

PULSE OXIMETRY SCREENING
FOR
(MORE THAN JUST)
CONGENITAL HEART DISEASE

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BACKGROUND

- Congenital heart disease is a common birth defect
- 10 per 1,000 live born infants
- Most common cause of infant death related to birth defects

- 100 babies born in NZ each year with a critical cardiac defect
 - 4 die each year as a result of late detection

BACKGROUND

- Pulse oximetry
 - Detects hypoxaemia
 - Majority of infants with severe heart disease will have low levels of oxygen
 - Screening successfully introduced in many developed countries
 - Can we do it in our maternity setting?
 - Feasibility study

FEASIBILITY STUDY

- Conducted from April 2016 to April 2018
 - ADHB 2 years
 - Lakes 23 months
 - Counties 18 months
- Investigating acceptability
 - Ongoing
 - Focus group discussions

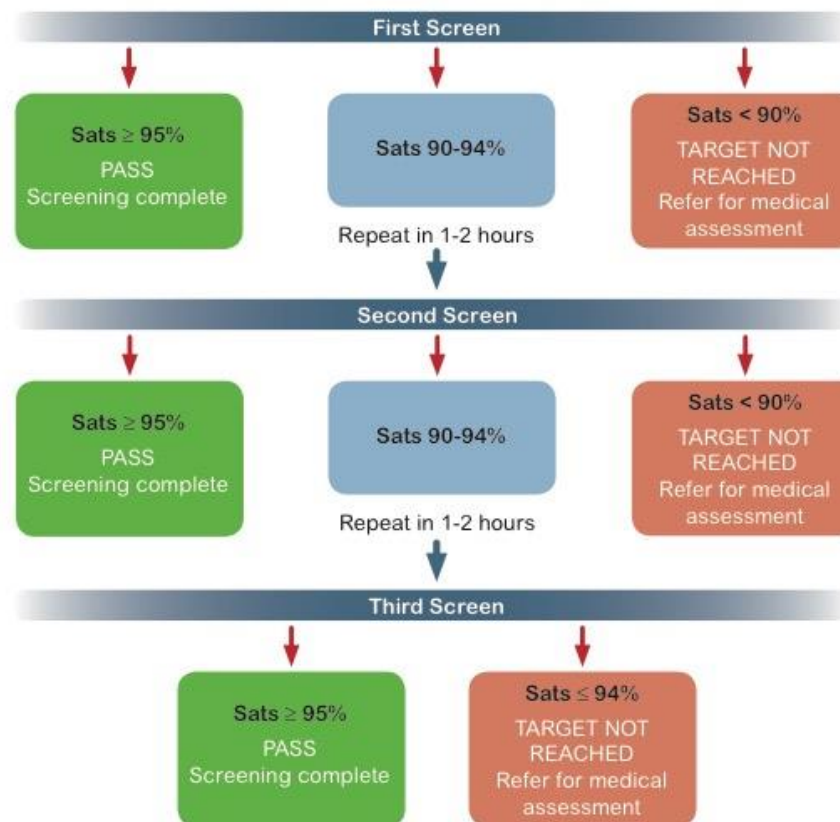


Pulse Oximetry Screening

Algorithm

Screening should be performed 2 to 24 hours after birth on all well newborn infants with a gestational age ≥ 35 weeks

Perform the test on **one foot**



Refer all infants who fail to reach pulse oximetry targets to the paediatric service.
Clinical concern at any stage warrants immediate referral.

Table 1. Timing of screening

	Total	ADHB	Lakes	CMDHB	p value
Total screened, n	16,644	10,798	1,739	4,107	
Age 1st screening performed, median(range)	7 h (1 – 472)	3 h (1 – 292)	15 h (1 – 393)	31 h (1 – 472)	< 0.001
2nd Test required, n (%)	387 (2.3)	292 (2.7)	26 (1.5)	69 (1.7)	< 0.001
3rd Test required, n (%)	83 (0.5)	60 (0.5)	12 (0.7)	11 (0.3)	0.05

Table 2. Relationship between infant activity and false-positive rate recorded for 1st screening test

Activity	Total (n)[#]	Median (range)	First Saturation <95%, n(%)	Pathology (n)	False-positives n (%)	p value
Asleep	5,365	99 (55 – 100)	144 (2.7)	9	135 (2.5)	0.002
Breastfeeding	2,448	99 (77 – 100)	53 (2.2)	4	49 (2.0)	0.3
Awake settled	6,408	99 (77 – 100)	122 (1.9)	14	108 (1.7)	*
Awake unsettled	1,030	98 (81 – 100)	53 (5.1)	1	52 (5.0)	< 0.001

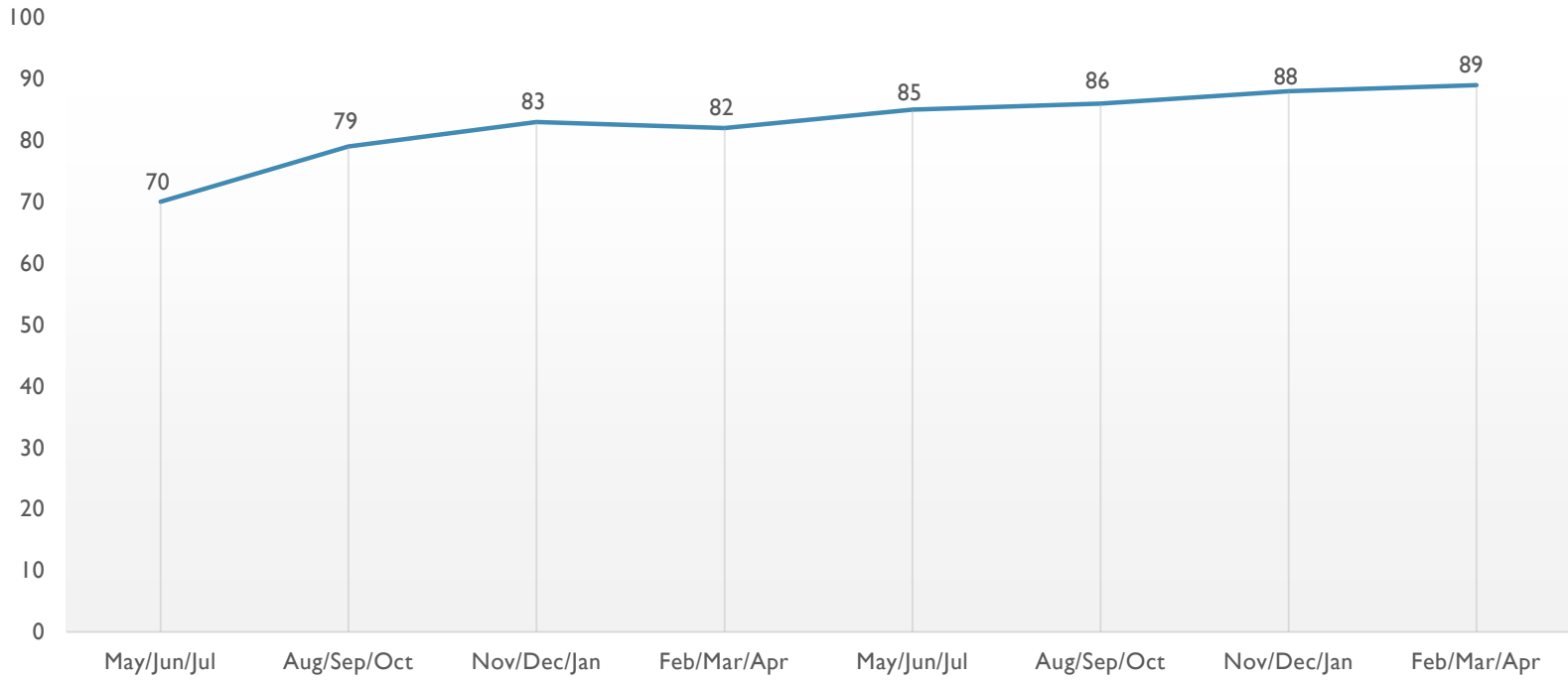
Exclusions applied to 1,393 due to insufficient data. Infant activity not recorded for 8 infants with pathology.

Table 3. Investigations

Positive screening results, n 48	FBC n 43	Culture n 35	CRP n 23	Blood gas n 42	CXR n 44	ECG n 10	Echo n 11
Congenital heart disease, n 3	3	2	2	3	3	3	3
Supraventricular tachycardia, n 1	1	-	-	1	1	1	1
Persistent pulmonary hypertension, n 3	3	2	1	3	3	-	3
Respiratory pathology, n 26	26	25	12	26	26	4	2
Sepsis, n 3	3	3	3	3	3	1	-
Slow transition/No pathology identified, n 12	7	3	5	6	8	1	2



Screening Rates ACH



TRANSITION

- Discussions with Women's Health / Paediatric services:
 - all participating DHBs
 - 8 months prior to end of study
 - ACH and Birthcare indicated that screening will be continued
 - equipment donated
 - 'starter pack' of consumables (posy wraps, brochures, screening records)

5 April 2018

Dear Elza

I am writing to formally confirm the National Screening Advisory Committee (NSAC) support for the implementation of pulse oximetry screening (POS) for critical congenital heart disease (CCHD) as part of routine clinical care.

NSAC accepts there is strong evidence for the use of POS within routine clinical practice and notes that equity in the provision of POS is a key concern.

I have written to Jill Lane, the Ministry of Health's Director of Service Commissioning, and Dr Andy Simpson, the Ministry's Chief Medical Officer advising them of NSAC's position. In

addition, I have asked that the Ministry advises DHBs and relevant professional bodies of NSAC's position, and that they encourage the sector to adopt POS as a quality improvement initiative.

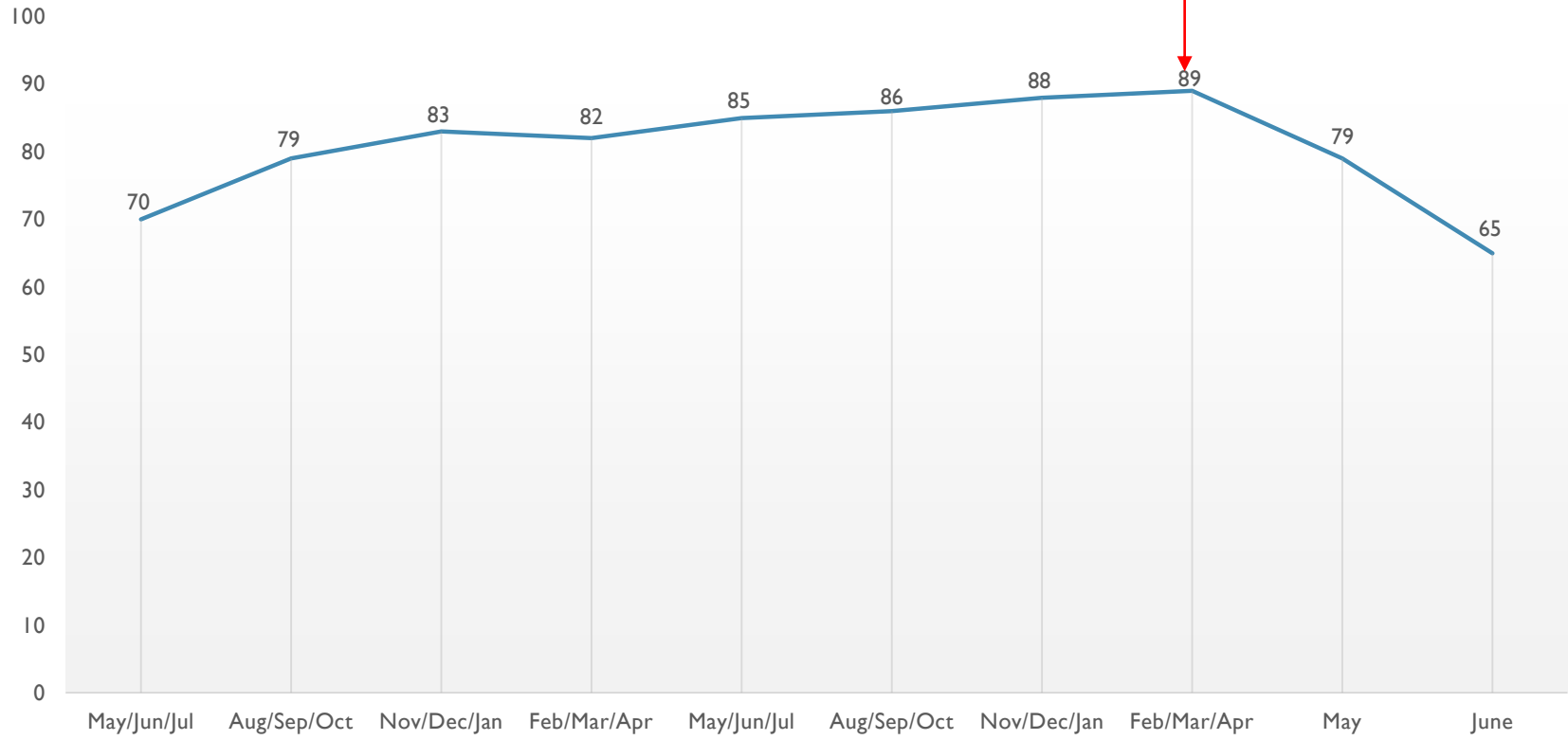
NSAC viewed the preliminary pilot results as very encouraging and indicated it would consider implementation options on completion of the pilot and an economic evaluation. At that time NSAC was undecided as to which implementation approach would work best:

- a nationally led screening programme
- a nationally led quality improvement programme
- sector led implementation with screening framed as part of improvements in routine care

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Screening Rates ACH



CONCLUSIONS

- The utility of pulse oximetry screening stretches beyond cardiac disease
- Minimise false-positives: Screen when infant settled or breastfeeding
- ACH made an exceptional contribution to study – good results were achieved
- **Thank you**
- Post-study screening rates = concerning

Help us to understand the barriers



You are invited to participate in a focus group discussion

Contact Dr Kim Ward:
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