Sweat Electrolyte Testing Workshop

Perth 2010

AACB AIMS
Combined Scientific Meeting
25-29 October 2010, Perth WA

Reporting

MP Metz

RCPA Quality Assurance Programs Pty Limited

Chemical Pathology QAP

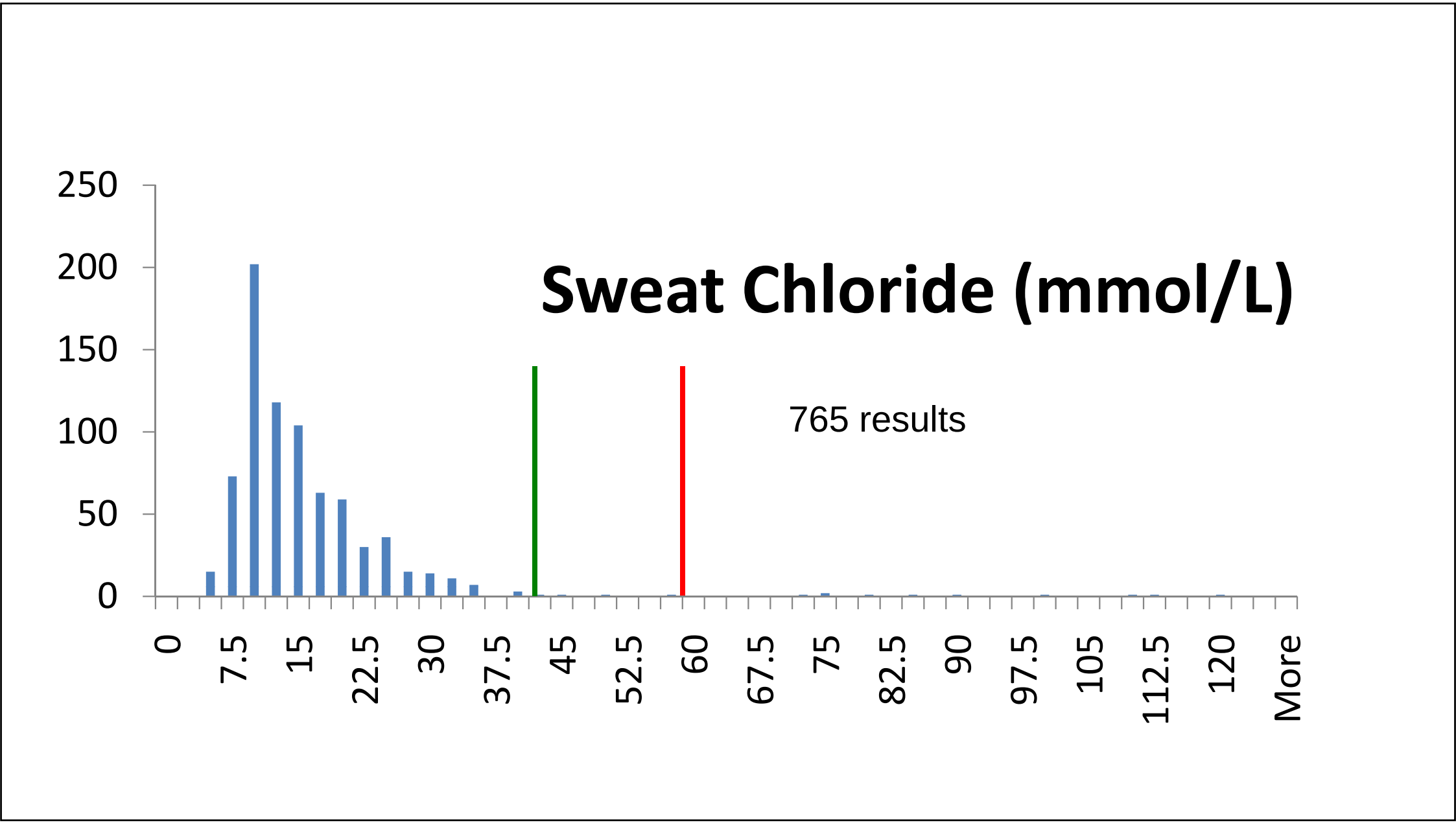
		Date:	05/08/2010
		Lab#:	366395
Test	Reference Interval	Unit	
SWEAT TEST	RESULTS		
Weight		mg	405
Sodium	(< 40)	mmol/L	20
Chloride	**(< 40)**	mmol/L	13

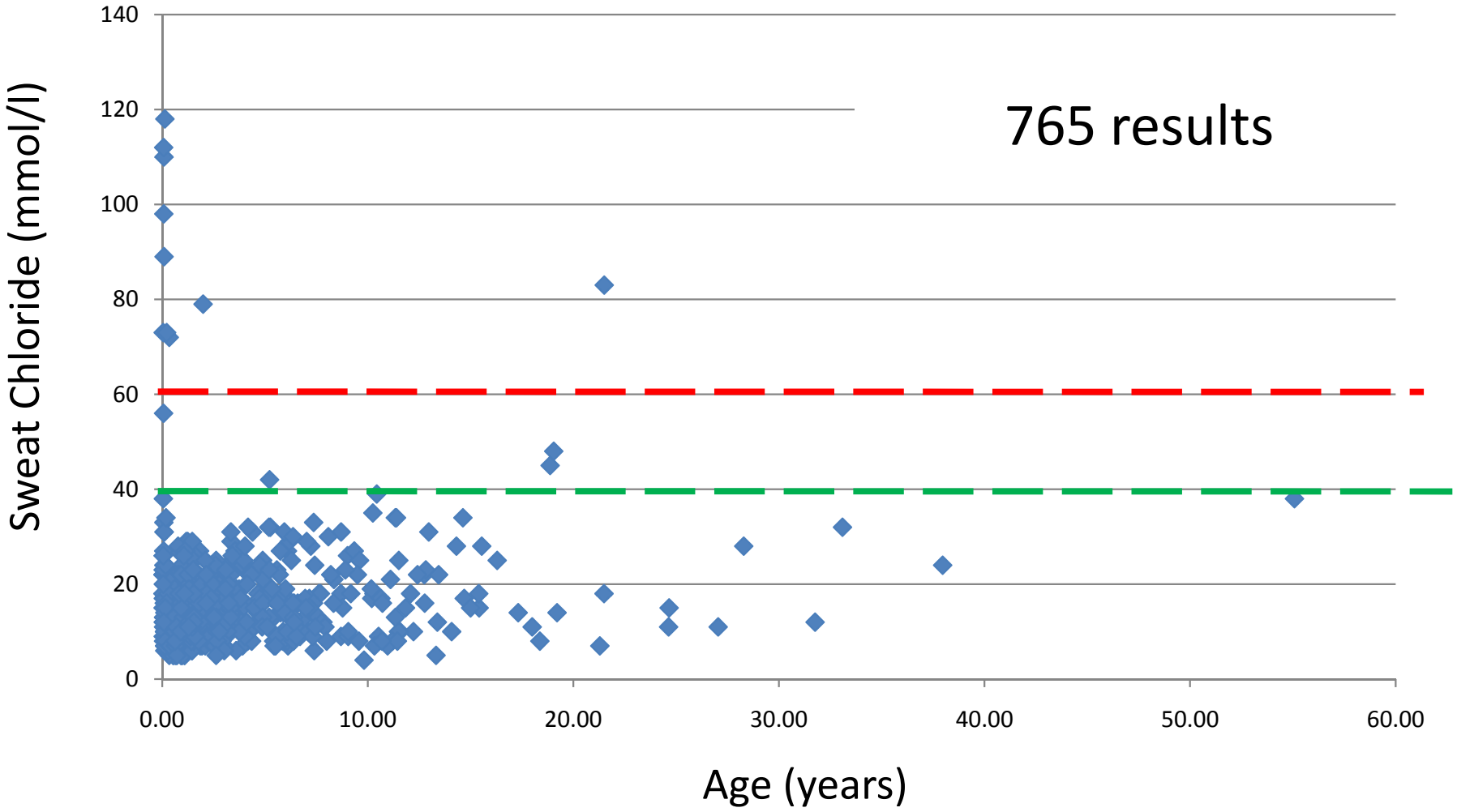
Sweat Chloride Concentration	Classical RefInts	Interpretation
<40	mmol/L	Normal
40-60	mmol/L	Equivocal
>60	mmol/L	Suggestive of CF

The Limitations of Sweat Electrolyte Reference Intervals for the Diagnosis of Cystic Fibrosis: A Systematic Review

AMishra, RGreaves, JMassie

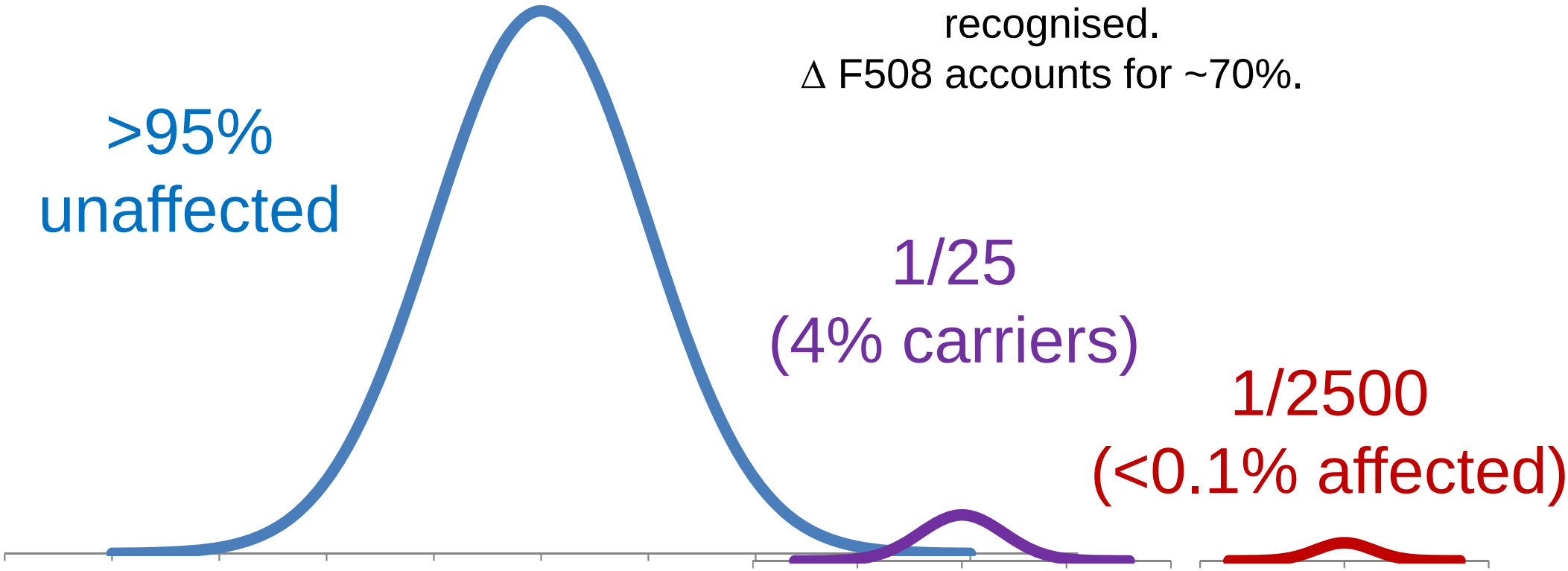
Clin Biochem Rev 2007; 28:60


Sweat Chloride (mmol/L)
765 results
250
200
150
100
50
0
0
7.5
15
22.5
30
37.5
45
52.5
60
67.5
75
82.5
90
97.5
105
112.5
120
More


765 results
Sweat Chloride (mmol/l)
140
120
100
80
60
40
20
0
0.00
10.00
20.00
30.00
40.00
50.00
60.00
Age (years)

www.genet.sickkids.on.ca

There are currently **1787** CFTR mutations recognised.
Δ F508 accounts for ~70%.



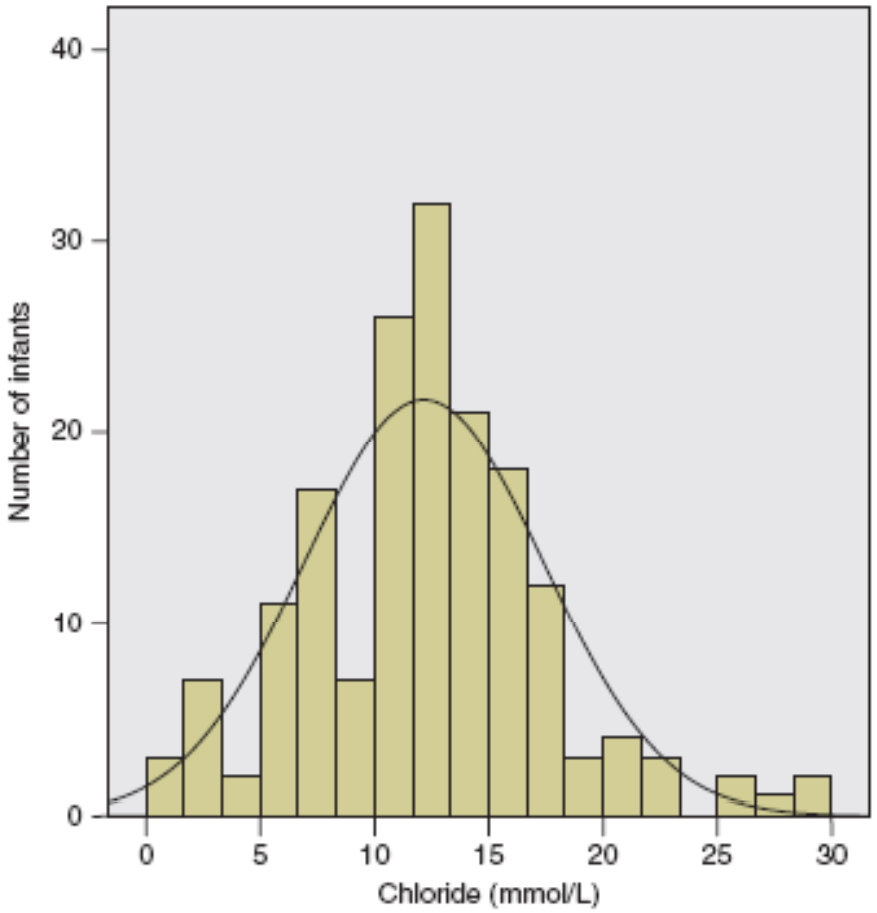


Figure 2 Distribution of sweat chloride concentrations from 165 infants between 5 wk and 6 wk of age (sweat collected by the Macroduct™ [ISE] method)

193 infants

ΔF508 excluded

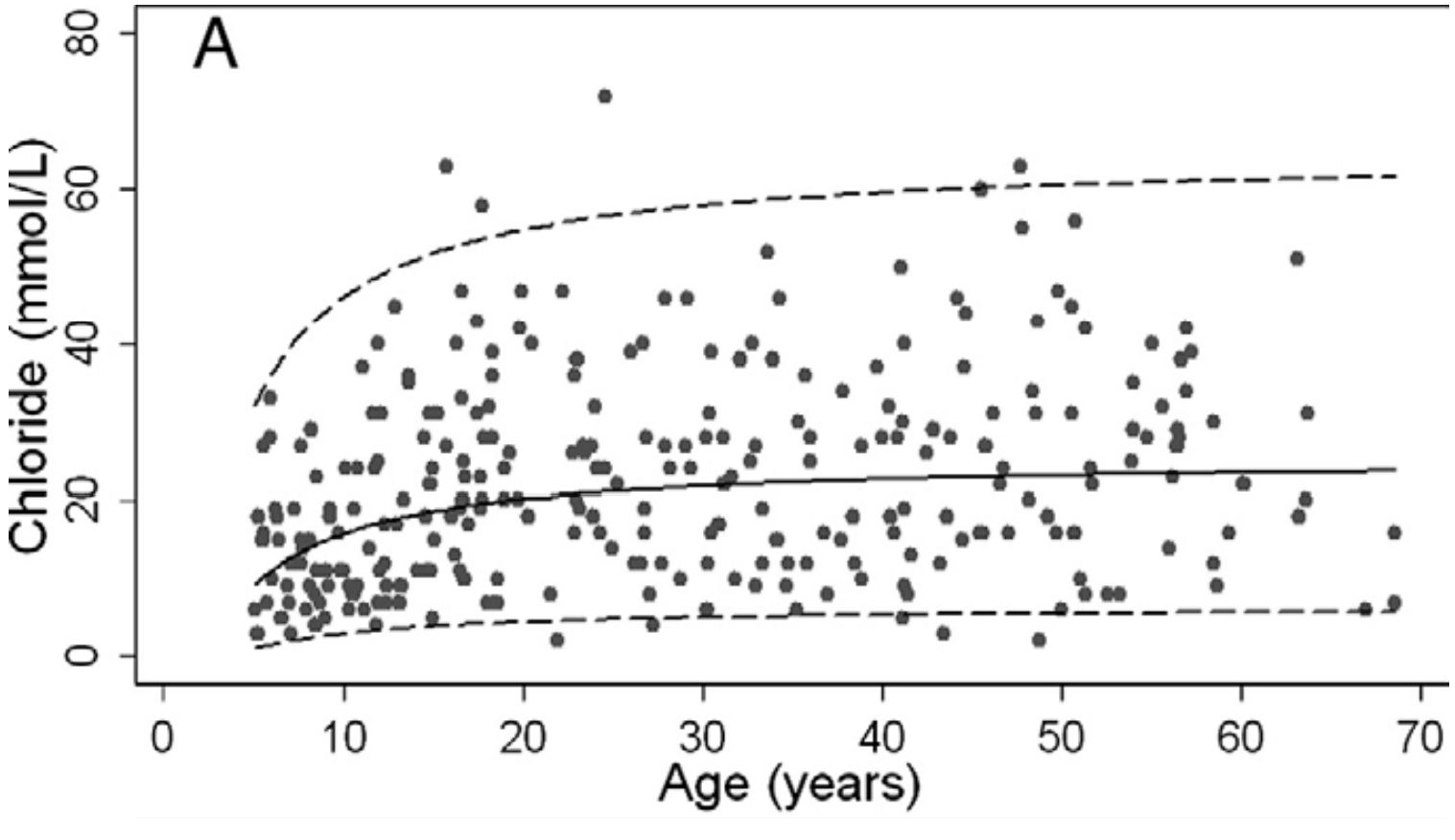
99.5%

30 mmol/L

A reference interval for sweat chloride in infants aged between five and six weeks of age.

RJayaraj, PBarton, et al

Ann Clin Biochem 2009;46:73-8.



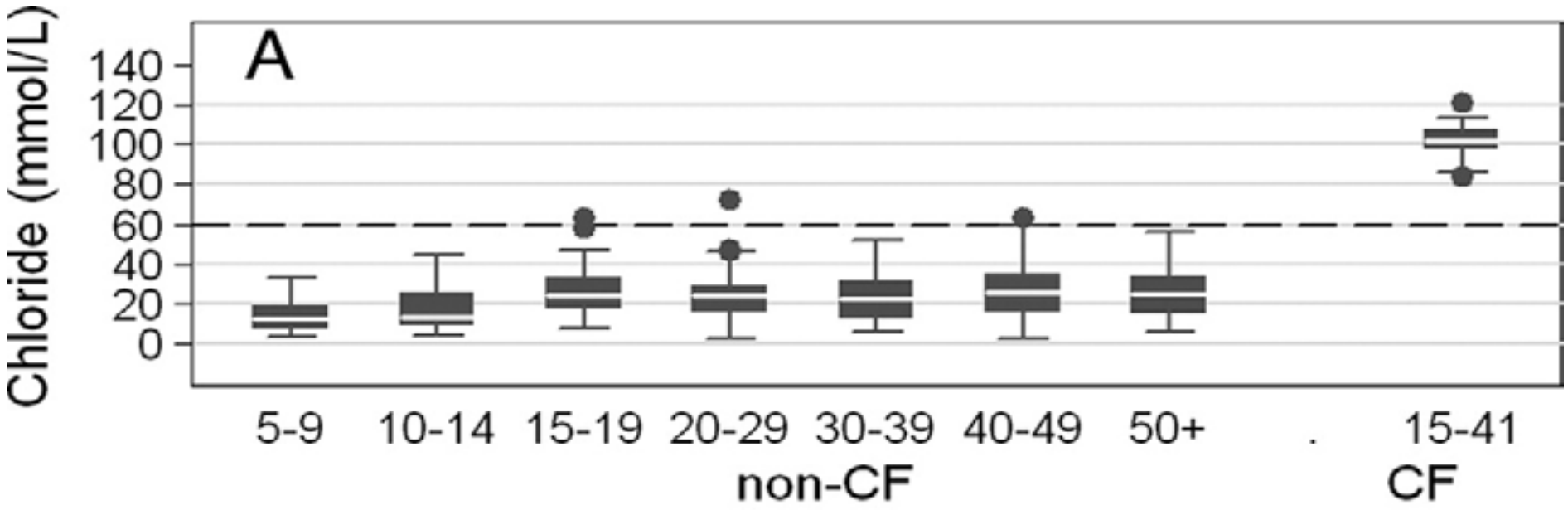
282 volunteers
in 7 cohorts

ΔF508
excluded

Diagnosis of Cystic Fibrosis by Sweat Testing:
Age-Specific Reference Intervals

AMishra, RGreaves, et al

J Ped 2008;153:758-63



Diagnosis of Cystic Fibrosis by Sweat Testing:
Age-Specific Reference Intervals
AMishra, RGreaves, et al
J Pediatr 2008;153:758-63

AGE (years)	Cl (mmol/L)
5-9	<39.5
10-14	<49.0
15-19	<53.3
20+	<59.6

Sweat Chloride Concentration	Classical RefInts	Interpretation
<40	mmol/L	Normal
40-60	mmol/L	Equivocal
>60	mmol/L	Suggestive of CF

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Australian Guidelines
Sweat Chloride Concentration

Age	Normal	Suggests	Supports
All	<40	40-60	>60

Clin Biochem Rev 2006, 27(S):S1

CLSI 2009
Sweat Chloride Concentration

Age	Normal	Intermediate	Suggestive
0-6 months	<30	30-59	>60
6 months -18 years	<40	40-59	>60
Adult	*<40*	*40-59*	*>60*

US CFF registry, 14% of adult diagnosis had sweat chloride < 60 mmol/L.
1% of CF have sweat chloride 40-60 mmol/L.

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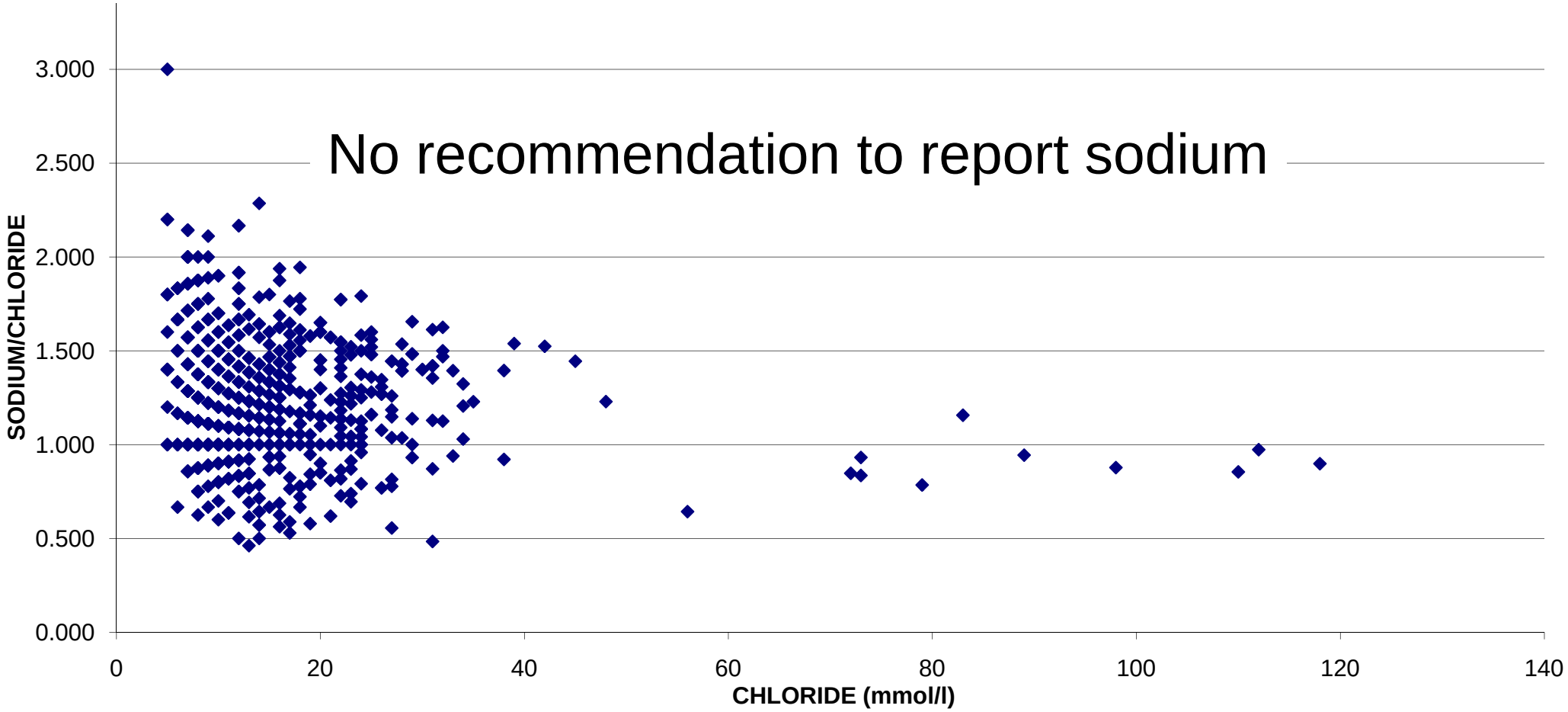
Chloride	(< 40)	mmol/L	13

Sweat Sodium



		Date:	05/08/2010
Test	Reference Interval	Unit	$1\ g/m^2/min$
SWEAT TEST	RESULTS		
Weight		**mg**	**405**
Sodium	(< 40)	mmol/L	20
Chloride	(< 40)	mmol/L	13

If done in duplicate, report each.
Do not report averages.

		Date:	05/08/2010
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Comments:

Comments

- Senior scientist with consultation
- Repeat equivocal and positive results
- Refer to specialist physician
- Consider mutation analysis

FALSE POSITIVES

Adrenal insufficiency

Pseudohypoaldosteronism

Hyporeninemic hypoaldosteronism

Hypothyroidism

Familial hypoparathyroidism

Atopic dermatitis

Familial cholestatic syndrome

Pyelonephritis

Nephrogenic diabetes insipidus

Fucosidosis

Glycogen Storage Disease I

Mauriac's syndrome

Malnutrition

Anorexia nervosa

Summary

For most people results are clear.

Most people with CF have high sweat chloride concentration.

Some people with CF have low sweat chloride concentration.

Some people without CF have high sweat chloride concentration.

Perth 2010
www.tebmeetings.com.au/aacbaims2010

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about the rose . . .
Cystic-L
Cystic Fibrosis Information & Support

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