

Integration of Molecular Point-of-Care Testing (POCT) for infectious diseases in community settings

Authors: Kayago K^{1*}, Cooney L¹, Causer L¹, Andrewartha K², Smith K¹, Matthews S², Shephard M², Alternetti N², Hewer G², Applegate TL¹, Borgnolo B¹, Crowley H^{1*}, Lew H J¹, Williams A^{1*}, Sharma A¹, Guy R¹ on behalf of the TTANGO3 and First Nations Infectious Diseases Point-of-Care Testing Programs.

¹ Kirby Institute – UNSW Sydney, ²Flinders University International Centre for Point-of-Care Testing, Australia

*Author identifies as Aboriginal and/or Torres Strait Islander

Aboriginal and Torres Strait Islander approvals: This is a review of publicly available data and First Nations Molecular Infectious Diseases POCT program data; individual community approval has not been sought. The First Nations POCT program governance includes oversight from the National Aboriginal and Torres Strait Islander Health Protection AHPPC Sub-Committee and First Nations POCT Leaders group.

Context: Integrated molecular POCT programs for multiple infections in primary health care are rare globally. The First Nations Molecular POCT Program is the largest network of decentralised services offering molecular POCT for 7 infectious diseases: 4 respiratory infections [SARS-CoV-2, influenza A, B, and respiratory syncytial virus (RSV)] and 3 sexually transmitted infections - STIs [*Chlamydia trachomatis*/*Neisseria gonorrhoeae* (CT/NG), and *Trichomonas vaginalis* (TV)] in regional and remote Australian health services. Testing is conducted by trained primary care health professionals.

Process: To demonstrate the feasibility of program integration, we describe the (i) number and proportion of staff trained, (ii) testing uptake by demographics and (iii) quality of testing, at 51 sites conducting respiratory infection and STIs testing from 1 August 2022 to 31 January 2024.

Analysis: 402 health professionals completed POCT training: 33% for STI and respiratory infections, 48% for STIs only and 19% for respiratory only. Staff conducted 13,546 patient tests: 4,172 CT/NG, 2,693 TV and 6,681 respiratory. Most STI tests (62.5%) were performed in patients aged 15-29 years. Respiratory tests were most frequently conducted in those aged >50 years (28.6%) or 0–9 years (21.6%). POCT clients were predominantly Aboriginal and/or Torres Strait Islander (88% STI, 70.6% respiratory), and women (63.7% STI, 61.9% respiratory). Overall STI positivity was 17.5% and overall respiratory infection (any) positivity was 26.9%. The error rate was <5%, compromising invalid or no results.

Outcomes: Integrated, targeted molecular POC testing for multiple infectious diseases is feasible in remote primary care with results available in 1-2 hours. This diagnostic model facilitates same day treatment for patients, the early detection of disease outbreaks and the evaluation of infectious disease control strategies. The success of this model allows for further expansion of the test menu through demonstration projects for Streptococcus A and human papillomavirus (HPV).

Disclosure of Interest Statement: Professor Guy, Dr Causer and Dr Matthews are investigators on a research project that receives free-of-charge Strep A and HPV test cartridges from Cepheid. Professor Guy and A/Prof Applegate are investigators on a research project that receives funding and in-kind support from Cepheid.

“The First Nations Molecular Point-of-Care Testing Program has been funded by the Australian Government Department of Health and Aged Care. The authors acknowledge the contribution to the program of many stakeholders including the National Aboriginal and Torres Strait Islander Health Protection Sub-Committee, participating Aboriginal community controlled and government health services, national, jurisdictional and local Aboriginal Community Controlled Health Organisations, State and Territory health departments, and other government services, industry and pathology providers.”