



# SIQAG

South Island Quality Assurance Group for Biochemistry

## Biochemistry: Agreed Reference Intervals Document

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## Introduction

The South Island Quality Assurance Group (SIQAG) for Biochemistry was established in 2008 as part of a comparability project between Canterbury Health Laboratories, Southern Community Laboratories, Med Lab South and Grey Hospital Laboratory. This project was initiated as part of a larger programme of work looking at the development of a regional results repository in the Canterbury region, similar to the Test Safe model adopted in Auckland.

The scope of work was initially limited to tests from the Health PAC schedule though it was agreed that other tests identified by this group should be reviewed.

Chemical Pathologists and senior Medical Laboratory Scientists from each laboratory met and pragmatically assessed tests for comparability. Where comparability was questionable, comparison testing was initiated.

In order to ensure that results reported to Eclair would cumulate and display correctly, each analyte that was deemed comparable had the following reviewed and agreed;

- Name (standardised to LOINC recommendation)
- reference interval
- units
- decimal places reported too
- LOINC code

Labnet partners, Taranaki and Hawke's Bay, which share the Delphic Laboratory System with Canterbury Health Laboratories, were consulted during the sign-off process to ensure that proposed reference intervals could be implemented across all laboratory sites.

The Auckland Regional Quality Assurance Group (ARQAG) and the Lower North Island Quality Assurance Group (LNIQAG) recommended reference intervals were also reviewed with a view to agreeing ranges nationally where possible.

The SIQAG for Biochemistry asks that members adopt the recommendations outlined in this document so that analyte / test information can be standardised wherever possible. It should be recognised that this is a working document and further recommendations may be adopted from other working groups.

It is the responsibility of the SIQAG for Biochemistry to ensure that this document remains current.

The SIQAG for Biochemistry: Agreed Reference Intervals Document is not a definitive list of Biochemistry "normal" reference intervals. It only details parameters and reference intervals that have been agreed across the three laboratory providers in Canterbury. Contact individual laboratories directly if you require a comprehensive set of reference intervals.

## Defining “Reference Intervals”

For the purpose of defining age ranges in SIQAG documentation, not prescriptive for the laboratory reporting of reference intervals.

Age ranges should be written carefully to ensure that there are no “gaps” or discontinuities in the age ranges for a particular test and so that the ranges can be interpreted in a uniform way when written into the various LIS.

- If there is only one range for an analyte – write as “0 – Adult” This specifically states that the range is to cover all individuals through childhood into adulthood.
- If there are a number of age ranges, the first interval should start at ‘0’ e.g. ‘0 – 1 year’.
- The implication is that the range covers the span of ages from birth to 1 completed year (1 year, 0d).
- The next age range should start where the previous range finishes – e.g. ‘>1 year – 5 years’ and then ‘>5 years – 10 years’ etc.
- The simplest unit of time should be used except where this may cause confusion – e.g. use ‘1 month’ not ‘30 days’.
- Unless the lower age limit for a range starts in adulthood (> 18 years), the last age range should specify that it includes adult subjects – e.g. ‘>11 years – Adult’, not ‘>11 years’.

## Albumin

Alternative name: (NA)

### Test / Analyte Information

<b>Health Pac Number</b>	BP2	<b>LOINC Code</b>	1751-7
<b>Reported to (no DP)</b>	0	<b>Units</b>	g/L
<b>Paed Range Needed</b>	Yes	<b>Sample Type</b>	Ser / Plas

### Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	BCG
<b>SCL Analyser</b>	Roche Cobas 6000 (c501)	<b>SCL Method</b>	BCG
<b>MLS Analyser</b>	Roche P Module	<b>MLS Method</b>	BCG
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	BCG
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	BCG
<b>HBDHB Analyser</b>	Architect c8000	<b>HBDHB Method</b>	BCG

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 – 1 year	30 – 45
>1 year - Adult	35 – 50

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
April 2008	Conception / Agreement (Single ranges for paediatric tests and adults), it was agreed that there should only be a paediatric range for children less than 1 year of age.
June 2009	Analyte reference intervals required changing by CHL, agreed by Taranaki.

## Alkaline phosphatase

Alternative name: (NA)

### Test / Analyte Information

<b>Health Pac Number</b>	BZ5	<b>LOINC Code</b>	6768-6
<b>Reported to (no DP)</b>	0	<b>Units</b>	U/L
<b>Paed Range Needed</b>	Yes	<b>Sample Type</b>	Ser / Plas

### Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	p-nitrophenol at 404nm
<b>SCL Analyser</b>	Roche Cobas 6000 (c501)	<b>SCL Method</b>	AMP (IFCC)
<b>MLS Analyser</b>	Roche P Module	<b>MLS Method</b>	AMP (IFCC)
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	AMP (IFCC)
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	p-nitrophenol at 404nm
<b>HBDHB Analyser</b>	Architect c8000	<b>HBDHB Method</b>	p-nitrophenol at 404nm

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>	
0 – 1 year	60 – 500	
>1 year – 11 years	80 – 360	
	<b>Female</b>	<b>Male</b>
>11 years – 16 years	80 – 400	90 – 450
>16 years – 18 years	50 – 200	60 – 300
> 18years	30 – 150	

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
May 2008	A paediatric work group was set-up by Dr Richard Mackay and the results of this workshop have been adopted. Some paediatric reference intervals required differentiation by sex. It was agreed though that there should be one adult range not differentiated by sex (minutes 1 <sup>st</sup> May 2008)

**ALT**

Alternative name: Alanine Aminotransferase

Test / Analyte Information

<b>Health Pac Number</b>	BZ8	<b>LOINC Code</b>	1742-6
<b>Reported to (no DP)</b>	0	<b>Units</b>	U/L
<b>Paed Range Needed</b>	No	<b>Sample Type</b>	Ser /Plas

Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	IFCC recom Bergmeyer
<b>SCL Analyser</b>	Roche Cobas 6000 (c501)	<b>SCL Method</b>	IFCC (without pyridoxal PO4)
<b>MLS Analyser</b>	Roche P Module	<b>MLS Method</b>	IFCC (without pyridoxal PO4)
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	IFCC (without pyridoxal PO4)
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	IFCC (without pyridoxal PO4)
<b>HBDHB Analyser</b>	Architect c8000	<b>HBDHB Method</b>	IFCC (without pyridoxal PO4)

Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>	
	<b>Female</b>	<b>Male</b>
0 - Adult	0 – 30	0 – 40

Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
April 2008	Conception / Agreement (Single ranges only but differentiated by sex)

## Amylase

Alternative name: Total Amylase

### Test / Analyte Information

<b>Health Pac Number</b>	BZ1	<b>LOINC Code</b>	1798-8
<b>Reported to (no DP)</b>	0	<b>Units</b>	U/L
<b>Paed Range Needed</b>	No	<b>Sample Type</b>	Ser / Plas

### Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	Enzymatic,G7-PNP
<b>SCL Analyser</b>	Roche Cobas 6000 (c501)	<b>SCL Method</b>	G7 PNP
<b>MLS Analyser</b>	Roche P Module	<b>MLS Method</b>	G7-PNP
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	G7-PNP
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	G7-PNP
<b>HBDHB Analyser</b>	Architect c8000	<b>HBDHB Method</b>	CNPG3

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 - Adult	< 100

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
September 2008	Conception / Agreement (Single ranges only)
June 2009	Analyte reference intervals required changing by CHL, agreed by Taranaki.

## Amylase/creat urine

Alternative name: (NA)

### Test / Analyte Information

<b>Health Pac Number</b>	BZ1	<b>LOINC Code</b>	34235-2
<b>Reported to (no DP)</b>	0	<b>Units</b>	Ratio
<b>Paed Range Needed</b>	No	<b>Sample Type</b>	Ur

### Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	Enzymatic,G7-PNP
<b>SCL Analyser</b>	Not performed	<b>SCL Method</b>	Not performed
<b>MLS Analyser</b>	Roche P Module	<b>MLS Method</b>	G7-PNP
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	G7-PNP
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	G7-PNP
<b>HBDHB Analyser</b>	Architect c8000	<b>HBDHB Method</b>	Calculated ratio

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 - Adult	< 35

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
September 2008	Conception / Agreement (Single ranges only)
June 2009	Analyte reference intervals required changing by CHL, agreed by Taranaki.

**Amylase (pancreatic)**

Alternative name: Pancreatic Amylase

Test / Analyte Information

<b>Health Pac Number</b>	BZ1	<b>LOINC Code</b>	1805-1
<b>Reported to (no DP)</b>	0	<b>Units</b>	U/L
<b>Paed Range Needed</b>	No	<b>Sample Type</b>	Ser / Plas

Laboratory Information

<b>CHL Analyser</b>	Abbott c8/c16000,	<b>CHL Method</b>	EPS substrate, enzymatic
<b>SCL Analyser</b>	Not done	<b>SCL Method</b>	N/A
<b>MLS Analyser</b>	Not done	<b>MLS Method</b>	N/A
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	Enzymatic colourimetric
<b>TDHB Analyser</b>	Not done	<b>TDHB Method</b>	N/A
<b>HBDHB Analyser</b>	Not done	<b>HBDHB Method</b>	N/A

Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 – Adult	8 – 53

Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
July 2010	Conception / Agreement (Single range only)

## AST

Alternative name: Aspartate Aminotransferase

### Test / Analyte Information

<b>Health Pac Number</b>	BZ2	<b>LOINC Code</b>	1920-8
<b>Reported to (no DP)</b>	0	<b>Units</b>	U/L
<b>Paed Range Needed</b>	Yes	<b>Sample Type</b>	Ser / Plas

### Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	IFCC recomm, Bergmeyer et al
<b>SCL Analyser</b>	Roche Cobas 6000 (c501)	<b>SCL Method</b>	IFCC (without pyridoxal PO4)
<b>MLS Analyser</b>	Roche P Module	<b>MLS Method</b>	IFCC (without pyridoxal PO4)
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	IFCC (without pyridoxal PO4)
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	IFCC (without pyridoxal PO4)
<b>HBDHB Analyser</b>	Architect c8000	<b>HBDHB Method</b>	IFCC (without pyridoxal PO4)

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 – 1 month	20 – 200
>1month – 2 years	20 – 80
>2 years – 5 years	15 – 60
> 5 years - Adult	10 – 50

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
April 2008	Conception / Agreement (Single ranges for paediatric tests and adults)
August 2008	A paediatric work group was set-up by Dr Richard Mackay and the results of this workshop have been adopted.

## Bilirubin

Alternative name: Total Bilirubin

### Test / Analyte Information

<b>Health Pac Number</b>	BV1	<b>LOINC Code</b>	14631-6
<b>Reported to (no DP)</b>	0	<b>Units</b>	umol/L
<b>Paed Range Needed</b>	Yes	<b>Sample Type</b>	Ser / Plas

### Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	In-house Jendrassik & Grof
<b>SCL Analyser</b>	Roche Cobas 6000 (c501)	<b>SCL Method</b>	DPD
<b>MLS Analyser</b>	Roche P Module	<b>MLS Method</b>	DPD
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	DPD
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	Diazonium salt
<b>HBDHB Analyser</b>	Architect c8000	<b>HBDHB Method</b>	Diazonium salt

### Reference Intervals

Age Range	Reference Interval	Comments
0 days (For specimens same day as dob)	< 50	
1 day (For specimens taken day after dob)	< 100	Consider Investigation and treatment for bilirubin over 100
2 days (For specimens taken 2 days after dob)	< 140	Consider Investigation and treatment for bilirubin over 250
3 days (For specimens taken 3 days after dob)	< 200	Consider Investigation and treatment for bilirubin over 300
4-14 days	< 170	Consider Investigation and treatment for bilirubin over 340
>2 weeks – 6 weeks	3 – 23	Consider investigation for prolonged jaundice for bilirubin over 150
> 6 weeks - Adult	2 – 20	

### Reference Intervals Justification

Date of change	Justification
April 2008	Conception / Agreement (Single ranges only) – paediatric to be referred to a workgroup.
August 2008	A paediatric work group was set-up by Dr Richard Mackay and the results of this workshop have been adopted. Some paediatric reference intervals required differentiation by sex. It was agreed though that there should be one adult range not differentiated by sex (minutes 1 <sup>st</sup> May 2008)
June 2009	Analyte reference intervals required changing by CHL, agreed by Taranaki.

**Bilirubin (conj)**

Alternative name/s: Conjugated Bilirubin / Direct Bilirubin

Test / Analyte Information

<b>Health Pac Number</b>	BV2	<b>LOINC Code</b>	14629-0
<b>Reported to (no DP)</b>	0	<b>Units</b>	umol/L
<b>Paed Range Needed</b>	No	<b>Sample Type</b>	Ser / plas

Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	In-house J&G
<b>SCL Analyser</b>	Roche Cobas 6000 (c501)	<b>SCL Method</b>	J-G
<b>MLS Analyser</b>	Roche P Module	<b>MLS Method</b>	J-G
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	J-G
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	Diazo
<b>HBDHB Analyser</b>	Architect c8000	<b>HBDHB Method</b>	Diazo

Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 - Adult	0 – 5

Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
April 2008	Conception / Agreement (Single ranges only)

## Calcium

Alternative name: (NA)

### Test / Analyte Information

<b>Health Pac Number</b>	BE8	<b>LOINC Code</b>	2000-8
<b>Reported to (no DP)</b>	1	<b>Units</b>	mmol/L
<b>Paed Range Needed</b>	No	<b>Sample Type</b>	Ser /Plas

### Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	Arsenazo dye
<b>SCL Analyser</b>	Roche Cobas 6000 (c501)	<b>SCL Method</b>	CPC
<b>MLS Analyser</b>	Roche P Module	<b>MLS Method</b>	CPC
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	CPC
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	Arsenazo dye
<b>HBDHB Analyser</b>	Architect c8000	<b>HBDHB Method</b>	Arsenazo III

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0-Adult	2.2 – 2.6

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
May 2008	Adult range agreed.

## Carbamazepine

Alternative name: (NA)

### Test / Analyte Information

<b>Health Pac Number</b>	BM3	<b>LOINC Code</b>	14639-9
<b>Reported to (no DP)</b>	0	<b>Units</b>	umol/L
<b>Paed Range Needed</b>	No	<b>Sample Type</b>	Ser / Plas

### Laboratory Information

<b>CHL Analyser</b>	Abbott c8/c16000	<b>CHL Method</b>	Cedia, enzymatic
<b>SCL Analyser</b>	Abbott Axsym	<b>SCL Method</b>	FPIA
<b>MLS Analyser</b>	Roche P Module	<b>MLS Method</b>	CEDIA
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	CEDIA
<b>TDHB Analyser</b>	Roche Cobas c501	<b>TDHB Method</b>	CEDIA
<b>HBDHB Analyser</b>	Architect i2000	<b>HBDHB Method</b>	CMIA

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 - Adult	16 – 40

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
July 2010	Conception / Agreement (Single ranges only)

## Chloride

Alternative name: (NA)

### Test / Analyte Information

<b>Health Pac Number</b>	BE4	<b>LOINC Code</b>	2075-0
<b>Reported to (no DP)</b>	0	<b>Units</b>	mmol/L
<b>Paed Range Needed</b>	No	<b>Sample Type</b>	Ser /Plas

### Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	ISE electrode
<b>SCL Analyser</b>	Not performed	<b>SCL Method</b>	Not performed
<b>MLS Analyser</b>	Roche ISE	<b>MLS Method</b>	ISE
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	ISE
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	Indirect ISE
<b>HBDHB Analyser</b>	Architect c8000	<b>HBDHB Method</b>	Indirect ISE

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 - Adult	95 –110

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
November 2008	Adult range agreed.
June 2009	Analyte reference intervals required changing by CHL, agreed by Taranaki.

## Cholesterol

Alternative name: Total Cholesterol

### Test / Analyte Information

<b>Health Pac Number</b>	BL1	<b>LOINC Code</b>	14647-2
<b>Reported to (no DP)</b>	1	<b>Units</b>	mmol/L
<b>Paed Range Needed</b>	No	<b>Sample Type</b>	Ser / Plas

### Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	Enzymes Chol oxidase
<b>SCL Analyser</b>	Roche Cobas 6000 (c501)	<b>SCL Method</b>	CHOD
<b>MLS Analyser</b>	Roche P Module	<b>MLS Method</b>	CHOD
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	CHOD
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	Enzymes Chol oxidase
<b>HBDHB Analyser</b>	Architect c8000	<b>HBDHB Method</b>	Enzymes Chol oxidase

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 - Adult	< 4.0

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
April 2008	Conception / Agreement (Single ranges only)
August 2008	Comparability agreed subsequent to comparison testing between CHL, SCL, MLS, Greymouth, Taranaki and Hawke' Bay.

It was agreed that the comments sent out should be reviewed between sites.

## Cholesterol (HDL)

Alternative name: HDL Cholesterol

### Test / Analyte Information

<b>Health Pac Number</b>	BL4	<b>LOINC Code</b>	14646-4
<b>Reported to (no DP)</b>	2	<b>Units</b>	mmol/L
<b>Paed Range Needed</b>	No	<b>Sample Type</b>	Ser / Plas

### Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	Accelerator selective detergent
<b>SCL Analyser</b>	Roche Cobas 6000 (c501)	<b>SCL Method</b>	Roche Direct 3rd Gen
<b>MLS Analyser</b>	Roche P Module	<b>MLS Method</b>	Roche Direct 3rd Gen
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	Roche Direct 3rd Gen
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	Accelerator selective detergent
<b>HBDHB Analyser</b>	Architect c8000	<b>HBDHB Method</b>	Accelerator selective detergent

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 - Adult	> 1.0

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
April 2008	Conception / Agreement (Single ranges only)
August 2008	Comparability agreed subsequent to comparison testing between CHL, SCL, MLS, Greymouth, Taranaki and Hawke' Bay.

## Cholesterol (LDL) (calculated)

Alternative name: LDL Cholesterol

### Test / Analyte Information

<b>Health Pac Number</b>	N/A	<b>LOINC Code</b>	39469-2
<b>Reported to (no DP)</b>	1	<b>Units</b>	mmol/L
<b>Paed Range Needed</b>	No	<b>Sample Type</b>	Ser / Plas

### Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	Calculation
<b>SCL Analyser</b>	Roche Cobas 6000 (c501)	<b>SCL Method</b>	Calculation
<b>MLS Analyser</b>		<b>MLS Method</b>	Calculation
<b>WCDHB Analyser</b>		<b>WCDHB Method</b>	Calculation
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	Calculation
<b>HBDHB Analyser</b>		<b>HBDHB Method</b>	Calculation

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 - Adult	< 2.5

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
April 2008	Conception / Agreement (Single ranges only)
August 2008	Comparability agreed subsequent to comparison testing between CHL, SCL, MLS, Greymouth, Taranaki and Hawke' Bay.
June 2009	Email from Angie Quinn (Standards Development Advisor, MoH) notifying SIQAG of LOINC code change – our response “We will note in our documents that the code for Cholesterol, LDL has been updated from XNZ0081 to LOINC 39469-2”

## Cholesterol (total/HDL)

Alternative name: Cholesterol / HDL Ratio

### Test / Analyte Information

<b>Health Pac Number</b>	N/A	<b>LOINC Code</b>	32309-7
<b>Reported to (no DP)</b>	1	<b>Units</b>	NA (Ratio)
<b>Paed Range Needed</b>	No	<b>Sample Type</b>	Ser / Plas

### Laboratory Information

<b>CHL Analyser</b>	Abbott c8/c16000	<b>CHL Method</b>	Calculation
<b>SCL Analyser</b>	Roche Cobas 6000 (c501)	<b>SCL Method</b>	Calculation
<b>MLS Analyser</b>		<b>MLS Method</b>	Calculation
<b>WCDHB Analyser</b>		<b>WCDHB Method</b>	Calculation
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	Calculation
<b>HBDHB Analyser</b>		<b>HBDHB Method</b>	Calculation

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 - Adult	< 4.5

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
April 2008	Conception / Agreement (Single ranges only)
August 2008	Comparability agreed subsequent to comparison testing between CHL, SCL, MLS, Greymouth, Taranaki and Hawke' Bay.

**CK**

Alternative name: (Creatinine Kinase)

Test / Analyte Information

<b>Health Pac Number</b>	BZ3	<b>LOINC Code</b>	2157-6
<b>Reported to (no DP)</b>	0	<b>Units</b>	U/L
<b>Paed Range Needed</b>	No	<b>Sample Type</b>	Ser / Plas

Laboratory Information

<b>CHL Analyser</b>	Abbott c8/c16000	<b>CHL Method</b>	Cedia, enzymatic assay
<b>SCL Analyser</b>	Roche Cobas c501	<b>SCL Method</b>	IFCC; creatine phos
<b>MLS Analyser</b>	Roche P Module	<b>MLS Method</b>	NAC activator/ Imidazole buffer
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	IFCC and DGKC
<b>TDHB Analyser</b>	Abbott C8000	<b>TDHB Method</b>	IFCC
<b>HBDHB Analyser</b>	Architect c8000	<b>HBDHB Method</b>	Imidazole buffer, NAC

Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>	
	<b>Female</b>	<b>Male</b>
0 - Adult	30 – 180	60 – 220

Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
July 2010	Conception / Agreement (Single ranges only) – alignment with ARQAG



## Creatinine

Alternative name: (N/A)

### Test / Analyte Information

<b>Health Pac Number</b>	BR1	<b>LOINC Code</b>	14682-9
<b>Reported to (no DP)</b>	0	<b>Units</b>	umol/L
<b>Paed Range Needed</b>	Yes (see below)	<b>Sample Type</b>	Ser / Plas

### Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	Improved Jaffe, kinetic rate
<b>SCL Analyser</b>	Roche Cobas 6000 (c501)	<b>SCL Method</b>	Rate blanked, compensated
<b>MLS Analyser</b>	Roche P Module	<b>MLS Method</b>	Rate blanked, compensated
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	Rate blanked, compensated
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	Improved Jaffe, kinetic rate
<b>HBDHB Analyser</b>	Architect c8000	<b>HBDHB Method</b>	Kinetic alk. picrate, rate-blanked

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>	
0 days – 1 month	20-60	
>1 month – 2 years	20-50	
>2 years – 4 years	20-60	
>4 years – 6 years	25-65	
>6 years – 10 years	25-70	
>10 years – 15 years	40-80	
	<b>Female</b>	<b>Male</b>
>15 years - Adult	45-90	50-110

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
April 2008	Conception / Agreement (Adult and Paediatric ranges only)
November 2008	Paediatric age range change from 7-30 days to 0-30days.
July 2009	Age divisions have been tidied up to match ARQAG and the adult reference intervals have been amended. Male was 50-110 amended to 60-105, Female was 40-90 amended to 45-90.
August 2009	New IDMS Creatinine method implemented at CHL – reference data supported slightly amended reference intervals. Female 45-90, Male 50-110. These have been ratified by the CDHB Nephrologists, Dr Geoff Smith (SCL) and Dr Guy Mulligan (MLS).

**CRP**

Alternative name: C-reactive protein

Test / Analyte Information

<b>Health Pac Number</b>	D21	<b>LOINC Code</b>	1988-5
<b>Reported to (no DP)</b>	0	<b>Units</b>	mg/L
<b>Paed Range Needed</b>	No	<b>Sample Type</b>	Ser / Plas

Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	Immunoturbidometric
<b>SCL Analyser</b>	Roche Cobas 6000 (c501)	<b>SCL Method</b>	Latex enhanced Immunoturbidometric
<b>MLS Analyser</b>	Roche P Module	<b>MLS Method</b>	Latex enhanced Immunoturbidometric
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	Latex enhanced Immunoturbidometric
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	Immunoturbidometric
<b>HBDHB Analyser</b>	Architect c8000	<b>HBDHB Method</b>	Latex enhanced Immunoturbidometric

Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 - Adult	< 5

Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
April 2008	Conception / Agreement (Single ranges only)

## Digoxin

Alternative name: (NA)

### Test / Analyte Information

<b>Health Pac Number</b>	BM1	<b>LOINC Code</b>	14698-5
<b>Reported to (no DP)</b>	1	<b>Units</b>	nmol/L
<b>Paed Range Needed</b>	No	<b>Sample Type</b>	Ser / Plas

### Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	Turbidometric
<b>SCL Analyser</b>	Roche Cobas 6000 (e601)	<b>SCL Method</b>	ECLIA
<b>MLS Analyser</b>	Roche E170	<b>MLS Method</b>	ECLIA
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	KIMS
<b>TDHB Analyser</b>	Dimension Xpand (Base) Architect (C8000)(Hawera)	<b>TDHB Method</b>	IEMA (Base) Turbidometric (Hawera)
<b>HBDHB Analyser</b>	Architect c8000	<b>HBDHB Method</b>	PETINIA

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 - Adult	0.6 – 2.0

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
September 2008	Conception / Agreement (Single ranges only) – Therapeutic range as opposed to standard reference interval.

## Ferritin

Alternative name: (NA)

### Test / Analyte Information

<b>Health Pac Number</b>	BH1	<b>LOINC Code</b>	2276-4
<b>Reported to (no DP)</b>	0	<b>Units</b>	ug/L
<b>Paed Range Needed</b>	Yes	<b>Sample Type</b>	Ser / Plas

### Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	CMIA
<b>SCL Analyser</b>	Roche Cobas 6000 (e601)	<b>SCL Method</b>	ECLIA
<b>MLS Analyser</b>	Roche E170	<b>MLS Method</b>	ECLIA
<b>WCDHB Analyser</b>	Roche Cobas 6000 (e601)	<b>WCDHB Method</b>	ECLIA
<b>TDHB Analyser</b>	Dimension Xpand	<b>TDHB Method</b>	IEMA
<b>HBDHB Analyser</b>	i2000	<b>HBDHB Method</b>	CMIA

### Reference Intervals

<b>Age Range</b>		<b>Reference Interval</b>	
0 – 15 years		15 – 150	
<b>Female</b>		<b>Male</b>	
<b>Age Range</b>	<b>Reference Interval</b>	<b>Age Range</b>	<b>Reference Interval</b>
>15 – 50 years	20 – 200	>15 – 30 years	20 – 350
> 50 years	20 – 350	> 30 years	20 – 500

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
	It was noted that these ranges were previously agreed prior to the comparability project.

## Folate

Alternative name: (NA)

### Test / Analyte Information

<b>Health Pac Number</b>	BH8	<b>LOINC Code</b>	14732-2
<b>Reported to (no DP)</b>	0	<b>Units</b>	nmol/L
<b>Paed Range Needed</b>	No	<b>Sample Type</b>	Ser / Plas

### Laboratory Information

<b>CHL Analyser</b>	Abbott Architect	<b>CHL Method</b>	CMIA
<b>SCL Analyser</b>	Roche Modular E	<b>SCL Method</b>	ECLIA
<b>MLS Analyser</b>	Roche Modular E	<b>MLS Method</b>	ECLIA
<b>WCDHB Analyser</b>	Roche Cobas 6000 (e601)	<b>WCDHB Method</b>	ECLIA
<b>TDHB Analyser</b>	Not done	<b>TDHB Method</b>	N/A
<b>HBDHB Analyser</b>	Architect i2000	<b>HBDHB Method</b>	CMIA

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 - Adult	> 8

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
July 2010	Conception / Agreement

**FSH**

Alternative name: (Follicle Stimulating Hormone)

Test / Analyte Information

<b>Health Pac Number</b>	BX3	<b>LOINC Code</b>	15067-2
<b>Reported to (no DP)</b>	1	<b>Units</b>	IU/L
<b>Paed Range Needed</b>	Yes	<b>Sample Type</b>	Ser / Plas

Laboratory Information

<b>CHL Analyser</b>	Beckman Access Machine	<b>CHL Method</b>	ILMA
<b>SCL Analyser</b>	Roche Cobas 6000 (e601)	<b>SCL Method</b>	ECLIA
<b>MLS Analyser</b>	Roche E170	<b>MLS Method</b>	ECLIA
<b>WCDHB Analyser</b>	Roche Cobas 6000 (e601)	<b>WCDHB Method</b>	ECLIA
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	CMIA
<b>HBDHB Analyser</b>	Not done	<b>HBDHB Method</b>	X

Reference Intervals

<b>Age Range</b>		<b>Reference Interval</b>	
0 – 10 years		0 – 6.5	
>10 years – 15 years		Pre-pubertal range 0-6.5 IU/L. Levels rise during puberty towards adult range	
<b>Female (&gt;15 years – Adult)</b>		<b>Male (&gt;15 years – Adult)</b>	
<b>Status</b>	<b>Reference Interval</b>	<b>Status</b>	<b>Reference Interval</b>
Follicular	3 – 10	X	2 – 12
Mid Cycle	4 – 25		
Luteal	2 – 8		
Post Menopause	>20		
Antenatal	<1		

Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
November 2008	Comparability agreed subsequent to comparison testing. Agreed to adopt ARQAG reference intervals.
June 2009	Analyte reference intervals required changing by CHL, agreed by Taranaki.

**GGT**

Alternative name: Gamma Glutamyl transferase

Test / Analyte Information

<b>Health Pac Number</b>	BZ6	<b>LOINC Code</b>	2324-2
<b>Reported to (no DP)</b>	0	<b>Units</b>	U/L
<b>Paed Range Needed</b>	Yes	<b>Sample Type</b>	Ser / Plas

Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	Enzyme colourmetric
<b>SCL Analyser</b>	Roche Cobas 6000 (c501)	<b>SCL Method</b>	IFCC
<b>MLS Analyser</b>	Roche P Module	<b>MLS Method</b>	IFCC
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	IFCC
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	Enzymatic IFCC
<b>HBDHB Analyser</b>	Architect c8000	<b>HBDHB Method</b>	Enzymatic, colorimetric

Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>	
0 – 6 months	< 150	
> 6 months – 1 year	< 50	
> 1 year – 12 years	< 30	
	<b>Female</b>	<b>Male</b>
> 12 years - Adult	10 – 35	10 – 50

Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
April 2008	Conception / Agreement (Single ranges for paediatric tests, but adults ranges should be differentiated by sex)
August 2008	A paediatric work group was set-up by Dr Richard Mackay and the results of this workshop have been adopted.

## Glucose

Alternative name: Random Glucose

### Test / Analyte Information

<b>Health Pac Number</b>	BG5	<b>LOINC Code</b>	14749-6
<b>Reported to (no DP)</b>	1	<b>Units</b>	mmol/L
<b>Paed Range Needed</b>	No	<b>Sample Type</b>	Ser / Plas

### Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	Enzymatic glucose hexokinase method
<b>SCL Analyser</b>	Roche Cobas 6000 (c501)	<b>SCL Method</b>	Enzymatic glucose hexokinase method
<b>MLS Analyser</b>	Roche P Module	<b>MLS Method</b>	Enzymatic glucose hexokinase method
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	Enzymatic glucose hexokinase method
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	Enzymatic glucose hexokinase method
<b>HBDHB Analyser</b>	Architect c8000	<b>HBDHB Method</b>	Hexokinase

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 - Adult	3.5 – 7.7

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
April 2008	Conception / Agreement (Single ranges only)

## Glucose (fasting)

Alternative name: (N/A)

### Test / Analyte Information

<b>Health Pac Number</b>	BG5	<b>LOINC Code</b>	14771-0
<b>Reported to (no DP)</b>	1	<b>Units</b>	mmol/L
<b>Paed Range Needed</b>	No	<b>Sample Type</b>	Ser / Plas

### Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	Enzymatic glucose hexokinase method
<b>SCL Analyser</b>	Roche Cobas 6000 (c501)	<b>SCL Method</b>	Enzymatic glucose hexokinase method
<b>MLS Analyser</b>	Roche P Module	<b>MLS Method</b>	Enzymatic glucose hexokinase method
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	Enzymatic glucose hexokinase method
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	Enzymatic glucose hexokinase method
<b>HBDHB Analyser</b>	Architect c8000	<b>HBDHB Method</b>	Hexokinase

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 - Adult	3.5 – 6.0

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
April 2008	Conception / Agreement (Single ranges only); 6/11/08 Agreed that CHL will output an appropriate comment between 5.5→6.0 for Hawke's Bay samples.

## HbA1c

Alternative name: (Glycated Haemoglobin)

### Test / Analyte Information

<b>Health Pac Number</b>	BG2	<b>LOINC Code</b>	XNZ0436
<b>Reported to (no DP)</b>	0	<b>Units</b>	mmol/mol
<b>Paed Range Needed</b>	No	<b>Sample Type</b>	Bld

### Laboratory Information

<b>CHL Analyser</b>	Biorad Variant II	<b>CHL Method</b>	HPLC
<b>SCL Analyser</b>	Biorad Variant II Turbo	<b>SCL Method</b>	HPLC
<b>MLS Analyser</b>	Biorad Variant II Turbo	<b>MLS Method</b>	HPLC
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	Turbidimetric inhibition immunoassay
<b>TDHB Analyser</b>	DCA 2000	<b>TDHB Method</b>	Latex immunoagglutination
<b>HBDHB Analyser</b>	BioRad D10	<b>HBDHB Method</b>	HPLC

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 - Adult	20 – 40

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
July 2009	Confirmation from the majority of SIQAG members (CHL, SCL ChCh, MLS Chch, WCDHB) that they are happy to adopt the suggested details for HbA1c reflecting the new requirements. – No negative responses were received.
September 2009	Name changed from HbA1c to HbA1c (IFCC) to allow differentiation between the % and mmol/mol reporting.
November 2011	Name changed back to HbA1c (and deleted HbA1c % units from document) as from Monday 03 October 2011 HbA1c has been reported in molar units (mmol/mol) only.

**HCG**

Alternative name: (NA)

Test / Analyte Information

<b>Health Pac Number</b>	BX2	<b>LOINC Code</b>	19080-1
<b>Reported to (no DP)</b>	0	<b>Units</b>	IU/L
<b>Paed Range Needed</b>	No	<b>Sample Type</b>	Ser / Plas

Laboratory Information

<b>CHL Analyser</b>	Abbott Architect	<b>CHL Method</b>	CMIA
<b>SCL Analyser</b>	Roche Cobas e601	<b>SCL Method</b>	ECLIA
<b>MLS Analyser</b>	Roche E170	<b>MLS Method</b>	ECLIA
<b>WCDHB Analyser</b>	Roche Cobas 6000 (e601)	<b>WCDHB Method</b>	ECLIA
<b>TDHB Analyser</b>	Abbott i2000	<b>TDHB Method</b>	CMIA
<b>HBDHB Analyser</b>	Architect i2000	<b>HBDHB Method</b>	CMIA

Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 - Adult	< 5

Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
July 2010	Conception / Agreement (Single ranges only)

## Iron

Alternative name: (NA)

### Test / Analyte Information

<b>Health Pac Number</b>	BH4	<b>LOINC Code</b>	14798-3
<b>Reported to (no DP)</b>	0	<b>Units</b>	umol/L
<b>Paed Range Needed</b>	Yes	<b>Sample Type</b>	Ser /Plas

### Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	Colorimetric complex with Ferene S
<b>SCL Analyser</b>	Roche Cobas 6000 (c501)	<b>SCL Method</b>	Ferrozine
<b>MLS Analyser</b>	Roche P Module	<b>MLS Method</b>	Ferrozine
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	Ferrozine
<b>TDHB Analyser</b>	Dimension Xpand	<b>TDHB Method</b>	Ferene
<b>HBDHB Analyser</b>	Architect c8000	<b>HBDHB Method</b>	Ferrozine (Roche)

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 – 2 months	10 – 31
>2 months – 1 year	4 – 27
>1 year – 3 years	5 – 23
>3 years – 10 years	6 – 25
>10 years – 18 years	8 – 32
18 + (Adult) > 18 years	10 – 30

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
August 2008	Adult range agreed. Paediatric range referred to workgroup (06/11/08).
February 2009	A paediatric work group was set-up by Dr Richard Mackay and the results of this workshop have been adopted.
June 2009	Analyte reference intervals required changing by CHL, agreed by Taranaki.

**LDH**

Alternative name: (NA)

Test / Analyte Information

<b>Health Pac Number</b>	BZ9	<b>LOINC Code</b>	2532-0
<b>Reported to (no DP)</b>	0	<b>Units</b>	U/L
<b>Paed Range Needed</b>	Yes (see below)	<b>Sample Type</b>	Ser / Plas

Laboratory Information

<b>CHL Analyser</b>	Abbott c8/c16000	<b>CHL Method</b>	L → P, Rate reaction
<b>SCL Analyser</b>	Roche Cobas c501	<b>SCL Method</b>	IFCC L → P
<b>MLS Analyser</b>	Roche P Module	<b>MLS Method</b>	IFCC L → P
<b>WCDHB Analyser</b>	Roche Cobas 6000 (e601)	<b>WCDHB Method</b>	L → P
<b>TDHB Analyser</b>	Abbott C8000	<b>TDHB Method</b>	IFCC L → P
<b>HBDHB Analyser</b>	Architect c8000	<b>HBDHB Method</b>	L → P,

Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 - Adult (Paediatric range to be reviewed)	110 – 220

Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
July 2010	Conception / Agreement on the Adult range, the paediatric query has been passed to Dr Richard Mackay for further discussion.

**LH**

Alternative name: (Luteinising Hormone))

Test / Analyte Information

<b>Health Pac Number</b>	BX4	<b>LOINC Code</b>	10501-5
<b>Reported to (no DP)</b>	1	<b>Units</b>	IU/L
<b>Paed Range Needed</b>	Yes	<b>Sample Type</b>	Ser / Plas

Laboratory Information

<b>CHL Analyser</b>	Beckman Access Machine	<b>CHL Method</b>	ILMA
<b>SCL Analyser</b>	Roche Cobas 6000 (e601)	<b>SCL Method</b>	ECLIA
<b>MLS Analyser</b>	Roche E170	<b>MLS Method</b>	ECLIA
<b>WCDHB Analyser</b>	Roche Cobas 6000 (e601)	<b>WCDHB Method</b>	ECLIA
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	CMIA
<b>HBDHB Analyser</b>	Not done	<b>HBDHB Method</b>	X

Reference Intervals

<b>Age Range</b>		<b>Reference Interval</b>	
0 -9 years 0 – 10 years		0 – 2.5	
>10 years – 15 years		Pre-pubertal range 0-2.5 IU/L. Levels rise during puberty towards adult range	
<b>Female (&gt;15 years – Adult)</b>		<b>Male (&gt;15 years – Adult)</b>	
<b>Status</b>	<b>Reference Interval</b>	<b>Status</b>	<b>Reference Interval</b>
Follicular	2 – 8	X	2 – 9
Mid Cycle	10 – 75		
Luteal	2 – 8		
Post Menopause	>15		
Antenatal	<1		

Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
November 2008	Comparability agreed subsequent to comparison testing. Agreed to adopt ARQAG reference intervals.
June 2009	Analyte reference intervals required changing by CHL, agreed by Taranaki.

## Lipase

Alternative name: (NA)

### Test / Analyte Information

<b>Health Pac Number</b>	BZ9	<b>LOINC Code</b>	3040-3
<b>Reported to (no DP)</b>	0	<b>Units</b>	U/L
<b>Paed Range Needed</b>	No	<b>Sample Type</b>	Ser / Plas

### Laboratory Information

<b>CHL Analyser</b>	Abbott c8/c16000	<b>CHL Method</b>	Colourimetric, enzymatic, diglyceride substrate
<b>SCL Analyser</b>	Not done	<b>SCL Method</b>	N/A
<b>MLS Analyser</b>	Not done	<b>MLS Method</b>	N/A
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	Enzymatic colorimetric, diglyceride substrate
<b>TDHB Analyser</b>	Not done	<b>TDHB Method</b>	N/A
<b>HBDHB Analyser</b>	Not done	<b>HBDHB Method</b>	N/A

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 - Adult	10 – 70

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
July 2010	Conception / Agreement (Single ranges only)

## Magnesium

Alternative name: (NA)

### Test / Analyte Information

<b>Health Pac Number</b>	BEB	<b>LOINC Code</b>	2601-3
<b>Reported to (no DP)</b>	1	<b>Units</b>	mmol/L
<b>Paed Range Needed</b>	No	<b>Sample Type</b>	Ser /Plas

### Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	Arsenazo dye
<b>SCL Analyser</b>	Roche P Module	<b>SCL Method</b>	Xylidyl Blue
<b>MLS Analyser</b>	Roche P Module	<b>MLS Method</b>	Xylidyl Blue
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	Xylidyl Blue
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	Arsenazo dye
<b>HBDHB Analyser</b>	Architect c8000	<b>HBDHB Method</b>	Arsenazo dye

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 - Adult	0.6 – 1.2

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
September 2008	Conception / Agreement (Single ranges only)

## Microalbumin/creat urine

Alternative name: (na)

### Test / Analyte Information

<b>Health Pac Number</b>	N/A	<b>LOINC Code</b>	14959-1
<b>Reported to (no DP)</b>	1	<b>Units</b>	g/mol
<b>Paed Range Needed</b>	no	<b>Sample Type</b>	Ur

### Laboratory Information

<b>CHL Analyser</b>	Abbott c8/c16000	<b>CHL Method</b>	Turbidimetric/Jaffe
<b>SCL Analyser</b>	Roche Cobas c501	<b>SCL Method</b>	Immunoturbidimetric/Jaffe
<b>MLS Analyser</b>	Roche P Module	<b>MLS Method</b>	Tinaquant/Jaffe
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	Turbidimetric / Rate Jaffe
<b>TDHB Analyser</b>	X	<b>TDHB Method</b>	X
<b>HBDHB Analyser</b>	Architect c8000	<b>HBDHB Method</b>	Turbidimetric/Jaffe kinetic

### Reference Intervals

Age Range	Reference Interval	
	Female	Male
0 - Adult	< 3.5	< 2.5

### Reference Intervals Justification

Date of change	Justification
July 2010	Conception / Agreement (Single ranges only) – alignment with ARQAG

## Microalbumin urine

Alternative name: (microalbumin urine albumin)

### Test / Analyte Information

<b>Health Pac Number</b>	BP7	<b>LOINC Code</b>	14957-5
<b>Reported to (no DP)</b>	0	<b>Units</b>	mg/L
<b>Paed Range Needed</b>	Yes	<b>Sample Type</b>	Ur

### Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	Turbidimetric IA
<b>SCL Analyser</b>	Roche Cobas 6000 (c501)	<b>SCL Method</b>	Turbidimetric IA
<b>MLS Analyser</b>	Roche P Module	<b>MLS Method</b>	Tinaquant
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	Immunoturbidimetric assay.
<b>TDHB Analyser</b>	Not performed	<b>TDHB Method</b>	N/A
<b>HBDHB Analyser</b>	Architect c8000	<b>HBDHB Method</b>	Turbidimetric IA

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 - Adult	<30

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
April 2008	Adult range agreed.

## Oestradiol

Alternative name: (NA)

### Test / Analyte Information

<b>Health Pac Number</b>	BX5	<b>LOINC Code</b>	14715-7
<b>Reported to (no DP)</b>	0	<b>Units</b>	pmol/L
<b>Paed Range Needed</b>	No	<b>Sample Type</b>	Ser / Plas

### Laboratory Information

<b>CHL Analyser</b>	Diasorin Kit (Manual Method)	<b>CHL Method</b>	RIA
<b>SCL Analyser</b>	Roche Cobas 6000 (e601)	<b>SCL Method</b>	ECLIA
<b>MLS Analyser</b>	Roche E170	<b>MLS Method</b>	ECLIA
<b>WCDHB Analyser</b>	Roche Cobas 6000 (e601)	<b>WCDHB Method</b>	ECLIA
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	CMIA
<b>HBDHB Analyser</b>	Not done	<b>HBDHB Method</b>	X

### Reference Intervals

Age Range		Reference Interval	
Female (adult)		Male (adult)	
Status	Reference Interval	Status	Reference Interval
Follicular	46 – 600	X	<160
Luteal	160 – 770		
Post Menopause	<200		

### Reference Intervals Justification

Date of change	Justification
November 2008	Comparability agreed subsequent to comparison testing. Agreed to adopt ARQAG reference intervals. <b>Only Med Lab South and Southern Community Laboratories will be cumulating Oestradiol – the method used at CHL is NOT comparable.</b>

## Phenobarbitone

Alternative name: (NA)

### Test / Analyte Information

<b>Health Pac Number</b>	BM3	<b>LOINC Code</b>	14874-2
<b>Reported to (no DP)</b>	0	<b>Units</b>	umol/L
<b>Paed Range Needed</b>	No	<b>Sample Type</b>	Ser / Plas

### Laboratory Information

<b>CHL Analyser</b>	Abbott Architect	<b>CHL Method</b>	LIA
<b>SCL Analyser</b>	Abbott AXSYM	<b>SCL Method</b>	FPIA
<b>MLS Analyser</b>	Not done	<b>MLS Method</b>	N/A
<b>WCDHB Analyser</b>	Not done	<b>WCDHB Method</b>	N/A
<b>TDHB Analyser</b>	Not done	<b>TDHB Method</b>	N/A
<b>HBDHB Analyser</b>	Not done	<b>HBDHB Method</b>	N/A

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 - Adult	65 – 130

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
July 2010	Conception / Agreement (Single ranges only)

## Phenytoin

Alternative name: (NA)

### Test / Analyte Information

<b>Health Pac Number</b>	BM3	<b>LOINC Code</b>	14877-5
<b>Reported to (no DP)</b>	0	<b>Units</b>	umol/L
<b>Paed Range Needed</b>	No	<b>Sample Type</b>	Ser / Plas

### Laboratory Information

<b>CHL Analyser</b>	Abbott Architect	<b>CHL Method</b>	LIA
<b>SCL Analyser</b>	Abbott AXSYM	<b>SCL Method</b>	FPIA
<b>MLS Analyser</b>	Roche P Module	<b>MLS Method</b>	KIMS
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	KIMS
<b>TDHB Analyser</b>	Roche Cobas c501	<b>TDHB Method</b>	KIMS
<b>HBDHB Analyser</b>	Architect i2000	<b>HBDHB Method</b>	CMIA

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 - Adult	40 – 80

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
July 2010	Conception / Agreement (Single ranges only)

## Phosphate

Alternative name: (NA)

### Test / Analyte Information

<b>Health Pac Number</b>	BEA	<b>LOINC Code</b>	14879-1
<b>Reported to (no DP)</b>	1	<b>Units</b>	mmol/L
<b>Paed Range Needed</b>	Yes	<b>Sample Type</b>	Ser /Plas

### Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	Molybdate
<b>SCL Analyser</b>	Roche Cobas 6000 (c501)	<b>SCL Method</b>	Phosphomolybdate Complex
<b>MLS Analyser</b>	Roche P Module	<b>MLS Method</b>	Molybdate
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	Phosphomolybdate Complex
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	Phosphomolybdate
<b>HBDHB Analyser</b>	Architect c8000	<b>HBDHB Method</b>	Phosphomolybdate

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 – 1 month	1.3 – 2.5
>1month – 1 year	1.2 – 2.2
>1 year – 4 years	1.1 – 2.0
>4 years – 11 years	1.0 – 2.0
>11 years – 16 years	0.9 – 1.9
>16 years - Adult	0.8 – 1.5

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
May 2008	Adult range agreed. Paediatric range referred to workgroup (06/11/08).
April 2009	A paediatric work group was set-up by Dr Richard Mackay and the results of this workshop have been adopted.

## Potassium

Alternative name: (NA)

### Test / Analyte Information

<b>Health Pac Number</b>	BE2 (BE3)	<b>LOINC Code</b>	2823-3
<b>Reported to (no DP)</b>	1	<b>Units</b>	mmol/L
<b>Paed Range Needed</b>	No	<b>Sample Type</b>	Ser / Plas

### Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	Indirect ion specific electrode
<b>SCL Analyser</b>	Roche Cobas 6000 (c501)	<b>SCL Method</b>	Indirect ISE
<b>MLS Analyser</b>	Roche ISE	<b>MLS Method</b>	ISE
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	ISE
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	Indirect ion specific electrode
<b>HBDHB Analyser</b>	Architect c8000	<b>HBDHB Method</b>	Indirect ISE

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 - Adult	3.5 – 5.2

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
November 2008	Conception / Agreement (Single ranges only) – Extended discussion was had over plasma vs serum. Negated by raising the upper limit from 5.0 → 5.2.

## Progesterone

Alternative name: (NA)

### Test / Analyte Information

<b>Health Pac Number</b>	BX1	<b>LOINC Code</b>	14890-8
<b>Reported to (no DP)</b>	0	<b>Units</b>	nmol/L
<b>Paed Range Needed</b>	No	<b>Sample Type</b>	Ser / Plas

### Laboratory Information

<b>CHL Analyser</b>		<b>CHL Method</b>	Inhouse Elisa method for this assay. Ref: An Enzyme-linked immunosorbent assay (ELISA) for plasma progesterone: immobilised antigen approach. P.A.Elder, K.H.J.Yeo, J.G.Lewis and J.K.Clifford Clinica Chimica Acta. 162 (1987) 199-206.
<b>SCL Analyser</b>	Roche Cobas 6000 (e601)	<b>SCL Method</b>	ECLIA
<b>MLS Analyser</b>	Roche E170	<b>MLS Method</b>	ECLIA
<b>WCDHB Analyser</b>	Roche Cobas 6000 (e601)	<b>WCDHB Method</b>	ECLIA
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	CMIA
<b>HBDHB Analyser</b>	Not done	<b>HBDHB Method</b>	X

### Reference Intervals

Female (adult)		Male (adult)	
Status	Reference Interval	Status	Reference Interval
Follicular	1 – 4	X	0 – 1
Luteal	15 – 100		
Post Menopause	<4		

### Reference Intervals Justification

Date of change	Justification
November 2008	Comparability agreed subsequent to comparison testing.

## Prolactin

Alternative name: (PRL)

### Test / Analyte Information

<b>Health Pac Number</b>	BX7	<b>LOINC Code</b>	15081-3
<b>Reported to (no DP)</b>	0	<b>Units</b>	mIU/L
<b>Paed Range Needed</b>	No	<b>Sample Type</b>	Ser /Plas

### Laboratory Information

<b>CHL Analyser</b>	Beckman Access Machine	<b>CHL Method</b>	ILMA
<b>SCL Analyser</b>	Roche Cobas 6000 (e601)	<b>SCL Method</b>	ECLIA
<b>MLS Analyser</b>	Roche E170	<b>MLS Method</b>	ECLIA
<b>WCDHB Analyser</b>	Roche Cobas 6000 (e601)	<b>WCDHB Method</b>	ECLIA
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	CMIA
<b>HBDHB Analyser</b>	Not done	<b>HBDHB Method</b>	X

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>	
	<b>Female</b>	<b>Male</b>
0 - Adult	50 – 550	50 – 350

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
November 2008	Comparability agreed subsequent to comparison testing. Agreed to adopt ARQAG reference intervals.
June 2009	As a result of the endocrinologists plus Guy Mulligan and Geoff Smith meeting yesterday, we are now all agreed that the prolactin reference intervals should be: Male: 50 – 350 mIU/L; Female: 50 - 550 mIU/L.

## Protein

Alternative name: (Total Protein)

### Test / Analyte Information

<b>Health Pac Number</b>	BP1	<b>LOINC Code</b>	2885-2
<b>Reported to (no DP)</b>	0	<b>Units</b>	g/L
<b>Paed Range Needed</b>	Yes	<b>Sample Type</b>	Ser /Plas

### Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	Biuret
<b>SCL Analyser</b>	Roche Cobas 6000 (c501)	<b>SCL Method</b>	Biuret
<b>MLS Analyser</b>	Roche P Module	<b>MLS Method</b>	Biuret
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	Biuret
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	Biuret
<b>HBDHB Analyser</b>	Architect c8000	<b>HBDHB Method</b>	Biuret

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 – 2 months	45 – 70
>2 months – 1 year	50 – 80
>1 year – 6 years	55 – 80
>6 years – 11 years	60 – 83
>11 years - Adult	64 – 83

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
April 2008	Adult range agreed. Paediatric range referred to workgroup (06/11/08).
February 2009	A paediatric work group was set-up by Dr Richard Mackay and the results of this workshop have been adopted.

## PSA

Alternative name: (Prostate Specific Antigen)

### Test / Analyte Information

<b>Health Pac Number</b>	D90	<b>LOINC Code</b>	2857-1
<b>Reported to (no DP)</b>	0	<b>Units</b>	ug/L
<b>Paed Range Needed</b>	No	<b>Sample Type</b>	Ser / Plas

### Laboratory Information

<b>CHL Analyser</b>	Abbott Architect	<b>CHL Method</b>	CMIA
<b>SCL Analyser</b>	Roche Cobas e601	<b>SCL Method</b>	ECLIA
<b>MLS Analyser</b>	Roche E170	<b>MLS Method</b>	ECLIA
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	ECLIA
<b>TDHB Analyser</b>	X	<b>TDHB Method</b>	X
<b>HBDHB Analyser</b>	Architect i2000	<b>HBDHB Method</b>	CMIA

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 - Adult	< 4.0

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
July 2010	Previously agreed at the 2009 SIQAG meeting.

## Sodium

Alternative name: (NA)

### Test / Analyte Information

<b>Health Pac Number</b>	BE1(BE3)	<b>LOINC Code</b>	2951-2
<b>Reported to (no DP)</b>	0	<b>Units</b>	mmol/L
<b>Paed Range Needed</b>	No	<b>Sample Type</b>	Ser / Plas

### Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	Indirect ion specific electrode
<b>SCL Analyser</b>	Roche Cobas 6000 (c501)	<b>SCL Method</b>	Indirect ISE
<b>MLS Analyser</b>	Roche ISE	<b>MLS Method</b>	ISE
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	ISE
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	Indirect ion specific electrode
<b>HBDHB Analyser</b>	Architect c8000	<b>HBDHB Method</b>	Indirect ISE

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 - Adult	135 – 145

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
April 2008	Conception / Agreement (Single ranges only)
June 2009	Analyte reference intervals required changing by CHL, agreed by Taranaki.

**T3 (free)**

Alternative name: (Tri-iodothyronine)

Test / Analyte Information

<b>Health Pac Number</b>	BT3	<b>LOINC Code</b>	14928-6
<b>Reported to (no DP)</b>	1	<b>Units</b>	pmol/L
<b>Paed Range Needed</b>	Yes	<b>Sample Type</b>	Ser /Plas

Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	CMIA
<b>SCL Analyser</b>	Roche Cobas 6000 (e601)	<b>SCL Method</b>	ECLIA
<b>MLS Analyser</b>	Roche E170	<b>MLS Method</b>	ECLIA
<b>WCDHB Analyser</b>	Roche Cobas 6000 (e601)	<b>WCDHB Method</b>	ECLIA
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	CMIA
<b>HBDHB Analyser</b>	Architect i2000	<b>HBDHB Method</b>	CMIA

Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 – 1 year	4.5 – 10.5
>1 year – 12 years	3.8 – 8.6
>12 years– 18 years	3.7 – 7.7
>18 years	2.5 – 6.0

Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
November 2008	Adult range agreed. Paediatric range referred to workgroup (06/11/08).
February 2009	A paediatric work group was set-up by Dr Richard Mackay and the results of this workshop have been adopted.

**T4 (free)**

Alternative name: (Thyroxine)

From LOINC also "Free thyroxine index or free T4"

Test / Analyte Information

<b>Health Pac Number</b>	BT2	<b>LOINC Code</b>	14920-3
<b>Reported to (no DP)</b>	0	<b>Units</b>	pmol/L
<b>Paed Range Needed</b>	Yes	<b>Sample Type</b>	Ser /Plas

Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	CMIA
<b>SCL Analyser</b>	Roche Cobas 6000 (e601)	<b>SCL Method</b>	ECLIA
<b>MLS Analyser</b>	Roche E170	<b>MLS Method</b>	ECLIA
<b>WCDHB Analyser</b>	Roche Cobas 6000 (e601)	<b>WCDHB Method</b>	ECLIA
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	CMIA
<b>HBDHB Analyser</b>	Architect i2000	<b>HBDHB Method</b>	CMIA

Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 – 6 days	17 – 42
> 6 days – 1 year	14 – 23
>1 year - Adult	10 – 24

Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
November 2008	Adult range agreed. Paediatric range referred to workgroup (06/11/08).
February 2009	A paediatric work group was set-up by Dr Richard Mackay and the results of this workshop have been adopted.

## Theophylline

Alternative name: (NA)

### Test / Analyte Information

<b>Health Pac Number</b>	BM4	<b>LOINC Code</b>	14915-3
<b>Reported to (no DP)</b>	0	<b>Units</b>	umol/L
<b>Paed Range Needed</b>	No	<b>Sample Type</b>	Ser / Plas

### Laboratory Information

<b>CHL Analyser</b>	Abbott Architect	<b>CHL Method</b>	LIA
<b>SCL Analyser</b>	Abbott AXSYM	<b>SCL Method</b>	FPIA
<b>MLS Analyser</b>	Not done	<b>MLS Method</b>	N/A
<b>WCDHB Analyser</b>	Not done	<b>WCDHB Method</b>	N/A
<b>TDHB Analyser</b>	Not done	<b>TDHB Method</b>	N/A
<b>HBDHB Analyser</b>	Architect i2000	<b>HBDHB Method</b>	CMIA

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 - Adult	55 – 110

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
July 2010	Conception / Agreement on the Adult range, the paediatric query has been passed to Dr Richard Mackay for further discussion.

## Transferrin

Alternative name: (NA)

### Test / Analyte Information

<b>Health Pac Number</b>	BH2	<b>LOINC Code</b>	3034-6
<b>Reported to (no DP)</b>	1	<b>Units</b>	g/L
<b>Paed Range Needed</b>	Yes	<b>Sample Type</b>	Ser /Plas

### Laboratory Information

<b>CHL Analyser</b>	Abbott Architect c8000/i2000	<b>CHL Method</b>	Immunoturbidimetric
<b>SCL Analyser</b>	Roche Cobas 6000 (c501)	<b>SCL Method</b>	Immunoturbidimetric
<b>MLS Analyser</b>	Roche P Module	<b>MLS Method</b>	Immunoturbidimetric
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	Immunoturbidimetric
<b>TDHB Analyser</b>	Dimension Xpand	<b>TDHB Method</b>	Immunoturbidimetric
<b>HBDHB Analyser</b>	Architect c8000	<b>HBDHB Method</b>	Immunoturbidimetric

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 – 2 months	1.3 – 2.3
>2 months – 3 years	1.6 – 3.3
>3 years - Adult	2.0 – 3.5

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
November 2008	Adult range agreed. Paediatric range referred to workgroup (06/11/08). This test will be used at the three laboratories instead of TIBC.
February 2009	A paediatric work group was set-up by Dr Richard Mackay and the results of this workshop have been adopted.

## Triglycerides

Alternative name: (NA)

### Test / Analyte Information

<b>Health Pac Number</b>	BL3	<b>LOINC Code</b>	14927-8
<b>Reported to (no DP)</b>	1	<b>Units</b>	mmol/L
<b>Paed Range Needed</b>	No	<b>Sample Type</b>	Ser / Plas

### Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	Enzymatic hydrolysis of trig
<b>SCL Analyser</b>	Roche Cobas 6000 (c501)	<b>SCL Method</b>	GPO
<b>MLS Analyser</b>	Roche P Module	<b>MLS Method</b>	GPO
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	GPO
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	GPO
<b>HBDHB Analyser</b>	Architect c8000	<b>HBDHB Method</b>	GPO

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 - Adult	< 1.7

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
April 2008	Conception / Agreement (Single ranges only)
August 2008	Comparability agreed subsequent to comparison testing between CHL, SCL, MLS, Greymouth, Taranaki and Hawke' Bay.

## TSH

Alternative name: (Thyroid Stimulating Hormone)

### Test / Analyte Information

<b>Health Pac Number</b>	BT1	<b>LOINC Code</b>	3016-3
<b>Reported to (no DP)</b>	2	<b>Units</b>	mIU/L
<b>Paed Range Needed</b>	Yes	<b>Sample Type</b>	Ser /Plas

### Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	CMIA
<b>SCL Analyser</b>	Roche Cobas 6000 (e601)	<b>SCL Method</b>	ECLIA
<b>MLS Analyser</b>	Roche E170	<b>MLS Method</b>	ECLIA
<b>WCDHB Analyser</b>	Roche Cobas 6000 (e601)	<b>WCDHB Method</b>	ECLIA
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	CMIA
<b>HBDHB Analyser</b>	Architect i2000	<b>HBDHB Method</b>	CMIA

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 – 4 days	1 – 20
>4 days – 1 month	0.7 – 16
>1 month – 6 months	0.5 – 6
>6 months - Adult	0.40 – 4.00

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
August 2008	Comparability agreed subsequent to comparison testing between CHL, SCL, MLS, Greymouth, Taranaki and Hawke' Bay. A paediatric work group was set-up by Dr Richard Mackay and the results of this workshop have been adopted.

## Urate

Alternative name: (Uric Acid)

### Test / Analyte Information

<b>Health Pac Number</b>	BR3	<b>LOINC Code</b>	14933-6
<b>Reported to (no DP)</b>	2	<b>Units</b>	mmol/L
<b>Paed Range Needed</b>	Yes	<b>Sample Type</b>	Ser /Plas

### Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	Modified Trinder
<b>SCL Analyser</b>	Roche Cobas 6000 (c501)	<b>SCL Method</b>	Uricase
<b>MLS Analyser</b>	Roche P Module	<b>MLS Method</b>	Uricase
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	Uricase
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	Uricase
<b>HBDHB Analyser</b>	Architect c8000	<b>HBDHB Method</b>	Uricase (Roche)

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>	
0 – 12 years	0.08 – 0.34	
	<b>Female</b>	<b>Male</b>
>12 years - Adult	0.15 – 0.36	0.20 – 0.42

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
May 2008	Adult range agreed. Paediatric range referred to workgroup (06/11/08).
February 2009	A paediatric work group was set-up by Dr Richard Mackay and the results of this workshop have been adopted.

## Urea

Alternative name: (NA)

### Test / Analyte Information

<b>Health Pac Number</b>	BR2	<b>LOINC Code</b>	22664-7
<b>Reported to (no DP)</b>	1	<b>Units</b>	mmol/L
<b>Paed Range Needed</b>	Yes	<b>Sample Type</b>	Ser /Plas

### Laboratory Information

<b>CHL Analyser</b>	Architect (C8000, i2000)	<b>CHL Method</b>	Enzymatic kinetic
<b>SCL Analyser</b>	Roche Cobas 6000 (c501)	<b>SCL Method</b>	Urease
<b>MLS Analyser</b>	Roche P Module	<b>MLS Method</b>	Urease
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	Urease
<b>TDHB Analyser</b>	Architect (C8000, i2000)	<b>TDHB Method</b>	Urease
<b>HBDHB Analyser</b>	Architect c8000	<b>HBDHB Method</b>	Urease

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 – 1 month	1.1 – 6.1
>1 month – 2 years	0.7 – 5.0
>2 years – 4 years	1.1 – 5.0
> 4 years – 6 years	1.1 – 5.7
>6 years – 10 years	1.4 – 5.7
>10 years – 13 years	1.8 – 6.4
>13 years - Adult	3.2 – 7.7

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
May 2008	Adult range agreed. Paediatric range referred to workgroup (06/11/08).
April 2009	A paediatric work group was set-up by Dr Richard Mackay and the results of this workshop have been adopted.
June 2009	Analyte reference intervals required changing by CHL, agreed by Taranaki.

## Valproate

Alternative name: (NA)

### Test / Analyte Information

<b>Health Pac Number</b>	BM3	<b>LOINC Code</b>	14946-8
<b>Reported to (no DP)</b>	0	<b>Units</b>	umol/L
<b>Paed Range Needed</b>	Yes	<b>Sample Type</b>	Ser / Plas

### Laboratory Information

<b>CHL Analyser</b>	Abbott c8/c16000	<b>CHL Method</b>	Enhanced Turbidimetric IA
<b>SCL Analyser</b>	Abbott AXSYM	<b>SCL Method</b>	FPIA
<b>MLS Analyser</b>	Roche P Module	<b>MLS Method</b>	KIMS
<b>WCDHB Analyser</b>	Roche Cobas 6000 (c501)	<b>WCDHB Method</b>	EMIT
<b>TDHB Analyser</b>	Roche Cobas c501	<b>TDHB Method</b>	Homogenous EIA
<b>HBDHB Analyser</b>	Architect i2000	<b>HBDHB Method</b>	CMIA

### Reference Intervals

<b>Age Range</b>	<b>Reference Interval</b>
0 - Adult	350 – 700

### Reference Intervals Justification

<b>Date of change</b>	<b>Justification</b>
July 2010	Conception / Agreement on the Adult range.

**Appendix A: Tests unable to cumulate**Test / Analyte Information

Test / Analyte	Decimal Places	Units	LOINC Code
Red Cell Folate		nmol/ L	
Protein Electrophoretic pattern			
Faecal occult blood, human haemoglobin specific			
Lipoproteins, electrophoresis, serum			
Glucose Tolerance test post-polycose		mmol/L	
Glucose Tolerance test standard		mmol/L	

**Appendix B: {TEST ENTRY: LOINC Name}**

Alternative name: (NA)

Test / Analyte Information

<b>Health Pac Number</b>	{health pac no}	<b>LOINC Code</b>	{LOINC Code}
<b>Reported to (no DP)</b>	{DP}	<b>Units</b>	{units}
<b>Paed Range Needed</b>	{yes or no}	<b>Sample Type</b>	{sample type}

Laboratory Information

<b>CHL Analyser</b>		<b>CHL Method</b>	X
<b>SCL Analyser</b>		<b>SCL Method</b>	X
<b>MLS Analyser</b>		<b>MLS Method</b>	X
<b>WCDHB Analyser</b>		<b>WCDHB Method</b>	X
<b>TDHB Analyser</b>		<b>TDHB Method</b>	X
<b>HBDHB Analyser</b>		<b>HBDHB Method</b>	X

Reference Intervals

Age Range	Reference Interval	
Adult	> 1.0	
Antenatal 1 <sup>st</sup> Trimester	-	X
Antenatal 2 <sup>nd</sup> Trimester	-	X
Antenatal 3 <sup>rd</sup> Trimester	-	X

Reference Intervals Justification

Date of change	Justification

**Change History:**

<b>Date of Change</b>	<b>Analyte</b>	<b>Version</b>	<b>Change History</b>
25/06/2009	Cholesterol (LDL) (calculated)	1.0	Email from Angie Quinn (Standards Development Advisor, MoH) notifying SIQAG of LOINC code change – our response “We will note in our documents that the code for Cholesterol, LDL has been updated from XNZ0081 to LOINC 39469-2”
25/06/2009	HbA1C	1.0	Additional HbA1c analyte entry added to the SIQAG documentation reflecting the requirement to report mmol/mol. a) Email from Angie Quinn (Standards Development Advisor, MoH) notifying us of the new NZ LOINC code – our response “We will note in our documents that the new code for HbA1c (mmol/mol) is XNZ0436.” b) Confirmation from the majority of SIQAG members (CHL, SCL ChCh, MLS Chch, WCDHB) that they are happy to adopt the suggested details for HbA1c reflecting the new requirements. – No negative responses were received.
25/06/2009	Prolactin	1.0	Email from John Livesey: - As a result of the endocrinologists plus Guy Mulligan and Geoff Smith meeting yesterday, we are now all agreed that the prolactin reference intervals should be: Male: 50 – 350 mIU/L; Female: 50 - 550 mIU/L.
24/07/2009		1.1	Labcare Taranaki included their Analysers and Methods.
05/08/2009		1.1	Updated SCL Analyser and Method list as provided by Geoff Smith.
05/08/2009	Creatinine	1.1	Age divisions have been tidied up to match ARQAG and the adult reference intervals have been amended. Male was 50-110 amended to 60-105, Female was 40-90 amended to 45-90.
10/09/2009	HbA1c	1.2	The name for HbA1c reporting mmol/mol has been amended to HbA1c (IFCC) to allow differentiation between the % and mmol/mol reporting.
15/09/2009	Creatinine	1.2	New IDMS Creatinine method implemented at CHL – reference data supported slightly amended reference intervals. Female 45-90, Male 50-110. These have been ratified by the CDHB Nephrologists, Dr Geoff Smith (SCL) and Dr Guy Mulligan (MLS).
14/01/2010	Introduction	1.3	Minor amendment to the introduction, updated SCL Analyser and Method list as provided by Geoff Smith.
18/04/2010	Progesterone	1.4	Technical correction: SIQAG did not adopt the ARQAG range for progesterone. This was agreed after comparison testing between Endolab (CHL), SCL, MLS, Taranaki and Grey Hospital.
18/04/2010	Digoxin	1.4	SCL have changed from using the Centaur CLIA to Cobas e601 ECLIA
23/07/2010		1.4	Adding the rules for defining reference interval as presented by Geoff Smith at SIQAG

23/07/2010	Folate, HCG, CK, Carbamazepine, Valproate, Theophylline, Phenobarbitone, Phenytoin, LHD, Lipase, PSA, Microalbumin/creat urine	1.4	Added to the SIQAG Document post the 22/07/2010 meeting.
19/09/2010		1.5	Including Richard MacKay's application of the rules for defining reference intervals.
06/10/2010	CK, LDH, Lipase, Amylase (pancreatic)	1.5	Technical correction as per email from Gordon Sutton: On reviewing the SIQAG last minutes a bit more closely we (Guy) noticed some unit errors with the enzymes namely: CK, LDH, Lipase and Pancreatic amylase should read U/L not IU/L.
20/10/2010	Theophylline	1.5	Corrected spelling of Theophylline to match NZPOCs test name spelling.
20/10/2010	Lipase	1.5	Added LOINC for Lipase 3040-3 (confirmed with Peter George that this is the same as Triacylglycerol lipase)
29/11/2011	HbA1c	1.5	Deleted HbA1c (%) and changed name of HbA1c (IFCC) back to HbA1c as from Monday 03 October 2011 HbA1c has been reported in molar units (mmol/mol) only.