

Title: Haematology Reference Ranges**

Revision date: 09/12/2024; Next revision date: 05/10/2028

Full Blood Count & White Blood Cell Differential Count					
PARAMETER	SEX	AGE	LOW	HIGH	UNITS
White Blood Cells (WBC)	Male	Birth (0 days)	10.0	26.0	x10 ⁹ /L
		Day 3	7.0	23.0	
		Day 7	6.0	22.0	
		Day 14	6.0	22.0	
		1 Month	5.0	19.0	
		2 Months	5.0	15.0	
		3 – 6 Months	6.0	18.0	
		1 Year	6.0	16.0	
		2 – 6 Years	5.0	15.0	
		6 – 12 Years	5.0	13.0	
		>12 Years	2.9	9.6	
	Female	Birth (0 days)	10.0	26.0	
		Day 3	7.0	23.0	
		Day 7	6.0	22.0	
		Day 14	6.0	22.0	
		1 Month	5.0	19.0	
		2 Months	5.0	15.0	
		3 – 6 Months	6.0	18.0	
		1 Year	6.0	16.0	
		2 – 6 Years	5.0	15.0	
		6 – 12 Years	5.0	13.0	
		>12 Years	2.9	9.6	
Red Blood Cells (RBC)	Male	Birth (0 days)	5.00	7.00	x10 ¹² /L
		Day 3	4.00	6.60	
		Day 7	3.90	6.30	
		Day 14	3.60	6.20	
		1 Month	3.00	5.40	
		2 Months	3.10	4.30	
		3 – 6 Months	4.10	5.30	
		1 Year	3.90	5.10	
		2 – 6 Years	4.00	5.20	
		6 – 12 Years	4.00	5.20	
		>12 Years	4.20	5.80	
	Female	Birth (0 days)	5.00	7.00	
		Day 3	4.00	6.60	
		Day 7	3.90	6.30	
		Day 14	3.60	6.20	
		1 Month	3.00	5.40	
		2 Months	3.10	4.30	
		3 – 6 Months	4.10	5.30	
		1 Year	3.90	5.10	
		2 – 6 Years	4.00	5.20	
		6 – 12 Years	4.00	5.20	
		>12 Years	3.70	5.10	

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Full Blood Count & White Blood Cell Differential Count					
PARAMETER	SEX	AGE	LOW	HIGH	UNITS
Haemoglobin (HGB)	Male	Birth (0 days)	140	220	g/L
		Day 3	150	210	
		Day 7	135	215	
		Day 14	125	205	
		1 Month	115	165	
		2 Months	94	130	
		3 – 6 Months	111	141	
		1 Year	111	141	
		2 – 6 Years	110	140	
		6 – 12 Years	115	155	
		>12 Years	125	170	
	Female	Birth (0 days)	140	220	
		Day 3	150	210	
		Day 7	135	215	
		Day 14	125	205	
		1 Month	115	165	
		2 Months	94	130	
		3 – 6 Months	111	141	
		1 Year	111	141	
		2 – 6 Years	110	140	
		6 – 12 Years	115	155	
		>12 Years	115	148	
Haematocrit (HCT/PCV)	Male	Birth (0 days)	0.450	0.750	L/L
		Day 3	0.450	0.670	
		Day 7	0.420	0.660	
		Day 14	0.310	0.710	
		1 Month	0.330	0.530	
		2 Months	0.280	0.420	
		3 – 6 Months	0.300	0.400	
		1 Year	0.300	0.380	
		2 – 6 Years	0.340	0.400	
		6 – 12 Years	0.350	0.450	
		>12 Years	0.390	0.510	
	Female	Birth (0 days)	0.450	0.750	
		Day 3	0.450	0.670	
		Day 7	0.420	0.660	
		Day 14	0.310	0.710	
		1 Month	0.330	0.530	
		2 Months	0.280	0.420	
		3 – 6 Months	0.300	0.400	
		1 Year	0.300	0.380	
		2 – 6 Years	0.340	0.400	
		6 – 12 Years	0.350	0.450	
		>12 Years	0.350	0.450	

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Full Blood Count & White Blood Cell Differential Count					
PARAMETER	SEX	AGE	LOW	HIGH	UNITS
Mean Cell Volume (MCV)	Male	Birth (0 days)	100	120	fL
		Day 3	92	118	
		Day 7	88	126	
		Day 14	86	124	
		1 Month	92	116	
		2 Months	87	103	
		3 – 6 Months	68	84	
		1 Year	72	84	
		2 – 6 Years	75	87	
		6 – 12 Years	77	95	
		>12 Years	81	100	
	Female	Birth (0 days)	100	120	
		Day 3	92	118	
		Day 7	88	126	
		Day 14	86	124	
		1 Month	92	116	
		2 Months	87	103	
		3 – 6 Months	68	84	
		1 Year	72	84	
		2 – 6 Years	75	87	
		6 – 12 Years	77	95	
		>12 Years	81	100	
Mean Corpuscular Haemoglobin (MCH)	Male	Birth (0 days)	31.0	37.0	pg
		Day 3	31.0	37.0	
		Day 7	31.0	37.0	
		Day 14	31.0	37.0	
		1 Month	30.0	36.0	
		2 Months	27.0	33.0	
		3 – 6 Months	24.0	30.0	
		1 Year	25.0	29.0	
		2 – 6 Years	24.0	30.0	
		6 – 12 Years	25.0	33.0	
		>12 Years	27.0	33.3	
	Female	Birth (0 days)	31.0	37.0	
		Day 3	31.0	37.0	
		Day 7	31.0	37.0	
		Day 14	31.0	37.0	
		1 Month	30.0	36.0	
		2 Months	27.0	33.0	
		3 – 6 Months	24.0	30.0	
		1 Year	25.0	29.0	
		2 – 6 Years	24.0	30.0	
		6 – 12 Years	25.0	33.0	
		>12 Years	27.0	33.3	

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Full Blood Count & White Blood Cell Differential Count					
PARAMETER	SEX	AGE	LOW	HIGH	UNITS
MCHC	Male	Birth (0 days)	300	360	g/L
		Day 3	290	370	
		Day 7	280	380	
		Day 14	280	380	
		1 Month	290	370	
		2 Months	285	355	
		3 – 6 Months	300	360	
		1 Year	320	360	
		2 – 6 Years	310	370	
		6 – 12 Years	310	370	
		>12 Years	310	350	
	Female	Birth (0 days)	300	360	
		Day 3	290	370	
		Day 7	280	380	
		Day 14	280	380	
		1 Month	290	370	
		2 Months	285	355	
		3 – 6 Months	300	360	
		1 Year	320	360	
		2 – 6 Years	310	370	
		6 – 12 Years	310	370	
		>12 Years	302	343	
Platelets (PLT)	Male	Birth (0 days)	100	450	x10 ⁹ /L
		Day 3	210	500	
		Day 7	160	500	
		Day 14	170	500	
		1 Month	200	500	
		2 Months	210	650	
		3 – 6 Months	200	550	
		1 Year	200	550	
		2 – 6 Years	200	490	
		6 – 12 Years	170	450	
		>12 Years	140	400	
	Female	Birth (0 days)	100	450	
		Day 3	210	500	
		Day 7	160	500	
		Day 14	170	500	
		1 Month	200	500	
		2 Months	210	650	
		3 – 6 Months	200	550	
		1 Year	200	550	
		2 – 6 Years	200	490	
		6 – 12 Years	170	450	
		>12 Years	140	400	

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Full Blood Count & White Blood Cell Differential Count					
PARAMETER	SEX	AGE	LOW	HIGH	UNITS
Red Cell Distribution Width (RDW)	Male	Birth (0 days)			%
		Day 3			
		Day 7			
		Day 14			
		1 Month			
		2 Months			
		3 – 6 Months			
		1 Year			
		2 – 6 Years			
		6 – 12 Years			
		>12 Years	10.5	16.0	
	Female	Birth (0 days)			
		Day 3			
		Day 7			
		Day 14			
		1 Month			
		2 Months			
		3 – 6 Months			
		1 Year			
		2 – 6 Years			
		6 – 12 Years			
		>12 Years	10.5	16.0	
Platelet Distribution Width (PDW)	Male	Birth (0 days)			fL
		Day 3			
		Day 7			
		Day 14			
		1 Month			
		2 Months			
		3 – 6 Months			
		1 Year			
		2 – 6 Years			
		6 – 12 Years			
		>12 Years	8.3	18.0	
	Female	Birth (0 days)			
		Day 3			
		Day 7			
		Day 14			
		1 Month			
		2 Months			
		3 – 6 Months			
		1 Year			
		2 – 6 Years			
		6 – 12 Years			
		>12 Years	8.3	18.0	

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Full Blood Count & White Blood Cell Differential Count					
PARAMETER	SEX	AGE	LOW	HIGH	UNITS
Mean Platelet Volume (MPV)	Male	Birth (0 days)			fL
		Day 3			
		Day 7			
		Day 14			
		1 Month			
		2 Months			
		3 – 6 Months			
		1 Year			
		2 – 6 Years			
		6 – 12 Years			
		>12 Years	8.9	13.0	
	Female	Birth (0 days)			
		Day 3			
		Day 7			
		Day 14			
		1 Month			
		2 Months			
		3 – 6 Months			
		1 Year			
		2 – 6 Years			
		6 – 12 Years			
		>12 Years	8.9	13.0	
Neutrophils	Male	Birth (0 days)	4.00	14.00	x10 ⁹ /L
		Day 3	3.00	5.00	
		Day 7	3.00	6.00	
		Day 14	3.00	7.00	
		1 Month	3.00	9.00	
		2 Months	1.00	5.00	
		3 – 6 Months	1.00	6.00	
		1 Year	1.00	7.00	
		2 – 6 Years	1.50	8.00	
		6 – 12 Years	2.00	8.00	
		>12 Years**	1.50	6.10	
	Female	Birth (0 days)	4.00	14.00	
		Day 3	3.00	5.00	
		Day 7	3.00	6.00	
		Day 14	3.00	7.00	
		1 Month	3.00	9.00	
		2 Months	1.00	5.00	
		3 – 6 Months	1.00	6.00	
		1 Year	1.00	7.00	
		2 – 6 Years	1.50	8.00	
		6 – 12 Years	2.00	8.00	
		>12 Years*	1.50	6.10	

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Full Blood Count & White Blood Cell Differential Count					
PARAMETER	SEX	AGE	LOW	HIGH	UNITS
Lymphocytes	Male	Birth (0 days)	3.00	8.00	x10 ⁹ /L
		Day 3	2.00	8.00	
		Day 7	3.00	9.00	
		Day 14	3.00	9.00	
		1 Month	3.00	16.00	
		2 Months	4.00	10.00	
		3 – 6 Months	4.00	12.00	
		1 Year	3.50	11.00	
		2 – 6 Years	6.00	9.00	
		6 – 12 Years	1.00	5.00	
		>12 Years	0.80	3.50	
	Female	Birth (0 days)	3.00	8.00	
		Day 3	2.00	8.00	
		Day 7	3.00	9.00	
		Day 14	3.00	9.00	
		1 Month	3.00	16.00	
		2 Months	4.00	10.00	
		3 – 6 Months	4.00	12.00	
		1 Year	3.50	11.00	
		2 – 6 Years	6.00	9.00	
		6 – 12 Years	1.00	5.00	
		>12 Years	0.80	3.50	
Monocytes	Male	Birth (0 days)	0.50	2.00	x10 ⁹ /L
		Day 3	0.50	1.00	
		Day 7	0.10	1.70	
		Day 14	0.10	1.70	
		1 Month	0.30	1.00	
		2 Months	0.40	1.20	
		3 – 6 Months	0.20	1.20	
		1 Year	0.20	1.00	
		2 – 6 Years	0.20	1.00	
		6 – 12 Years	0.20	1.00	
		>12 Years	0.20	0.90	
	Female	Birth (0 days)	0.50	2.00	
		Day 3	0.50	1.00	
		Day 7	0.10	1.70	
		Day 14	0.10	1.70	
		1 Month	0.30	1.00	
		2 Months	0.40	1.20	
		3 – 6 Months	0.20	1.20	
		1 Year	0.20	1.00	
		2 – 6 Years	0.20	1.00	
		6 – 12 Years	0.20	1.00	
		>12 Years	0.20	0.90	

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Full Blood Count & White Blood Cell Differential Count					
PARAMETER	SEX	AGE	LOW	HIGH	UNITS
Eosinophils	Male	Birth (0 days)	0.10	1.00	x10 ⁹ /L
		Day 3	0.10	2.00	
		Day 7	0.10	0.80	
		Day 14	0.10	0.90	
		1 Month	0.20	1.00	
		2 Months	0.10	1.00	
		3 – 6 Months	0.10	1.00	
		1 Year	0.10	1.00	
		2 – 6 Years	0.10	1.00	
		6 – 12 Years	0.10	1.00	
		>12 Years	0.00	0.40	
	Female	Birth (0 days)	0.10	1.00	
		Day 3	0.10	2.00	
		Day 7	0.10	0.80	
		Day 14	0.10	0.90	
		1 Month	0.20	1.00	
		2 Months	0.10	1.00	
		3 – 6 Months	0.10	1.00	
		1 Year	0.10	1.00	
		2 – 6 Years	0.10	1.00	
		6 – 12 Years	0.10	1.00	
		>12 Years	0.00	0.40	
Basophils	Male	Birth (0 days)			x10 ⁹ /L
		Day 3			
		Day 7			
		Day 14			
		1 Month			
		2 Months			
		3 – 6 Months			
		1 Year			
		2 – 6 Years			
		6 – 12 Years			
		>12 Years	0.00	0.10	
	Female	Birth (0 days)			
		Day 3			
		Day 7			
		Day 14			
		1 Month			
		2 Months			
		3 – 6 Months			
		1 Year			
		2 – 6 Years			
		6 – 12 Years			
		>12 Years	0.00	0.10	

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Full Blood Count & White Blood Cell Differential Count					
PARAMETER	SEX	AGE	LOW	HIGH	UNITS
Nucleated RBC (NRBCs)	Male	Birth (0 days)			x10 ⁹ /L
		Day 3			
		Day 7			
		Day 14			
		1 Month			
		2 Months			
		3 – 6 Months			
		1 Year			
		2 – 6 Years			
		6 – 12 Years			
		>12 Years	0.00	0.01	
	Female	Birth (0 days)			
		Day 3			
		Day 7			
		Day 14			
		1 Month			
		2 Months			
		3 – 6 Months			
		1 Year			
		2 – 6 Years			
		6 – 12 Years			
		>12 Years	0.00	0.01	
Metamyelocytes	Male	All	0.00	0.00	x10 ⁹ /L
	Female	All	0.00	0.00	
Myelocytes	Male	All	0.00	0.00	x10 ⁹ /L
	Female	All	0.00	0.00	
Promyelocytes	Male	All	0.00	0.00	x10 ⁹ /L
	Female	All	0.00	0.00	
Blast cells	Male	All	0.00	0.00	x10 ⁹ /L
	Female	All	0.00	0.00	
Atypical mononuclear cells	Male	All	0.00	0.00	x10 ⁹ /L
	Female	All	0.00	0.00	
Plasma cells	Male	All	0.00	0.00	x10 ⁹ /L
	Female	All	0.00	0.00	

* Normal neutrophil counts in healthy people from Africa and the Middle East may be lower than 1.5 x 10⁹/L.

Please note: the laboratory does not provide the percentage value for the WBC differential as these are not reportable values.

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Reticulocyte count					
PARAMETER	SEX	AGE	LOW	HIGH	UNITS
Reticulocytes	Male	Birth (0 days)	120	400	x10 ⁹ /L
		Day 3	50	350	
		Day 7	50	100	
		Day 14	50	100	
		1 Month	20	60	
		2 Months	30	50	
		3 – 6 Months	40	100	
		1 Year	30	100	
		2 – 6 Years	30	100	
		6 – 12 Years	30	100	
		>12 Years	16	124	
		Female	Birth (0 days)	120	
	Day 3		50	350	
	Day 7		50	100	
	Day 14		50	100	
	1 Month		20	60	
	2 Months		30	50	
	3 – 6 Months		40	100	
	1 Year		30	100	
	2 – 6 Years		30	100	
	6 – 12 Years		30	100	
	>12 Years	25	105		
Erythrocyte Sedimentation Rate					
ESR	Male	0 - 17 Years	0	10	mm/Hr
		17- 50 Years	0	10	
		51 - 60 Years	0	12	
		61 – 70 Years	0	14	
		>70 Years	0	30	
	Female	0 - 17 Years	0	12	
		17 - 50 Years	0	12	
		51 – 60 Years	0	19	
		61 – 70 Years	0	20	
		>70 Years	0	35	
Plasma Viscosity					
Plasma Viscosity	Male	All	1.50	1.72	mPa.s @ 25°C
	Female	All	1.50	1.72	

******The reference ranges in this document apply to the following Synnovis sites:

- Synnovis Hub Blood Sciences Laboratory
- Guy's and St Thomas' Hospitals Essential Services Laboratories
- King's College Hospital Essential Services Laboratory
- Princess Royal University Hospital Essential Services Laboratory

The Royal Brompton and Harefield Essential Services Laboratories will adopt these reference ranges when the same instrumentation as the other Synnovis sites is implemented.

References for the reference ranges for each method can be found within the appropriate Standard Operating Procedure.

Clinical Sign-off	Beverley J. Hunt
Signature	
Date:	9 th of December 2024