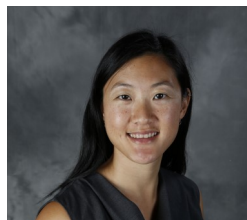


# Pediatric Reference Range Changes for CBC, Diff and Reticulocyte Counts



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Effective 04/28/2021, the UVMMC Clinical Laboratory will be reporting updated pediatric reference ranges for a number of components of the complete blood count, including white blood cell count, hematocrit, hemoglobin, platelet count, differential cell counts, and reticulocyte count. In addition to the reference limits themselves, there will also be changes to the age ranges represented. These updated reference ranges are based on a Boston Children's Hospital study that was published in Pediatric Reference Intervals, Eighth Edition, copyright 2021, pages 209-253 by Wong, Brugnara, Straseski, Kellogg and Adeli. These were derived using the Sysmex XN testing platform on which our assays are also performed. The testing platform, test names, and ordering processes remain the same.

## Updated Pediatric Reference Ranges for CBC and Reticulocyte:

Age	Pediatric WBC				Pediatric RBC				Pediatric HGB			
	Male		Female		Male		Female		Male		Female	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
1-3 days	7.56	21.26	7.97	23.17	3.57	5.50	3.58	5.42	12.8	19.7	12.8	19.2
4-7 days	7.54	14.91	7.93	17.11	3.89	5.64	3.80	5.76	13.3	19.3	13.0	19.4
8-14 days	7.80	17.07	8.00	16.82	3.30	5.30	3.47	5.37	11.0	17.5	12.0	18.3
15-30 days	6.54	15.44	6.59	15.58	3.00	4.70	3.22	4.76	9.8	15.4	10.2	15.8
31-60 days	5.85	14.49	6.52	14.75	2.87	4.09	2.95	4.17	9.0	12.9	8.9	12.7
61-180 days	4.40	14.77	5.51	14.63	3.21	5.48	2.98	4.68	10.1	13.2	10.0	14.1
0.5 to <2 years	3.74	14.67	4.76	14.43	3.65	5.51	3.54	5.31	10.1	13.6	10.1	13.7
2 to <6 years	3.97	13.45	4.19	13.63	3.34	5.41	3.65	5.34	10.2	13.7	10.3	13.7
6 to <12 years	3.44	12.71	3.75	13.09	3.11	5.34	3.41	5.40	10.3	14.3	10.6	14.7
12 to <18 years	3.13	12.43	3.78	12.06	3.97	5.88	3.38	5.29	11.2	16.4	10.4	14.6

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# Pediatric Reference Range Changes for CBC, Diff and Reticulocyte Counts

## Updated Pediatric Reference Ranges for CBC and Reticulocyte: (cont)

Age	Pediatric HCT and MHCT				Pediatric MCV				Pediatric MCH			
	Male		Female		Male		Female		Male		Female	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
1-3 days	37.6	56.6	37.4	55.7	96	111	96	112	33.2	37.9	33.3	38.7
4-7 days	37.9	55.7	36.1	54.7	93	105	92	104	32.6	36.4	31.9	36.4
8-14 days	32.8	50.5	35.4	53.0	92	104	94	106	31.7	36.2	32.1	36.9
15-30 days	29.2	45.2	30.0	45.9	90	101	90	102	30.7	35.0	30.6	34.9
31-60 days	26.3	36.9	27.3	38.6	86	97	87	97	29.3	33.3	29.4	33.4
61-180 days	25.8	43.8	27.8	40.8	68	92	74	97	21.2	31.4	23.8	32.0
0.5 to <2 years	28.4	41.2	25.4	40.2	68	88	71	88	19.4	29.1	20.1	29.6
2 to <6 years	27.4	40.3	28.3	40.9	68	88	68	89	20.3	29.8	19.5	29.9
6 to <12 years	25.6	42.6	28.4	44.4	70	90	71	93	22.8	30.7	21.6	31.1
12 to <18 years	33.7	48.7	27.8	43.8	74	94	71	96	23.1	31.7	21.0	32.1

Age	Pediatric MCHC				Pediatric RDW-CV				Pediatric PLT			
	Male		Female		Male		Female		Male		Female	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
1-3 days	33.0	36.0	33.1	35.8	15.4	19.9	15.2	19.8	114	295	120	327
4-7 days	33.8	36.0	33.8	36.0	14.7	18.9	14.6	18.4	142	400	127	391
8-14 days	33.4	35.8	33.4	35.5	14.1	17.6	14.1	16.8	184	530	206	555
15-30 days	33.2	35.8	33.0	35.6	13.8	17.2	13.7	16.8	200	480	202	544
31-60 days	33.0	35.5	32.8	35.5	13.3	16.2	13.1	16.5	252	535	267	564
61-180 days	29.8	35.8	31.6	36.0	11.8	19.7	11.6	17.3	204	576	196	591
0.5 to <2 years	30.2	35.0	30.1	35.0	11.9	20.6	11.4	20.7	169	543	175	562
2 to <6 years	30.3	35.6	29.6	35.4	11.8	18.5	11.7	17.6	168	492	171	504
6 to <12 years	31.0	35.2	30.2	35.2	11.6	21.1	11.6	17.0	167	462	176	500
12 to <18 years	30.6	35.3	29.7	35.1	11.5	16.5	11.5	19.3	152	426	159	424

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# Pediatric Reference Range Changes for CBC, Diff and Reticulocyte Counts

## Updated Pediatric Reference Ranges for CBC and Reticulocyte: (cont)

Age	Pediatric MPV				Pediatric RDW-SD				Pediatric RET				
	Male		Female		Male		Female		Male		Female		
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	
1-3 days	9.1	11.1	9.1	11.2	This parameter will not report a ref range, but will be reported with the following statement, <b>"No reference range currently available for patients under 18."</b>					2.7	10.2	3.4	21.0
4-7 days	9.5	11.9	9.5	11.9		1.0	3.6	0.5	4.7				
8-14 days	9.8	12.1	10.1	12.2		0.5	5.8	0.8	9.9				
15-30 days	9.9	12.4	9.6	12.0		0.7	4.7	0.4	5.5				
31-60 days	9.2	11.3	9.3	11.4		1.1	6.4	1.0	4.6				
61-180 days	8.4	12.1	8.4	12.3									
0.5 to <2 years	8.4	11.7	8.5	11.9									
2 to <6 years	8.4	12.0	8.5	12.1									
6 to <12 years	8.8	12.3	8.8	12.6									
12 to <18 years	8.9	12.8	9.0	12.6									

## Newly Added Pediatric Reference Ranges for Differential:

Age	Pediatric Absolute Neutrophils				Pediatric Absolute Lymphocytes				Pediatric Absolute Monocytes			
	Male		Female		Male		Female		Male		Female	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
1-3 days	3.03	11.01	3.02	11.02	1.75	4.35	1.77	4.52	0.53	1.63	0.56	1.46
4-7 days	1.96	4.71	1.98	6.68	2.42	5.83	1.43	5.47	0.57	1.90	0.31	1.53
8-14 days	1.87	5.63	1.71	5.92	2.25	5.58	3.01	5.65	0.68	1.69	0.58	2.18
15-30 days	1.29	4.30	1.37	4.93	2.36	5.87	2.57	5.84	0.63	1.49	0.54	1.47
31-60 days	1.24	4.64	1.31	5.61	1.91	5.59	1.76	5.67	0.53	1.41	0.50	1.43
61-180 days	1.06	7.62	1.17	5.24	2.67	5.94	1.51	5.38	0.56	1.47	0.18	1.30
0.5 to <2 years	1.12	8.76	1.20	7.29	0.68	6.37	2.49	8.17	0.31	1.52	0.35	1.44
2 to <6 years	1.29	8.46	1.35	8.92	1.31	5.75	1.35	5.80	0.33	1.33	0.30	1.30
6 to <12 years	1.27	8.69	1.24	9.22	1.08	4.64	0.94	5.01	0.29	1.22	0.28	1.17
12 to <18 years	1.35	8.54	1.51	9.19	1.03	3.71	1.09	3.94	0.28	1.15	0.26	1.07

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# Pediatric Reference Range Changes for CBC, Diff and Reticulocyte Counts

## Newly Added Pediatric Reference Ranges for Differential (*cont*):

Age	Pediatric Absolute Eosinophils				Pediatric Absolute Basophils				Pediatric Immature Grans			
	Male		Female		Male		Female		Male		Female	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
1-3 days	0.01	0.70	0.00	0.57	0.01	0.13	0.02	0.14	0.04	0.41	0.04	0.56
4-7 days	0.02	0.72	0.05	0.80	0.01	0.12	0.01	0.10	0.04	0.37	0.04	0.32
8-14 days	0.01	0.67	0.02	0.74	0.01	0.11	0.01	0.11	0.03	0.16	0.03	0.25
15-30 days	0.02	0.71	0.01	0.65	0.00	0.06	0.00	0.08	0.03	0.12	0.02	0.11
31-60 days	0.00	0.53	0.00	0.52	0.01	0.05	0.01	0.06	0.02	0.10	0.02	0.11
61-180 days	0.06	1.03	0.00	0.52	0.01	0.09	0.02	0.04	0.01	0.05	0.00	0.12
0.5 to <2 years	0.00	0.98	0.00	0.54	0.01	0.09	0.01	0.07	0.00	0.13	0.00	0.07
2 to <6 years	0.01	0.92	0.00	0.75	0.01	0.10	0.01	0.08	0.00	0.08	0.00	0.09
6 to <12 years	0.01	0.94	0.00	0.77	0.01	0.09	0.01	0.09	0.00	0.08	0.00	0.07
12 to <18 years	0.02	0.72	0.01	0.54	0.01	0.09	0.01	0.09	0.00	0.08	0.00	0.08

If you have any questions or concerns regarding this change, please reach out to the hematology medical director Dr. Joanna Conant ([joanna.conant@uvmhealth.org](mailto:joanna.conant@uvmhealth.org)).

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