An innovative connectivity solution for national decentralised infectious diseases testing programs in regional and remote primary health services in Australia

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POC23 Conference

14-15 March 2023

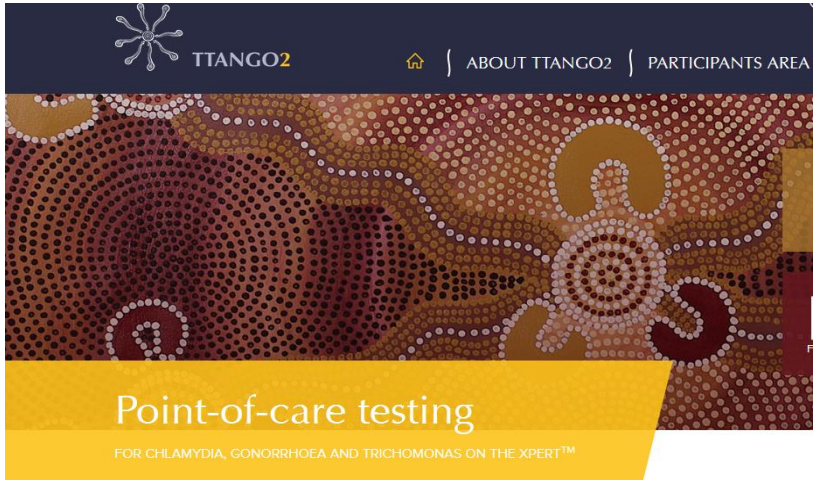
Molecular POC testing programs in Australia

- Two decentralised molecular POC testing programs in regional and remote primary health services
- GeneXpert molecular testing platform (4-module devices)
- Patient and quality tests performed by trained clinical staff
- GeneXpert platform generates an objective digital test result
- Result information is valuable for a range of purposes
  - Clinical management
  - Public health surveillance
  - Quality and program management

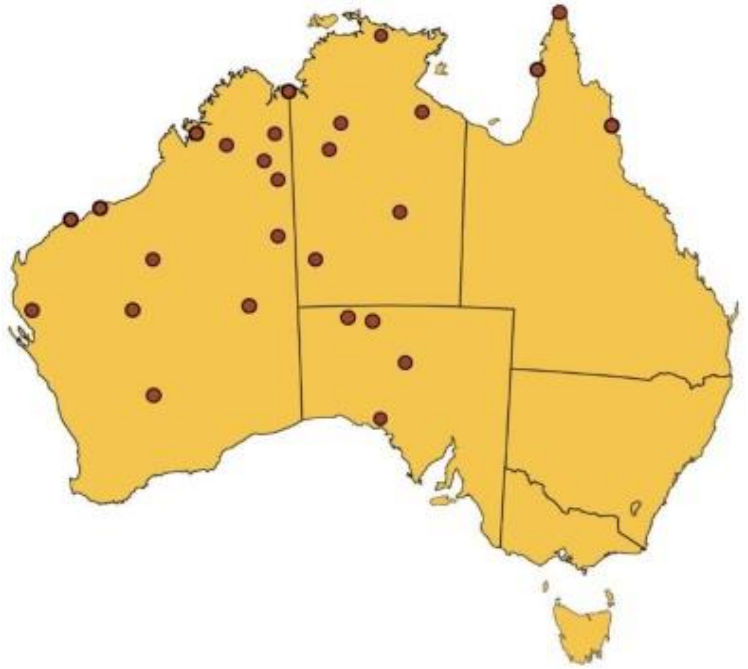
Training session

Trained operator

Sexually transmissible infections (STI) POCT Program



https://www.ttango.com.au/

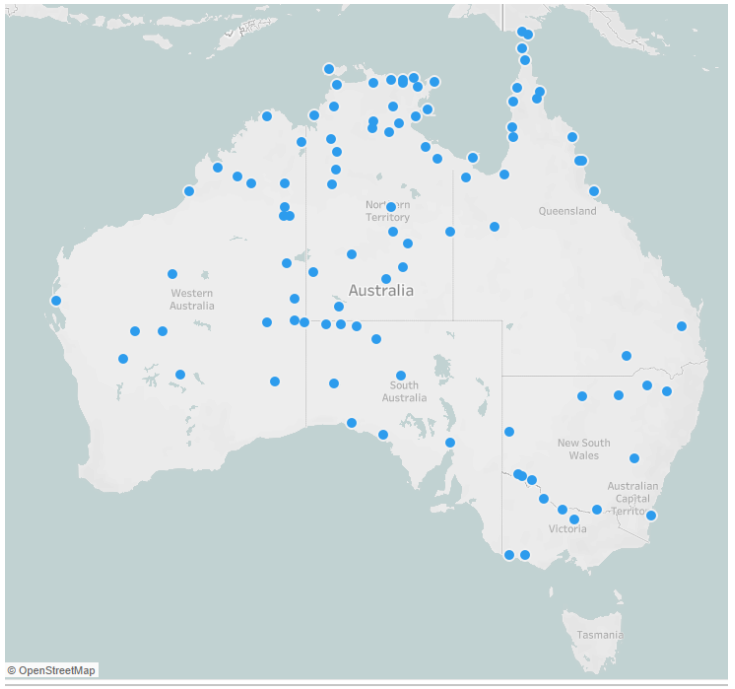


- Also known as TTANGO (Test, Treat ANd Go)
- TTANGO: cluster RCT (2013-15) at 12 sites using CT/NG assay
- TTANGO2: Translational research (2016-19) at 31 sites; TV added in 2018
- TTANGO3: Service delivery model (2020-2023) – scaling up to ~80 health services

CT: *Chlamydia trachomatis* , NG*: Neisseria gonorrhoeae and* TV: *Trichomonas vaginalis*

First Nations Respiratory Infections POCT Program

https://www.covid19poct.com.au/

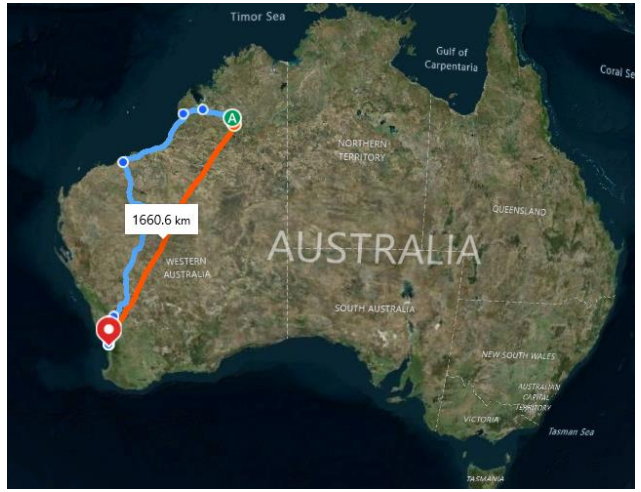


- Previously known as Aboriginal and Torres Strait Islander COVID-19 POCT program
- Commenced 2020, leveraging existing TTANGO network
- Scaled up to 105 primary care health services across 6 jurisdictions
- 2022 – transitioned to multiplex respiratory panel (COVID-19, FluA, FluB and RSV)

POC testing health services characteristics

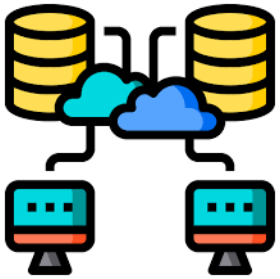
- 6 Australian jurisdictions
- 65% are Aboriginal community controlled
- 35% are government managed
- 78% are very remote or remote locations
- median aerial distance from health service to reference laboratory ~600 km
- variety of clinical management systems in use

e.g. Communicare, MMEX, Best practice, Medical Director

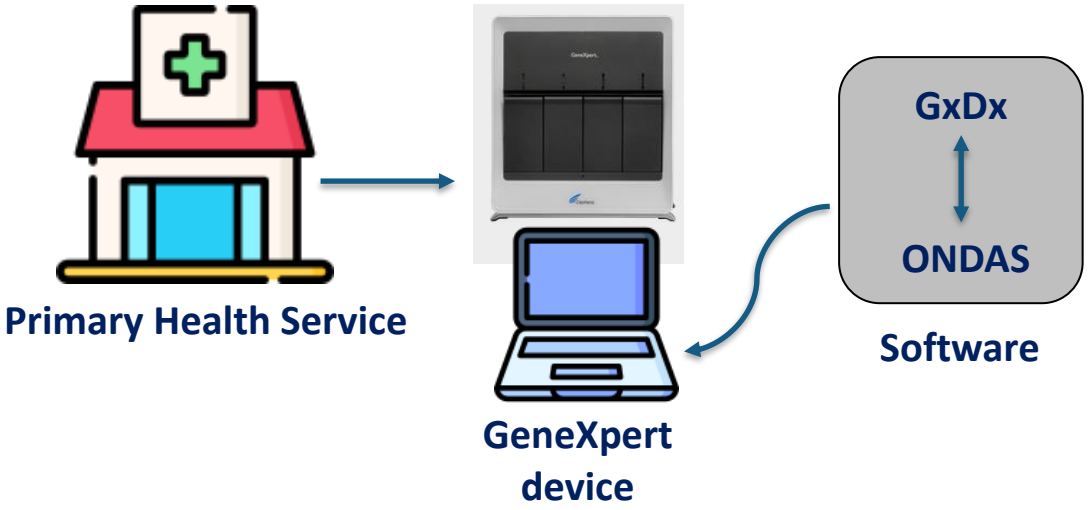


Infrastructure required

- No existing connectivity infrastructure for decentralised POCT in Australia
- Range of end-user requirements
- Relying on busy clinical staff at primary health services
- Design and implement a connectivity system to meet requirements for
  - Clinical management
  - Public health surveillance including mandatory notifications
  - Program implementation and monitoring
  - Quality management and training
- Maximise data quality
- Ensure device performance
- Minimise clinician workload



Connectivity system and result transmission



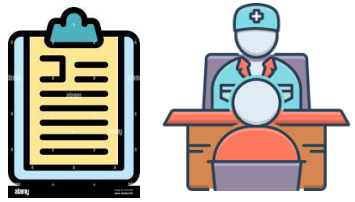
GxDx software (Cepheid)

- Proprietary software
- Drives testing process
- Limited patient identifiers

ONDAS software (Clinical Universe)

- Commercial middleware
- Interfaces with GxDx
- Captures patient identifiers
- Generates test orders and result message

Connectivity system and result transmission

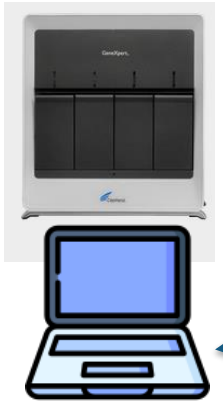


Patient and doctor list

- Configured and installed

Patient management systems

Primary Health Service



GeneXpert device

GxDx ↕ ONDAS

Software

ONDAS software (Clinical Universe)

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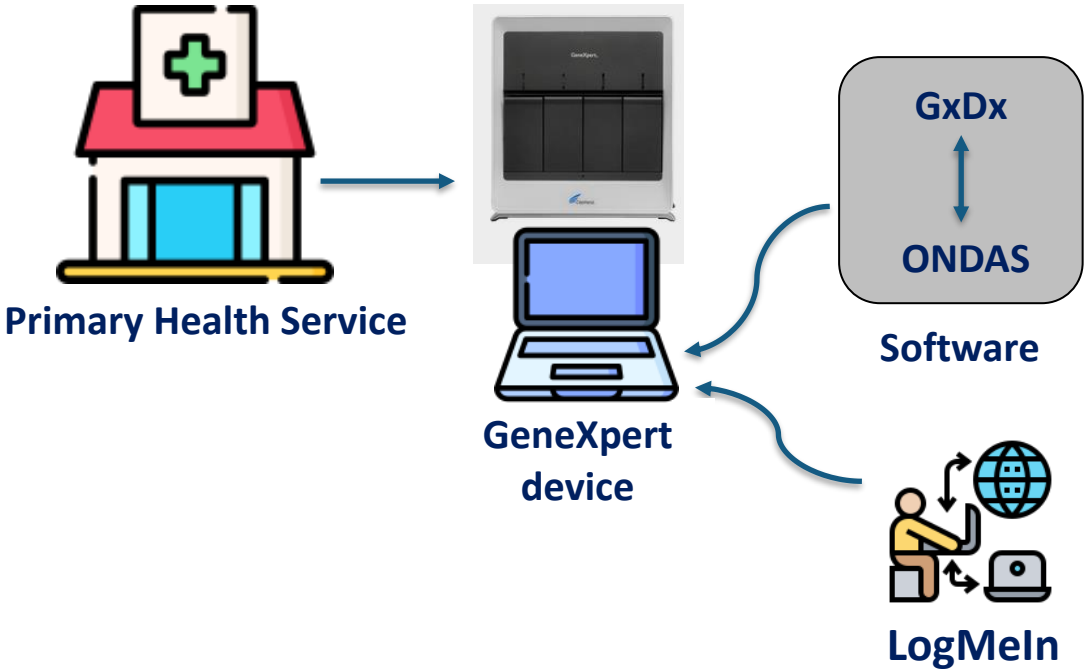
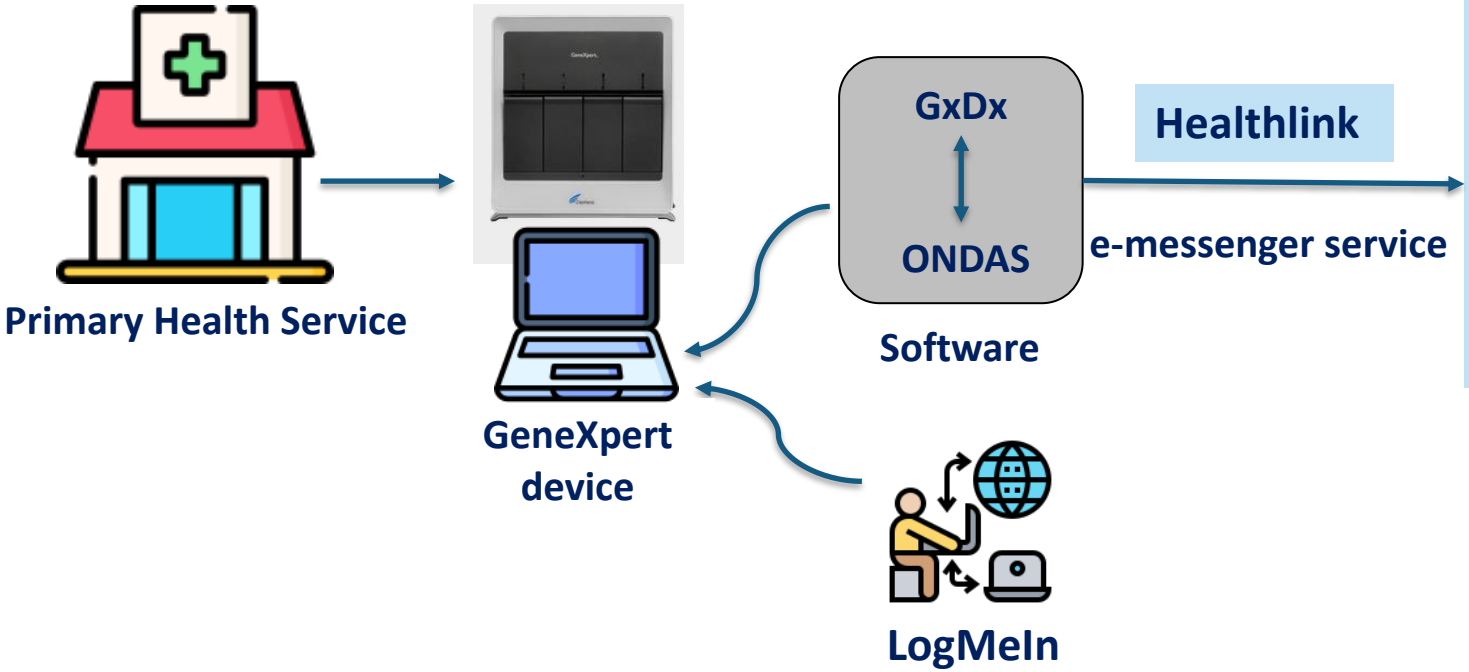


LogMeIn

- Enables remote laptop access
- For instrument set-up, software upgrades and operator troubleshooting

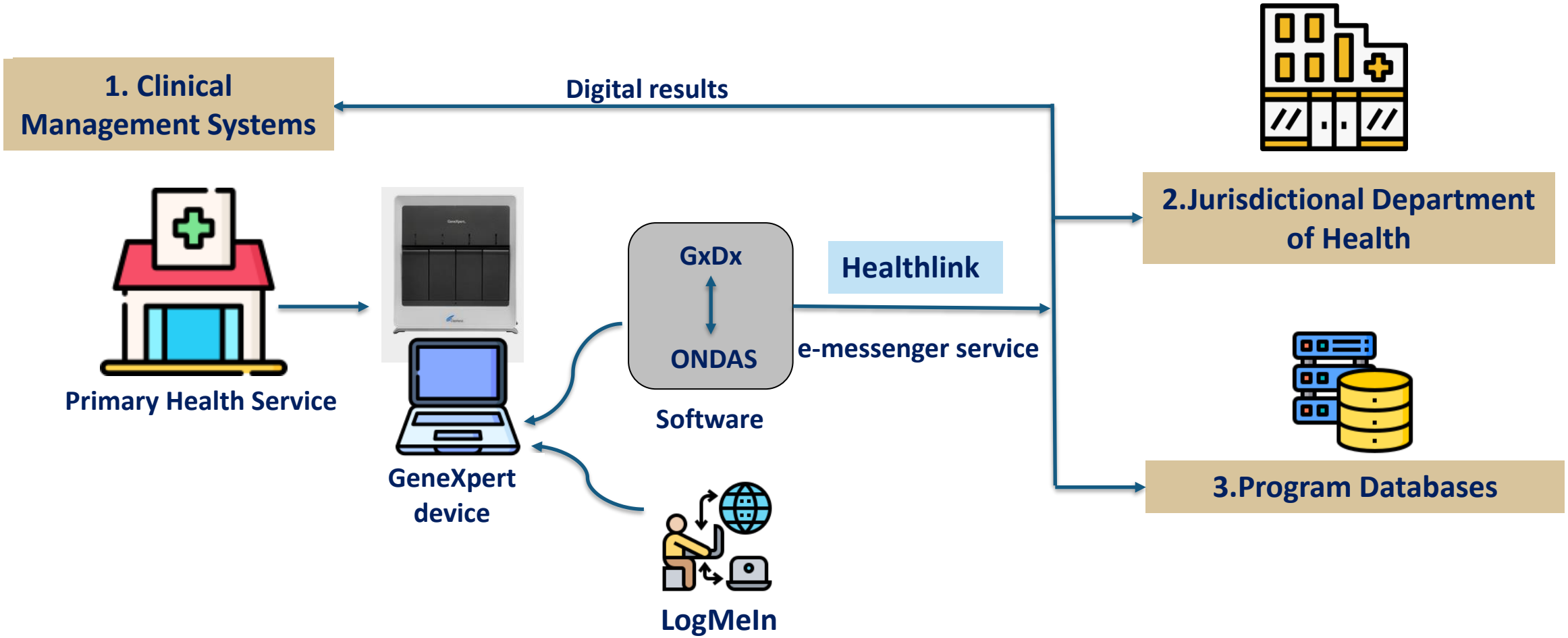
Connectivity system and result transmission



HealthLink

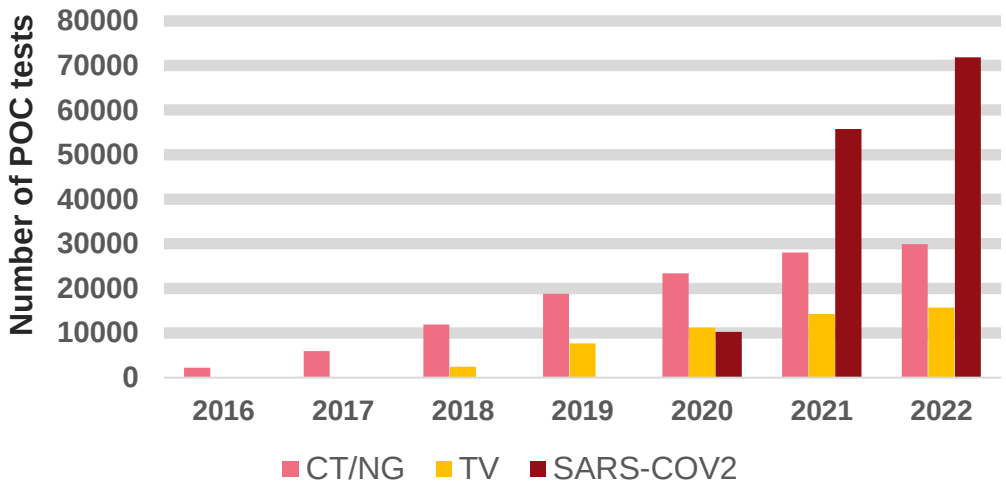
- E-messenger service
- Encrypted end-to-end delivery to designated end user

Connectivity system and result transmission



Quality, timeliness and completeness

Cumulative number of POC tests by Year



Tests and completeness

- Total patient test results: 117,411
- Complete demographic data for sex, age and ethnicity >99%

Median time to receipt of result (IQR)

- In 2016: 5.1 hours (1.7 – 268.5)
- In 2022: 2.3 hours (1.4 – 3.1)

“Hotline” rapid response for quality POCT results

Received automated email alert from health service

Phone conversation with health service operator

Scientific verification of all positive results

Rapid notification to requesting doctor, surveillance team and department of public health

Challenges

- Geographic remoteness of the health services
- Variety of governance structures and local systems
- Multiple recipients and reporting requirements
- Program and health service commitment
- Limited IT capacity
- Software upgrades and new assay deployment

Conclusion

- Connectivity system supported the implementation and integration of POC testing in primary health services
- Optimised system delivers real-time results to meet clinical, public health surveillance needs
- Approach is technically scalable, suitable for onboarding of other POC tests
- Represents the first such system in Australia implemented independent of traditional pathology networks

Acknowledgements

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In collaboration with

Aboriginal Health Organisations

- Aboriginal Health Council of WA
- Ngaanyatjarra Health Service, WA
- Kimberley Aboriginal Medical Services, WA
- WA Department of Health, WA Country Health Services
- Aboriginal Health Council of SA
- Nganampa Health Council, SA
- Kimberley Aboriginal Medical Services Council
- Ngaanyatjarra Health Service
- Aboriginal Medical Services Alliance of the Northern Territory
- Central Australian Aboriginal Congress, Alice Springs, NT
- Katherine West Health Board, NT Health
- Victorian Aboriginal Community Controlled Health Organisation
- Aboriginal Health and Medical Research Council of NSW
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- Apunipima Cape York Health Council

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- University of Queensland Centre for Clinical Research
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- Longhorn Vaccines and Diagnostics LLC

Pathology providers

- NSW State Reference Laboratory for HIV & Molecular Diagnostics Medicine Laboratory St Vincent's Hospital, Sydney
- Forensic and Scientific Services
- Victorian Infectious Disease Reference Laboratory
- Path West, Westerns Diagnostics
- CliniPath ,
- SA pathology
- Territory Pathology
- Pathology Queensland
- NSW Pathology

State health departments

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- WA Health
- WA Country Health Service
- SA Health
- QLD Health
- NT Health

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