

**BLOOD SCIENCES
 DEPARTMENT OF CLINICAL BIOCHEMISTRY**

Title of Document: Age-related reference ranges: Biochemistry

 Q Pulse Reference N^o: BS/CB/DCB/GEN/7

Authoriser: Peter Beresford

 Version N^o: 14

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Age Related Reference Ranges

Please contact the Duty Biochemist (Mon-Fri 9am-5pm) on 01174 14 8437 if you require further information.

Alkaline Phosphatase (ALP) IU/L

Gender	Age	Low	High
Both	<14 days	90	273
Both	14 days - <1 year	134	518
Both	1 - 9 years	156	369
Both	10 - 12 years	141	460
Male	13 - 14 years	127	517
Male	15 - 16 years	89	365
Male	17 - 18 years	59	164
Male	19+ years	30	130
Female	13 - 14 years	62	280
Female	15 - 16 years	54	130
Female	17 - 18 years	48	130
Female	19+ years	30	130

Anti-Mullerian Hormone (AMH) IU/L

Gender	Age	Low	High
Female	<60 days	0	25
Male	<60 days	100	1900
Male	60 days - <2y	500	2300
Male	2 - <4 years	300	1900
Male	4 - <11 years	200	1400
Male	11 - <13 years	70	1000
Male	13 - <18 years	30	600
Male	18+ years	25	140

Aspartate aminotransferase (AST) IU/L

Gender	Age	Low	High
Both	0 – 14 days	0	150
Both	15 days - <1 year	0	60
Both	1 - 7 years	0	40
Male	Adult	0	50
Female	Adult	0	35

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Calcium (adjusted) mmol/L

Gender	Age	Low	High
Both	0 – 4 weeks	2.00	2.70
Both	+4 weeks – 16 years	2.20	2.70
Both	16+ years	2.20	2.60

Creatinine (serum) µmol/L

Gender	Age	Low	High
Both	<2 weeks	27	77
Both	2 weeks - <1 year	14	34
Both	1 - 2 years	15	31
Both	3 - 4 years	23	37
Both	5 - 6 years	25	42
Both	7 - 8 years	30	47
Both	9 - 10 years	29	56
Both	11 years	36	64
Both	12 years	36	67
Male	13 years	38	76
Male	14 years	40	83
Male	15 years	47	98
Male	16 years	54	99
Male	17+ years	59	104
Female	13 years	38	74
Female	14 years	43	75
Female	15 years	44	79
Female	16 years	48	81
Female	17+ years	45	84

Free Androgen Index (FAI)

Gender	Age	Low	High
Female	14 – 17 years	0.6	6.5
Female	18 – 46 years	0.7	10.9
Female	47+ years	0.2	6.8

FSH IU/L

Gender	Age	Low	High
Female	<1 year	0	16
Female	1 – 8 years	0.6	6.4
Female	9 – 11 years	0.9	7.8
Female	Follicular	3.9	8.8
Female	Mid-cycle	4.5	22.5
Female	Luteal	18	5.1
Female	Post-menopause	16	-
Male	<1 year	0	4

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Male	1 – 8 years	0.2	2.3
Male	9 – 11 years	0.6	5
Male	12 – 17 years	1.3	7.4
Male	18+ years	1.3	19.3

GGT U/L

Gender	Age	Low	High
Both	0 – 14 days	0	160
Both	15 days – 1 year	0	100
Male	1+ years	0	55
Female	1+ years	0	38

Iron umol/L

Gender	Age	Low	High
Both	0 – 13 years	3	25
Both	14+ years	11	32

LDH U/L

Gender	Age	Low	High
Both	0 - 14 days	0	1020
Both	15 days - 1 year	0	380
Both	1 - 9 years	0	270
Both	10+ years	0	250

LH U/L

Gender	Age	Low	High
Female	<1 year	0	3.3
Female	1 – 8 years	0	2
Female	9 – 11 years	0	8
Female	Follicular	2.1	10.9
Female	Mid-cycle	19.2	103
Female	Luteal	1.2	12.9
Female	Post-menopause	16	-
Male	<1 year	0	6.8
Male	1 – 8 years	0	2
Male	9 - 13 years	0	3.3
Male	14+ years	1.2	8.6

Lipase U/L

Gender	Age	Low	High
Both	0 – 9 years	0	30
Both	10 – 17 years	0	40
Both	18+ years	0	67

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Free T3 pmol/L

Gender	Age	Low	High
Both	0 – 14 days	4.3	6.9
Both	15 days - 2 years	4.0	6.2
Both	3+ years	3.8	6.0

Free T4 pmol/L

Gender	Age	Low	High
Both	0 – 14 days	17	57
Both	15 days - 2 years	9.5	17.8
Both	3+ years	8.0	18.0

Galactitol $\mu\text{mol}/\text{mmol}$ creatinine

Gender	Age	Low	High
Both	<3 months	3	80
Both	3 - 12 months	10	65
Both	1 year	6	22
Both	2 - 5 years	3	17
Both	6 - 14 years	2	10
Both	15+ years	2	4

Galactokinase $\mu\text{mol}/\text{h}/\text{g}$ Hb

Gender	Age	Low	High
Both	0 - 6 months	3.7	9.0
Both	6+ months	1.5	4.0

Methylmalonic acid (Urine MMA) $\mu\text{mol}/\text{mmol}$ creatinine

Gender	Age	Low	High
Both	less than 1 year	0.4	23
Both	1 - 16 years	2	5.1
Both	16+ years	0.7	3.2

Mucopolysaccharide screen: Urine Glycosaminoglycans (mg GAG/mmol creatinine)

Gender	Age	Low	High
Both	0 - 6 months	0	30
Both	6 - 12 months	0	26
Both	1 - 2 years	0	21
Both	3 - 4 years	0	14
Both	5 - 7 years	0	11
Both	8 - 15 years	0	9
Both	16+ years	0	3

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Oestradiol pmol/L

Gender	Age	Low	High
Both	<1 year	0	200
Both	1 – 11 years	0	80
Male	>12 years	0	120
Female	Follicular	80	420
Female	Mid-cycle	120	1900
Female	Luteal	130	900
Female	Post-menopause	0	110

Phenylalanine targets in PKU patients (bloodspots) µmol/L

Gender	Age	Low	High
Both	<12 years	120	360
Both	12+ years	120	600
Female	Trying to conceive	120	250
Female	Pregnant	120	250

Phosphate mmol/L

Gender	Age	Low	High
Both	<1 month	1.3	2.6
Both	1 month – 1 year	1.3	2.4
Both	1 - 15 years	0.90	1.80
Both	16+ years	0.80	1.50

Phytanic acid µmol/L Usually measured as part of VLCFA profile

Gender	Age	Low	High
Both	<1 month	0	5.4
Both	1 month – 1 year	0	10.8
Both	1+ years	0	12.3

Potassium mmol/L

Gender	Age	Low	High
Both	<4 weeks	3.4	6.0
Both	4 weeks - 1 year	3.5	5.7
Both	1+ years	3.5	5.3

Progesterone nmol/L

Gender	Age	Low	High
Male	<1 year	0	20
Male	>1 year	0	5
Female	<1 year	0	30
Female	1 – 11 years	0	5
Female	Follicular	0	4

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Female	Luteal	12	-
Female	Post-menopause	0	2

SHBG nmol/L

Gender	Age	Low	High
Female	14 – 17 years	18	96
Female	18 – 46 years	18	136
Female	47+ years	17	125

Testosterone nmol/L

Gender	Age	Low	High
Male	<1 year	0	10
Female	<1 year	0	2.2
Both	1 – 8 years	0	0.7
Male	9 – 12 years	0	1.7
	13 – 17 years	0	20 (pubertal stage dependent)
	18+ years	6	27
Female	9 – 11 years	0	1.7
Female	12+ years	0	2.7

Triglycerides mmol/L

Gender	Age	Low	High
Both	0 – 14 days	1	3.1
Both	15 days – 1 year	0.6	3.1
Both	1 – 14 years	0.5	2.4
Both	14+ years	0.5	1.7

TSH mU/L

Gender	Age	Low	High
Both	0 – 14 days	0.79	5.9
Both	>15 days	0.38	5.33

Urea mmol/L

Gender	Age	Low	High
Both	<28 days	0.8	5.5
Both	28 days – 1 year	1.0	5.5
Both	1 – 15 years	2.5	6.5
Both	16+ years	2.5	7.8

Urate (Uric acid) μ mol/L

Gender	Age	Low	High
Male	<8 years	60	240
Male	8 – 10 years	70	350
Male	11 – 15 years	120	460

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Male	16+ years	200	430
Female	<8 years	60	240
Female	8 – 10 years	130	370
Female	11 – 15 years	150	390
Female	16 – 49 years	190	360
Female	50+ years	140	360