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Saturday, June 10, 2017

17:30 - 18:00 Point of Care Testing in Your Practice



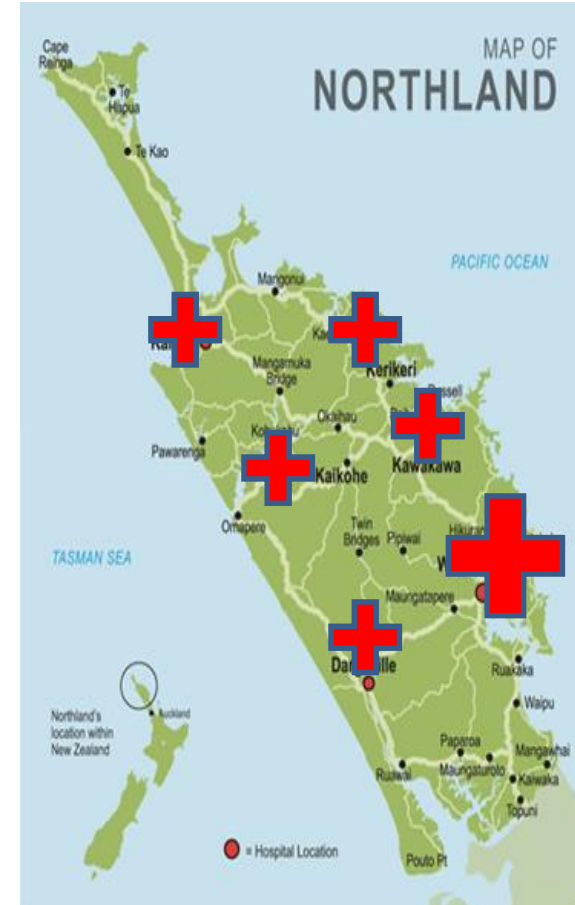
Everything you wanted to know about Point-of-Care Testing in Rural and General Practice but were afraid to ask!

Geoff Herd & Cathy Beazley
GPCME Conference Rotorua
8 -11 June 2017



Introduction

- Definitions and Applications of POCT:
 - History lesson(!)
 - POCT & With-Patient Testing
- Quality & Risk Management
- Community POCT Experience
 - Scope & Scale of POCT in GP
 - Optimising the Patient Journey
 - Cost effectiveness
 - Improving access to care in the Hokianga



POCT: the Oldest Form of Clinical Laboratory Medicine

- 1350 BC Ancient Egyptians: pregnancy test
urine B-hCG germinates barley or wheat (!)



- 1500 BC Indian physicians: ants attracted to
urine from patients with boils (?diabetes)

Point-of-Care or **With-Patient** Testing

- medical lab testing **with** the patient (bedside or decentralised testing)
- **reduces Therapeutic TAT e.g.:**
 - critical care: blood gas analysis, glucose
 - emergency care: Lactate, cTN, B-hCG
 - clinics & GP: CRP, HbA1c, BNP, INR, etc
- **POCT is complementary to medical lab testing**
 - should be integrated with clinical pathways
 - varies between hospitals & between countries
- **POCT can help to improve access and outcomes**



POCT = **WITH** patient testing



Whole of life **I**ntant
Testing for **H**ealth



GP/ ED B-hCG
Creatinine



GP/ED
Troponin BNP



OR/Theatre
Blood Gases TEG



GP / Clinic:
HbA1c;
Alb/Cr ratio



GP / Pharmacy
Lipids / INR



GP/Home
Glucose

Key question for any POCT proposal

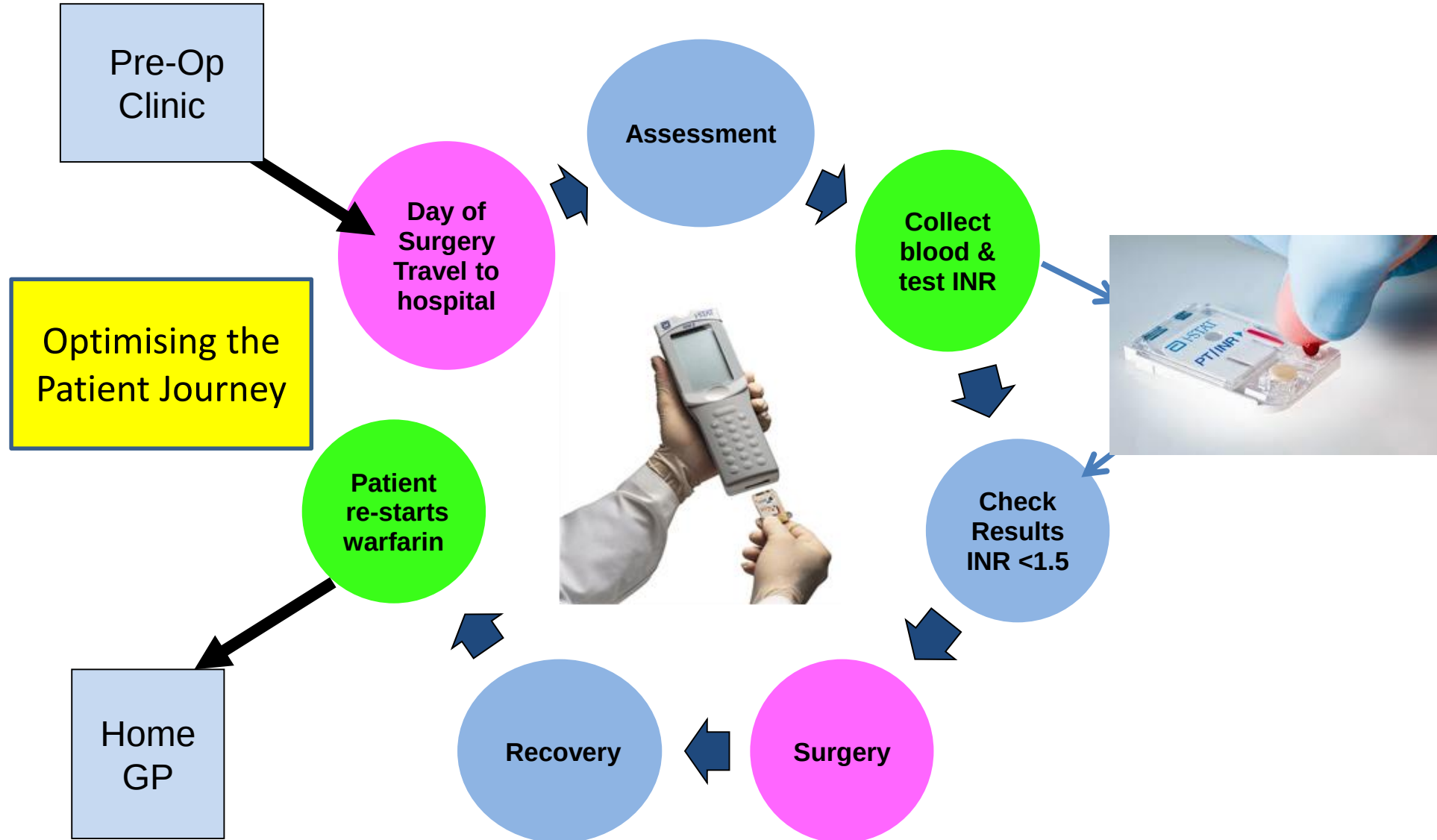
NZPOCTAG Best Practice Guidelines for POCT;2014

“What is the clinical problem that needs to be solved by point of care testing that cannot be solved by conventional laboratory testing?”

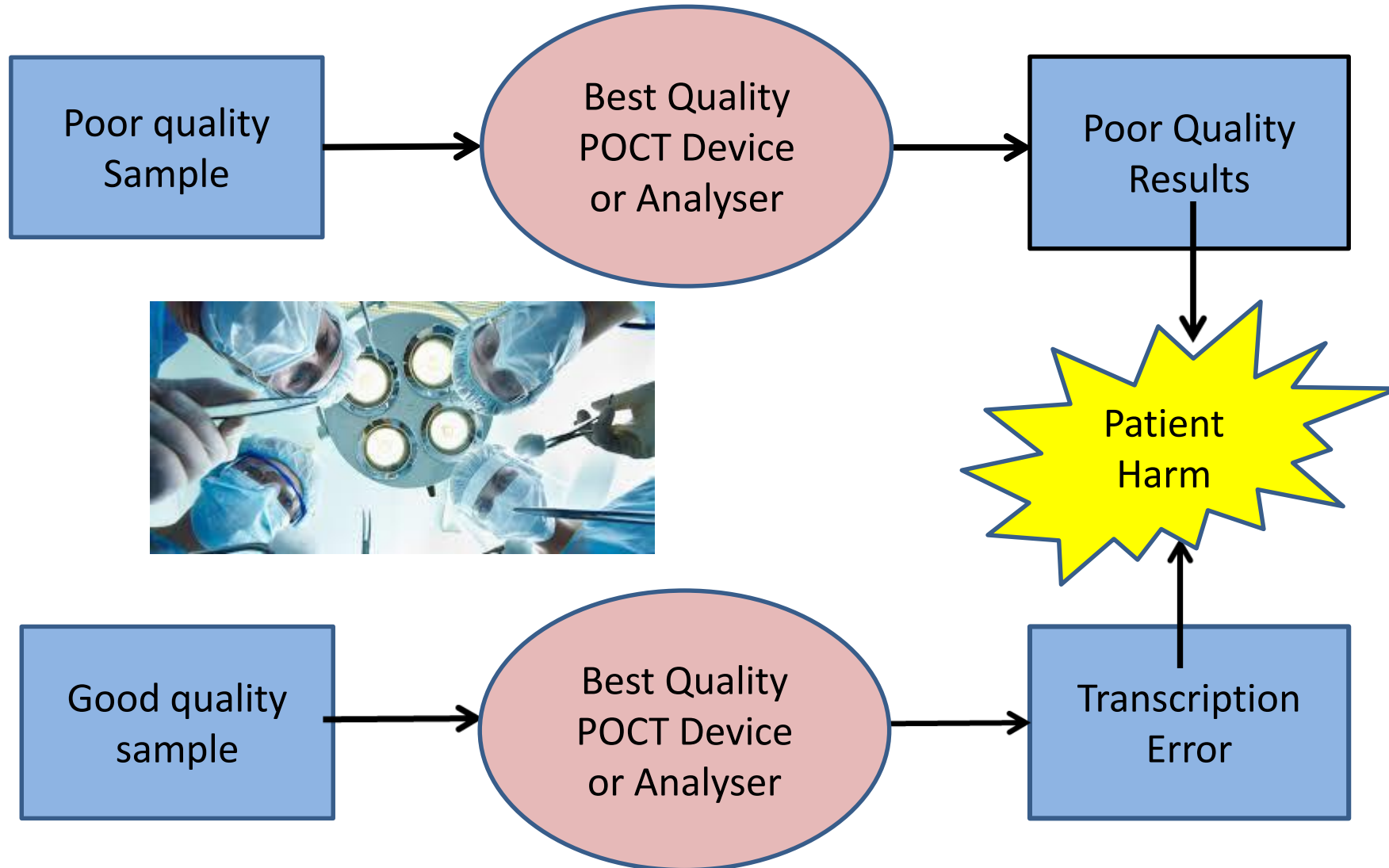


Solving a Clinical Problem

POC INR Testing Prior to Surgery – 5 min

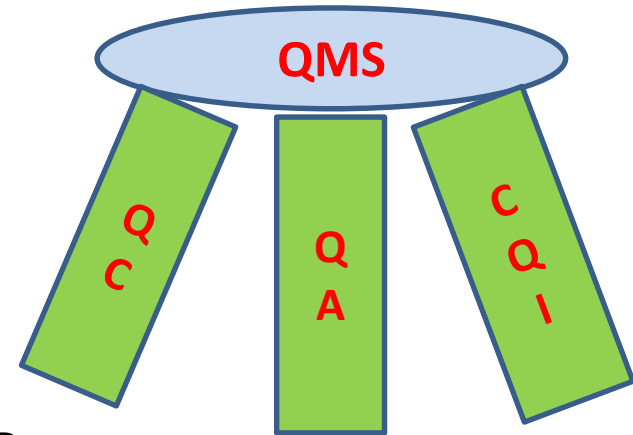


Pre & Post Analytical POCT Error



Quality Management Systems

- **Patient safety is paramount**
- Governance provides executive authority to implement POCT supported by QMS^{1,2}
- QMS in health is a strategic tool to improve patient outcomes
- **QMS for POCT comprises -**
 - **Quality Control:** Sampling, IQC, EQA, ILCP,
 - **Quality Assurance:** Staff Training; Accreditation
 - **Continuous Quality Improvement :** clinical audit, PDSA
- **QMS is A Sustainable POCT Risk Management System**



(1) Musaad and Herd *NZMJ* 2013; 126: No1383
(2) Herd and Musaad *NZMJ* 2015; 128: No1471

NDHB POC HbA1c Waikato EQA Results: Siemens DCA Vantage x5 OPD Locations

Sample				Site			NDHB	Waikato
Number	Date	BOI	CHC	DLC	DRG	KTA	mean	Median
101	Mar-14	97	99	95	100	100	98.2	102
102	Apr-14	98	96	93	93	91	94.2	93
103	May-14	82	80	81	80	81	80.8	81
104	Jun-14	77	74	75	74	75	75	75
105	Jul-14	87	84	80	79	82	82.4	81
106	Aug-14	82	75	77	74	77	77	77
107	Sep-14	97	97	97	100	103	98.8	100
108	Oct-14	69	68	66	69	62	66.8	68
109	Nov-14	73	75	77	79	78	76.4	76
110	Dec-14	65	70	65	67	70	67.4	66
	Mean	83	82	81	82	82	82	81.9

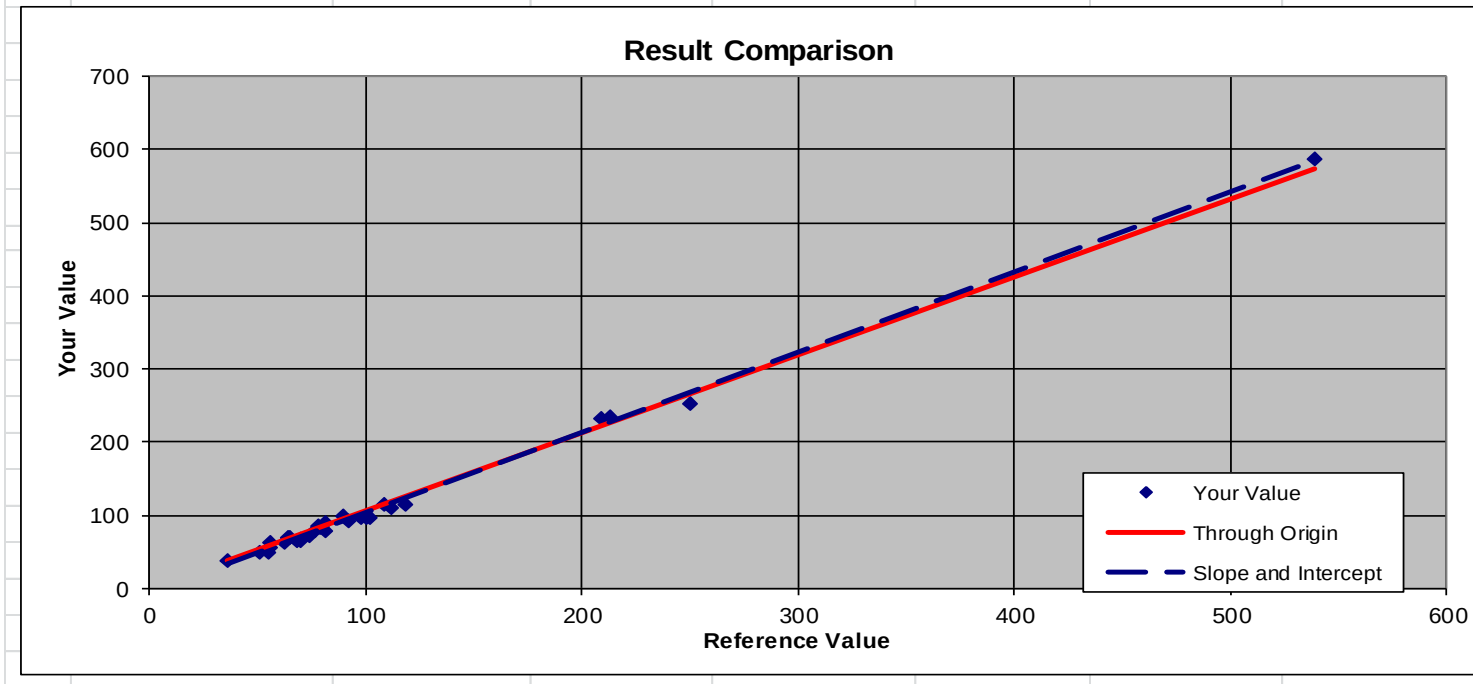


**POCT HbA1c results can be
accurate and reliable**

Are POCT results accurate ? Example: whole blood Creatinine

NDHB data July 2015

- i-STAT whole blood v cobas 6000 plasma
- POCT enzymatic v Lab picrate (umol/L)
- $n = 31$; $r^2 = 0.9968$; slope = 0.9119; intercept = 5.8
- Important range for safety decisions is 100 - 150 umol/L



Survey POCT in Primary Care

Turner et al Fam Pract 2016 Aug;33(4)388-394

- POCT which may help diagnosis

Condition	Percentage of all conditions (n)	Percentage of respondents
UTI	12.4 (521)	47.0
PE/DVT	11.4 (478)	43.1
Acute cardiac disease	9.2 (387)	25.4
INR	6.7 (282)	17.9
Pregnancy	4.2 (178)	16.1
Anaemia	3.9 (162)	14.6

Survey POCT in Primary Care

Turner et al Fam Pract 2016 Aug;33(4)388-394

- POCT would help reduce referrals

Condition	Percentage of all conditions (n)	Percentage of respondents
PE/DVT	21.4 (517)	46.6
Acute cardiac disease	11.2 (271)	24.4
Diabetes	5.5 (133)	12.0
COPD / Asthma	5.0 (122)	11.0
Heart Failure	4.8 (116)	10.5
INR	4.1 (100)	9.0

Survey POCT in Primary Care

Turner et al Fam Pract 2016 Aug;33(4)388-394

- **POCT would help management & monitoring**

Condition	Percentage of all conditions (n)	Percentage of respondents
INR	16.7 (547)	49.3
Diabetes	16.0 (527)	47.5
Acute & chronic renal failure	7.0 (230)	20.7
COPD / Asthma	6.8 (223)	20.1
Lipid disorder	4.7 (154)	13.9
Hyper/hypothyroidism	3.7 (121)	10.9

Barriers to POCT for Rural & GP

WONCA SIG 2016

- Cost of devices
- Lack of reimbursement
- Staffing issues, training & time
- Perceptions about test accuracy
- Logistics, space and storage
- Cost of QC & Accreditation requirements
- Lack of knowledge: how to set up POCT?
- (Perceived) lack of support from suppliers

Australian POCT in GP Trial

RCT 53 Practices 4968 patients

Laurence et al 2010 BJGP **60**; e98-e104

• Patient Satisfaction Statements:	p value
• Prefer finger prick test	< 0.001
• Labs have better hygiene(!)	< 0.001
• Confidence in results	< 0.010
• No need to travel to lab	< 0.009
• Extra time & transport costs	0.510
• Immediate feedback important	<0.003
• More motivated with POC Tests	<0.001
• Strengthened Pt/GP relationship	0.010



**POCT in GP & the Community
Improving Access to Care:
Group A Streptococcus Testing
to Help Prevent Rheumatic Fever**

Sore throats matter

if your **child** has a **sore throat** see a **doctor or a nurse**

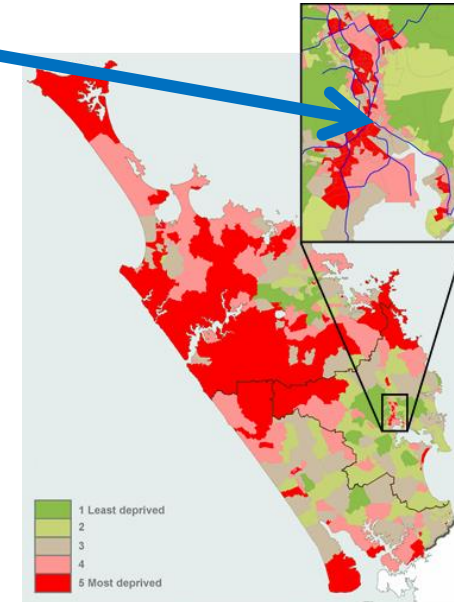
A Healthier Northland
He Hauora Mo Te Tai Tokerau

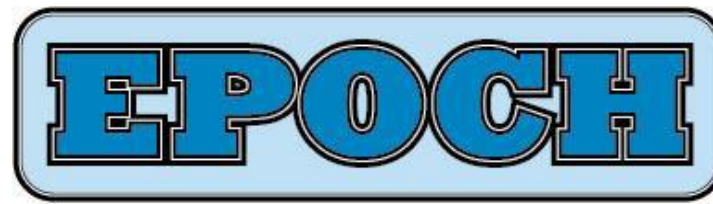
NORTHLAND DISTRICT HEALTH BOARD
Te Poari Hauora A Kōhe O Te Tai Tokerau



Improving Access to Care: Rapid Group A Streptococcus Testing in GP

- Urban General Practice in Whangarei
- Social deprivation; high health needs
- Crowding patient follow-up difficult
- **Trial POCT Group A Strep testing**
 - NDHB lab validation completed
 - T/S test with *QuikRead go*
 - treat positives with penicillin
 - “one stop shop”
 - rapid tracing of contacts
 - community engagement





Wells et al 2017 PLOS in press

- [Evaluation of POCT in Heart Health \(EPOCH\)](#)
- Research question: to determine if POCT could improve the number of completed CVD assessments in GP setting
- Primary Goal to compare numbers of completed assessments in 20 practices:
 - 10 practices use Roche cobas b101
 - 10 control practices use lab service
 - **POCTests: HbA1c & Lipids**



Roche cobas b101 locations



WDHB: POCT for 11 Rural Practices

Melanie Adriaansen & Stephanie Williams WDHB

- Goal to improve management of acutely unwell patients
- Troponin, D.dimer, INR, FBC under evaluation
- Improve diagnostic certainty
- Avoid unnecessary ED visits/hospitalisations
- Inform care plans: right care at the right time
- Increase knowledge and skills
- Improve access to lab testing for rural patients
- Reduce anxiety / waiting for test results
- Reduce patients need for travel & treat close to home



13 Practices in WDHB...

7 Main Practices:

1. Wellsford Medical Centre
2. Kawau Bay Health
3. Kowhai Surgery
4. Kumeu Village Medical Centre
5. The Doctors (Huapai) Limited
6. Waimauku Doctors
7. Kaipara Medical Centre

6 Satellite Practices:

1. Matakana
2. Maungaturoto
3. Paparoa
4. Snells Beach
5. Mangawhai
6. Silver Fern Medical



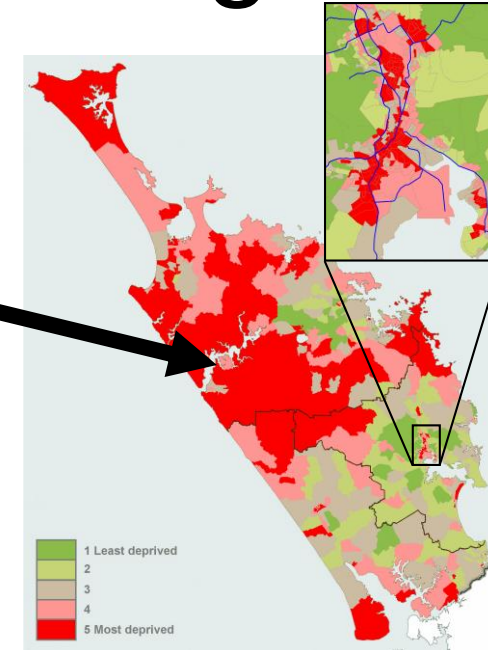
Challenges for Rural & Community POCT

- **Usability** of devices
- **Acceptability** in the clinical setting
- **POCT needs QMS to be sustainable**
 - supplier support for devices/QC etc
 - novelty value diminishes
 - staff changes & workload increases
 - willing to use the instrument & do QC
- **POCT must be integrated:**
 - with patient pathway
 - results integrated with EMR
- **POCT must be affordable &**
- **POCT must improve the patient experience**



POCT Evaluation in Hokianga

- Rawene Hospital 2 hours to Whangarei
- High deprivation; no lab service
- i-STAT Analyser:
 - Blood gases Biochemistry, TnI, BNP
 - POCT implemented with NDHB QMS:
 - Staff Training & QC programme
 - Oversight by NDHB
 - Outcome:
 - **Improved patient disposition & diagnostic certainty**
 - **Cost to Rawene \$90K incl some longer bed stays**
 - **Net saving to NDHB in reduced transfers/costs \$362K p.a.**



Blattner K, et al. Changes in clinical practice and patient disposition following the introduction of point-of-care testing in a rural hospital. *Health Policy* 2010a;96:7–12

Blattner K, et al Introducing point-of-care testing into a rural hospital setting: thematic analysis of interviews with providers. *J Primary Health Care* 2010b;2 (1):54–60.

Point-of-Care Testing: a new definition, a new paradigm

P

Patient

O

Optimised

C

Controlled

T

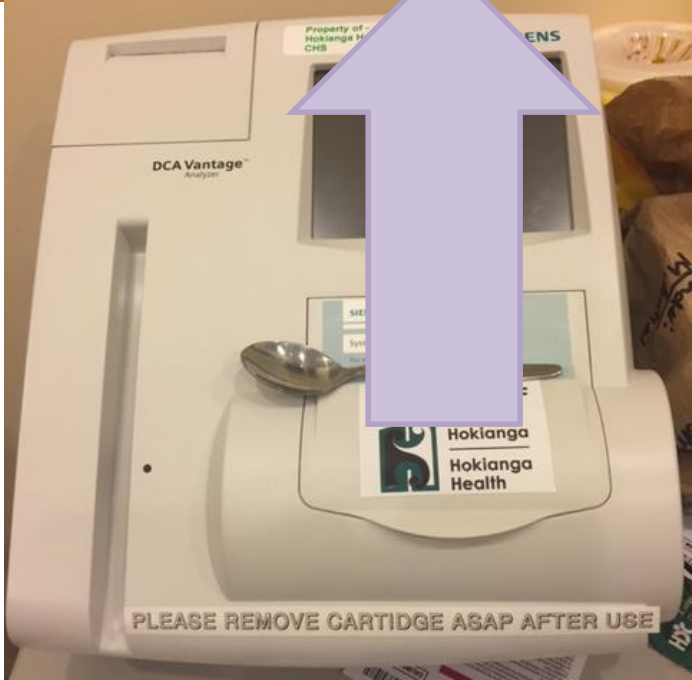
Testing



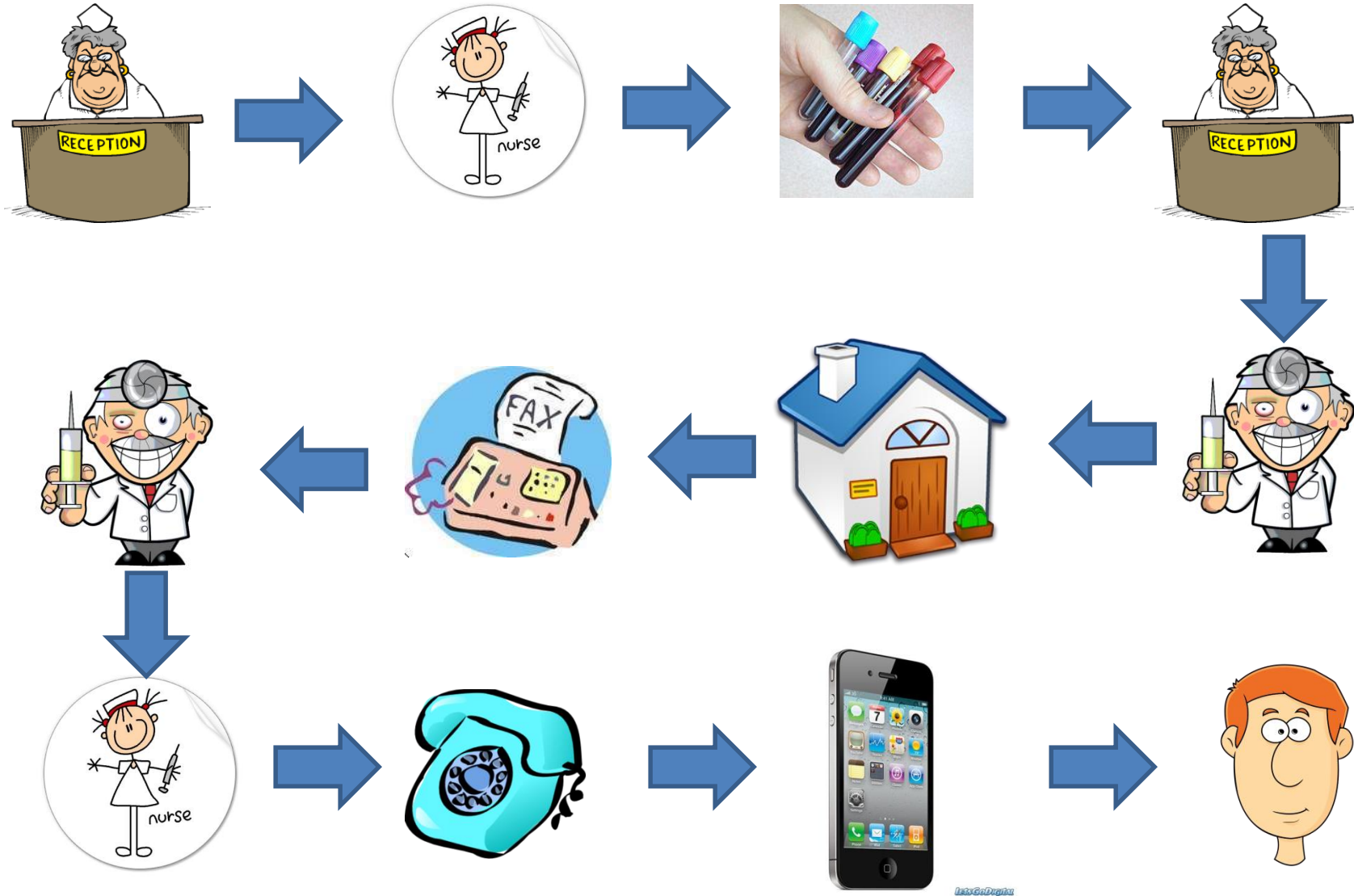
Point of care testing in Rural Northland

Nurse Practitioner Catherine Beazley
Hokianga Health

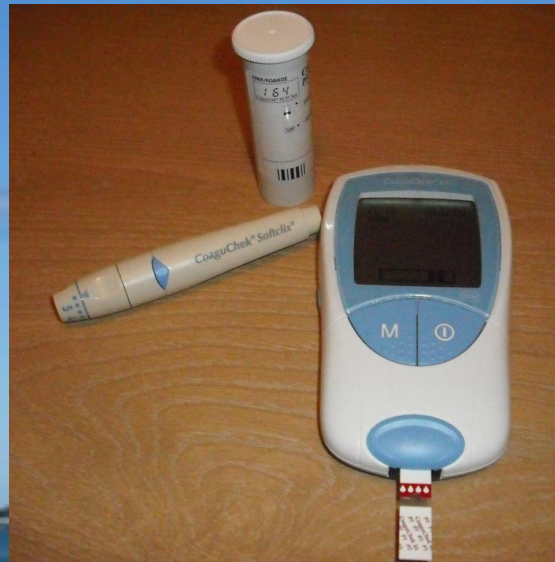




Historically



CoaguChek



DHB – Northland Health Services Plan

- “We need to do things differently to address the impending tsunami of escalating demand for services. Specifically, we need to be dealing with health needs more effectively ‘upstream’, in the primary and community setting.”

(NDHB, 2012)

iSTAT

- Chemistry
- cTnI
- INR
- BNP
- Blood gases



Quality Control

- All tests require evidence and ongoing monitoring
- Nurse led
- INR – six monthly
- iSTAT – daily simulator check; quality testing with new supplies



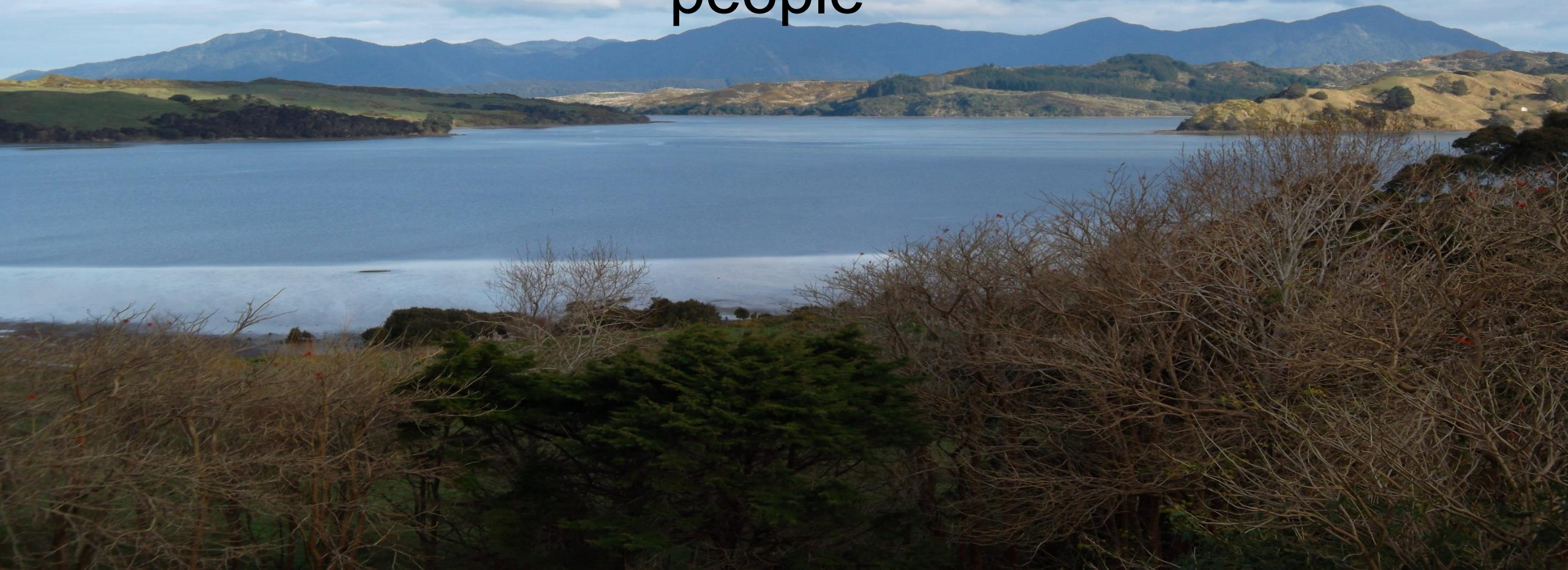
Associated costs

- INR – test strips (<\$10)
- iSTAT – cartridges (\$10 - \$35)
- Question who covers the costs
- Time to encourage funding into primary care to support development

Hokianga

Te Kohanga o Te Tai Tokerau

‘Nesting place of Northern
people’



“Everything you wanted to know about Point-of-Care Testing in Rural and General Practice but were afraid to ask!”

- Vast scope & scale of POC testing
- Diverse applications & settings
- Seek advice about devices, tests & QA
- New technologies easy to use & reliable
- Can help diagnosis, referral & monitoring
- Patients are more engaged & motivated
- Can improve access & improve outcomes

Acknowledgements

- Dr Peter Chapman Smith
- Organising Committee Rotorua General Practice Conference and Medical Exhibition
- Melanie Adriaansen, WDHB
- Stephanie Williams, WDHB

