

## Opinion

# The National QAAMS Program – A Practical Example of PoCT Working in the Community

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### **Abstract**

The Quality Assurance for Aboriginal and Torres Strait Islander Medical Services (QAAMS) Program is the largest and longest-standing national point-of-care testing (PoCT) program in Australia. With a focus on PoCT for diabetes management, it now operates in 115 Indigenous medical services and has been funded continuously by the Australian Government for 11 years. A recent independent evaluation of the QAAMS Program concluded the program continues to meet best practice standards for Indigenous healthcare, diabetes management and PoCT.

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### **Introduction**

The Quality Assurance for Aboriginal and Torres Strait Islander Medical Services (QAAMS) Program is the largest national PoCT program in Australia. The program supports the quality-assured conduct of PoCT for haemoglobin A<sub>1c</sub> (HbA<sub>1c</sub>) and urine albumin:creatinine ratio (ACR) to assist diabetes management in over 110 Aboriginal and Torres Strait Islander medical services across Australia (Figure 1). The DCA 2000 and Vantage PoCT devices (Siemens Healthcare Diagnostics, Melbourne, Australia) are used to measure these two markers. The QAAMS Program is also the longest-standing PoCT program in Australia, having been continuously funded by the Australian Government's Department of Health and Ageing for more than a decade since it commenced in July 1999. QAAMS is managed through a partnership between the Community Point-of-Care Services unit at Flinders University (which is responsible for the overall management of the program) and the RCPA Quality Assurance Programs Pty Ltd (which provides the external quality assurance component of the program).

The QAAMS Program addresses a specific clinical need and a major contemporary health issue confronting Indigenous Australians. Rates of diabetes in many Indigenous communities are as high as 30–40%, rates of death due to diabetes in Indigenous Australians are 12 to 17-times that of non-Indigenous Australians, and 47% of all cases of end-stage renal disease in Indigenous patients are directly attributable to diabetes.<sup>1</sup>

There are many unique and challenging aspects to the community-based QAAMS Program. Most importantly, the QAAMS Program fosters and encourages community control and ownership of the program. This strategy is crucial to the acceptance of the program in the Indigenous community setting. Aboriginal Health Professionals (Aboriginal people who are qualified in the practice of primary healthcare and who live and work in the community) are trained as device operators of the DCA PoCT device. This pivotal role has provided Aboriginal Health Professionals with a strong sense of empowerment, responsibility and commitment to the program, a role which is highly valued by the Indigenous patients they service. Utilising the skills and talents of this group of health professionals as PoCT device operators had not been attempted prior to the QAAMS Program.

More than 80% of the medical services participating in the QAAMS Program are rural or remote. Issues such as staff turnover, extreme heat, humidity and dust, limited refrigerator space, power fluctuations, and maintenance of cold-chain procedures for the delivery of reagents and quality materials are continuous problems facing remote communities in particular. This makes the sustainability of the program a constant challenge for both the participating service and the QAAMS Program's management team.

In practice, the long-term sustainability and overall success of the program has been due to a commitment and adherence to four underlying principles: continuing education, training and

competency assessment of PoCT device operators; regular surveillance of analytical quality through tailored quality control (QC) and external quality assurance (EQA) testing procedures; on-going support services for participating sites; and continuous research, evaluation and quality improvement of the program.

### **Core Elements of the QAAMS Program**

All the QAAMS Program services are provided with a primary training manual (115-page, full-colour, A3 size), a series of laminated full-colour A3 posters providing a simple step-by-step guide to patient, QC and EQA testing, and a DVD providing a complete electronic copy of all training resources. The QAAMS Program has a range of flexible and practical options for delivery of training to participants: on-site visits to individual medical services, regional workshops, an annual national workshop, videoconferencing, and access to a live web-streamed video training presentation via the QAAMS Program website.<sup>2</sup> Through a password-protected participant-only area, Aboriginal Health Professionals and nurses can undertake training in their own time and at their own pace. For each test there are 10 short (5-minute) video segments which take the participant through the theory and practice of PoCT for patient, QC and EQA testing procedures.

Competency assessment is a mandatory requirement of the program, with all new trainees at the end of their initial face-to-face training session being required to complete a set of written questions and a practical test (involving both QC and EQA testing) under the supervision of a QAAMS Program scientist. Competency assessment is also available on-line via the website with results of the written questions and practical test being sent to the QAAMS Program Training Co-ordinator. Competency must be renewed every two years (either at a training session or via the web). In the past three years 415 Aboriginal Health Professionals (and nurses) have completed competency certification using this system.

All services are required to conduct QC testing (two QCs for each test) in the first fortnight of each month and EQA testing (two EQA samples for each test) in the second fortnight of each month. The QC and EQA result and reporting sheets have been designed to be culturally appropriate and clear to an Indigenous audience. To facilitate ease of interpretation, the acceptable, warning and action limits are structured like Australian Football League goalposts (corresponding to goal, behind and 'out-on-the full' zones respectively) and colour-coded like traffic lights (with green, orange and red zones respectively). A 'red' QC result alerts the PoCT operator that patient testing must stop and 'red' results must be phoned immediately to a QAAMS Program scientist who assists the service with troubleshooting. The QC and EQA results

from all services are reviewed monthly at regular meetings of the QAAMS Program scientists from both the Flinders' Community Point-of-Care Services unit and the RCPA Quality Assurance Programs. An example of an EQA report is shown in Figure 2.

Ongoing support services for participants are provided through telephone hotlines to the QAAMS Program management teams and Siemens Healthcare Diagnostics, quarterly newsletters, and regular fax and e-mail correspondence. The telephone hotline service assists participants with all aspects of the program with questions ranging from 'Which bottle do I use for my QC or EQA?', 'How do I order my DCA cartridges?', to 'Can you please help me interpret my QC or EQA results?'

The strong link with Siemens Healthcare Diagnostics who have tailored purchasing and maintenance of DCAs, ordering supplies, and technical support to the needs of the QAAMS Program participants has been a vital element of the QAAMS Program.

A key recent support initiative has been the formation of a QAAMS Leaders Team, which comprises an Aboriginal Health Professional from each state of Australia who has demonstrated outstanding leadership and commitment to the program. The QAAMS Leaders Team meets regularly with the QAAMS Program management team to ensure that the program remains culturally appropriate and inclusive of the Indigenous viewpoint on all QAAMS Program-related matters. The Leaders Team also participates in regional training sessions and has strong input and active participation in the QAAMS Program annual workshop.

### **Research and Evaluation of the QAAMS Program**

The QAAMS program has accumulated a large body of evidence to demonstrate the program is analytically sound, culturally and clinically effective, cost effective and sustainable, and adaptable and transferable to other clinical settings.

The quality management system used by the QAAMS Program has worked effectively over many years, with the analytical quality of results continually improving over the lifetime of the program and consistently meeting profession-based analytical goals.<sup>3-6</sup> For example, the median imprecision achieved nationally by QAAMS Program operators for EQA HbA<sub>1c</sub> testing over the past four testing cycles has averaged 2.5% (range 2.4 to 2.7%). Across the same time period, the all-method median imprecision recorded by laboratories participating in the RCPA Glycohaemoglobin Quality Assurance Program was 2.8% (range 2.5 to 2.9%).



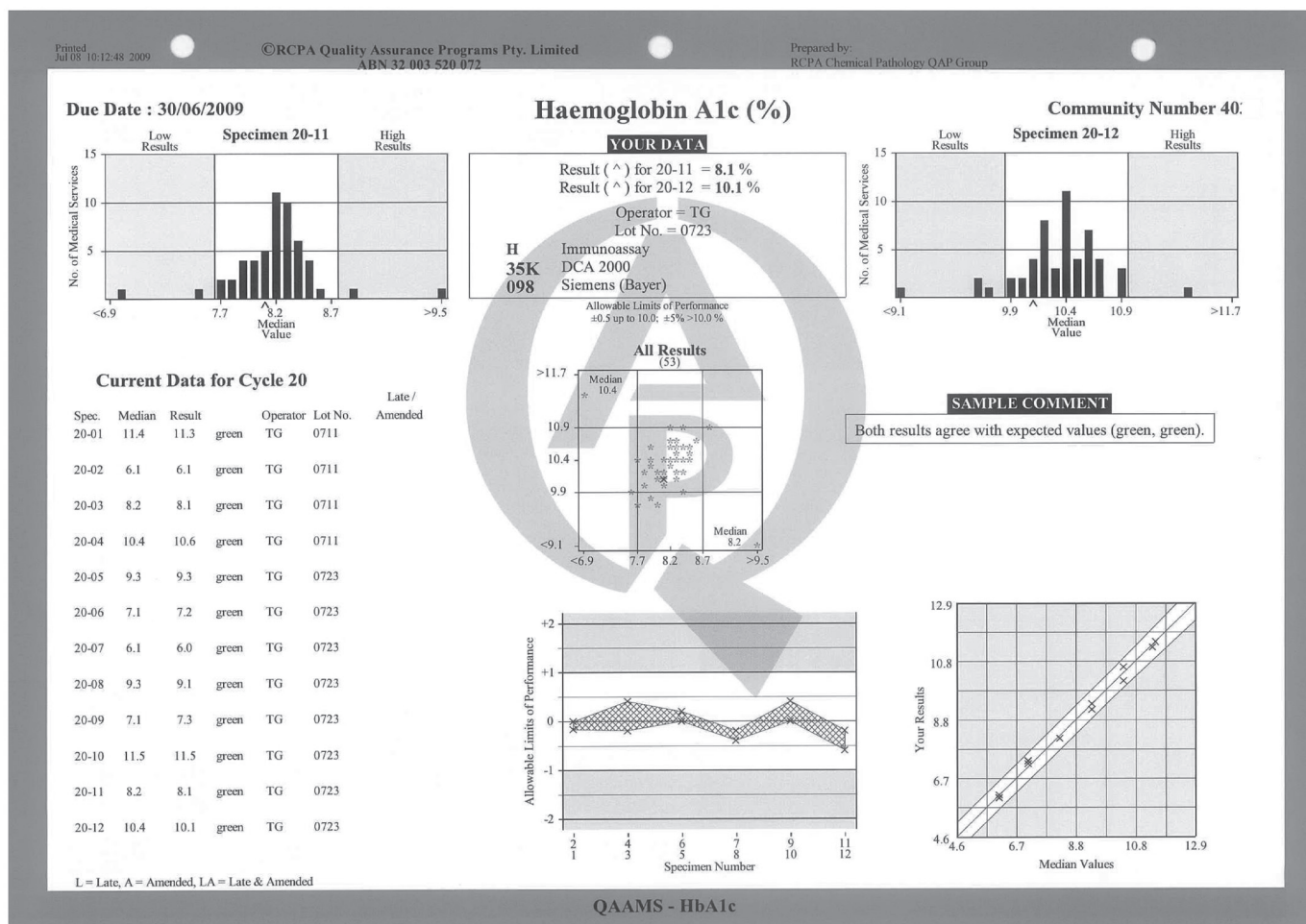
**Figure 1.** Map showing general location of health services participating in the QAAMS program.

The performance of the QAAMS Program services is now meeting the desired analytical goal of 3% set by the Australian Government for PoCT HbA<sub>1c</sub> analysers.<sup>3</sup>

The clinical effectiveness of the QAAMS Program has been confirmed through (i) qualitative surveys of clinical staff responsible for managing Indigenous patients and (ii) quantitative data collected both within and between participating services that measured the absolute change in mean HbA<sub>1c</sub> across time or change in clinical category of diabetes control over time. In terms of surveys, clinicians reported (with >90% agreement) that PoCT was an acceptable alternative to laboratory testing. The immediacy of results contributed positively to patient care such that they wished to continue to use PoCT for diabetes management of their patients.<sup>7</sup> Statistically significant decreases in HbA<sub>1c</sub> over time since the introduction of PoCT have previously been reported from individual rural and remote communities participating in QAAMS where there has either been no change in clinical management or where PoCT has been introduced concurrently with chronic disease self-management care planning

processes.<sup>7</sup> In a new study involving 272 Indigenous diabetes patients from across seven of the QAAMS Program services, the number and percentage of patients in different HbA<sub>1c</sub> categories was compared at baseline and their most recent PoCT measurement (median time difference 2.5 years). After introduction of PoCT, there was a statistically significant improvement in HbA<sub>1c</sub> category, with a 12% increase in the percentage of patients with an HbA<sub>1c</sub> <8%, a 7% reduction in the percentage of patients with an HbA<sub>1c</sub> between 8 and 10%, and a 6% reduction in patients with HbA<sub>1c</sub> greater than 10% ( $p = 0.014$  by chi-squared test).

The cultural effectiveness of the QAAMS Program has been confirmed through (i) an independent review of the program by the National Aboriginal Community Controlled Health Organisation (NACCHO), the peak body representing Aboriginal Community Controlled Health Services in Australia and (ii) qualitative surveys of both Aboriginal Health Professionals (PoCT device operators) and Indigenous patients with diabetes (the consumers of the PoCT service).<sup>7,8</sup> NACCHO concluded that ‘a sense of community control was



**Figure 2.** Example of a QAAMS EQA report.

enhanced as a result of the way in which the management of persons with diabetes became more focused within most services' through the use of PoCT.<sup>8</sup> Qualitative surveys have clearly shown that PoCT has specific cultural advantages in terms of convenience and accessibility for patients.<sup>7</sup> Being able to have a pathology test, obtain a result and see the doctor on-site during the one visit has not only improved the patient's self-motivation to improve their health but also improved their relationship with the treating medical practitioner. This contrasts markedly with the clinical scenario prior to PoCT where it was often very difficult or impossible for Indigenous patients to come back for a follow-up visit with the doctor several days later to obtain laboratory results due to other cultural and family priorities.

The QAAMS Program has been cost effective and sustainable due to access to Medicare rebates for HbA<sub>1c</sub> (since 2000) and urine ACR (since 2006) that have been made available specifically for services enrolled in the QAAMS Program. A representative from Medicare Australia is a member of the

QAAMS Program Management Group, and services can obtain help from their State Indigenous Medicare Liaison Officer to ensure that they claim their full entitlement.

The QAAMS Program has proven adaptable and transferable to other clinical settings and health sectors. The education, training and quality management framework for the QAAMS Program was adapted for use in the Australian Government's PoCT in General Practice Trial.<sup>9-11</sup> The Flinders' Community Point-of-Care Services unit has also utilised the foundation elements of the QAAMS Program in other community models which it now manages or supports, including: the Northern Territory i-STAT PoCT Program (which involves 30 remote health services in the Territory in partnership with the Northern Territory Department of Health and Families); the Diabetes Management Along the Mallee Track Program (in northern western Victoria involving the country town of Ouyen and seven surrounding towns in partnership with the Mallee Track Health and Community Service);<sup>12</sup> and the Ngati Porou Hauora Warfarin Management Program (involving six

remote Maori health clinics on the East Cape region of the North Island of New Zealand in partnership with Ngati Porou Hauora and Roche New Zealand).

### Conclusion

The Australian Government commissioned two independent evaluations of the QAAMS Program (2006, 2008) by the Melbourne-based consultancy firm Campbell Research and Consulting. Both reports are strongly affirmative of the QAAMS Program with Campbell Research and Consulting concluding in their 2008 report that: 'All sources of evidence suggest that the QAAMS Program is meeting best practice standards in the areas of Indigenous healthcare, diabetes management and Point of Care testing [and] QAAMS is one of the few programs to successfully navigate the cultural complexities and potential pitfalls of chronic disease management in Indigenous communities'.<sup>13</sup>

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