



## The Capillary Point-of-Care Study

### Why was this study done?

Type 2 Diabetes is responsible for a huge burden of disease in the Kimberley. Current recommendations to exclude or diagnose diabetes stipulate the need to use laboratory blood glucose samples which can cause logistical problems and delays in diagnosis particularly in remote communities. Being able to use capillary point-of-care (POC) glucometers to diagnose or exclude diabetes would make this process quicker and easier, however prior to this study we were not sure if POC glucometers were reliable enough to use in this way.

### How was this study done?

Seven sites took part in the study (Bidyadanga clinic, Broome Regional Aboriginal Medical Service, Derby Aboriginal Health Service, Kalumburu clinic, Kimberley Satellite Dialysis Centre, Lombadina clinic and Oombulgurri clinic). Anyone having a lab venous glucose test at any of these sites was asked if they would also mind having a POC test at the same time. The POC and lab tests were done by the same staff who usually did them in the usual way they were done at each clinic.

### What were the results?

200 people were enrolled in the study of whom 36 had to be excluded. The most common reason for exclusion was that no venous sample had been taken at the same consultation as the capillary sample. The remaining 164 included subjects were aged between 16 – 65 with a median age of 45. 60% of participants were female, 91% were indigenous and 41% were diabetic. Two types of POC glucometers used in the study; AccuChek Advantage (used on 15% of subjects) and MediSense Optium.

We found a high overall correlation between the laboratory glucose samples and the POC glucose samples (i.e the results obtained by each method were quite similar). Using a statistical analysis called the receiver operator characteristic curve we determined that a random POC glucose level of <5.5 mmol/l is accurate enough to be used in the exclusion of diabetes, and a random POC glucose level of  $\geq 12.2$  mmol/l can be used to diagnose diabetes. This second number is higher than the current diagnostic lab level of  $\geq 11.1$  mmol/l. This is thought to be because of the different physiological make up of venous and capillary blood which is more pronounced at higher glucose levels.

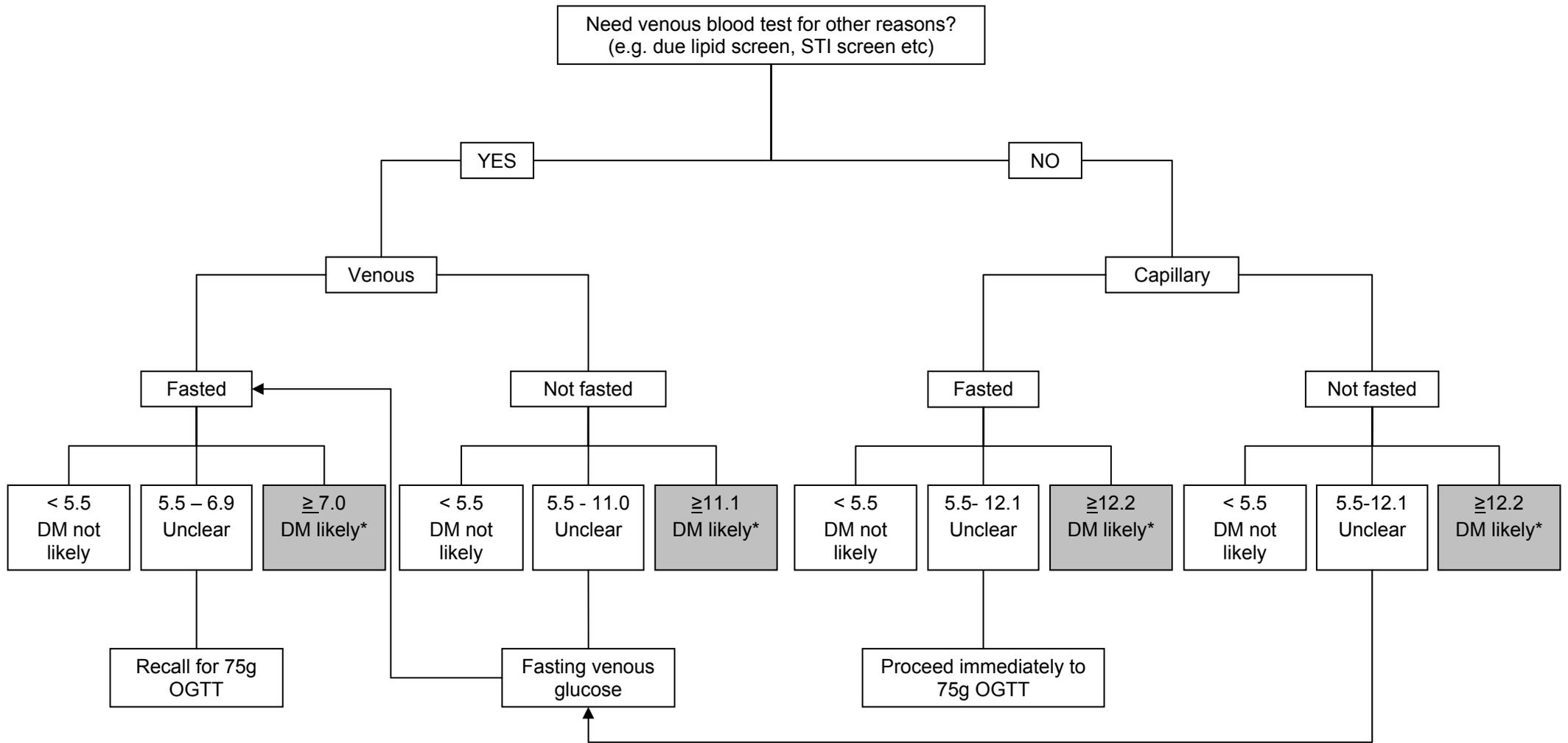
Based on these results we recommend altering the current diabetes guidelines (see table below) to incorporate use of POC glucometers to make diagnosing or excluding diabetes quicker and easier. Keep an eye on the healthy Kimberley website to see when the new guidelines have been officially adopted. A report on this study has been submitted to the Medical Journal of Australia.

Current Diabetes Guidelines	Recommended New Diabetes Guidelines
<b>Screening for diabetes:</b> <ul style="list-style-type: none"> <li>• Random lab glucose every 2 years</li> <li>• If lab glucose &lt;5.5 mol/l - diabetes unlikely</li> </ul>	<b>Screening for diabetes:</b> <ul style="list-style-type: none"> <li>• Annual glucose with either lab or POC sample</li> <li>• If lab or POC glucose &lt;5.5 mmol/l - diabetes unlikely</li> </ul>
<b>Diabetes diagnosis requires:</b> <ul style="list-style-type: none"> <li>• 2 high readings without symptoms (lab only)</li> <li>• 1 high reading with symptoms (lab only)</li> <li>• &gt;20 mmol/l - no obvious infection or steroids (lab only)</li> </ul>	<b>Diabetes diagnosis requires:</b> <ul style="list-style-type: none"> <li>• 2 high readings without symptoms (at least 1 must be from a lab sample)</li> <li>• 1 high reading with symptoms (lab only)</li> <li>• &gt;20 mmol/l - no obvious infection or steroids (lab only)</li> </ul>
<b>A high reading is:</b> <ul style="list-style-type: none"> <li>• A fasting glucose <math>\geq 7.0</math> mmol/l</li> <li>• A random glucose <math>\geq 11.1</math> mmol/l</li> </ul>	<b>A high reading is:</b> <ul style="list-style-type: none"> <li>• A fasting glucose <math>\geq 7.0</math> mmol/l</li> <li>• A random glucose <math>\geq 11.1</math> (lab) or <math>\geq 12.2</math> (POC) mmol/l</li> </ul>

**Many thanks to all the clinical staff who collected the data for this study and the clients who took part in it. Without your help this research would not have been possible.**

This study was a joint project between the Kimberley Aboriginal Medical Services Council, The WA Rural Clinical School and the WA Country Health Service – Kimberley. If you have any questions or comments please direct them to Dr Julia Marley by email ([Julia.Marley@uwa.edu.au](mailto:Julia.Marley@uwa.edu.au)) or phone ((08) 9193 6043).

# Diabetes screening flow chart



\* see case definition in Diabetes Type II Chronic Disease Protocol