S,P-C3)	< 15 d 15 d – < 1y 1 y – < 19 y ≥ 19 y	0.57–1.29 0.58–1.69 0.9–1.61 0.9–1.8	g/L	44 1, 2
Complement component 4 (S,P-C4)	< 1 y	0.07–0.31	g/L	44

	1 y – < 19 y ≥ 19 y	0.13–0.38 0.1–0.4		1,2
Cholinesterase (S,P-ChE)	< 16 y ≥ 16 y 16 y - < 40 y ≥ 40 y Pregnant woman, or woman using oral contraceptives (18 y – < 42 y)	5320–12920 M 5320–12920 F 4260–11250 F 5320–12920 F 3650–9120	U/L	1, 2
Dibucain number	Phenotype UU Phenotype UA Phenotype AA Risk of scolin-apnoe	≥ 73 57–72 ≤ 72 <57		
Chorionic gonadotropin (intact + β subunit) (S,P-hCG intact + β subunit)	≥ 18 y	M < 2.0 F nonpregnant ≤ 1.0 postmenopausal ≤ 7.0 During pregnancy according to weeks of gestation	U/L	2
Chorionic gonadotropin, free β subunit (S-fβ-hCG)		Result is considered in complex of I trimester pregnancy screening	U/L	
Cortisol (S,P-Cort)	< 1 k 1 k – < 1 a 1 a – < 12 a 12 a – < 19 a ≥ 19 a	15–396 18–552 66–410 100–480 6–10 a.m 133–537 4–8 p.m 68.2–327	nmol/L	44 1, 2
Creatine kinase (S,P-CK)	< 2 d 2 d – < 6 d 6 d – < 7 m 7 m – < 1 y 1 y – < 4 y 4 y – < 7 y 7 y – < 13 y 13 y – < 18 y ≥ 18 y	< 712 < 652 < 295 < 203 < 228 < 149 M < 247 F < 154 M < 270 F < 123 M < 308 F < 192	U/L	1 2
Creatine kinase, MB isoenzyme, mass (S,P-CK-MBm)	≥ 18 y	M < 6.22 F < 4.88	µg/L	2
Creatinine (S,P-Crea)	Preterm neonates < 2 m 2 m – < 1 y 1 y – < 3 y 3 y – < 5 y 5 y – < 7 y 7 y – < 9 y 9 y – < 11 y 11 y – < 13 y 13 y – < 15 y ≥ 15 y	29–87 27–77 14–34 15–31 23–37 25–42 30–47 29–56 39–60 40–68 M 59–104 F 45–84	µmol/L	2
Creatinine in urine U-Crea (first morning urine) dU-Crea	 ≥ 18 y 3 y – < 9 y 9 y – < 13 y 13 y – < 18 y	 M 3.5–24.6 F 2.6–20.0 0.97–6.0 1.5–12.5 2.6–16.5	 mmol/L mmol/d	 2 3

	≥ 18 y	M 9.0–19.0 F 6.0–13.0		2
Creatinine clearance	5 d – < 8 d 1 m – < 3 m 3 m – < 1 y 3 y – < 14 y ≥ 18 y	> 38 > 54 > 64 > 120 66–143	mL/min/1,73m^2 mL/min/1,73m^2	1 (2004) 1 (2004)
Estimated glomerular filtration rate (eGFR (Crea, CKD-EPI))	≥ 18 y	≥ 90	mL/min/1,73m^2	12
Cryoglobulins (S-Cryo)	≥ 18 y	< 50	mg/L	38
Uric acid (S,P-UA)	1 d – < 1 m 1 m – < 1 y 1 y – < 4 y 4 y – < 7 y 7 y – < 10 y 10 y – < 13 y 13 y – < 16 y 16 y – < 19 y ≥ 19 y	M 71–230 F 59–271 M 71–330 F 65–319 M 124–330 F 106–295 M 106–325 F 118–301 M 106–319 F 106–325 M 130–342 F 148–348 M 183–413 F 130–378 M 124–448 F 142–389 M 202–417 F 143–339 Target level in case of podagra therapy < 360	µmol/L	1 2
Uric acid in urine dU-UA U-UA (first morning urine)	 ≥ 18 y ≥ 18 y	 1.2–5.9 2.2–5.5	 mmol/d mmol/L	 1, 2 1, 2
Lactate dehydrogenase (S,P- LDH)	< 15 p 15 p – < 1a 1a – < 10 a 10 a – < 15 a 15 a – < 19 a ≥ 19 a	< 1128 < 424 < 305 < 260 < 240 < 250	U/L	44 2
Lactate dehydrogenase in pleural fluid (PlrF-LDH) expressed by ratio PlrF-LDH/S,P-LDH	All age groups	Transudate < 0.6 Exudate > 0.6		13, 1
Lactate vP-Lac aP-Lac	 ≥ 18 y ≥ 18 y	 < 2.2 < 1.6	 mmol/L	 1, 2
Lactate in cerebrospinal fluid (CSF-Lac)	< 3 d 3 d – < 11 d 11 d – < 18 y ≥ 18 y	1.1–6.7 1.1–4.4 1.1–2.8 1.1–2.4	mmol/L	1, 2
Lactose tolerance test (LTT)	All age groups	A rise in the blood glucose concentration > 1.1 mmol/L indicates the absence of lactase deficiency		20
Lamotrigine (S,P-Lamotr)	All age groups	Therapeutic 1.5–15 Toxic > 20	mg/L	9
Leflunomiid (P-Leflunomide)	All age groups	Therapeutic range is not uniquely determined. Before conception level must be < 0.02	mg/L	10
Lithium (S-Li)	≥ 18 y	Therapeutic 0.6–1.2 Toxic > 2	mmol/L	2
Lipase (S,P-Lip)	< 1 m 1 m – < 13 y 16 y – < 18 y	< 34 < 31 < 55	 U/L	1

	≥ 18 y	13–60		2
Luteinizing hormone (S,P-LH)	< 6 m 6 m – < 11 y 11 y – < 14 y 14 y – < 18 y ≥ 18 y	M < 6.2 F < 8.2 M < 1.3 F < 1.3 M < 2.0 F < 10.0 M 1.3–8.4 F 0.4–25 M 1.7–8.6 F follic.phase 2,4–12,6 Ovul 14–95,6 lut.phase 1.0–11.4 postmenop 7.7–58.5	U/L	44 1, 2
Magnesium (S,P-Mg)	2 d – < 5 d 5 m – < 6 y 6 y – < 12 y 12 y – < 20 y 20 y – < 60 y 60 y – < 90 y ≥ 90 y	0.62–0.91 0.70–0.95 0.70–0.86 0.70–0.91 0.66–1.07 0.66–0.99 0.70–0.95	mmol/L	2, 5
Magnesium in urine dU-Mg U-Mg	 ≥ 18 y ≥ 18 y	 3.0–5.0 1.7–5.7	 mmol/d mmol/L	 2 1 (2004)
Methadone in urine (U-Mtd)	All age groups	negative		
Metamphetamines in urine (U-Met)	All age groups	negative		
Methemoglobin (B-MetHb)	≥ 18 y	< 0.6	% of total Hb	35
Meropenem (P-Meropenem)	All age groups	Therapeutic range is not uniquely determined, effect is assessed using minimal inhibitory concentration (MIC)	mg/L	21
Methotrexate (S,P-MTX)	All age groups	Therapeutic range depends on dose of MTX and specimen collecting time	µmol/L	39
Mycophenolic acid (P-MPA)	All age groups	Depends on the type of transplantate and concomitant administration of some other drugs		2
Myoglobin (S,P-Myogl)	≥ 18 y	M 28–72 F 25–58	µg/L	1, 2
Sodium (S,P-Na)	< 8 d 8 d – < 2 m 2 m – < 7 m 7 m – < 1 y 1 y – < 18 y ≥ 18 y	131–144 132–142 132–140 131–140 132–141 136–145	mmol/L	1 2
Sodium in urine dU-Na U-Na (first morning urine)	 6 y – < 10 y 10 y – < 15 y ≥ 15 y ≥ 18 y	 M 41–115 F 20–69 M 63–177 F 48–168 M 40–220 F 27–287 54–190	 mmol/d mmol/L	 5 1
Neuron specific enolase (S-NSE)	≥ 18 y	< 16.3	µg/L	2
Neutrophil gelatinase-associated lipocalin in urine (U-NGAL)	≥ 18 y	≤ 131.7	µg/L	39
Olanzapine (P-Olanzapine	All age groups	Therapeutic 20–80 Toxic > 100	µg/L	11
Oligoclonal immunoglobulin G in cerebrospinal fluid (CSF-IgG-oligo)	All age groups	Normal finding is negative		

Opiates in urine (U-Mop)	All age groups	negative		
Osmolality (S-Osmol)	18 y – < 61 y ≥ 61 y	275–295 280–300	mosm/kgH_2O	1
Osmolality in urine (U-Osmol)	≥ 18 y	400–800	mosm/kgH_2O	1
Parathyroid hormone (S-PTH)	< 1 k 1 k – < 1 a 1 a – < 11 a 11 a – < 19 a ≥ 19 a	0,7–6,3 0,9–6,5 1,2–6,3 1,6–7,2 M, F 1.6–6.9	pmol/L	44 1, 2
Paracetamol (S,P-Paracet)	≥ 18 y	Therapeutic range 10–30 Toxic > 200 (4 h after administration) > 100 (8 h after administration) > 50 (12 h after administration)	mg/L	2
Piperacillin (P-Piperacillin)	All age groups	Therapeutic range is not uniquely determined, effect is assessed using minimal inhibitory concentration (MIC)	mg/L	21
Posaconazole (P-Posaconazole)	All age groups	Therapeutic range is not uniquely determined, in case of prophylactic therapy suggested concentration is > 0,7	mg/L	18
Porphobilinogen in urine U-PBG U-PBG/U-Crea	 ≥ 18 y ≥ 18 y	 < 8.84 < 1.5	 µmol/L mmol/mol	 31 6
Porphyrines in urine U-Porph U-Porph/U-Crea	 ≥ 18 a ≥ 18 a	 20–320 < 38	 nmol/L µmol/mol	 31 36
Prealbumin (S-PreAlb)	< 15 d 15 d – < 1 y 1 y – < 5 y 5 y – < 13 y 13 y – < 16 y 16 y – < 19 y ≥ 19 y	< 0.11 0.04–0.24 0.11–0.23 0.13–0.26 0.17–0.31 M 0.2–0.35 N 0.16–0.33 0.20–0.40	g/L	1 1, 2
Progesterone (S,P-Prog)	F 1 m – < 12 y F 12 y – < 19 y M 1 m – < 19 y ≥ 19 y	< 3 < 38 < 3 M 0.7–4.3 F follic.phase 0.6–4.7 ovulat.phase 2.4–9.4 lut.phase 5.3–86 postmenop. 0.3–2.5	nmol/L	44 1, 2
Procalcitonin (S,P-PCT)	≥ 3 d	< 0.05 Value > 2 is indicative for sepsis	µg/L	2
Prolactin (S,P-Prol)	1 m– < 1 y 1 y – < 19 y ≥ 19 y	110–1274 64–532 M 86–324 F 102–496	mU/L	44 2
Prostate-specific antigen (S,P-PSA)	< 40 y	< 1.4	µg/L	1, 2

	40 y – < 50 y 50 y – < 60 y 60 y – < 70 y ≥ 70 y	< 2.0 < 3.1 < 4.1 < 4.4		
Free prostate-specific antigen (S,P-fPSA%)	All age groups	The risk of prostate cancer increases if fPSA% is < 15–25%	%	2
Pregnancy assotiated protein A (S-PAPP-A)		Result is considered in complex of I trimester pregnancy screening	U/L	
Iron (S,P-Fe)	< 14 y 14 y – < 19 y ≥ 19 y	M, F 5.0–25.0 M 8.0–31.0 F 6.0–31.0 M 11.0–28.0 F 6.6–26.0	µmol/L	44 1
Renin (P-Renin)	14 d – < 4 m 4 m – < 1 y 1 y – < 3 y 3 y – < 5 y 5 y – < 7 y 7 y – < 11 y 11 y – < 15 y 15 y – < 18 y ≥ 18 y	11.2–147.9 supine 17.4–173.8 supine 21.4–102.3 supine 19.5–123.0 supine 20.4–128.8 supine 14.8–102.3 supine 13.8–104.7 supine 13.8–72.4 supine 5.3–99.1 upright	mU/L	43 42
Rheumatoid factor (S,P-RF)	≥ 18 y	< 14	kU/L	1, 2
Risperidone and 9-hydroksyrisperidoyne (P-Risperidone+9-hydroxyrisperidone)	All age groups	Therapeutic 20–60 Toxic > 120	µg/L	11
Salicylates (S,P-Salic)	≥ 18 y	Therapeutic range: antipyretic, analgetic 30–100 anti-inflammatory 150–300 Toxic > 300 lethal > 600	mg/L	2
Sirolimus (B-Sirolimus)	All age groups	Therapeutic range depends on indications of Sirolimus administration and specimen collection time	µg/L	39
Sex hormone binding protein (S,P-SHBG) Free androgen index (FAI)	< 1 k 1 k – < 13 a 13 a – < 15 a 15 a – < 19 a 19 a – < 50 a ≥ 50 y 20 y – < 50 y ≥ 50 y	> 16 > 37,5 21,1–152 M 13,6–62 N 21,6–127,0 M 18.3–54.1 F 32.4–128 M 20.6–76.7 F 27.1–128 M 35.0–92.6 F 0.297–5.62 M 24.30–72.1 F 0.187–3.63	nmol/L % 	44 2 2
Tacrolimus (B-Tacro)	All age groups	Therapeutic range depends on indications of Tacrolimus administration and specimen collection time	µg/L	39
Theophylline (S,P-Theoph)	All age groups	Therapeutic range for bronchodilatation:	mg/L	

	(exept newborns) ≥ 18 y	10–20 Treatment of neonatal apnoe: 6–13 Toxic: > 20		1, 2 5 5
Testosteron (S,P-Testo)	< 6 m 6 m – < 11 y 11 y – < 19 y 11 y – < 15 y 15 y – < 19 y 19 y – < 50 y ≥ 50 y 18 y – < 50 y ≥ 50 y	M 0.2–19 F < 12 M, F < 0.10 F < 1.8 M < 20 M 1.7–24 M 8.64–29.0 F 0.29–1.67 M 6.68–25.7 F 0.10–1.42 M > 0.220 M > 0.180	nmol/L nmol/L	44 2 19
Transferrin (S,P-Transf) Transferrin saturation	< 9 w 9 w – < 1 y 1 y – < 19 y ≥ 19 y ≥ 18 y	1.11–2.43 1.15–3.52 2.38–3.66 2.0–3.6 16–45	g/L %	44 2 1
Soluble transferrin receptor (S,P-Transf-sR)	9 m – < 1 y 18 y – < 83 y	4.1–7.7 1.71–4.13	mg/L	22 2
Triglycerides (S,P-Trigl)	Preterm neonates ≥ 18 y	< 0.7 recommended < 1.7 fasting < 2.0 nonfasting	mmol/L	1 16, 2
Triiodthyronine (S,P-T3)	< 6 d 6 d – < 4 m 4 m – < 1 y 1 y – < 7 y 7 y – < 12 y 12 y – < 21 y ≥ 21 y	1.12–4.43 1.23–4.22 1.32–4.07 1.42–3.80 1.43–3.55 1.40–3.34 1.30–3.10	nmol/L	1 1, 2
Free triiodthyronine (S,P-fT3)	< 6 d 6 d – < 4 m 4 m – < 1 y 1 y – < 7 y 7 y – < 12 y 12 y – < 21 y ≥ 21 y Pregnancy	2.65–9.68 3.00–9.28 3.30–8.95 3.69–8.46 3.88–8.02 3.93–7.70 3.10–6.80 I trim 3.8–6.0 II trim 3.2–5.5 III trim 3.1–5.0	pmol/L	1 1, 2 1
Tricyclic antidepressants in urine (U-TCA)	All age groups	negative		
Troponin T (high sensitivity) (S,P-cTnT-hs)	≥ 18 y	< 14 ≥ 14 myocardial necrosis	ng/L	2, 29
Ceruloplasmin (S,P-Cer)	< 2 m 2 m – < 6 m 6 m – < 1 y 1 y – < 8 y 8 y – < 14 y 14 y – < 19 y ≥ 19 y	0.07–0.24 0.13–0.33 0.14–0.39 0.22–0.43 0.21–0.40 M 0.17–0.35 N 0.21–0.43 M 0.15–0.30 F 0.16–0.45	g/L	5, 44 2

Zinc (S-Zn)	≥ 18 y	M 11.1–19.5 F 10.7–17.5	µmol/L	14
Antibodies to cyclic citrullinated peptide (S,P-CCP IgG)	All age groups	< 17	kU/L	2
Cyclosporin A (B-CyA)	All age groups	Therapeutic range depends on indications of CyA administration and specimen collection time	µg/L	2
Cystatin C (S,P-CysC)	< 1 m 1 m – < 1 y 1 y – < 2 y 2 y – < 3 y 3 y – < 5 y 5 y – < 6 y 6 y – < 9 y 9 y – < 10 y 10 y – < 11 y 11 y – < 12 y 12 y – < 13 y 13 y – < 14 y 14 y – < 15 y 15 y – < 16 y 16 y – < 17 y 17 y – < 18 y 18 y – < 78 y	1.1–2.2 0.5–1.4 M 0.74–1.22 F 0.74-1.20 M 0.67–1.10 F 0.67–1.08 M 0.65–1.06 F 0.64–1.04 M 0.65–1.07 F 0.66–1.06 M 0.65–1.09 F 0.67–1.08 M 0.66–1.10 F 0.68–1.09 M 0.66–1.11 F 0.68–1.11 M 0.67–1.13 F 0.69-1.14 M 0.69–1.17 F 0.68–1.16 M 0.72–1.22 F 0.66–1.14 M 0.74–1.24 F 0.64–1.11 M 0.74–1.23 F 0.63–1.09 M 0.73–1.20 F 0.62–1.07 M 0.71–1.15 F 0.61–1.05 0.61–0.95	mg/L	1 30 2
Estimated glomerular filtration rate (eGFR (CysC, CKD-EPI))	≥ 18 y	≥ 90	mL/min/1,73m^2	12
Thyroglobulin (S,P-TG)	< 6 d 6 d – < 4 m 4 m – < 1 y 1 y – < 7 y 7 y – < 12 y 12 y – < 21 y ≥ 21 y	25–307 20–228 18–125 9.0–67 5.1–43 2.6–36 1.4–78	µg/L	1 2
Antibodies to thyroglobulin (S-TG IgG)	< 6 d 6 d – < 4 m 4 m – < 1 y 1 y – < 7 y 7 y – < 12 y 12 y – < 21 y ≥ 21 y	< 134 < 146 < 130 < 38 < 37 < 64 < 115	kU/L	1 1, 2
Antibodies to thyroid peroxidase (S,P-TPO IgG)	< 6 d 6 d – < 4 m 4 m – < 1 y 1 y – < 7 y 7 y – < 12 y 12 y – < 21 y ≥ 21 y	< 117 < 47 < 32 < 13 < 18 < 26 < 34	kU/L	1 1, 2
Antibodies to TSH receptor (S-TR IgG)	All age groups	< 1.22 Cut off for Graves disease > 1.75	U/L	2
Thyroxine (S,P-T4)	< 6 d 6 d – < 4 m 4 m – < 1 y 1 y – < 7 y	64.9–239 69.6–219 73.0–206 76.6–189	nmol/L	1

	7 y – < 12 y 12 y – < 21 y ≥ 21 y	77.1–178 76.1–170 66.0–181		1, 2
Free thyroxine (S,P-fT4)	< 6 d 6 d – < 4 m 4 m – < 1 y 1 y – < 7 y 7 y – < 12 y 12 y – < 21 y ≥ 21 y Pregnancy	11.0–32.0 11.5–28.3 11.9–25.6 12.3–22.8 12.5–21.5 12.6–21.0 12.0–22.0 I trim 12.1–19.6 II trim 9.6–17.0 III trim 8.4–15.6	pmol/L	1 1, 2 1
Urea (S,P-Urea)	0 d – < 15 d 15 d – < 1 y 1 y – < 10 y 10 y – < 19 y ≥ 19 y	1.1–7.9 1.3–5.8 3.2–7.6 F 2.6–6.5 M 2.6–7.2 < 8.1	mmol/L	44 2
Urea in urine dU-Urea U-Urea (first morning urine)	 ≥ 18 y ≥ 18 y	 428–714 286–595	 mmol/d mmol/L	 2 2
Protein (S,P-Prot)	< 15 d 15 d – < 1 y 1 y – < 6 y 6 y – < 9 y 9 y – < 19 y ≥ 19 y	51–80 43–69 59–73 62–75 63–78 64–83	g/L	44 1, 2
Protein in cerebrospinal fluid (CSF-Prot)	1 d – < 2 m 2 m – < 4 m 4 m – < 7 m 7 m – < 1 y 1 y – < 3 y 3 y – < 5 y 5 y – < 9 y ≥ 18 y	0.25–0.72 0.20–0.72 0.15–0.50 0.10–0.45 0.10–0.40 0.10–0.38 0.10–0.43 0.15–0.45	g/L	1 2
Protein in pleural fluid (PlrF-Prot) PlrF-Prot/S,P-Prot	All age groups	 transudate < 0.5 exudate > 0.5	g/L	13
Protein in urine dU-Prot U-Prot/U-Crea	 ≥ 18 y ≥ 18 y	 < 0.15 < 0.2	 g/d mg/mg	 1 27
Protein fractions in serum (S-Prot-Fr)	≥ 18 y	albumin 35–52 globulins: alpha 1 1.0–3.0 alpha 2 4.0–8.0 beta 1 4.0–8.0 beta 2 2.0–7.0 gamma 7.0–17.0	g/L	
Protein fractions in urine (U-Prot-Fr)	All age groups	Results will be commented by laboratory doctor	mg/L	1, 2
Valproate (S,P-Valpr)	All age groups	Therapeutic 50–100 Toxic > 150	mg/L	1,2 2
Vancomycin (S,P-Vanco)	≥ 18 y	Pre-dose (trough) concentration: therapeutic range 15–20 AUC/MIC 400–600 (if MIC	mg/lL	40 27

		is ~ 1 mg/L)		
Bicarbonate (S,P-HCO_3)	≥ 18 y	22–29	mmol/L	1, 2
Vitamiin B12 (S,P-Vit B12)	< 1 m 1 m – < 1 y 1 y – < 12 y 12 y – < 19 y ≥ 19 y	138–1377 124–1236 261–1180 199–835 145–569	pmol/L	44 2
Vitamiin D (S,P-Vit D(25-OH))	All age groups	Deficiency < 50	nmol/L	34
Estradiol (S,P-E2)	1 m – < 18 y 1 m – < 10 y 10 y – < 14 y 14 y – < 18 y ≥ 18 y	M < 18 N < 18 N < 250 N 53.6–912 M < 159 F follic.phase 45–854 ovulat.phase151–1461 lut.phase 82–1251 postmenop. < 183	pmol/L	44 2

Tests forwarded to other laboratories

Analyte	**Age**	**Reference range**	**Units**	**Refe-rence**
5-HIAA in urine (dU-5-HIAA) Performer : Departement of Pharmacology, Tartu University	≥ 18 y	2–8	mg/d	
Levetiracetam (S,P-Levetir) Performer : Departement of Pharmacology, Tartu University	All age groups	12–46	mg/L	
Oxcarbazepine (S,P-Oxcarb) Performer : Departement of Pharmacology, Tartu University	All age groups	Concentration of MHD 3–35	mg/L	
Thiopurine methyltransferase in erythrocytes (RBC-TPMT) Performer : Departement of Pharmacology, Tartu University	≥ 18 y	Concentration of 6-methylmercaptopurine after 60 min of incubation 59–110	ng/mL(RBC)/h	
Vitamin A (S,P-Vit A) Performer : Departement of Pharmacology, Tartu University	< 1 y 1 y – < 7 y 7 y – < 13 y 13 y – < 18 y ≥ 18 y	0.20–0.50 0.20–0.50 0.25–0.60 0.25–0.70 0.30–0.70	mg/L	
Vitamin E (S,P-Vit E) Performer : Departement of Pharmacology, Tartu University	< 1 y 1 y – < 7 y 7 y – < 13 y 13 y – < 18 y ≥ 18 y	1–8 3–9 4–9 5–18 5–20	mg/L	
Vitamin B1 (B-Vit B1) Performer : Departement of Pharmacology, Tartu University	All age groups	25–75	µg/L	

Vitamin B6 (B-Vit B6) Performer : Departement of Pharmacology, Tartu University	All age groups	5–50	µg/L	
Voriconazole (S,P-Voricon) Performer : Departement of Pharmacology, Tartu University	≥ 18 y	1.0–5.5	mg/L	

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