



# POC23

## Rapid molecular point-of-care test for Strep A pharyngitis in remote-living school aged children



Bernadette Wong and A/Prof Asha Bowen  
*on behalf of the Missing Piece Surveillance Study Team*



WESFARMERS  
CENTRE OF VACCINES  
& INFECTIOUS DISEASES



Proudly supported by the  
people of Western Australia  
through Channel 7's Telethon

# Acknowledgement of Country



*Great Northern Highway connecting Broome and Derby in WA*

*Image Source: [ABC News](#), 2023*

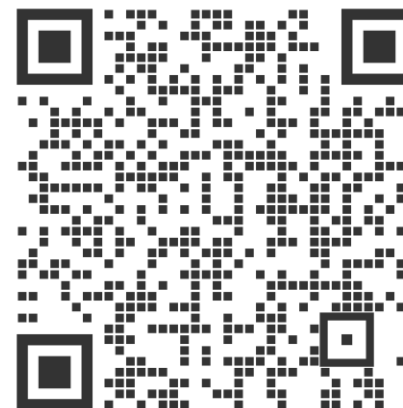


TELETHON  
**KIDS**  
INSTITUTE  
Discover. Prevent. Cure.

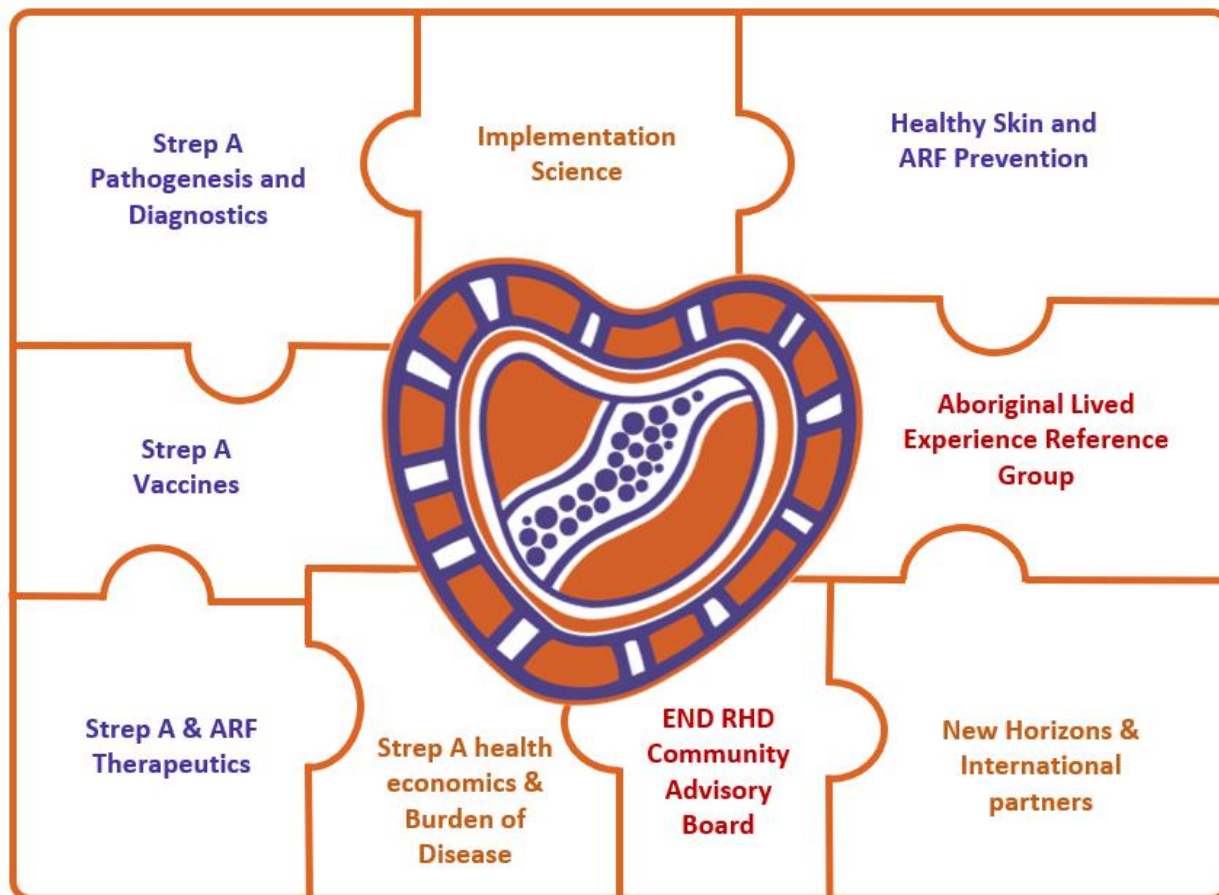


@AshaBowen @BernWongWT

# The END RHD Program



← SCAN HERE



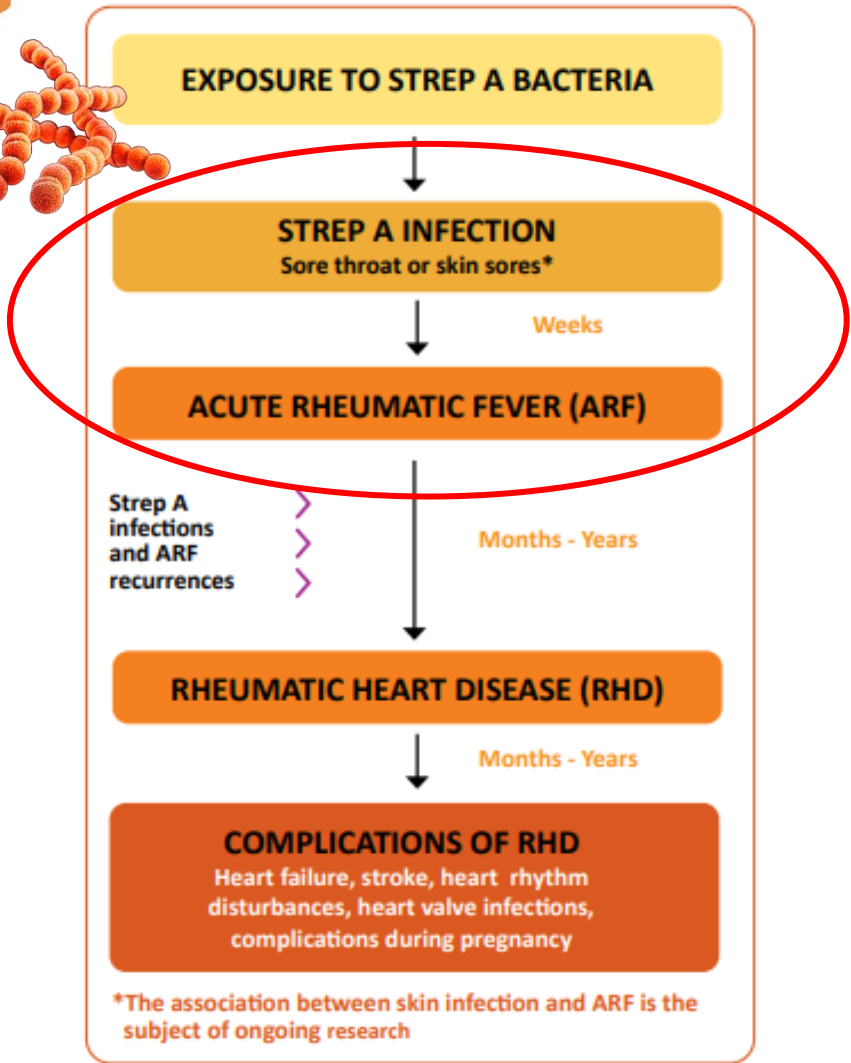
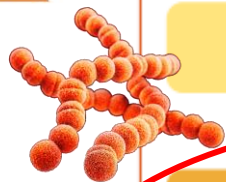
## OUR MISSION

To **end RHD in Australia by 2031** through a comprehensive research program

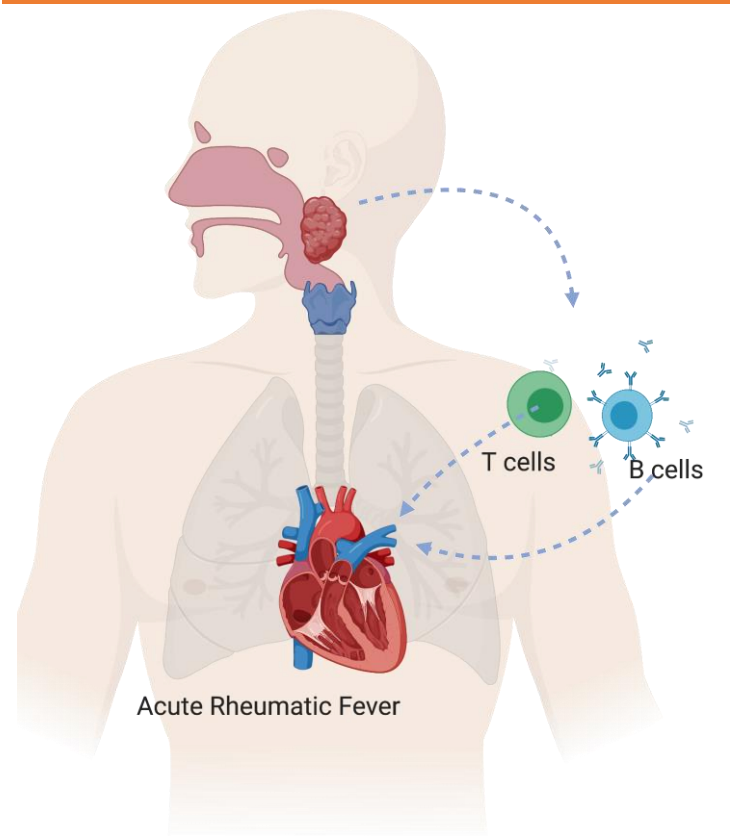
- Exploring primordial / primary / secondary / tertiary prevention
- Bringing together **community, researchers, practitioners & funders**



# Prevent ARF by managing Strep A sore throat or skin sores



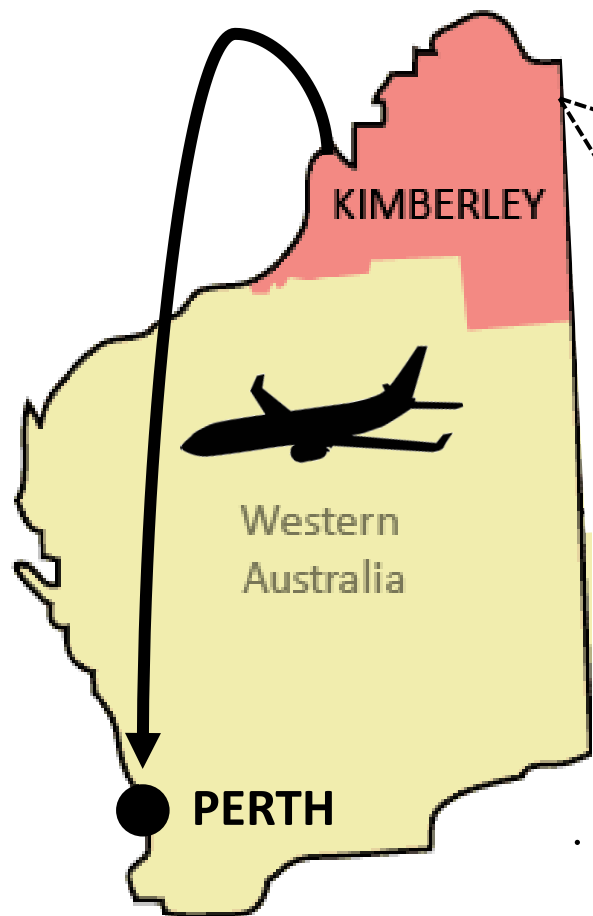
## Acute Rheumatic Fever (ARF)



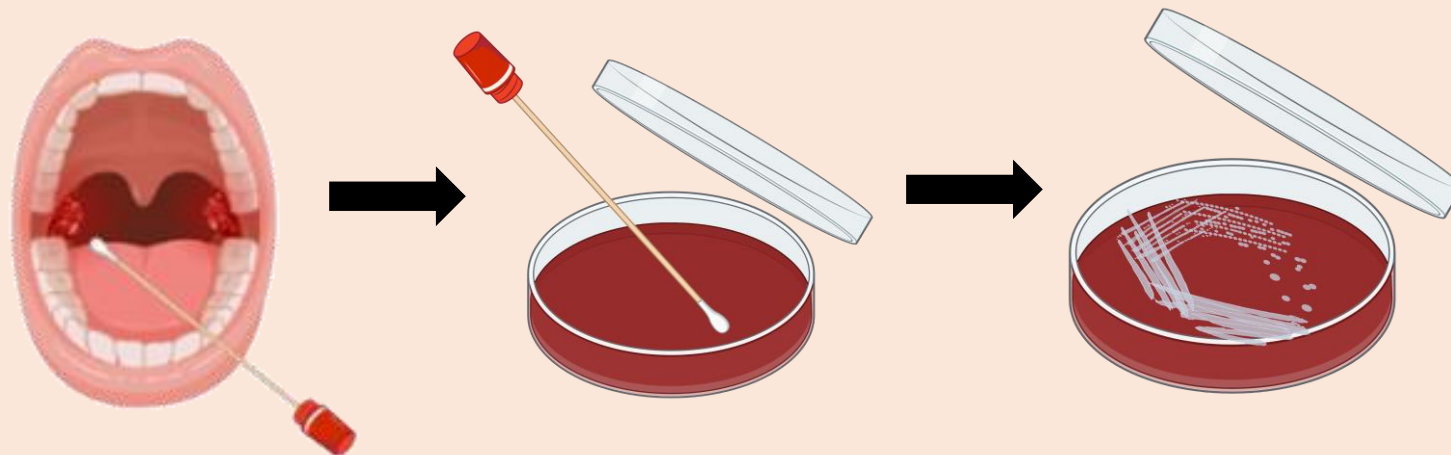
## Rheumatic Heart Disease (RHD)



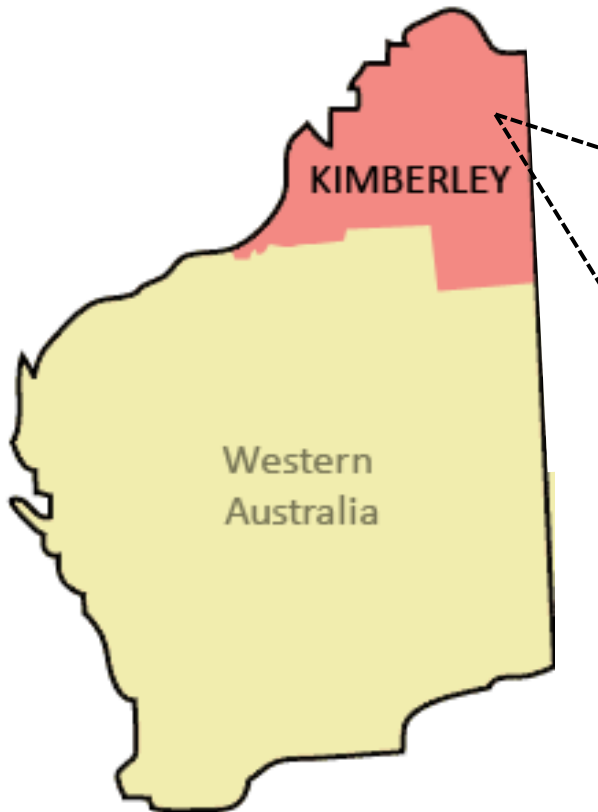
# Accurate and timely diagnosis of Strep A sore throat is needed, especially in remote settings



Current laboratory diagnostic pathway is a long process



# Strep A molecular POCT may revolutionise primary prevention strategies for ARF and RHD



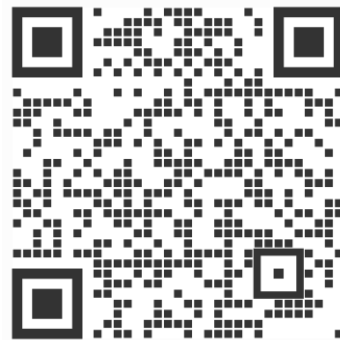
*Am. J. Trop. Med. Hyg.*, 103(6), 2020, pp. 2530–2532  
doi:10.4269/ajtmh.20-0341  
Copyright © 2020 by The American Society of Tropical Medicine and Hygiene

## Performance and Practicality of a Rapid Molecular Test for the Diagnosis of Strep A Pharyngitis in a Remote Australian Setting

Janessa L. Pickering,<sup>1,2\*</sup> Dylan D. Barth,<sup>1,2</sup> and Asha C. Bowen<sup>1,2,3,4</sup>

<sup>1</sup>Wesfarmer's Centre for Vaccines and Infectious Diseases, Telethon Kids Institute, Nedlands, Australia; <sup>2</sup>Centre for Child Health Research, University of Western Australia, Nedlands, Australia; <sup>3</sup>Department of Infectious Diseases, Perth Children's Hospital, Nedlands, Australia; <sup>4</sup>Menzies School of Health Research, Charles Darwin University, Darwin, Australia

**Abstract.** Over 5 days, 120 schoolchildren from two schools in the remote Kimberley region of Australia were screened for Strep A pharyngitis. Molecular point-of-care testing identified Strep A pharyngitis in 13/18 (72.2%) symptomatic children. The portability and feasibility of molecular point-of-care testing was highly practical for remote settings.



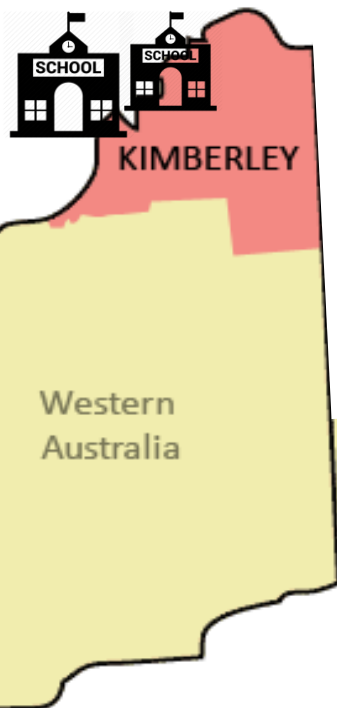
← SCAN HERE



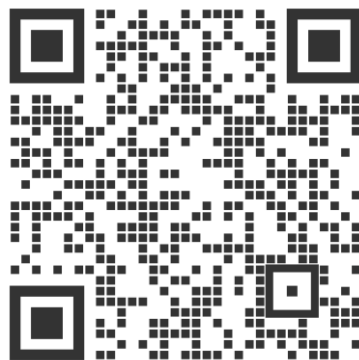
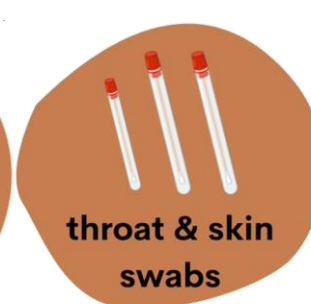
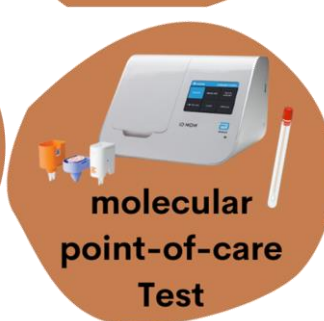
@AshaBowen @BernWongWT

# The Missing Piece Surveillance Study in the Kimberley, WA

?  
Burden  
of  
Disease



- **Prospective cohort surveillance study**
  - Cross-sectional screening twice a year
  - Weekly active surveillance



# POCT throat swabs were provided for children reporting and/or presenting sore throat symptoms

## Number of participants enrolled:

- 283 school children
- Aged 5 to 15 years old

## Swab collection period:

- April 2021 to September 2022

### Self-reported sore throat symptoms

Throat pain or a sore throat  
 Hard to swallow  
 Not eating as much  
 Not drinking as much  
 Croaky voice  
 Fever or feeling hot or cold

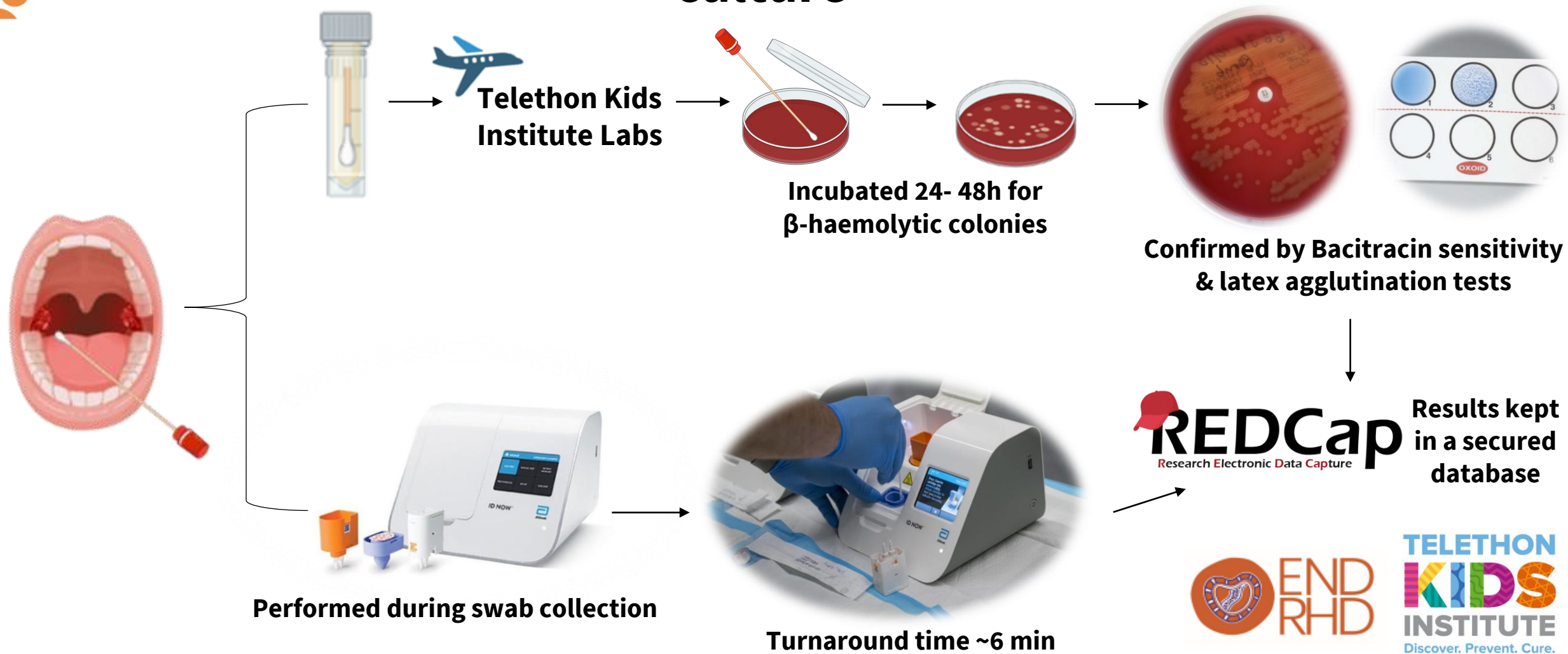
### Clinically identified features recorded on examination

Tonsillectomy  
 Cough  
 Rhinorrhoea  
 Hoarseness  
 Temperature >38  
 Tonsillar erythema  
 Tonsilla swelling  
 Exudate on the pharynx  
 Exudate on the tonsils  
 Oropharyngeal candidiasis  
 Tender anterior cervical node  
 Ant. Cervical node >1.5cm in diam



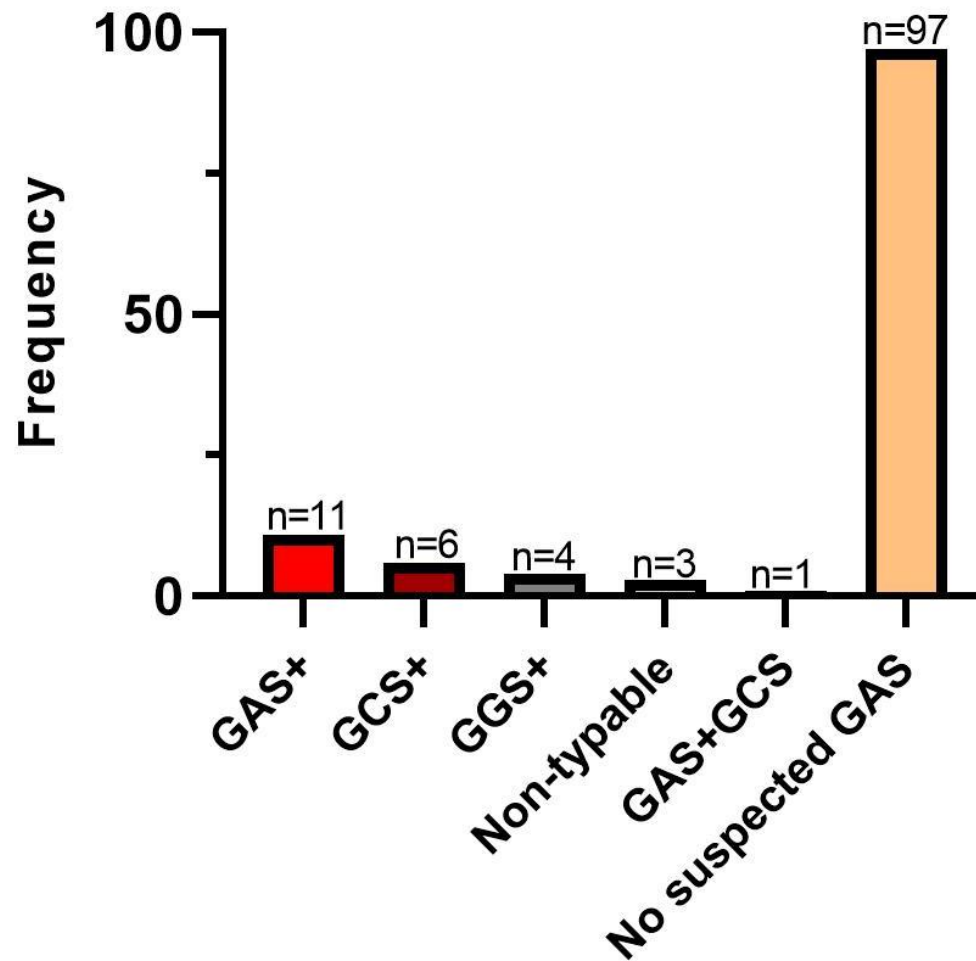


# POCT results were compared against gold standard Strep A culture



# Strep A, C and G were cultured from sore throat samples

## Culture Data



25/122 (20.5%) of throat swabs cultured identified  $\beta$ -haemolytic colonies with Strep morphology

12/122 (9.8%) of throat swabs cultured were Strep A +



# POCT detected more Strep A sore throats, but assay had lower sensitivity than expected.

30/122 (24.5%) of POCT throat swabs were Strep A +

METHOD:	<i>Total no. of sore throat instances = 122</i>
True Positive	10
False Negative	1
<b>Sensitivity (%)</b>	<b>90.1</b>
Positive Predictive Value (%)	34.5
True Negative	94
False Positive	20
<b>Specificity (%)</b>	<b>82.9</b>
Negative Predictive Value (%)	98.9

1 sample that was Strep A culture (+) was not Strep A (+) by POCT



# Conclusions

- Our knowledge of the burden of Strep A sore throat in the Kimberley is improving, where children are at high risk of ARF and RHD
  - **Samples not showing concordance between POCT and culture provide the opportunity for further molecular investigations**
- Using POCT to detect Strep A sore throats enabled immediate treatment referral
  - **Clear advantage in fast TAT, demonstrating value of POCT**
- A small study cohort and testing multiple tools to detect Strep A sore throats are limitations to stringent quality of testing for Strep POCT
  - **However, this was a stepping-stone to a larger POCT programme to roll out Strep A testing in remote clinics**



SCAN HERE



# Acknowledgements:

## The Missing Piece Surveillance Study Team:

A/Prof Asha Bowen – CI, Head END RHD Programme  
 Dr Janessa Pickering – Investigator, Snr Research Officer  
 Dr Dylan Barth – Investigator, Honorary Research Associate  
 Bernadette Wong – Research Assistant  
 Rebecca Famlonga – Senior Research Officer  
 Abbey Ford – Project Officer  
 Gelsa Cinanni – Honours Student  
 Scott Winslow – Research Assistant

## Telethon Kids Kulunga Aboriginal Unit:

John Jacky – Community Engagement Officer  
 Slade Sibosado – Manager of Telethon Kids Kimberley  
 Liam Bedford – Community Capacity Coordinator

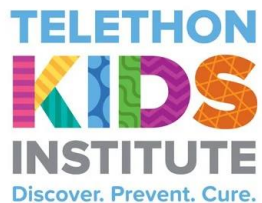
## Aboriginal Medical Services Partners:

Robyn Macarthur – Child Health Nurse, DAHS  
 Shelley Kneebone – Chief Executive Officer, DAHS  
 Narelle Ozies – Senior Manager Business Operations, DAHS  
 Delia Lawford – Practice Manager, BRAMS



## Funding:

NHMRC END RHD Centre of Research Excellence (END RHD CRE);  
 WA Child Health Research Fund



Government of Western Australia  
 Department of Health



@AshaBowen @BernWongWT