



Uluru, or Ayers Rock: symbol of Australia's vast Outback and sacred to Indigenous Australians.

# Preventing diabetes in Australia’s Aboriginal communities

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Diabetes is one of the most serious contemporary health problems confronting Australia’s Aboriginal people. Professor Mark Shephard, Director of the Flinders University International Centre for Point-of-Care Testing, is fighting the disease with education, encouragement, and regular point-of-care haemoglobin A1c (HbA1c) testing in the Australian Outback.

Text: Garry Barker

**B**efore the European arrival Aboriginal people lived on a low-fat, zero-sugar diet through a hunter-gatherer lifestyle. Down Under it’s called “bush tucker”, but few if any Aboriginal people, even those in communities hundreds of kilometers from even the smallest town, now live this way. Today, most Indigenous people in rural and remote areas shop at small stores stocking frozen or canned Western-style foods, including highly-sugared bottled drinks such as Coca-Cola.

## A milestone in the battle against diabetes

Twenty years ago, providing pathology services in remote areas was costly, difficult, and uncertain. Blood samples had to be flown to city pathology laboratories or transported hundreds of kilometers by road. By the time they arrived they were often unsuitable for testing. Results took many days to get back. Patients lost interest and failed to return for treatment.

Professor Mark Shephard of Flinders University Adelaide has always been fascinated by Australia’s deserts. He took an interest in Aboriginal culture and met many people proud of their tra-

ditional lands. “But I also saw incredible poverty and ill health, and for some time I had wondered if we could use the point-of-care testing (POCT) system we had at Flinders Medical Centre to deal with chronic diseases in those communities.”

Since then great progress has been made in improving education of Aboriginal patients and in their monitoring and treatment. Much of it was the result of a chance meeting 20 years ago between Shephard and a government healthcare official. Shephard told the official of his ideas and was assured funding could be available. A program called Quality Assurance for Aboriginal and Torres Strait Islander Medical Services (QAAMS) was launched and the battle against Aboriginal diabetes took a new turn.



When Professor Mark Shephard, Director of the Flinders University International Centre for Point-of-Care Testing, launched the Quality Assurance for Aboriginal and Torres Strait Islander Medical Services (QAAMS) program, the battle against Aboriginal diabetes took a new turn.





With a simple point-of-care test, clinicians can detect diabetes in about six minutes even in rural and remote areas.

Today QAAMS has 200 Siemens DCA Vantage® Analyzers in service, some among urban Aboriginal people but the vast majority in medical centres in rural and remote areas. With Australian Federal government support and dedicated healthcare staff, QAAMS has made vital, regular, laboratory-standard point-of-care testing available to Indigenous people across the breadth of Australia. QAAMS methods have been hailed around the world and are being used, with the help of Shephard’s centre, in other countries.

“I think that is a remarkable achievement,” Shephard said. “We use exactly the same quality testing material as Australian laboratories and from the same manufacturer, so we can make direct comparisons on the analytical performance of point-of-care testing on the DCA Vantage with those of the laboratory. There is no statistical difference between them in regard to quality.”

## Empowered locals and fast results

Local Aboriginal health workers and practitioners were trained by Shephard’s centre to conduct point-of-care testing for HbA1c, so they were empowered with direct control in patient care, something they valued highly. But most important, he said, was that patients got results

quickly. “Prior to POCT it took on average 24 days to get patients back for their consultations in some remote communities,” Shephard said. “With POCT they have the result in six minutes with just a finger prick of blood needed for the test. Follow-up is on the spot in another 15 minutes. With laboratory testing, mean turnaround time was 42 hours in these remote communities. Patients often lost interest and did not return. Convenience and accessibility are key to POC testing.”

While QAAMS itself is not involved in educating patients, the health centre staff working directly with patients on the ground provide encouragement and education during the six-minute waiting time for the POC test result about how to combat diabetes and the life-threatening diseases it can cause, such as heart disease and nerve damage leading to amputation of limbs. It is a vital task, but very complex and difficult, exacerbated by the remoteness of many Outback clinics. However, QAAMS does, in its annual workshops, inform clinical staff members and doctors by hosting speakers, including a range of health professionals working in diabetes-related areas, on the subject. Their most recent workshop attracted more than 90 clinical staff members from rural and remote medical centres.

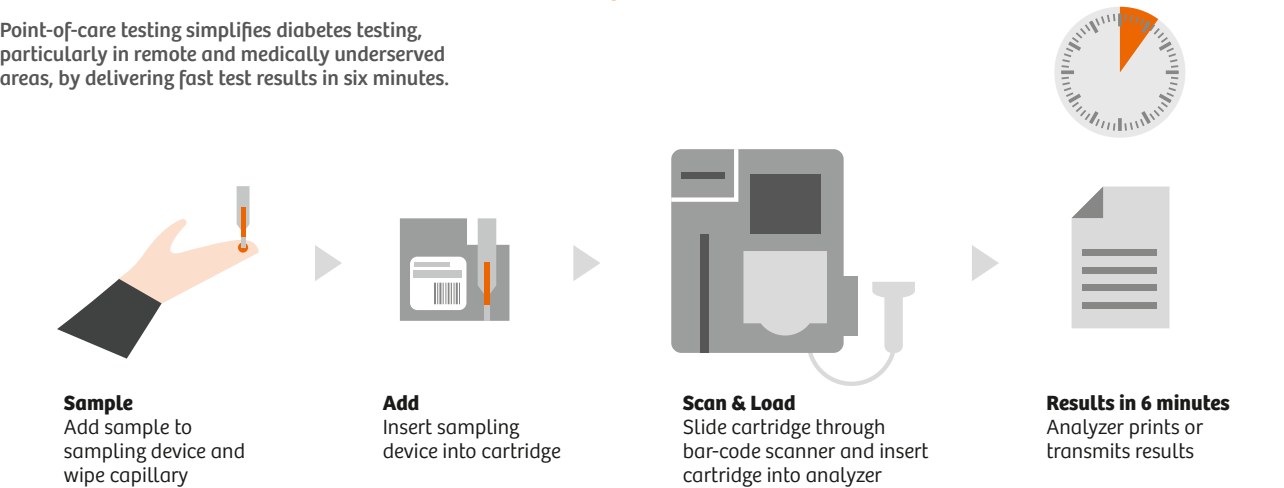
## Moving from testing to diagnosis

Another important change in the past decade was moving from only using the HbA1c test for diabetes management to now diagnosing diabetes. “QAAMS is the only POCT network in Australia approved by the Australian Government and Medicare to use HbA1c<sup>1</sup> for diagnosis,” Shephard said. “That’s because of QAAMS’ consistently high standard of analytical quality. There is no difference between the QAAMS test and sending a blood sample to a laboratory.”[1]

But, despite all improvements, Aboriginal people were still fundamentally more vulnerable to diabetes than other Australians, he said. “The prevalence of diabetes is four times higher than in non-aboriginal people and exacerbated in some cases by a combination of obesity, access to poor diet, alcohol, lifestyle factors, poor and overcrowded housing, poor hygiene, and poor water quality. High blood pressure and cardio-

## Reduction in time-to-result from 24 days to 6 minutes

Point-of-care testing simplifies diabetes testing, particularly in remote and medically underserved areas, by delivering fast test results in six minutes.



vascular disease are also problems. “The gap in life expectancy has improved a bit but it is still wide compared with other groups such as New Zealand’s Maoris or Canada’s Indigenous people.” Recent reports show Aboriginal males born in 2012 were estimated to live to 69 and females to 74, about 20 years less than non-indigenous people.

## Combatting the onset of other diseases

Education of patients and treatment in many communities has brought significant improvements in glycemic control, meaning these patients are at lower risk of complications from disabling or life-threatening diseases such as retinopathy, kidney and heart disease, and nerve damage. “Reducing or avoiding these problems is what diabetes management is all about and QAAMS has contributed significantly to that.”

Finding and keeping healthcare staff is difficult and high turnover is a major problem for remote communities, according to Shephard. Some sites had to rely on agencies to fill gaps, and many doctors and clinical staff were often on a fly-in, fly-out basis, he said. And while most people who worked in remote centres were very passionate about their communities, it remained hard work in difficult conditions.

Access to suitable food in remote Aboriginal communities has also improved, Shephard said, “but it’s dependent on the store managers in those places. They have tended to stock high-sugar, high-fat foods because it’s easier than getting fresh vegetables, but there is a strong knowledge base now and a push by the communities for better and fresher foods. Even a one percent reduction in haemoglobin A1c can significantly reduce the risk of complications.” ●

**Garry Barker** specializes in business, technology, and healthcare. Previously Technology Editor of The Age, Melbourne’s premier morning newspaper, he now writes and produces weekly global podcasts on those topics.

**References**  
[1] Shephard M, Shephard A, McAteer B, Regnier T, Barancek K. Results from 15 years of quality surveillance for a national Indigenous point-of-care testing program for diabetes. Clinical Biochemistry. 2017: <http://dx.doi.org/10.1016/j.clinbiochem.2017.07.007>

<sup>1</sup> DCA systems HbA1c test kit 10698915 (an aid to diagnose diabetes and identify patients at risk for developing diabetes) is not available for sale in the U.S. Product availability varies by country.

The statements by Siemens Healthineers customers described herein are based on results that were achieved in the customer’s unique setting. Since there is no “typical” hospital and many variables exist (e.g., hospital size, case mix, level of IT adoption) there can be no guarantee that other customers will achieve the same results.