

Prediabetes and pregnancy:

Using early pregnancy HbA_{1c} to find Aboriginal women with high-risk of diabetes in pregnancy (GDM) and having babies that grow too big

What do we already know?

- Gestational diabetes mellitus (GDM) means **high blood glucose (sugar) in pregnancy**. This can make both the woman and their baby sick. The baby can grow too big and there can be problems during the birth.
- An oral glucose tolerance test (OGTT), also known as the **sugar drink test**, is used to check for GDM. Women have to fast overnight (no food or drinks) and have three blood samples taken over two hours.
- The OGTT is used to check for GDM in all women **late in pregnancy** (24-28 weeks gestation).
- Women who have high risk for diabetes (includes Aboriginal women and women who are obese) are also asked to do the OGTT **early in pregnancy** (<20 weeks gestation) - So women might be asked to do the test twice!
- Some women who get told they have GDM may have had **pre-diabetes before they became pregnant**. Pre-diabetes is when blood glucose levels are high, but less than that of diabetes.
- Having pre-diabetes means that there is a **high risk of developing diabetes** in the next 5 years. Pre-diabetes in pregnancy can also cause problems like big babies and other birthing problems.
- In the **ORCHID Study** we wanted to know if HbA_{1c} could be used early in pregnancy to find women who were at risk of having GDM and having a baby that grows too big.

What does this research show?

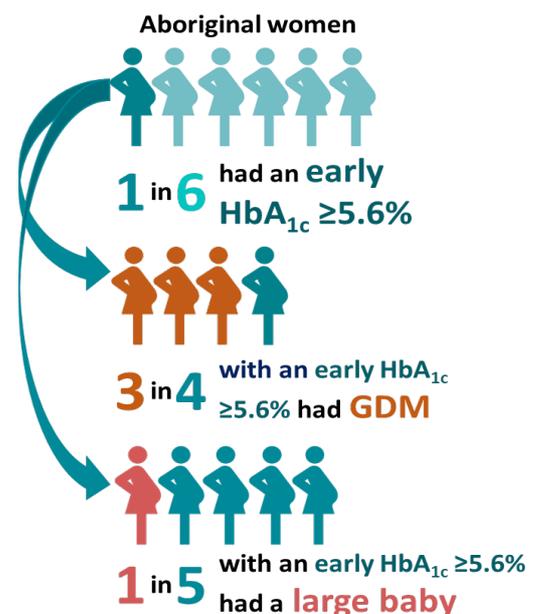
1. The best HbA_{1c} cut-point for Aboriginal women was $\geq 5.6\%$. Most Aboriginal women that above the cut-point were also told that they had GDM later in pregnancy.

These women likely had pre-diabetes before they got pregnant rather than developing GDM during pregnancy.

2. Risk for having large babies was twice as high in women above the early HbA_{1c} cut-point compared to women who were below the cut-point and who did not develop GDM.

Women with pre-diabetes before they became pregnant are at high-risk for having a baby that grows too big.

3. There were big differences between Aboriginal and non-Aboriginal women:



Out of every 20 women:

- 3.25 Aboriginal women and 1 non-Aboriginal woman had pre-diabetes before they became pregnant
- 2.5 Aboriginal women and 6 non-Aboriginal women developed GDM during pregnancy

Fewer non-Aboriginal women had pre-diabetes going into pregnancy and more of them develop GDM during pregnancy, compared to Aboriginal women.

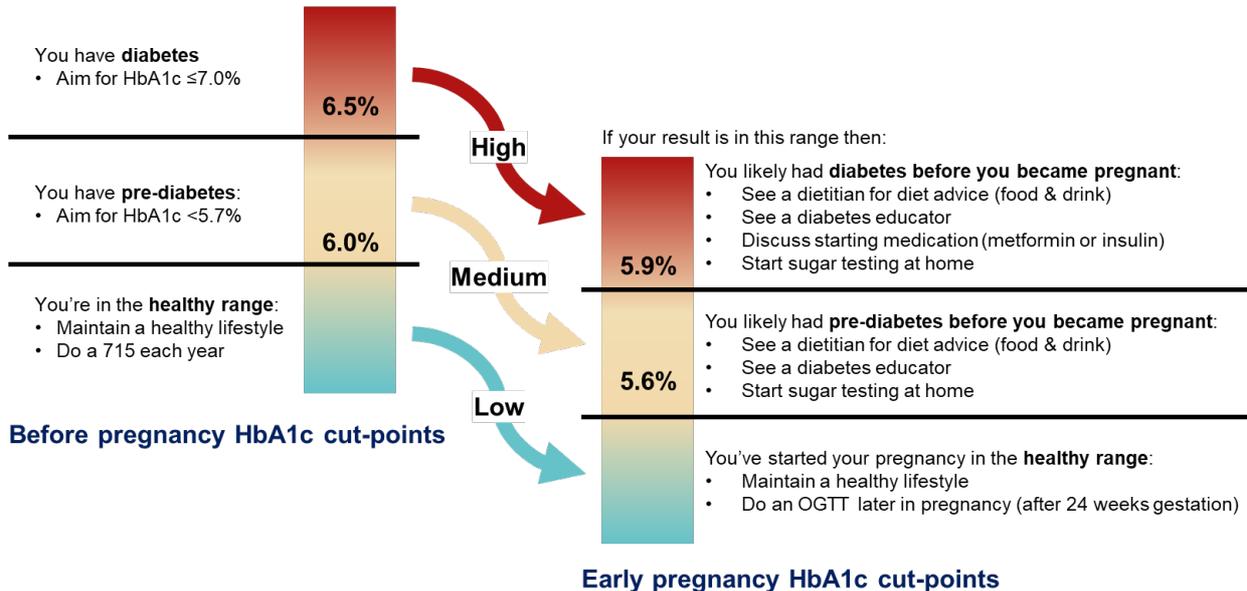
What does this mean for clinical practice?

- If you are at high risk of having pre-diabetes or diabetes (includes all Aboriginal family members) it is good to have an HbA1c check-up every year – this can be done as part of the annual health check (“715 health check”).
- We think that all Aboriginal women should do an HbA1c test at their first antenatal visit to see if they had pre-diabetes or diabetes before they became pregnant. We plan on yarning with Aboriginal women and clinic staff to co-design culturally appropriate ways to support women with pre-diabetes in pregnancy.

HbA1c results – what does it mean for your risk of having a baby that grows too big?

- Outside of pregnancy we use HbA1c to find people who have diabetes ($\geq 6.5\%$) and pre-diabetes (5.7-6.4%). In pregnancy HbA1c usually drops, but in women who have low iron (anaemia) it can increase.
- Currently clinics only use HbA1c in pregnancy to find women who most likely had diabetes before they became pregnant ($\geq 6.5\%$).

If your result is in this range then:



- Promoting healthy changes (healthy weight and ongoing regular moderate intensity exercise) before and during pregnancy to lower blood glucose is **important for mums, dads and their babies.**

Future research

In the Kimberley, all women have been offered an early HbA_{1c} at their first antenatal visit since 2017 to check for pre-existing diabetes. Kimberley Aboriginal Medical Services & Rural Clinical School of WA are working together to look at outcomes for Kimberley Aboriginal women who delivered their babies between 2018 and 2021. This for us to confirm that the early HbA_{1c} $\geq 5.6\%$ cut-point finds women who had pre-diabetes or diabetes before they became pregnant.

We would like to thank all women who took part in this study, health service staff who assisted with ORCHID and the health services that agreed to participate.

This project is a collaboration between Rural Clinical School of WA, Kimberley Aboriginal Medical Services, WA Country Health Services and this part was funded through grants from RCSWA, Lishman Health Foundation and Diabetes Australia. Click [here](#) to read this ORCHID study publication and other plain language statements. If you have any questions or comments, please direct them to ORCHID Study Chief Investigator, [A/Prof Julia Marley](#).

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