

## Biochemistry

	Units	Female Reference Range		Male Reference Range	
		Age	Reference Range	Age	Reference Range
Albumin	g/L	0 Days	34 - 47	0 Days	34 - 47
		15 Days	29 - 49	15 Days	29 - 49
		1 Year	39 - 49	1 Year	39 - 49
		8 Years	42 - 50	8 Years	42 - 50
		15 Years	41 - 51	15 Years	42 - 53
		<b>19 Years</b>	<b>42 - 50</b>	<b>19 Years</b>	<b>42 - 50</b>
Alkaline Phosphatase	U/L	0 Days	89 - 239	0 Days	89 - 239
		15 Days	125 - 440	15 Days	125 - 440
		1 Year	143 - 318	1 Year	143 - 318
		10 Years	131 - 393	10 Years	131 - 393
		13 Years	66 - 245	13 Years	119 - 440
		15 Years	59 - 120	15 Years	88 - 315
		17 Years	55 - 93	17 Years	64 - 150
		<b>19 Years</b>	<b>38 - 126</b>	<b>19 Years</b>	<b>38 - 126</b>
ALT	U/L	0 Years	17 - 69	0 Years	17 - 69
		1 Year	24 - 45	1 Year	24 - 45
		13 Years	20 - 38	13 Years	22 - 49
		<b>19 Years</b>	<b>0 - 34</b>	<b>19 Years</b>	<b>0 - 49</b>
AST	U/L	0 Days	29 - 213	0 Days	29 - 213
		15 Days	29 - 97	15 Days	29 - 97
		1 Year	33 - 66	1 Year	33 - 66
		7 Years	28 - 50	7 Years	28 - 50
		12 Years	23 - 41	12 Years	24 - 49
		<b>19 Years</b>	<b>18 - 34</b>	<b>19 Years</b>	<b>18 - 54</b>
BHBA	mmol/L	All	< 0.25	All	< 0.25
Bilirubin, Conjugated	umol/L	0 Days	0 - 10	0 Days	0 - 10
		<b>7 Days</b>	<b>0 - 5</b>	<b>7 Days</b>	<b>0 - 5</b>
Bilirubin, Total	umol/L	0 Days	< 285	0 Days	< 285
		15 Days	< 13	15 Days	< 13
		1 Year	< 8	1 Year	< 8
		9 Years	< 10	9 Years	< 10
		12 Years	< 13	12 Years	< 13
		15 Years	< 15	15 Years	< 15
<b>19 Years</b>	<b>&lt; 21</b>	<b>19 Years</b>	<b>&lt; 21</b>		
Bilirubin, Unconjugated	umol/L	0 Days	10 - 180	0 Days	10 - 180
		<b>7 Days</b>	<b>0 - 19</b>	<b>7 Days</b>	<b>0 - 19</b>
Calcium	mmol/L	0 Years	2.08 - 2.64	0 Years	2.08 - 2.64
		1 Year	2.22 - 2.54	1 Year	2.22 - 2.54
		<b>19 Years</b>	<b>2.10 - 2.60</b>	<b>19 Years</b>	<b>2.10 - 2.60</b>
Total CO2	mmol/L	All	22 - 30	All	22 - 30
CK	U/L	All	30 - 150	< 60 Years	45 - 250
				≥ 60 Years	40 - 200
Creatinine	umol/L	0 Days	27 - 76	0 Days	27 - 76
		15 Days	8 - 29	15 Days	8 - 29
		2 Years	16 - 35	2 Years	16 - 35
		5 Years	25 - 50	5 Years	25 - 50
		12 Years	37 - 67	12 Years	37 - 67
		15 Years	40 - 69	15 Years	51 - 89
		<b>19 Years</b>	<b>49 - 90</b>	<b>19 Years</b>	<b>60 - 110</b>

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CRP	mg/L	All	< 10.0	All	< 10.0
GGT	U/L	0 Days	19 - 196	0 Days	19 - 196
		15 Days	< 114	15 Days	< 114
		1 Year	< 14	1 Year	< 14
		11 Years	< 18	11 Years	< 18
		<b>19 Years</b>	<b>&lt; 37</b>	<b>19 Years</b>	<b>&lt; 65</b>
Glucose Fasting	mmol/L	All	4.0 - 6.0	All	4.0 - 6.0
Glucose Random	mmol/L	All	4.0 - 7.8	All	4.0 - 7.8
Lactate	mmol/L	All	0.7 - 2.1	All	0.7 - 2.1
Lactate Dehydrogenase (LD)	U/L	0 Days	309 - 1222	0 Days	309 - 1222
		15 Days	163 - 452	15 Days	163 - 452
		1 Year	192 - 321	1 Year	192 - 321
		10 Years	157 - 272	10 Years	170 - 283
		15 Years	130 - 250	15 Years	130 - 250
		<b>19 Years</b>	<b>120 - 250</b>	<b>19 Years</b>	<b>120 - 250</b>
Lipase	U/L	0 Years	< 149	0 Years	< 149
		<b>19 Years</b>	<b>23 - 300</b>	<b>19 Years</b>	<b>23 - 300</b>
Magnesium	mmol/L	0 Years	0.62 - 0.95	0 Years	0.62 - 0.95
		6 Years	0.70 - 0.86	6 Years	0.70 - 0.86
		12 Years	0.70 - 0.91	12 Years	0.70 - 0.91
		<b>19 Years</b>	<b>0.70 - 1.1</b>	<b>19 Years</b>	<b>0.70 - 1.1</b>
Phosphate	mmol/L	0 Days	1.89 - 3.53	0 Days	1.89 - 3.53
		15 Days	1.63 - 2.83	15 Days	1.63 - 2.83
		1 Year	1.46 - 2.29	1 Year	1.46 - 2.29
		5 Years	1.41 - 2.02	5 Years	1.41 - 2.02
		13 Years	1.10 - 1.88	13 Years	1.22 - 2.09
		16 Years	1.03 - 1.71	16 Years	1.03 - 1.71
		<b>19 Years</b>	<b>0.99 - 1.54</b>	<b>19 Years</b>	<b>0.90 - 1.52</b>
Urate	umol/L	0 Days	168 - 751	0 Days	168 - 751
		15 Days	99 - 377	15 Days	99 - 377
		1 Year	111 - 291	1 Year	111 - 291
		12 Years	157 - 350	12 Years	160 - 453
		<b>19 Years</b>	<b>147 - 366</b>	<b>19 Years</b>	<b>218 - 459</b>
Urea	mmol/L	0 Days	1.2 - 8.4	0 Days	1.2 - 8.4
		15 Days	1.4 - 6.2	15 Days	1.4 - 6.2
		1 Year	3.4 - 8.1	1 Year	3.4 - 8.1
		10 Years	2.8 - 7.0	10 Years	2.8 - 7.7
		<b>19 Years</b>	<b>2.7 - 6.7</b>	<b>19 Years</b>	<b>3.5 - 8.6</b>
		<b>60 Years</b>	<b>3.6 - 9.2</b>	<b>60 Years</b>	<b>3.6 - 9.2</b>
Total Protein	g/L	0 Days	54 - 85	0 Days	54 - 85
		15 Days	45 - 73	15 Days	45 - 73
		1 Year	62 - 77	1 Year	62 - 77
		6 Years	65 - 79	6 Years	65 - 79
		9 Years	66 - 83	9 Years	66 - 83
		<b>19 Years</b>	<b>63 - 82</b>	<b>19 Years</b>	<b>63 - 82</b>
Acetaminophen	umol/L	Therapeutic	< 200	Therapeutic	< 200
Salicylate	mmol/L	Toxic (0 Years)	≥ 1.50	Toxic (0 Years)	≥ 1.50
		Toxic (18 Years)	≥ 2.20	Toxic (18 Years)	≥ 2.20
		Toxic (65 Years)	≥ 1.50	Toxic (65 Years)	≥ 1.50
Sodium	mmol/L	All	135 - 145	All	135 - 145
Potassium	mmol/L	All	3.5 - 5.2	All	3.5 - 5.2
Chloride	mmol/L	All	95 - 110	All	95 - 110

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$\beta$ -hCG	IU/L	All non-pregnant	< 5	All	< 5	
Troponin I	ng/L	0 Years	No reference interval established			
		3 Months	$\leq 30$	3 Months	$\leq 30$	
		18 Years	< 17	18 Years	< 35	
Ethanol	mmol/L	All	< 2.2	All	< 2.2	

### Blood Gases

		Venous	Arterial
pH	-	7.32 - 7.42	7.35 - 7.45
pCO <sub>2</sub>	mmHg	38 - 50	35 - 45
PO <sub>2</sub>	mmHg	N/A	80 - 100
BE	mmol/L	N/A	-2 - +3
HCO <sub>2</sub>	mmol/L	24 - 30	22 - 26
O <sub>2</sub> sat meas	fr	N/A	0.94 - 0.98

### Coagulation Reference Ranges for Downtime

Test	Units	Age	Reference Range	Reference Range (INR)
PT/ INR (patient on warfarin)	INR	Therapeutic Range		2.0 - 3.0
PT (patient not on anticoagulant)	Sec / INR	Adult:	9.4-12.5	0.8 - 1.1
		0-30 days	9.5-12.6	0.8 - 1.1
		1-5 months	9.7-12.8	0.8 - 1.1
		6-11 months	9.8-13.0	0.8 - 1.1
		1-5 years	9.9-13.4	0.9 - 1.2
		6-10 years	10.0-14.6	0.9 - 1.3
		11-17 years	10.0-14.1	0.9 - 1.2
APTT (patient on Heparin)	Sec	Standard dose therapeutic UFH	55 - 100	
		Low dose therapeutic UFH	45-65	
APTT (patient not on anticoagulant)	Sec	Adult:	25-37	
		0-30 days:	28-46	
		1-11 months:	25-41	
		1-5 years:	24-39	
		6-10 years:	27-39	
		11-17 years:	25-38	
D Dimer	ug/L FEU	$\geq 16$ years:	< 500	
		0-30 days:	445-1200	
		1-5 months:	<215-878	
		6-11 months:	<215-844	
		1-5 years:	<215-780	
		6-10 years:	<215-567	
		11-15 years:	<215-580	

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### Complete Blood Cell Count Reference Intervals

Age	Sex	Leukocytes (X10 <sup>9</sup> /L)	Hemoglobin (g/L)	Hct (L/L)	ERCS (X10 <sup>12</sup> /L)	MCH (pg)	MCHC (g/L)	MCV (fl)	MPV (fl)	PLTS (X10 <sup>9</sup> /l)	RDW (%)
0DAY	U	9.4 - 34.0	135 -195	0.420-0.600	3.9-5.5	31-37	300-360	98-118	-	-	-
0DAY	F	9.4 - 34.0	135-195	0.420-0.600	3.9-5.5	31-37	300-360	98-118	-	-	-
0DAY	M	9.4 - 34.0	135-195	0.360-0.550	3.9-5.5	31-37	300-360	98-118	-	-	-
1DAY	F/M/U	5.0 -21.0	145 - 225	0.450-0.670	4.0-6.6	28-40	290-360	95-121	-	-	-
3DAY	F/M/U	-	135 - 215	0.420-0.660	3.9-6.3	-	280-360	88-126	-	-	-
7DAY	F/M/U	5.0 - 20.0	125 - 205	0.390-0.630	3.6-6.2	-	-	86-124	-	-	-
14DAY	F/M/U	5.0 - 19.5	100 - 180	0.310-0.550	3.0-5.4	-	290-360	85-123	-	-	-
1M	F/M/U	6.0 - 17.5	90 - 140	0.280-0.420	2.7-4.9	26-34	-	77-115	-	-	-
2M	F/M/U	-	95 - 135	0.290-0.410	3.1-4.5	25-35	300-360	74-108	-	-	-
6M	F/M/U	-	105 - 135	0.330-0.390	3.7-5.3	23-31	-	70-86	-	-	-
1Y	F/M/U	6.0 - 17.0	-	-	-	-	-	-	-	-	-
2Y	F/M/U	5.5 - 15.5	115 - 135	0.340-0.400	3.9-5.3	24-30	310-360	75-87	-	-	-
4Y	F/M/U	5.0 - 14.5	-	-	-	-	-	-	-	-	-
6Y	F/M/U	4.5 - 13.5	115 - 155	0.350-0.450	4.0-5.2	25-33	-	77-95	-	-	-
8Y	F/M/U	-	-	-	-	-	-	-	-	-	-
12Y	F	4.0 - 11.0	115 - 165	0.370-0.470	3.8-5.8	27-32	315-353	82-99	-	-	-
	M	4.0 - 11.0	130 - 180	0.400-0.540	4.5-6.5	27-32	315-353	82-99	-	-	-
	U	4.0 - 11.0	-	-	-	27-32	315-353	82-99	-	-	-
ALL	F/M/U	-	-	-	-	-	-	-	7.4-10.4	150-400	11.5-15.0

## Complete Blood Cell Count Reference Intervals Cont'd

Age	Sex	NE# (X10 <sup>9</sup> /l)	LY# (X10 <sup>9</sup> /l)	MO# (X10 <sup>9</sup> /l)	EO# (X10 <sup>9</sup> /l)	BA# (X10 <sup>9</sup> /l)	NRBC# (X10 <sup>9</sup> /l)	Ret# (X10 <sup>9</sup> /l)	Ret-He	IPF	IRF	IG#
0DAY	U	5.0-21.0	2.0-11.5	0.6-2.0	0.2-0.7	0.0-0.2	-	-	-	-	-	-
0DAY	F	5.0-21.0	2.0-11.5	0.6-2.0	0.2-0.7	0.0-0.2	-	-	-	-	-	-
0DAY	M	5.0-21.0	2.0-11.5	0.6-2.0	0.2-0.7	0.0-0.2	-	-	-	-	-	-
1DAY	F/M/U	1.5-10.0	2.0-17.0	0.5-1.9	0.2-0.8	-	-	-	-	-	-	-
3DAY	F/M/U	-	-	-	-	-	-	-	-	-	-	-
7DAY	F/M/U	1.0-9.5	-	0.5-1.8	0.2-0.6	-	-	-	-	-	-	-
14DAY	F/M/U	1.0-9.0	2.5-16.5	0.4-1.4	-	-	-	-	-	-	-	-
1M	F/M/U	1.0-8.5	4.0-13.5	0.3-0.9	0.2-0.5	-	-	-	-	-	-	-
2M	F/M/U	-	-	-	-	-	-	-	-	-	-	-
6M	F/M/U	1.5-8.5	4.0-10.5	-	-	-	-	-	-	-	-	-
1Y	F/M/U	-	3.0-9.5	-	-	-	-	-	-	-	-	-
2Y	F/M/U	-	2.0-8.0	0.3-0.8	-	-	-	-	-	-	-	-
4Y	F/M/U	1.5-8.0	1.5-7.0	0.3-0.7	0.2-0.4	-	-	-	-	-	-	-
6Y	F/M/U	-	1.5-6.8	0.2-0.5	0.1-0.3	-	-	-	-	-	-	-
8Y	F/M/U	1.8-8.0	1.5-6.5	-	-	-	-	-	-	-	-	-
12Y	F	2.0-7.5	1.5-4.0	0.2-0.8	0.0-0.4	0.0-0.1	-	-	-	-	-	-
	M	2.0-7.5	1.5-4.0	0.2-0.8	0.0-0.4	0.0-0.1	-	-	-	-	-	-
	U	2.0-7.5	1.5-4.0	0.2-0.8	0.0-0.4	0.0-0.1	-	-	-	-	-	-
ALL	F/M/U	-	-	-	-	-	0	10-86	33.0-40.2	1.6-10.6	3.2-18.7	0.0-0.1