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	Ees- ja perekonnanimi	Ametikoht	kuupäev

Reference values for haematology tests

Analyte Abbreviation	Age	Sex	Value	Unit	Reference	
COMPLETE BLOOD CELL COUNT 5-DIFF, B-CBC-5DIFF BLOOD SMEAR MICROSCOPY, B-SMEAR-M PANEL						
RBC B-RBC	≥18y	F	4,1–5,2	10 ¹² /L	17	
		M	4,5–5,7			
	0d – <7d	M/F	4,0–6,6		5	
	7d – <14d		3,9–6,3			
	14d – <1m		3,6–6,2			
	1m – <2m		3,0–5,4			
	2m – <3m		2,7–4,9			
	3m – <6m		3,5–5,2			
	6m – <3y		3,5–5,6			
	3y – <12y		3,8–5,6			
	12y – <15y		M			4,4–5,7
	15y – <18y					4,5–6,0
	12y – <18y	F	4,0–5,6			
WBC B-WBC	≥18y	M/F	4,1–9,7	10 ⁹ /L	17	
	0h – <12h		9,0–30,0			
	12h – <24h		13,0–38,0		8	
	24h – <7d		9,4–34,0			
	7d – <14d		5,0–21,0			
	14d – <1m		5,0–20,0			
	1m – <6m		5,0–19,5			
	6m – <2y		6,0–17,5			
	2y – <4y		6,0–17,0			
	4y – <6y		5,5–15,5			
	6y – <8y		5,0–14,5			
	8y – <16y		4,5–13,5			
	16y – <18y		4,5–13,0			
Hb B-Hb	≥ 18y	F	121–150	g/L	17	
		M	134–170			
	0d – <7d	M/F	145–225		5	
			7d – <14d			135–215

Analyte Abbreviation	Age	Sex	Value	Unit	Reference	
	14d – <1m		125–205			
	1m – <2m		100–180			
	2m – <3m		90–140			
	3m – <6m		110–147			
	6m – <3y		106–145			
	3y – <12y		110–157			
	12y – <15y	M	125–170			
	15y – <18y		137–180			
	12y – <18y	F	120–160			
Hct B-Hct	≥18y	M	40–49	%	17	
		F	37–45			
	0d – <7d	M/F	45–67		5	
	7d – <14d		42–66			
	14d – <1m		39–63			
	1m – <2m		31–55			
	2m – <3m		28–42			
	3m – <6m		31–45			
	6m – <3y	31–44				
	3y – <12y	34–46				
	12y – <15y	M	36–50			
	15y – <18y		40–54			
	12y – <18y	F	36–48			
	Plt B-PLT	≥18y	M/F			157–372
0d – <18y		145–390		4		
MPV B-MPV	≥18y	M/F	9,2–12,3	fL		17
Pct B-Pct	≥18y	M/F	0,18–0,38	%	17	
LCR B-LCR	≥18y	M/F	17,8–45,1	%	17	
PDW B-PDW	≥18y	M/F	10,1–16,2	fL	17	
IPF B-IPF	≥18y	M/F	1,3–7,0	%	17	
MCV B-MCV	≥18y	M/F	82–95	fL	17	
	0d – <7d		95–121		5	
	7d – <14d		88–126			
	14d – <1m		86–124			
	1m – <2m		85–123			
	2m – <3m		77–115			
	3m – <6m		74–98			
	6m – <3y		71–90			
	3y – <12y		75–91			
	12y – <18y		82–100			

Analyte Abbreviation	Age	Sex	Value	Unit	Reference
MCH B-MCH	≥18y	M/F	28–33	pg	17
MCHC B-MCHC	≥ 18y	M/F	322–356	g/L	17
	0d – <7d		310–350		5
	7d – <1m		305–355		
	1m – <3m		310–350		
	3m – <6m		305–350		
	6m – <3y		310–350		
	3y – <12y		315–360		
	12y – <18y		320–360		
RDW-CV B-RDW-CV	≥18y	M/F	12–15	%	17
	0d – <18y		11–16		5
RDW-SD B-RDW-SD	≥18y	M/F	38–48	fL	17
Ret% B-Ret% Ret B-Ret #	≥ 18y	M/F	0,5–2,5	%	3
			50–100	10 ⁹ /L	
Neut% B-Neut% Neut B-Neut#	≥18y	M/F	42,0–71,0	%	3
			1,9–6,7	10 ⁹ /L	17
			0h – <12h	6,0–26,0	8
			12h – <24h	6,0–28,0	
			24h – <7d	5,0–21,0	
			7d – <14d	1,5–10,0	
			14d – <1m	1,0–9,5	
			1m – <6m	1,0–9,0	
			6m – <1y	1,0–8,5	
			1y – <6y	1,5–8,5	
			6y – <10y	1,5–8,0	
			10y – <18y	1,8–8,0	
Neutrophils band form% B- Neut Band% *Appears only in B-Smear-m panel	≥ 18y	M/F	0–5,0	%	
Lymph% B-Lymph% Lymph B-Lymph#	≥18y	M/F	21,0–45,0	%	3
			1,3–3,1	10 ⁹ /L	17
			0h – <24h	2,0–11,0	8
			24h – <7d	2,0–11,5	
			7d – <1m	2,0–17,0	
			1m – <6m	2,5–16,5	
			6m – <1y	4,0–13,5	
			1y – <2y	4,0–10,5	
			2y – <4y	3,0–9,5	
			4y – <6y	2,0–8,0	
			6y – <8y	1,5–7,0	

Analyte Abbreviation	Age	Sex	Value	Unit	Reference	
	8y – <10y		1,5–6,8			
	10y – <16y		1,5–6,5			
	16y – <18y		1,2–5,2			
Mono% B-Mono% Mono B-Mono#	≥18y	M/F	4,0–11,0	%	3 17	
			0,24–0,8	10 ⁹ /L		
	0d – <7d		0,5–1,7		5	
	7d – <14d		0,3–1,3			
	14d – <3m		0,5–1,8			
	3m – <6m		0,2–1,6			
	6m – <3y		0,2–1,4			
	3y – <12y		0,1–1,1			
	12y – <18y		0–1,0			
Eo% B-Eo% Eo B-Eo#	≥ 18y	M/F	0,4–6,0	%	3 17	
			0,02–0,4	10 ⁹ /L		
	0d – <7d		0,2–0,7		5	
	7d – <14d		0,2–0,8			
	14d – <3m		0,2–0,6			
	3m – <6m		0–1,1			
	6m – <3y		0–1,0			
	3y – <18y		0–0,7			
Baso% B-Baso% Baso B-Baso#	≥18y	M/F	0,1–1,3	%	5 17	
			0,01–0,08	10 ⁹ /L		
	0d – <7d		0–0,3			
	7d – <18y		0–0,2			
IG% B-IG% IG B-IG#	≥18y	M/F	0-0,5	%	17	
			0–0,03	10 ⁹ /L		
ERYTHROCYTE SEDIMENTATION RATE B-ESR						
Erythrocyte sedimentation rate B-ESR	17y – <51y	F	<13	mm/h	3	
	51y – <61y		<20			
	61y – <70y		<21			
	≥70y		<36			
	17y – <51y	M	<11			
	51y – <61y		<13			
	61y – <70y		<15			
	≥70y		<31			
COAGULATION						
Prothrombin time P-PT%	All	M/F	>70	%	1	
International normalized ratio	≥ 18y	M/F	0,80–1,20		1	
	0d – <3d		1,15–1,35		9	

Analyte Abbreviation	Age	Sex	Value	Unit	Reference
INR	3d – <1m		1,05–1,35		
	1m – <1y		0,86–1,22		
	1y – <6y		0,92–1,14		
	6y – <11y		0,87–1,20		
	11y – <18y		0,97–1,30		
Activated partial thromboplastin time P-APTT	≥ 18y	M/F	28,9–38,1	sec	1
	0d – <3d		34,3–44,8		9
	3d – <1m		29,5–42,2		
	1m – <1y		35,1–46,3		
	1y – <6y		33,6–43,8		
	6y – <11y		31,8–43,7		
	11y – <18y		33,9–46,1		
Thrombin time P-TT	All	M/F	<21	sec	1
Fibrinogen P-Fibr	≥18y	M/F	2,0–4,0	g/L	1
	0d – <3d		1,92–3,74		9
	3d – <1m		2,83–4,01		
	1m – <1y		0,82–3,83		
	1y – <6y		1,62–4,01		
	6y – <11y		1,99–4,09		
	11y – <18y		2,12–4,33		
Factor VII P-FVII	≥18y	M/F	55 –170	%	1
	0d – <3d		52–88		9
	3d – <1m		67–107		
	1m – <1y		83–160		
	1y – <6y		72–150		
	6y – <11y		70–156		
	11y – <18y		69–200		
Factor VIII P-FVIII:C	≥ 18y	M/F	60–150	%	1
	0d – <3d		105–329		9
	3d – <1m		83–274		
	1m – <1y		54–145		
	1y – <6y		36–185		
	6y – <11y		52–182		
	11y – <18y		59–200		
Factor IX P-FIX	≥18y	M/F	60–150	%	1
	0d – <3d		35–56		9
	3d – <1m		44–97		
	1m – <1y		43–121		
	1y – <6y		44–127		
	6y – <11y		48–45		
	11y – <18y		64–216		

Analyte Abbreviation	Age	Sex	Value	Unit	Reference	
Factor XI P-FXI	≥18y	M/F	60–150	%	1	
	0d – <3d		7–41		9	
	3d – <1m		24–79			
	1m – <1y		62–125			
	1y – <6y		65–162			
	6y – <11y		65–162			
	11a – <18a		65–139			
Factor VIII inhibitor Factor IX inhibitor P-FVIII inh, P-FIX inh	All	M/F	Negative (<0,6)	BU	23	
Factor inhibitor screening P-F inh screen	All	M/F	Negative		1	
Von Willebrand factor P-vWF	≥18y	M/F	50–160	%	1	
	0d – <3d		102–158		9	
	3d – <1m		96–152			
	1m – <1y		53–116			
	1y – <6y		62–109			
	6y – <11y		74–111			
	11y – <18y		58–136			
Von Willebrand factor activity P-vWF Act	All	M/F	48–173	%	24	
Von Willebrand factor activity ratio P-vWF Act/P-vWF	All	M/F	<0,6–0,7		25	
Free Protein S P-fPS	≥18y	M	70–148	%	1	
		F	50–134		1	
	0d – <3d	M/F	37–42		9	
			3d – <1m		40–57	
			1m – <1y		80–116	
			1y – <6y		63–120	
			6y – <11y		83–123	
			11y – <18y		76–127	
Protein C P-PC	≥ 18y	M/F	70–130	%	1	
	0d – <3d		24–44		9	
	3d – <1m		28–54			
	1m – <1y		31–112			
	1y – <6y		65–127			
	6y – <11y		71–129			
	11y – <18y		66–118			
Activated protein	All	M/F	≥120	sec		

Analyte Abbreviation	Age	Sex	Value	Unit	Reference
C resistance P-APC-R					1
Antithrombin III P-AT III	≥ 18y	M/F	80–120	%	1
	0d – <3d		58–90		9
	3d – <1m		60–89		
	1m – <1y		72–134		
	1y – <6y		101–131		
	6y – <11y		95–134		
	11y – <18y		96–126		
D-dimer P-D-Di	≥18y	M/F	<0,5	mg/L	1
	0d – <3d		<2,47		9
	3d – <1m		<2,74		
	1m – <1y		<0,42		
	1y – <6y		<0,53		
	6y – <11y		<0,56		
	11y – <18y		<0,39		
Lupus sensitive APTT P-PTT-LA	All	M/F	Negative (35–48)	sec	1
Lupus anticoagulant (normalized ratio) P-LA normratio	All	M/F	Negative Normratio <1,2		1
Low molecular weight heparin P-LMWH Unfractionated heparin P-UFH	All	M/F	Missing in normal plasma without treatment (<0,1 kIU/L) Treatment with heparin – result depends on dosage, time of sampling	kIU/L	1
Rivaroxaban P-RXN	All	M/F	Missing in normal plasma without treatment (< 25 µg/L) Treatment with rivaroxaban – result depends on renal function, dosage, time of sampling	µg/L	1
Apixaban P-APBN	All	M/F	Missing in normal plasma without treatment (< 23 µg/L)	µg/L	1

Analyte Abbreviation	Age	Sex	Value	Unit	Reference
			Treatment with apixaban – result depends on renal function, dosage, time of sampling		
Edoxaban P-EDBN	All	M/F	Missing in normal plasma without treatment (< 20 µg/L) Treatment with edoxaban – result depends on renal function, dosage, time of sampling	µg/L	1
Dabigatran P-DBTN	All	M/F	Missing in normal plasma without treatment (< 15 µg/L) Treatment with dabigatran – result depends on renal function, dosage, time of sampling	µg/L	1
Plasminogen P-Plasm	≥18a	M/F	80–120	%	1
Platelet function assay with collagene and epinephrine B-PFA-Col/Epi	All	M/F	82–150	sec	14
Platelet function assay with collagene and adenosine diphosphate B-PFA-Col/ADP	All	M/F	62–100	sec	14
Platelet function assay for detection of P2Y12 receptor blockade B-PFA-P2YP12	All	M/F	≤106	sec	11
CEREBROSPINAL FLUID ANALYSIS, CSF-Diff-a					
Leukocytes	≥16y	M/F	<6	10 ⁶ /L	6

Analyte Abbreviation	Age	Sex	Value	Unit	Reference
CSF-WBC	≤28p		<20		10
	29d – <3m		<10		
	3m – <16y		<6		
Erythrocytes CSF-RBC	≥18a		<6		
	Newborn, preterm ≤7d		<1000		
	Newborn, term ≤7d		<800		
	7d – ≤28d	<50			
	29d – <18y	<6			
CEREBROSPINAL FLUID MICROSCOPY, CSF-Diff-m					
Lymphocytes	≥18y	M/F	63–99	%	6
Monocytes			3–37		
Neutrophils			0–2		
Lymphocytes	Neonate (≤28d)	2–38			
Monocytes		50–94			
Neutrophils		0–8			
URINALYSIS DIPSTICK U-strip					
Specific gravity U-SG strip	≥18y	M/F	1,005–1,030		20
pH U-pH strip			5,0–8,0		19
Leukocytes U-WBC strip			Negative		21
Erythrocytes U-RBC strip			Negative		
Nitrite U-Nit strip			Negative		
Protein U-Prot strip			Negative		
Glucose U-Gluc strip			Negative		
Ketone U-Ket strip			Negative		
Urobilinogen U-Ubg strip			Negative		
Bilirubin U-Bil strip			Negative		
URINE FLOW CYTOMETRY U-Fc					
Erythrocytes U-RBC Fc	≥18a	M/N	Negative (<23)	10 ⁶ /L	22
Leukocytes U-WBC Fc			Negative (<25)		
Squamous epithelial cells			Negative (<31)		

Analyte Abbreviation	Age	Sex	Value	Unit	Reference
U-SquaEC Fc					
Transitional epithelial cells U-TranEC Fc			Negative (<1)		
Tubular epithelial cells U-RTEC FC			Negative (<3)		
Hyaline casts U-HyCAST Fc			Negative (<1)		
Pathological casts U-PathCAST Fc			Negative (<1)		
Bacteria U-BACT Fc			Negative (<1200)		
Crystals U-XTAL Fc			Negative (<10)		
Yeast-like Cells U-YLC Fc			Negative (<1)		
URINE SEDIMENT MICROSCOPY U-Sed-m panel					
Erythrocytes	All	M/F	≤ 1	/hpf	18
Leukocytes		M	≤ 2		
		F	≤ 4		
FECAL OCCULT BLOOD (St-Hb QN)					
National colon cancer screening	All	M/F	<20 (decision limit)	µg/g	15
In clinical indications			<15		16

References

1. Diagnostica Stago metoodilised juhendid
3. Dacie and Lewis, Practical Haematology, 2017
4. Nordic Reference Interval Project 2003
5. Calgary Laboratory Services, CBC Reference values 2016
6. CLSI H56-A (2006)
8. Wintrobe's Clinical Hematology, 2003
9. Diagnostica Stago 2016
10. Sihtasutus Tartu Ülikooli Kliinikum Lastekliinik Valvearsti teatmik 2019
11. Innovance PFA2Y kasutusjuhend, 2012
14. Dade PFA Collagen/EPI Test Cartidge and Dade PFA Collagen/ADP Test Cartidge kasutusjuhend, 2012
15. Jämesoolevähi sõeluuringu korraldusjuhend 1.0
16. Orion Diagnostica. QuikRead go iFOBT, assay procedure, v151053-3
17. Hematoloogilise automaatuuringu referentsväärtused Eesti täiskasvanutel, Eesti Arst 2020; 99(5):277-283
18. Heil, W., Ehrhardt, V. 2008. Reference Ranges for Adults and Children.
19. Brunzel, N. A. 2013. Fundamentals of Urine and Body Fluid Analysis. Third Edition. Elsevier.
20. Sysmex Meditape UC-10S testribade metoodiline juhend (v 05/2017)
21. Sysmex Meditape UC-9A testribade metoodiline juhend (v 06/2017)

Tähis	TÜLP-14.6
Viide	PÜL-14
Versioon	14

22. Sysmex UF-4000 General Information tootja juhend (v 09/2018)
23. Miller CH. Laboratory testing for factor VIII and IX inhibitors in hemophilia: A review. *Haemophilia*. 2018 March; 24(2): 186–197
24. Siemens Innovanve VWF Ac metoodiline juhend (Rev. 02, 2011-03)
25. Paula D. James, Nathan T. Connell, Barbara Ameer, Jorge Di Paola, Jeroen Eikenboom, Nicolas Giraud, Sandra Haberichter, Vicki Jacobs-Pratt, Barbara Konkle, Claire McLintock, Simon McRae, Robert R. Montgomery, James S. O'Donnell, Nikole Scappe, Robert Sidonio, Veronica H. Flood, Nedaa Husainat, Mohamad A. Kalot, Reem A. Mustafa; ASH ISTH NHF WFH 2021 guidelines on the diagnosis of von Willebrand disease. *Blood Adv* 2021; 5 (1): 280–300.