

# **Standards for Pathology Informatics in Australia (SPIA)**

## **Harmonised Reference Intervals Chemical Pathology**

(v2.0)

Superseding and incorporating the  
Australian Pathology Units and Terminology Standards  
and Guidelines (APUTS)



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# Standards for Pathology Informatics in Australia (SPIA)

Previously known as the Australian Pathology Units and Terminology Standards and Guidelines (APUTS)

## Australasian Reference Intervals - Chemical Pathology\*

\* AACB Committee for Common Reference Intervals and AACB Paediatric Biochemistry Special Interest Group

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Version	Reason for Change	Author	Date
1.0	Initial Australasian Reference Intervals. Prepared by the AACB Committee for Common Reference Intervals and AACB Paediatric Biochemistry Special Interest Group. To be published by the RCPA Pathology Information, Terminology and Units Standardisation (PITUS-14) Project.	Donna Moore	06-Jun-14
1.1	Fixed minor formatting issues.	Donna Moore	3-Nov-14
2.0	Updated title and added copyright information. Changed preferred name from 'Total Protein' to 'Total protein'. Added harmonised reference intervals for Bilirubin, Creatine kinase, Alanine aminotransferase, Aspartate aminotransferase, Gamma glutamyltransferase and Lipase.	Donna Moore	24-Nov-16

# Standards for Pathology Informatics in Australia (SPIA)

Australasian Reference Intervals - Chemical Pathology					
Analyte	Age	Reference	Interpretation of age (days)	Interpretation of reference (units)	
<b>Sodium</b> (LN-RCPA: 2951-2)	0d to <1w	(132–147) mmol/L	$0 \leq d \leq 6$	$132 \leq x \leq 147$ mmol/L	
	1w to <18y	(133–144) mmol/L	$7 \leq d \leq 6573$	$133 \leq x \leq 144$ mmol/L	
	18y to <120y	(135–145) mmol/L	$6574 \leq d \leq 43829$	$135 \leq x \leq 145$ mmol/L	
<b>Potassium</b> (LN-RCPA: 2823-3) See note 1	0d to <1w	(3.8–6.5) mmol/L	$0 \leq d \leq 6$	$3.8 \leq x \leq 6.5$ mmol/L	
	1w to <26w	(4.2–6.7) mmol/L	$7 \leq d \leq 181$	$4.2 \leq x \leq 6.7$ mmol/L	
	26w to <2y	(3.9–5.6) mmol/L	$182 \leq d \leq 729$	$3.9 \leq x \leq 5.6$ mmol/L	
	2y to <18y	(3.6–5.3) mmol/L	$730 \leq d \leq 6573$	$3.6 \leq x \leq 5.3$ mmol/L	
	18y to <120y	(3.5–5.2) mmol/L	$6574 \leq d \leq 43829$	$3.5 \leq x \leq 5.2$ mmol/L	
<b>Chloride</b> (LN-RCPA: 2075-0)	0d to <1w	(98–115) mmol/L	$0 \leq d \leq 6$	$98 \leq x \leq 115$ mmol/L	
	1w to <18y	(97–110) mmol/L	$7 \leq d \leq 6573$	$97 \leq x \leq 110$ mmol/L	
	18y to <120y	(95–110) mmol/L	$6574 \leq d \leq 43829$	$95 \leq x \leq 110$ mmol/L	
<b>Bicarbonate</b> (LN-RCPA: 1963-8)	0d to <1w	(15–28) mmol/L	$0 \leq d \leq 6$	$15 \leq x \leq 28$ mmol/L	
	1w to <2y	(16–29) mmol/L	$7 \leq d \leq 729$	$16 \leq x \leq 29$ mmol/L	
	2y to <10y	(17–30) mmol/L	$730 \leq d \leq 3651$	$17 \leq x \leq 30$ mmol/L	
	10y to <18y	(20–32) mmol/L	$3652 \leq d \leq 6573$	$20 \leq x \leq 32$ mmol/L	
	18y to <120y	(22–32) mmol/L	$6574 \leq d \leq 43829$	$22 \leq x \leq 32$ mmol/L	
<b>Creatinine</b> (LN-RCPA: 14682-9) See note 2 and 3	0d to <1w	(22–93) umol/L	$0 \leq d \leq 6$	$22 \leq x \leq 93$ umol/L	
	1w to <4w	(17–50) umol/L	$7 \leq d \leq 27$	$17 \leq x \leq 50$ umol/L	
	4w to <2y	(11–36) umol/L	$28 \leq d \leq 729$	$11 \leq x \leq 36$ umol/L	
	2y to <6y	(20–44) umol/L	$730 \leq d \leq 2190$	$20 \leq x \leq 44$ umol/L	
	6y to <12y	(27–58) umol/L	$2191 \leq d \leq 4382$	$27 \leq x \leq 58$ umol/L	
	<b>Male</b>				
	12y to <15y	(35–83) umol/L	$4383 \leq d \leq 5477$	$35 \leq x \leq 83$ umol/L	
	15y to <19y	(50–100) umol/L	$5478 \leq d \leq 6938$	$50 \leq x \leq 100$ umol/L	
	19y to <60y	(60–110) umol/L	$6939 \leq d \leq 21914$	$60 \leq x \leq 110$ umol/L	
	<b>Female</b>				
	12y to <15y	(35–74) umol/L	$4383 \leq d \leq 5477$	$35 \leq x \leq 74$ umol/L	
	15y to <19y	(38–82) umol/L	$5478 \leq d \leq 6938$	$38 \leq x \leq 82$ umol/L	
	19y to <60y	(45–90) umol/L	$6939 \leq d \leq 21914$	$45 \leq x \leq 90$ umol/L	
<b>Calcium</b> (LN-RCPA: 2000-8)	0d to <1w	(1.85–2.80) mmol/L	$0 \leq d \leq 6$	$1.85 \leq x \leq 2.80$ mmol/L	
	1w to <26w	(2.20–2.80) mmol/L	$7 \leq d \leq 181$	$2.20 \leq x \leq 2.80$ mmol/L	
	26w to <2y	(2.20–2.70) mmol/L	$182 \leq d \leq 729$	$2.20 \leq x \leq 2.70$ mmol/L	
	2y to <18y	(2.20–2.65) mmol/L	$730 \leq d \leq 6573$	$2.20 \leq x \leq 2.65$ mmol/L	
	18y to <120y	(2.10–2.60) mmol/L	$6574 \leq d \leq 43829$	$2.10 \leq x \leq 2.60$ mmol/L	
<b>Calcium corrected for albumin</b> (LN-RCPA: 29265-6)	18y to <120y	(2.10–2.60) mmol/L	$6574 \leq d \leq 43829$	$2.10 \leq x \leq 2.60$ mmol/L	
<b>Phosphate</b> (LN-RCPA: 14879-1)	0d to <1w	(1.25–2.85) mmol/L	$0 \leq d \leq 6$	$1.25 \leq x \leq 2.85$ mmol/L	
	1w to <4w	(1.50–2.75) mmol/L	$7 \leq d \leq 27$	$1.50 \leq x \leq 2.75$ mmol/L	
	4w to <26w	(1.45–2.50) mmol/L	$28 \leq d \leq 181$	$1.45 \leq x \leq 2.50$ mmol/L	
	26w to <1y	(1.30–2.30) mmol/L	$182 \leq d \leq 364$	$1.30 \leq x \leq 2.30$ mmol/L	
	1y to <4y	(1.10–2.20) mmol/L	$365 \leq d \leq 1460$	$1.10 \leq x \leq 2.20$ mmol/L	
	4y to <15y	(0.90–2.00) mmol/L	$1461 \leq d \leq 5477$	$0.90 \leq x \leq 2.00$ mmol/L	
	15y to <18y	(0.80–1.85) mmol/L	$5478 \leq d \leq 6573$	$0.80 \leq x \leq 1.85$ mmol/L	
	18y to <20y	(0.75–1.65) mmol/L	$6574 \leq d \leq 7304$	$0.75 \leq x \leq 1.65$ mmol/L	
	20y to <120y	(0.75–1.50) mmol/L	$7305 \leq d \leq 43829$	$0.75 \leq x \leq 1.50$ mmol/L	
	<b>Magnesium</b> (LN-RCPA: 2601-3)	0d to <1w	(0.60–1.00) mmol/L	$0 \leq d \leq 6$	$0.60 \leq x \leq 1.00$ mmol/L
		1w to <18y	(0.65–1.10) mmol/L	$7 \leq d \leq 6573$	$0.65 \leq x \leq 1.10$ mmol/L
18y to <120y		(0.70–1.10) mmol/L	$6574 \leq d \leq 43829$	$0.70 \leq x \leq 1.10$ mmol/L	
<b>Lactate dehydrogenase</b> (LN-RCPA: 14804-9) See note 4	18y to <120y	(120–250) U/L	$6574 \leq d \leq 43829$	$120 \leq x \leq 250$ U/L	
<b>Alkaline phosphatase</b> (LN-RCPA: 6768-6)	0d to <1w	(80–380) U/L	$0 \leq d \leq 6$	$80 \leq x \leq 380$ U/L	
	1w to <4w	(120–550) U/L	$7 \leq d \leq 27$	$120 \leq x \leq 550$ U/L	
	4w to <26w	(120–650) U/L	$28 \leq d \leq 181$	$120 \leq x \leq 650$ U/L	
	26w to <2y	(120–450) U/L	$182 \leq d \leq 729$	$120 \leq x \leq 450$ U/L	
	2y to <6y	(120–370) U/L	$730 \leq d \leq 2190$	$120 \leq x \leq 370$ U/L	
	6y to <10y	(120–440) U/L	$2191 \leq d \leq 3651$	$120 \leq x \leq 440$ U/L	
	<b>Male</b>				
	10y to <14y	(130–530) U/L	$3652 \leq d \leq 5112$	$130 \leq x \leq 530$ U/L	
	14y to <15y	(105–480) U/L	$5113 \leq d \leq 5477$	$105 \leq x \leq 480$ U/L	
	15y to <17y	(80–380) U/L	$5478 \leq d \leq 6208$	$80 \leq x \leq 380$ U/L	
	17y to <19y	(50–220) U/L	$6209 \leq d \leq 6938$	$50 \leq x \leq 220$ U/L	
	19y to <22y	(45–150) U/L	$6939 \leq d \leq 8034$	$45 \leq x \leq 150$ U/L	
	22y to <120y	(30–110) U/L	$8035 \leq d \leq 43829$	$30 \leq x \leq 110$ U/L	
	<b>Female</b>				
	10y to <13y	(100–460) U/L	$3652 \leq d \leq 4747$	$100 \leq x \leq 460$ U/L	
	13y to <14y	(70–330) U/L	$4748 \leq d \leq 5112$	$70 \leq x \leq 330$ U/L	
	14y to <15y	(50–280) U/L	$5113 \leq d \leq 5477$	$50 \leq x \leq 280$ U/L	
	15y to <16y	(45–170) U/L	$5478 \leq d \leq 5843$	$45 \leq x \leq 170$ U/L	
	16y to <22y	(35–140) U/L	$5844 \leq d \leq 8034$	$35 \leq x \leq 140$ U/L	
	22y to <120y	(30–110) U/L	$8035 \leq d \leq 43829$	$30 \leq x \leq 110$ U/L	
<b>Total protein</b> (LN-RCPA: 2885-2)	18y to <120y	(60–80) g/L	$6574 \leq d \leq 43829$	$60 \leq x \leq 80$ g/L	
<b>Bilirubin</b> (LN-RCPA: 14631-6)	18y to <120y	(1–20) µmol/L	$6574 \leq d \leq 43829$	$1 \leq x \leq 20$ µmol/L	
<b>Creatine kinase</b> (LN-RCPA: 2157-6)	<b>Male</b>				
	18y to <60y	(45–250) U/L	$6574 \leq d \leq 21914$	$45 \leq x \leq 250$ U/L	
	60y to <120y	(40–200) U/L	$21915 \leq d \leq 43829$	$40 \leq x \leq 200$ U/L	
<b>Female</b>					
18y to <120y	(30–150) U/L	$6574 \leq d \leq 43829$	$30 \leq x \leq 150$ U/L		
<b>Alanine aminotransferase</b> (no pyridoxal 5-phosphate) (LN-RCPA: 1744-2)	<b>Male</b>				
	18y to <120y	(5–40) U/L	$6574 \leq d \leq 43829$	$5 \leq x \leq 40$ U/L	
<b>Female</b>					
18y to <120y	(5–35) U/L	$6574 \leq d \leq 43829$	$5 \leq x \leq 35$ U/L		
<b>Aspartate aminotransferase</b> (no pyridoxal 5-phosphate) (LN-RCPA: 1920-8)	<b>Male</b>				
	18y to <120y	(5–35) U/L	$6574 \leq d \leq 43829$	$5 \leq x \leq 35$ U/L	
<b>Female</b>					
18y to <120y	(5–30) U/L	$6574 \leq d \leq 43829$	$5 \leq x \leq 30$ U/L		
<b>Gamma glutamyltransferase</b> (LN-RCPA: 2324-2)	<b>Male</b>				
	18y to <120y	(5–50) U/L	$6574 \leq d \leq 43829$	$5 \leq x \leq 50$ U/L	
<b>Female</b>					
18y to <120y	(5–35) U/L	$6574 \leq d \leq 43829$	$5 \leq x \leq 35$ U/L		
<b>Lipase</b> (LN-RCPA: 3040-3) See note 5	18y to <120y	(10–60) U/L	$6574 \leq d \leq 43829$	$10 \leq x \leq 60$ U/L	

Unless otherwise specified, the intervals are for serum or plasma for adults (18 years of age and older). The intervals are for use by laboratories using methods which are traceable to JCTLM-listed reference materials, methods and services (except bicarbonate where no references are listed).

LN-RCPA is the LOINC code from the RCPA dataset to be used for each analyte.

Note:

1. For reference intervals between 0w to <18y, the Potassium Reference Intervals listed in the table are for serum specimens only. Below are the Potassium Reference Intervals for when a plasma specimen is collected.

<b>Potassium</b> Plasma: See note 1	0d to <1w	(3.5–6.2) mmol/L	$0 \leq d \leq 6$	$3.5 \leq x \leq 6.2$ mmol/L
	1w to <26w	(3.8–6.4) mmol/L	$7 \leq d \leq 181$	$3.8 \leq x \leq 6.4$ mmol/L
	26w to <2y	(3.5–5.4) mmol/L	$182 \leq d \leq 729$	$3.5 \leq x \leq 5.4$ mmol/L
	2y to <18y	(3.3–4.9) mmol/L	$730 \leq d \leq 6573$	$3.3 \leq x \leq 4.9$ mmol/L

For reference intervals from 18y to <120y, the Potassium Reference Intervals listed are for use for both serum and plasma. Laboratories testing only heparin plasma may choose to use a lower interval.

2. Creatinine RIs are by Vitros enzymatic assay

3. Creatinine has harmonised reference intervals for adults up to the age of 60 years. For older ages laboratories may elect to maintain these.

4. Lactate dehydrogenase [L to P] (IFCC), lactate to pyruvate method (IFCC method).

5. The reference interval for adult serum lipase excludes Siemens Dimension and Ortho Clinical Vitros. There are linear relationships between the "harmonised" assay group and the Dimension and Vitros: "Harmonised" = Dimension x 0.21 - 0.6; "Harmonised" = Vitros x 0.27 + 12.

# Standards for Pathology Informatics in Australia (SPIA)

Australasian Adult Reference Intervals - Chemical Pathology				
Analyte	Age	Reference	Interpretation of age (days)	Interpretation of reference (units)
<b>Sodium</b> (LN-RCPA: 2951-2)	18y to <120y	(135-145) mmol/L	6574 ≤ d ≤ 43829	135 ≤ x ≤ 145 mmol/L
<b>Potassium</b> (LN-RCPA: 2823-3) See note 1	18y to <120y	(3.5-5.2) mmol/L	6574 ≤ d ≤ 43829	3.5 ≤ x ≤ 5.2 mmol/L
<b>Chloride</b> (LN-RCPA: 2075-0)	18y to <120y	(95-110) mmol/L	6574 ≤ d ≤ 43829	95 ≤ x ≤ 110 mmol/L
<b>Bicarbonate</b> (LN-RCPA: 1963-8)	18y to <120y	(22-32) mmol/L	6574 ≤ d ≤ 43829	22 ≤ x ≤ 32 mmol/L
<b>Creatinine</b> (LN-RCPA: 14682-9) See note 2	<b>Male</b>			
	19y to <60y	(60-110) umol/L	6574 ≤ d ≤ 43829	60 ≤ x ≤ 110 umol/L
	<b>Female</b>			
	19y to <60y	(45-90) umol/L	6574 ≤ d ≤ 43829	45 ≤ x ≤ 90 umol/L
<b>Calcium</b> (LN-RCPA: 2000-8)	18y to <120y	(2.10-2.60) mmol/L	6574 ≤ d ≤ 43829	2.10 ≤ x ≤ 2.60 mmol/L
<b>Calcium corrected for albumin</b> (LN-RCPA: 29265-6)	18y to <120y	(2.10-2.60) mmol/L	6574 ≤ d ≤ 43829	2.10 ≤ x ≤ 2.60 mmol/L
<b>Phosphate</b> (LN-RCPA: 14879-1) See note 3	20y to <120y	(0.75-1.50) mmol/L	6574 ≤ d ≤ 43829	0.75 ≤ x ≤ 1.50 mmol/L
<b>Magnesium</b> (LN-RCPA: 2601-3)	18y to <120y	(0.70-1.10) mmol/L	6574 ≤ d ≤ 43829	0.70 ≤ x ≤ 1.10 mmol/L
<b>Lactate dehydrogenase</b> (LN-RCPA: 14804-9) See note 4	18y to <120y	(120-250) U/L	6574 ≤ d ≤ 43829	120 ≤ x ≤ 250 U/L
<b>Alkaline phosphatase</b> (LN-RCPA: 6768-6) See note 5	22y to <120y	(30-110) U/L	6574 ≤ d ≤ 43829	30 ≤ x ≤ 110 U/L
<b>Total protein</b> (LN-RCPA: 2885-2)	18y to <120y	(60-80) g/L	6574 ≤ d ≤ 43829	60 ≤ x ≤ 80 g/L
<b>Bilirubin</b> (LN-RCPA: 14631-6)	18y to <120y	(1 - 20) μmol/L	6574 ≤ d ≤ 43829	1 ≤ x ≤ 20 μmol/L
<b>Creatine kinase</b> (LN-RCPA: 2157-6)	<b>Male</b>			
	18y to <60y	(45 - 250) U/L	6574 ≤ d ≤ 21914	45 ≤ x ≤ 250 U/L
	60y to <120y	(40 - 200) U/L	21915 ≤ d ≤ 43829	40 ≤ x ≤ 200 U/L
	<b>Female</b>			
	18y to <120y	(30 - 150) U/L	6574 ≤ d ≤ 43829	30 ≤ x ≤ 150 U/L
<b>Alanine aminotransferase</b> (no pyridoxal 5-phosphate) (LN-RCPA: 1744-2)	<b>Male</b>			
	18y to <120y	(5 - 40) U/L	6574 ≤ d ≤ 43829	5 ≤ x ≤ 40 U/L
	<b>Female</b>			
	18y to <120y	(5 - 35) U/L	6574 ≤ d ≤ 43829	5 ≤ x ≤ 35 U/L
<b>Aspartate aminotransferase</b> (no pyridoxal 5-phosphate) (LN-RCPA: 1920-8)	<b>Male</b>			
	18y to <120y	(5 - 35) U/L	6574 ≤ d ≤ 43829	5 ≤ x ≤ 35 U/L
	<b>Female</b>			
	18y to <120y	(5 - 30) U/L	6574 ≤ d ≤ 43829	5 ≤ x ≤ 30 U/L
<b>Gamma glutamyltransferase</b> (LN-RCPA: 2324-2)	<b>Male</b>			
	18y to <120y	(5 - 50) U/L	6574 ≤ d ≤ 43829	5 ≤ x ≤ 50 U/L
	<b>Female</b>			
	18y to <120y	(5 - 35) U/L	6574 ≤ d ≤ 43829	5 ≤ x ≤ 35 U/L
<b>Lipase</b> (LN-RCPA: 3040-3) See note 6	18y to <120y	(10 - 60) U/L	6574 ≤ d ≤ 43829	10 ≤ x ≤ 60 U/L

Unless otherwise specified, the intervals are for serum or plasma for adults (18 years of age and older). The intervals are for use by laboratories using methods which are traceable to JCTLM-listed reference materials, methods and services (except bicarbonate where no references are listed).

LN-RCPA is the LOINC code from the RCPA dataset to be used for each analyte.

Note:

1. This range is proposed for use for both serum and plasma. Laboratories testing only heparin plasma may choose to use a lower interval.
2. Creatinine has harmonised reference intervals for adults up to the age of 60 years. For older ages laboratories may elect to maintain these.
3. Starting at age 20 years to align with paediatric intervals.
4. Lactate dehydrogenase [L to P] (IFCC), lactate to pyruvate method (IFCC method).
5. Starting at age 22 years to align with paediatric intervals.
6. The reference interval for adult serum lipase excludes Siemens Dimension and Ortho Clinical Vitros. There are linear relationships between the "harmonised" assay group and the Dimension and Vitros: "Harmonised" = Dimension x 0.21 - 0.6; "Harmonised" = Vitros x 0.27 +12.

# Standards for Pathology Informatics in Australia (SPIA)

Australasian Paediatric Reference Intervals - Chemical Pathology					
Analyte	Age	Reference	Interpretation of age (days)	Interpretation of reference (units)	
<b>Sodium</b> (LN-RCPA: 2951-2)	0d to <1w	(132-147) mmol/L	$0 \leq d \leq 6$	$132 \leq x \leq 147$ mmol/L	
	1w to <18y	(133-144) mmol/L	$7 \leq d \leq 6573$	$133 \leq x \leq 144$ mmol/L	
	18y to <120y	(135-145) mmol/L	$6574 \leq d \leq 43829$	$135 \leq x \leq 145$ mmol/L	
<b>Potassium</b> (LN-RCPA: 2823-3) See note 1	0d to <1w	(3.8-6.5) mmol/L	$0 \leq d \leq 6$	$3.8 \leq x \leq 6.5$ mmol/L	
	1w to <26w	(4.2-6.7) mmol/L	$7 \leq d \leq 181$	$4.2 \leq x \leq 6.7$ mmol/L	
	26w to <2y	(3.9-5.6) mmol/L	$182 \leq d \leq 729$	$3.9 \leq x \leq 5.6$ mmol/L	
	2y to <18y	(3.6-5.3) mmol/L	$730 \leq d \leq 6573$	$3.6 \leq x \leq 5.3$ mmol/L	
	18y to <120y	(3.5-5.2) mmol/L	$6574 \leq d \leq 43829$	$3.5 \leq x \leq 5.2$ mmol/L	
<b>Chloride</b> (LN-RCPA: 2075-0)	0d to <1w	(98-115) mmol/L	$0 \leq d \leq 6$	$98 \leq x \leq 115$ mmol/L	
	1w to <18y	(97-110) mmol/L	$7 \leq d \leq 6573$	$97 \leq x \leq 110$ mmol/L	
	18y to <120y	(95-110) mmol/L	$6574 \leq d \leq 43829$	$95 \leq x \leq 110$ mmol/L	
<b>Bicarbonate</b> (LN-RCPA: 1963-8)	0d to <1w	(15-28) mmol/L	$0 \leq d \leq 6$	$15 \leq x \leq 28$ mmol/L	
	1w to <2y	(16-29) mmol/L	$7 \leq d \leq 729$	$16 \leq x \leq 29$ mmol/L	
	2y to <10y	(17-30) mmol/L	$730 \leq d \leq 3651$	$17 \leq x \leq 30$ mmol/L	
	10y to <18y	(20-32) mmol/L	$3652 \leq d \leq 6573$	$20 \leq x \leq 32$ mmol/L	
	18y to <120y	(22-32) mmol/L	$6574 \leq d \leq 43829$	$22 \leq x \leq 32$ mmol/L	
<b>Creatinine</b> (LN-RCPA: 14682-9) See note 2 and 3	0d to <1w	(22-93) umol/L	$0 \leq d \leq 6$	$22 \leq x \leq 93$ umol/L	
	1w to <4w	(17-50) umol/L	$7 \leq d \leq 27$	$17 \leq x \leq 50$ umol/L	
	4w to <2y	(11-36) umol/L	$28 \leq d \leq 729$	$11 \leq x \leq 36$ umol/L	
	2y to <6y	(20-44) umol/L	$730 \leq d \leq 2190$	$20 \leq x \leq 44$ umol/L	
	6y to <12y	(27-58) umol/L	$2191 \leq d \leq 4382$	$27 \leq x \leq 58$ umol/L	
	<b>Male</b>				
	12y to <15y	(35-83) umol/L	$4383 \leq d \leq 5477$	$35 \leq x \leq 83$ umol/L	
	15y to <19y	(50-100) umol/L	$5478 \leq d \leq 6938$	$50 \leq x \leq 100$ umol/L	
	19y to <60y	(60-110) umol/L	$6939 \leq d \leq 21914$	$60 \leq x \leq 110$ umol/L	
	<b>Female</b>				
	12y to <15y	(35-74) umol/L	$4383 \leq d \leq 5477$	$35 \leq x \leq 74$ umol/L	
	15y to <19y	(38-82) umol/L	$5478 \leq d \leq 6938$	$38 \leq x \leq 82$ umol/L	
	19y to <60y	(45-90) umol/L	$6939 \leq d \leq 21914$	$45 \leq x \leq 90$ umol/L	
	<b>Calcium</b> (LN-RCPA: 2000-8)	0d to <1w	(1.85-2.80) mmol/L	$0 \leq d \leq 6$	$1.85 \leq x \leq 2.80$ mmol/L
		1w to <26w	(2.20-2.80) mmol/L	$7 \leq d \leq 181$	$2.20 \leq x \leq 2.80$ mmol/L
26w to <2y		(2.20-2.70) mmol/L	$182 \leq d \leq 729$	$2.20 \leq x \leq 2.70$ mmol/L	
2y to <18y		(2.20-2.65) mmol/L	$730 \leq d \leq 6573$	$2.20 \leq x \leq 2.65$ mmol/L	
18y to <120y		(2.10-2.60) mmol/L	$6574 \leq d \leq 43829$	$2.10 \leq x \leq 2.60$ mmol/L	
<b>Phosphate</b> (LN-RCPA: 14879-1)	0d to <1w	(1.25-2.85) mmol/L	$0 \leq d \leq 6$	$1.25 \leq x \leq 2.85$ mmol/L	
	1w to <4w	(1.50-2.75) mmol/L	$7 \leq d \leq 27$	$1.50 \leq x \leq 2.75$ mmol/L	
	4w to <26w	(1.45-2.50) mmol/L	$28 \leq d \leq 181$	$1.45 \leq x \leq 2.50$ mmol/L	
	26w to <1y	(1.30-2.30) mmol/L	$182 \leq d \leq 364$	$1.30 \leq x \leq 2.30$ mmol/L	
	1y to <4y	(1.10-2.20) mmol/L	$365 \leq d \leq 1460$	$1.10 \leq x \leq 2.20$ mmol/L	
	4y to <15y	(0.90-2.00) mmol/L	$1461 \leq d \leq 5477$	$0.90 \leq x \leq 2.00$ mmol/L	
	15y to <18y	(0.80-1.85) mmol/L	$5478 \leq d \leq 6573$	$0.80 \leq x \leq 1.85$ mmol/L	
	18y to <20y	(0.75-1.65) mmol/L	$6574 \leq d \leq 7304$	$0.75 \leq x \leq 1.65$ mmol/L	
	20y to <120y	(0.75-1.50) mmol/L	$7305 \leq d \leq 43829$	$0.75 \leq x \leq 1.50$ mmol/L	
<b>Magnesium</b> (LN-RCPA: 2601-3)	0d to <1w	(0.60-1.00) mmol/L	$0 \leq d \leq 6$	$0.60 \leq x \leq 1.00$ mmol/L	
	1w to <18y	(0.65-1.10) mmol/L	$7 \leq d \leq 6573$	$0.65 \leq x \leq 1.10$ mmol/L	
	18y to <120y	(0.70-1.10) mmol/L	$6574 \leq d \leq 43829$	$0.70 \leq x \leq 1.10$ mmol/L	
<b>Alkaline phosphatase</b> (LN-RCPA: 6768-6)	0d to <1w	(80-380) U/L	$0 \leq d \leq 6$	$80 \leq x \leq 380$ U/L	
	1w to <4w	(120-550) U/L	$7 \leq d \leq 27$	$120 \leq x \leq 550$ U/L	
	4w to <26w	(120-650) U/L	$28 \leq d \leq 181$	$120 \leq x \leq 650$ U/L	
	26w to <2y	(120-450) U/L	$182 \leq d \leq 729$	$120 \leq x \leq 450$ U/L	
	2y to <6y	(120-370) U/L	$730 \leq d \leq 2190$	$120 \leq x \leq 370$ U/L	
	6y to <10y	(120-440) U/L	$2191 \leq d \leq 3651$	$120 \leq x \leq 440$ U/L	
	<b>Male</b>				
	10y to <14y	(130-530) U/L	$3652 \leq d \leq 5112$	$130 \leq x \leq 530$ U/L	
	14y to <15y	(105-480) U/L	$5113 \leq d \leq 5477$	$105 \leq x \leq 480$ U/L	
	15y to <17y	(80 - 380) U/L	$5478 \leq d \leq 6208$	$80 \leq x \leq 380$ U/L	
	17y to <19y	(50-220) U/L	$6209 \leq d \leq 6938$	$50 \leq x \leq 220$ U/L	
	19y to <22y	(45-150) U/L	$6939 \leq d \leq 8034$	$45 \leq x \leq 150$ U/L	
	22y to <120y	(30-110) U/L	$8035 \leq d \leq 43829$	$30 \leq x \leq 110$ U/L	
	<b>Female</b>				
	10y to <13y	(100-460) U/L	$3652 \leq d \leq 4747$	$100 \leq x \leq 460$ U/L	
	13y to <14y	(70-330) U/L	$4748 \leq d \leq 5112$	$70 \leq x \leq 330$ U/L	
	14y to <15y	(50-280) U/L	$5113 \leq d \leq 5477$	$50 \leq x \leq 280$ U/L	
	15y to <16y	(45-170) U/L	$5478 \leq d \leq 5843$	$45 \leq x \leq 170$ U/L	
	16y to <22y	(35-140) U/L	$5844 \leq d \leq 8034$	$35 \leq x \leq 140$ U/L	
	22y to <120y	(30-110) U/L	$8035 \leq d \leq 43829$	$30 \leq x \leq 110$ U/L	

LN-RCPA is the LOINC code from the RCPA dataset to be used for each analyte.

Note:

- Potassium Reference Intervals are for serum specimens. Below are the Potassium Reference Intervals for when a plasma specimen is collected.

<b>Potassium</b> Plasma: See note 1	0d to <1w	(3.5-6.2) mmol/L	$0 \leq d \leq 6$	$3.5 \leq x \leq 6.2$ mmol/L
	1w to <26w	(3.8-6.4) mmol/L	$7 \leq d \leq 181$	$3.8 \leq x \leq 6.4$ mmol/L
	26w to <2y	(3.5-5.4) mmol/L	$182 \leq d \leq 730$	$3.5 \leq x \leq 5.4$ mmol/L
	2y to <18y	(3.3-4.9) mmol/L	$731 \leq d \leq 6574$	$3.3 \leq x \leq 4.9$ mmol/L

- Reference intervals for patients <19y are specific for labs who use the Ortho Vitros Enzymatic creatinine assay.

- Creatinine has harmonised reference intervals for patients up to the age 60 years. The reference intervals above this age are currently under review.