

ADULT REFERENCE INTERVALS**

TEST NAME	SEX	MIN AGE	MAX AGE	LOWER RANGE	UPPER RANGE	UNITS	EFFECTIVE DATE
CLINICAL CHEMISTRY							
ALBUMIN	M/F	1Y	110Y	33	48	g/L	6/NOV/1999
ACTH	M/F	0Y	110Y	7.2	63.3	ng/l	21/FEB/2018
ALP	M	17Y	<19Y	50	220	U/L	30/JAN/2017
	M	19Y	<22Y	45	150	U/L	30/JAN/2017
	F	16Y	<22Y	35	140	U/L	30/JAN/2017
	M/F	22Y	120Y	30	110	U/L	30/JAN/2017
ALT	M	0Y	110Y		<51	U/L	16/NOV/2018
	F	0Y	110Y		<36	U/L	16/NOV/2018
AMYLASE	M/F	0Y	110Y	36	128	U/L	6/NOV/1999
AST	M/F	0Y	110Y		<36	U/L	16/NOV/2018
BICARBONATE (SERUM)	M/F	18Y	120Y	22	32	mmol/L	30/JAN/2017
BILIRUBIN DIRECT (CONJ)	M/F	0Y	110Y		<10	umol/L	6/NOV/1999
BILIRUBIN TOTAL	M/F	1Y	120Y	0	20	umol/L	16/NOV/2018
CALCIUM	M/F	18Y	120Y	2.10	2.60	mmol/L	30/JAN/2017
CHLORIDE	M/F	18Y	120Y	95	110	mmol/L	30/JAN/2017
CHOLESTEROL	M/F	0Y	110Y	3.0	5.5	mmol/L	6/NOV/1999
CK	M	0Y	<60Y	45	250	U/L	16/NOV/2018
	F	60Y	120Y	40	200	U/L	16/NOV/2018
	F	0Y	120Y	30	150	U/L	16/NOV/2018
CKMB	M/F	0Y	110Y		<5	ug/L	6/NOV/1999
C-REACTIVE PROTEIN	M/F	0Y	110Y		<3	mg/L	6/NOV/1999
CREATININE (SERUM)	M	15Y	<19Y	50	100	umol/L	30/JAN/2017
	M	19Y	<60Y	60	110	umol/L	30/JAN/2017
	F	15Y	<19Y	38	82	umol/L	30/JAN/2017
	F	19Y	<60Y	45	90	umol/L	30/JAN/2017
CREATININE CLEARANCE	M/F	0Y	110Y	>90		mL/min	25JUN/2017
eGFR (ESTIMATED GLOMERULAR FILTRATION RATE)	M/F	18Y	110Y	>90		mL/min/1.73m ²	8/AUG/2008
FERRITIN	M	0Y	110Y	20	300	ug/L	6/NOV/1999
	F	0Y	110Y	15	200	ug/L	6/NOV/1999
FRUCTOSAMINE	M/F	0Y	110Y	200	290	umol/L	6/NOV/1999
GGT	M/F	0Y	110Y	5	50	U/L	16/NOV/2018
GLUCOSE (FASTING)	M/F	1Y	110Y	3.0	5.5	mmol/L	15/SEP/2000
HAEMOGLOBIN GLYCOSYLATED (HbA1c – NGSP)	M/F	0Y	110Y	Clinical Decision Limits apply (call laboratory)		%	29/OCT/2018
HAEMOGLOBIN GLYCOSYLATED (HbA1c – IFCC)	M/F	0Y	110Y			mmol/mol	

TEST NAME	SEX	MIN AGE	MAX AGE	LOWER RANGE	UPPER RANGE	UNITS	EFFECTIVE DATE
HCG (SERUM PREGNANCY)	F			0	4	IU/L	21/MAR/2017
HDL CHOLESTEROL	M	0Y	110Y	0.7	1.9	mmol/L	6/NOV/1999
	F	0Y	110Y	0.9	2.4	mmol/L	6/NOV/1999
HOMOCYSTEINE	M	0Y	110Y	5	15	umol/L	6/NOV/1999
	F	0Y	110Y	5	12	umol/L	6/NOV/1999
IRON	M	0Y	110Y	8.1	32.6	umol/L	6/NOV/1999
	F	0Y	110Y	5.0	30.4	umol/L	6/NOV/1999
LD (LDH)	M/F	18Y	120Y	120	250	U/L	30/JAN/2017
LDL CHOLESTEROL	M/F	0Y	110Y		<3.5	mmol/L	6/NOV/1999
LIPASE	M/F	0Y	120Y	10	60	U/L	16/NOV/2018
MAGNESIUM	M/F	18Y	120Y	0.70	1.10	mmol/L	30/JAN/2017
OSMOLALITY	M/F	0Y	110Y	275	300	mmol/Kg	6/NOV/1999
PHOSPHATE	M/F	18Y	<20	0.75	1.65	mmol/L	30/JAN/2017
	M/F	20Y	120Y	0.75	1.50	mmol/L	30/JAN/2017
POTASSIUM	M/F	18Y	120Y	3.5	5.2	mmol/L	24/JAN/2017
PROTEIN	M/F	18Y	120Y	60	80	g/L	30/JAN/2017
PRO BRAIN NATRIURETIC PEPTIDE II (Pro BNP II)	F	0d	45Y	0	13.7	pmol/L	14/FEB/2012
	F	45Y	54Y	0	20.0	pmol/L	14/FEB/2012
	F	54Y	64Y	0	29.1	pmol/L	14/FEB/2012
	F	64Y	74Y	0	33.6	pmol/L	14/FEB/2012
	M	0d	45Y	0	7.4	pmol/L	14/FEB/2012
	M	45Y	54Y	0	9.9	pmol/L	14/FEB/2012
	M	54Y	64Y	0	19.0	pmol/L	14/FEB/2012
	M	64Y	74Y	0	28.4	pmol/L	14/FEB/2012
	M/F	74Y	110Y	Consider heart failure at NT-Pro BNP levels >35.0 pmol/L		pmol/L	14/FEB/2012
SODIUM	M/F	18Y	120Y	135	145	mmol/L	30/JAN/2017
TRANSFERRIN	M/F	0Y	110Y	1.8	3.5	g/L	16/NOV/2018
TRIGLYCERIDE	M/F	0Y	110Y		<2.0	mmol/L	6/NOV/1999
TROPONIN T (hs TnT)	M/F	0Y	110Y		<14	ng/L	21/JUN/2010
UREA	F	0d	<50Y	3.0	7.0	mmol/L	16/NOV/2018
	F	50Y	<70Y	3.5	8.0	mmol/L	16/NOV/2018
	F	70Y	<120Y	4.0	9.0	mmol/L	16/NOV/2018
	M	0d	<50Y	3.5	8.0	mmol/L	16/NOV/2018
	M	50Y	<70Y	4.0	9.0	mmol/L	16/NOV/2018
	M	70Y	<120Y	4.5	10.00	mmol/L	16/NOV/2018
URIC ACID	M	18Y	120Y	0.20	0.42	mmol/L	16/NOV/2018
	F	18Y	120Y	0.14	0.34	mmol/L	16/NOV/2018

TEST NAME	SEX	MIN AGE	MAX AGE	LOWER RANGE	UPPER RANGE	UNITS	EFFECTIVE DATE
ARTERIAL BLOOD GAS							
pH	M/F	18Y	120Y	7.35	7.45	N/A	24/JAN/2017
pCO ₂	M/F	18Y	120Y	35	45	mmHg	24/JAN/2017
PO ₂	M/F	0Y	120Y	75	105	mmHg	4/DEC/2018
SO ₂	M/F	18Y	120Y	95	100	%	24/JAN/2017
HAEMOGLOBIN	M	0Y	120Y	130	170	g/L	4/DEC/2018
	F	0Y	120Y	120	150	g/L	4/DEC/2018
OXYHAEMOGLOBIN	M/F	19Y	110Y	94	98	%	6/NOV/1999
CARBOXYHAEMOGLOBIN	M/F	18Y	120Y	0.3	1.8	%	4/DEC/2018
METHAEMOGLOBIN	M/F	18Y	120Y	0.4	1.2	%	4/DEC/2018
BICARBONATE (actual) WHOLE BLOOD	M/F	18Y	120Y	22	28	mmol/L	24/JAN/2017
BASE EXCESS	M/F	18Y	120Y	-3	3	mmol/L	24/JAN/2017
LACTATE	M/F	0Y	110Y		<2.0	mmol/L	4/DEC/2018
SODIUM	M/F	18Y	120Y	136	146	mmol/L	24/JAN/2017
POTASSIUM	M/F	18Y	120Y	3.7	4.7	mmol/L	4/DEC/2018
CHLORIDE	M/F	0Y	120Y	101	110	mmol/L	4/DEC/2018
IONISED CALCIUM	M/F	18Y	120Y	1.15	1.30	mmol/L	24/JAN/2017
GLUCOSE (FASTING)	M/F	0Y	120Y	3.5	5.4	mmol/L	24/JAN/2017
CREATININE	M	18Y	120Y	60	110	umol/L	24/JAN/2017
	F	18Y	120Y	45	90	umol/L	24/JAN/2017
VENOUS BLOOD GAS							
pH	M/F	18Y	120Y	7.30	7.40	N/A	4/DEC/2018
pCO ₂	M/F	18Y	120Y	40	50	mmHg	4/DEC/2018
PO ₂	M/F	18Y	120Y	No range	No range	mmHg	4/DEC/2018
HAEMOGLOBIN	M	18Y	120Y	130	170	g/L	4/DEC/2018
	F	18Y	120Y	120	150	g/L	4/DEC/2018
CARBOXYHAEMOGLOBIN	M/F	18Y	120Y	0.3	1.8	%	4/DEC/2018
METHAEMOGLOBIN	M/F	18Y	120Y	0.4	1.2	%	4/DEC/2018
BICARBONATE (actual) WHOLE BLOOD	M/F	18Y	120Y	22	32	mmol/L	4/DEC/2018
BASE EXCESS	M/F	18Y	120Y	-3	3	mmol/L	4/DEC/2018
LACTATE	M/F	0Y	110Y		<2.0	mmol/L	4/DEC/2018
SODIUM	M/F	18Y	120Y	136	146	mmol/L	4/DEC/2018
POTASSIUM	M/F	18Y	120Y	3.7	4.7	mmol/L	4/DEC/2018
CHLORIDE	M/F	18Y	120Y	101	110	mmol/L	4/DEC/2018
IONISED CALCIUM	M/F	18Y	120Y	1.15	1.30	mmol/L	4/DEC/2018
GLUCOSE (FASTING)	M/F	18Y	120Y	3.5	5.4	mmol/L	4/DEC/2018
CREATININE	M	18Y	120Y	60	110	umol/L	4/DEC/2018
	F	18Y	120Y	45	90	umol/L	4/DEC/2018

TEST NAME	SEX	MIN AGE	MAX AGE	LOWER RANGE	UPPER RANGE	UNITS	EFFECTIVE DATE
URINE CHEMISTRY							
ALBUMIN / CREATININE RATIO	M	0Y	110Y		<2.5	mg/mmol	12/MAR/2001
	F	0Y	110Y		<3.5	mg/mmol	12/MAR/2001
PROTEIN / CREATININE RATIO	M/F	0Y	110Y		<15	mg/mmoCr	23/NOV/2016
PROTEIN (24HR URINE)	M/F	0Y	110Y		<150	mg/24hrs	25/JUN/2016
CSF							
GLUCOSE	M/F	0Y	110Y	2.5	5.5	mmol/L	6/NOV/1999
PROTEIN	M/F	0Y	110Y	0.15	0.45	g/L	6/NOV/1999
RBC	M/F	0Y	110Y		<1	10 ⁶ /L	6/NOV/1999
WBC	M/F	0Y	110Y		<1	10 ⁶ /L	6/NOV/1999
HAEMATOLOGY							
ESR	M	17Y	50Y	0	10	mm/hr	6/NOV/1999
	F	17Y	50Y	0	12	mm/hr	6/NOV/1999
	M	>50Y		0	14	mm/hr	6/NOV/1999
	F	>50Y		0	20	mm/hr	6/NOV/1999
HAEMATOCRIT (PCV)	M	12Y	110Y	0.40	0.54	LL*	6/NOV/1999
	F	12Y	110Y	0.37	0.47	LL*	6/NOV/1999
<i>* Haematocrit units changed from ratio to LL (implemented -19 Sept 2016) Effective date represents the upper and lower limits of reference range only which did not change.</i>							
HAEMOGLOBIN	M	12Y	110Y	130	180	g/L	6/NOV/1999
	F	12Y	110Y	115	165	g/L	6/NOV/1999
MCH	M/F	12Y	110Y	26.5	33.0	pg	16/JUL/2001
MCHC	M/F	12Y	110Y	310	360	g/L	16/JUL/2001
MCV	M/F	12Y	110Y	80	100	fL	16/JUL/2001
PLATELETS	M/F	12Y	110Y	150	450	10 ⁹ /L	6/NOV/1999
MVP	M	0Y	110Y	7.4	11.7	fL	25/JUN/2010
	F	0Y	110Y	7.4	11.5	fL	25/JUN/2010
RBC	M	12Y	110Y	4.5	6.5	10 ¹² /L	16/JUL/2001
	F	12Y	110Y	3.8	5.8	10 ¹² /L	16/JUL/2001
RETICS (ABS)	M/F	1Y	110Y	20	80	10 ⁹ /L	17/JUL/2002
WCC(WBC)	M/F	12Y	110Y	3.5	11.0	10 ⁹ /L	6/NOV/1999
BASOPHILS (ABS)	M/F	12Y	110Y	0.0	0.2	10 ⁹ /L	16/JUL/2001
EOSINOPHILS (ABS)	M/F	12Y	110Y	0.04	0.44	10 ⁹ /L	16/JUL/2001
LYMPHOCYTES (ABS)	M/F	12Y	110Y	1.5	4.0	10 ⁹ /L	16/JUL/2001
MONOCYTES (ABS)	M/F	12Y	110Y	0.1	0.8	10 ⁹ /L	16/JUL/2001
NEUTROPHILS (ABS)	M/F	12Y	110Y	1.7	7.0	10 ⁹ /L	16/JUL/2001

TEST NAME	SEX	MIN AGE	MAX AGE	LOWER RANGE	UPPER RANGE	UNITS	EFFECTIVE DATE
HAEMATOLOGY - COAGULATION							
APTT	M/F	17Y	110Y	25	37	secs	22/DEC/2006
D-DIMER LIA	M/F	17Y	110Y	0.0	<0.5	mg/L	26/SEP/2000
FIBRINOGEN	M/F	17Y	110Y	2.2	4.3	g/L	6/NOV/1999
INR	M/F	17Y	110Y	0.8	1.1	ratio	6/NOV/1999
PROTHROMBIN TIME (PT)	M/F	17Y	110Y	12	15	secs	19/AUG/2000
THROMBIN TIME	M/F	0Y	110Y	15	21	secs	23/JUN/05
HITS	M/F	0Y	110Y	<u>Detected</u> or <u>Not Detected</u>			29/FEB/16
HAEMATOLOGY - SPECIAL HAEMOSTASIS							
ADAMTS13 ASSAY (ATS 13)	M/F	17Y	110Y	14	130	IU/dL	18/MAY/2016
ENDOCRINOLOGY							
THYROID STIMULATING HORMONE (TSH)	M/F	11Y	<20Y	0.51	4.30	mIU/L	18/JUN/2014
	M/F	20Y	110Y	0.27	4.20	mIU/L	18/JUN/2014
TRIIODOTHYONINE (FT3)	M/F	11Y	<20Y	3.93	7.70	pmol/L	18/AUG/2014
	M/F	20Y	110Y	3.1	6.8	pmol/L	18/AUG/2014
THYROXINE (FT4)	M/F	11Y	<20Y	12.6	21.0	pmol/L	18/JUN/2014
	M/F	20Y	110Y	12.0	22.0	pmol/L	18/JUN/2014
FOLLICLE STIMULATING HORMONE (FSH)	F	11Y	<110	Female FSH reference interval: Follicular phase: 3.5-12.5 IU/L Ovulation phase: 4.7-21.5 IU/L Luteal phase: 1.7-7.7 IU/L Post-menopausal: 25.8-134.8 IU/L		IU/L	23/DEC/2016
	M	11Y	<110	1.5	12.4	IU/L	12/APR/2016
CORTISOL (6 - 10 am)	M/F	0d	<110Y	166	507	nmol/L	24/SEPT/2016
CORTISOL (4 - 8 pm) <i>(Appear on report only as comment)</i>	M/F	0d	<110Y	74	291	nmol/L	24/SEPT/2016
URINE MICROBIOLOGY							
WCC	M/F	0Y	110Y	0	10	10 ⁶ /L	6/NOV/1999
RCC	M/F	0Y	110Y	0	10	10 ⁶ /L	6/NOV/1999
EPITHELIAL CELLS	M/F	0Y	110Y	Nil			6/NOV/1999
ORGANISMS	M/F	0Y	110Y	Nil			6/NOV/1999
CASTS	M/F	0Y	110Y	Nil		10 ³ /L	6/NOV/1999
IMMUNOLOGY							
BETA 2 MICROGLOBULIN (B2M)	M/F	0Y	110Y	1.1	2.5	mg/L	27/JUL/2012
Neuron Specific Enolase (NSE)	M/F	0Y	110Y		<12	mcg/L	17/JUN/1998
ANTINUCLEAR ANTIBODIES (ANA)	M/F	0Y	110Y	Negative at titre 1:80			1998
RHEUMATOID FACTOR	M/F	0Y	110Y		<20	IU/ml	30/OCT/2013

TEST NAME	SEX	MIN AGE	MAX AGE	LOWER RANGE	UPPER RANGE	UNITS	EFFECTIVE DATE
TUMOUR MARKERS							
AFP	M	1Y	110Y	0	8	KU/L	6/NOV/1999
	F	3Y	110Y	0	8	KU/L	6/NOV/1999
CA125	M/F	0Y	110Y	0	35	KU/L	6/NOV/1999
CA153	M/F	0Y	110Y	0	30	KU/L	6/NOV/1999
CA199	M/F	0Y	110Y	0	40	KU/L	6/NOV/1999
CEA	M/F	0Y	110Y	0	4	ug/L	14/NOV/2005
PSA	M	0Y	110Y	0	4	ug/L	6/NOV/1999

TEST	AGE RANGE	REFERENCE INTERVALS	
IMMUNOLOGY IgG, IgA, IgM, IgE			
		Male	Female
IgG	1 – 30 days	2.21-8.38 g/L	1.88-8.76 g/L
	1 – 6 months	1.66-5.47 g/L	3.32-6.75 g/L
	6 - 12 months	1.56-8.29 g/L	3.46-6.58 g/L
	1 – 3 years	4.31-11.09 g/L	4.68-11.96 g/L
	4-6 years	4.85-13.18 g/L	5.74-13.09 g/L
	7-9 years	5.95-14.28 g/L	5.01-14.59 g/L
	10-12 years	6.95-16.02 g/L	5.99-15.90 g/L
	13-15 years	6.03-15.82 g/L	7.57-16.21 g/L
	16-18 years	5.37-16.82 g/L	8.10-17.92 g/L
	18-115 years	7.0-16.0 g/L	7.0-16.0 g/L
IgA	1 – 30 days	0.01-0.17 g/L	0.01-0.16 g/L
	1 – 6 months	0.06-0.47 g/L	0.01-0.49 g/L
	6 - 12 months	0.08-0.89 g/L	0.13-0.75 g/L
	1 – 3 years	0.15-1.42 g/L	0.21-1.17 g/L
	4-6 years	0.50-1.92 g/L	0.39-1.70 g/L
	7-9 years	0.64-2.09 g/L	0.34-1.81 g/L
	10-12 years	0.51-2.23 g/L	0.61-1.98 g/L
	13-15 years	0.35-2.52 g/L	0.68-2.46 g/L
	16-18 years	0.74-2.61 g/L	0.75-2.67 g/L
	18-115 years	0.70 - 4.0g/L	0.70 - 4.0g/L
IgM	1 – 30 days	0.08-0.78 g/L	0.13-0.70 g/L
	1 – 6 months	0.18-0.98 g/L	0.06-1.42 g/L
	6 - 12 months	0.27-1.32 g/L	0.03-1.45 g/L
	1 – 3 years	0.42-1.61 g/L	0.47-2.00 g/L

	4-6 years	0.43-1.66 g/L	0.54-2.00 g/L
	7-9 years	0.33-1.55 g/L	0.42-1.81 g/L
	10-12 years	0.39-1.67 g/L	0.54-2.28 g/L
	13-15 years	0.38-2.00 g/L	0.46-2.42 g/L
	16-18 years	0.40-1.95 g/L	0.58-2.41 g/L
	18-115 years	0.4 -2.3 g/L	0.4 -2.3 g/L
IgE	<0-3 months	<4 kU/L	
	3m -6m	<10 kU/L	
	6m - 1 yr	<20 kU/L	
	1-2 yr	<40 kU/L	
	2-4 yr	<70 kU/L	
	4-6 yr	<95 kU/L	
	6-7 yr	<110 kU/L	
	7-9 yr	<130 kU/L	
	9-10 yr	<150 kU/L	
	>10 yr	<115 kU/L	

SEROLOGY

All tests are done on Abbott Architect

HIV AG/AB	<p>S/CO <0.80 = Negative</p> <p>S/CO >0.99= Positive</p> <p>Specimens with S/CO values between 0.80 and 0.99 are considered equivocal</p> <p>*"All specimens that are reactive or equivocal on initial testing should be retested in duplicate. "</p>
HEP B surface Antigen	<p>S/CO (serum cut-off) <1.0= Negative</p> <p>=>1.0= Positive</p>
HEP B surface Antibody	<p>This result from Abbott Architect Anti-HBs CMIA.</p> <p>Note: As the relationship between Hepatitis B Surface Antibody concentration and Test OD is linear over a limited range, this concentration is an approximation.</p> <p><10 mIU/mL: No evidence of antibody to Hepatitis B surface Antigen.</p> <p>>30 mIU/mL: Good response to HBV immunisation or exposure to HBV.</p>
HEP B core Antibody	<p>This result from Abbott Architect Anti-HBc II assay.</p> <p>S/CO<1 HBcAb not detected.</p> <p>S/CO>=1 HBcAb detected (specificity approx. 95%)</p>
HEP C Antibody	<p>S/CO (serum cut-off) <1.0= Negative</p> <p>=>1.0= Positive</p>

NSWHP Clinical Projects Manager:



Dated: 13 February 2019

**These reference intervals are applicable to the following NSWHP Hospital Laboratory Sites; Randwick¹, St George², Sutherland³

¹ NSW Health Pathology Level 4 Campus Centre Prince of Wales Hospital 320-346 Barker Street Randwick NSW 2031

² NSW Health Pathology Level 3 Clinical Services Building St. George Hospital Gray Street, Kogarah, NSW 2217

³ NSW Health Pathology Building Sutherland Hospital, Kareena Rd, Caringbah, NSW 2229