Diabetes across the Lifecourse:

Northern Australia Partnership

Policy and Practice Brief – June update 2019

This Partnership brief provides an overview of recent publications from the work of the Diabetes across the Lifecourse Partnership. Also included is a statement which aims to clarify the terminology related to diabetes in pregnancy and an update on diabetes in youth funding.

SAVE THE DATE

We are pleased to announce the date for our Annual Educational Symposium, to be held Friday 27th September, 2019 from 8am until 1pm.

All welcome to join the Clinical Reference Group meeting afterwards from 1.30pm until 4pm.

Registration is free but essential. https://www.stickytickets.com.au/88115

WEBEX also available - please contact Norlisha Bartlett for details; ntdippartnership@menzies.edu.au

The following keynote speakers will be presenting:

Professor Alex Brown
Aboriginal Health Equity Team Leader – SAHMRI. Professor of Medicine – Aboriginal Health, University of Adelaide.

Professor Jerry Greenfield
Endocrinologist, *Garvan Institute & St Vincent's Hospital*, Sydney

Professor Elizabeth Davis
Child Diabetes & Obesity, *Telethon*

Professor Jonathan Shaw
Clinical Diabetes and Epidemiology *Baker Institute*, Melbourne




FUNDING NEWS

We are pleased to announce the news of a successful Commonwealth grant to fund important work on youth onset diabetes. On March 15th, the Hon Ken Wyatt, Minister for Indigenous Health, announced the $3.87 million grant to fund the Northern Australia Youth Diabetes Collaborative.

The project aims to develop, pilot and evaluate culturally appropriate diabetes management programs for Aboriginal and Torres Strait Islander children and youth with type 2 diabetes across Northern Australia, including the NT, Kimberley and Far North Queensland.

Recent Publications

Maple-Brown L., et al. Pregnancy And Neonatal Diabetes Outcomes in Remote Australia: the PANDORA study – an observational birth cohort. ***International Journal of Epidemiology*****, 2019. 48(1): 307-318.**

Summary: PANDORA stands for Pregnancy and Neonatal Diabetes Outcomes in Remote Australia. The PANDORA study is a prospective birth cohort study which examines birth outcomes among women with diabetes (hyperglycaemia) in pregnancy. Diabetes in pregnancy includes gestational diabetes, newly detected diabetes in pregnancy and type 2 diabetes which existed before pregnancy. The PANDORA study involved 1135 NT women (48% of whom are Indigenous women) and their children; 900 women with diabetes and 235 women without diabetes were included. Results from the PANDORA study found that Indigenous women had much higher rates of type 2 diabetes than non-Indigenous women. Type 2 diabetes in pregnancy was a key contributor to poorer birth outcomes for Indigenous women. Other preventable and modifiable risk factors including smoking, maternal body mass index (BMI) and gestational weight gain also contributed to poor outcomes. These results highlight the importance of the prevention or delay of type 2 diabetes in younger women as early as possible in the life course.

Maple-Brown L, et al. A real-world experience of metformin use in pregnancy: observational data from the Northern Territory Diabetes in Pregnancy Clinical Register. ***Journal of Diabetes,*** **2019 Jan 25.**

Summary: Using 5 years of real-world clinical register data, we report that the use of metformin in pregnancy was high among Indigenous women and has increased from 2012 to 2016 among non-Indigenous women with type 2 diabetes and gestational diabetes in the Northern Territory.

We found no clear evidence of any adverse outcomes related to the use of metformin for the treatment of hyperglycaemia in pregnancy. Specifically, there were no significant differences between groups with and without metformin for caesarean section, large for gestational age or serious neonatal adverse events.

Longmore D, et al. Maternal body mass index, excess gestational weight gain, and diabetes are positively associated with neonatal adiposity in the Pregnancy and Neonatal Diabetes Outcomes in Remote Australia (PANDORA) study. ***Paediatric Obesity*****, 2019 Jan 16:e12490.**

Summary: This aspect of the PANDORA study involved evaluation of 877 Indigenous and Europid women (of whom 644 had hyperglycaemia – type 2 diabetes, newly detected diabetes in pregnancy and gestational diabetes) and their babies. Neonates had measurements performed in the first 72 hours after birth. Neonatal outcomes included length, head circumference, skin folds (including sum of three skin folds) and percentage body fat.

Results demonstrated that maternal type 2 diabetes or newly detected diabetes in pregnancy (compared to no hyperglycaemia) was associated with greater neonatal adiposity measures. Neonates born to mothers with higher body mass index (BMI) or weight gain in pregnancy above recommendation, were larger with greater skin fold measures and adiposity. The findings from this study further highlight the importance of preventing type 2diabetes in young women in order to improve outcomes for their offspring. Addressing modifiable factors including maternal weight during pregnancy is additionally important.

Titmuss A, Davis E, Brown A, Maple-Brown L. Emerging diabetes and metabolic conditions among Aboriginal and Torres Strait Islander young people in Australia. Medical Journal of Australia, 2019. 210(3):111-113.

Summary: The HOT NORTH Diabetes in Youth collaboration represents clinicians, policy makers, community members and researchers across northern Australia, the Kimberley, NT and far north Queensland. There are increasing numbers of Aboriginal and Torres Strait Islander young people affected by type 2 diabetes, and they are more likely to have associated conditions such as high blood pressure, elevated lipids, and obesity. Disturbingly, there is an almost 50% chance of end stage renal failure within 20 years of diagnosis. Youth onset diabetes (diagnosed before the age of 25 years) is different from adult onset diabetes in terms of its underlying cause, complications, prognosis and treatment response. There is also a greater risk of mental health concerns.

We need to rethink our current strategies and think beyond the health sector and engage Aboriginal communities to develop effective approaches. We need to use a suite of interventions across the life course, targeting children and young people before they develop disease, and preventing intergenerational ill health. We also need to establish the true prevalence of diabetes in Aboriginal young people, and hear from young people and families as to how diabetes and health are conceptualised, so that we improve models of care and educational resources. Diabetes in young people is considered a 'disease of poverty' internationally and so we also need to address entrenched socioeconomic inequities facing many Aboriginal young people.

Clarifying Diabetes in Pregnancy – a Statement from the Diabetes Across the Lifecourse: Northern Australia Partnership

Diabetes is a common complicating factor affecting pregnancy, and has short-term and long-term impacts on health of both mother and offspring. There is often confusion among healthcare workers and women about the terminology used when describing diabetes in pregnancy. This statement aims to clarify these ambiguities and highlight key messages vital to providing effective care for women affected by diabetes in pregnancy.

Table 1 – Diagnostic thresholds for gestational diabetes and diabetes in pregnancy[1]

Glucose measure	Gestational diabetes	Overt diabetes in pregnancy
OGTT[2] – 0 hour	5.1-6.9 mmol/L	≥ 7.0 mmol/L
OGTT – 1 hour	≥ 10.0 mmol/L	N/A
OGTT – 2 hour	8.5-11.0 mmol/L	≥ 11.1 mmol/L
Random plasma glucose	N/A	≥ 11.1 mmol/L
HbA1c[3]	*39-47 mmol/L (5.7-6.4%)[3]*	≥ 48 mmol/L (6.5%)

[1]Criteria are met if *any* of the above results meet the threshold for diagnosis, with the exception of HbA1c with regard to GDM (see 3, below).
[2]OGTT – fasting 75 gram oral glucose tolerance test.
[3] HbA1c is *not* suitable for screening/diagnosis beyond the first trimester. OGTT is the preferred test for screening both in early pregnancy (for women with risk factors for diabetes in pregnancy) and for universal screening at 24-28 weeks gestation. If OGTT is not feasible in early pregnancy, HbA1c may be used as a guide to indicate risk and prompt further testing, although is not a criterion for formal diagnosis of GDM. Ideally an HbA1c of 39-47 mmol/L (5.7-6.4%) should be confirmed with OGTT. HbA1c ≥ 6.5% in the first trimester is diagnostic of overt diabetes in pregnancy and may be confirmed with random plasma glucose or a second HbA1c (as per diagnostic criteria for type 2 diabetes outside of pregnancy).

TERMINOLOGY

The definitions of diagnostic terms referring to diabetes in pregnancy have evolved over time, contributing to significant confusion around their meaning. To add to the confusion, diagnostic criteria have also been revised, creating a situation where multiple criteria exist with a lack of consistency in criteria used across healthcare services. The below definitions are currently endorsed by the Partnership, with diagnostic thresholds summarised in Table 1.

The Diabetes Across the Lifecourse: Northern Australia Partnership ("the Partnership") uses ***hyperglycaemia in pregnancy*** as an all-encompassing term to include all forms of raised glucose in pregnancy; this includes gestational diabetes and pre-existing diabetes. Some use the term "***diabetes in pregnancy***" as an all-encompassing term, while other groups, e.g. WHO, Queensland Clinical Practice Guidelines, use the term "***diabetes in pregnancy***" only when glucose is elevated to the degree which would meet diagnostic criteria for type 2 diabetes outside of pregnancy, classifying this as a distinct entity to gestational diabetes; the Partnership refers to this as "***overt diabetes in pregnancy***" (see below).

Gestational diabetes (GDM) refers to hyperglycaemia newly detected in pregnancy, including when assessed during universal screening at 24-28 weeks gestation or on first trimester screening in high-risk women. The Partnership defines GDM as per Table 1, where women are diagnosed with GDM if glucose levels are ***not*** sufficiently elevated to meet criteria for diagnosis of diabetes outside of pregnancy (in contrast to "overt diabetes in pregnancy", below). GDM is sometimes used by others to refer to any diabetes newly diagnosed in pregnancy.

Pre-existing diabetes refers to diabetes which has been previously diagnosed outside the setting of pregnancy, including type 1 and type 2 diabetes.

Overt diabetes in pregnancy refers to hyperglycaemia occurring during pregnancy, where glucose is elevated to such a degree which would meet criteria for diagnosis of diabetes outside of pregnancy, suggesting the woman has pre-existing diabetes. As pre-existing diabetes cannot be confirmed until the postpartum period, the term 'overt diabetes in pregnancy' differentiates these women from those with confirmed pre-existing diabetes, while acknowledging these women are likely to have a higher risk of complications during pregnancy than those with GDM and therefore require closer monitoring. **Women with overt diabetes in pregnancy require assessment for complications of diabetes at the time of diagnosis, i.e. during pregnancy, and should be managed as though they have pre-existing type 2 diabetes in pregnancy until this can be assessed further postpartum.**

GESTATIONAL DIABETES – THE RISK DOES NOT END WITH DELIVERY

Women with GDM are educated about the importance of postpartum glucose assessment; this is often explained as necessary to ensure glucose metabolism has returned to normal after pregnancy. This message may be mistakenly perceived by women as meaning GDM "goes away" after pregnancy, and there are no long-term health effects. It is essential that women are informed of **the life-long increased risk of developing type 2 diabetes**, and therefore the need for lifestyle changes to reduce their risk as well as regular glucose checks lifelong to ensure that if diabetes develops it is picked up early.

POSTPARTUM FOLLOW-UP – THE PARTNERSHIP'S KEY 5 MESSAGES

The postpartum period is an opportune time to improve health for women and families, and ensure optimal health prior to a future pregnancy. The Partnership has identified the following key 5 priorities for women's health after a pregnancy complicated by hyperglycaemia:

1. ***Glucose checks***
    - GDM – fasting 75 gram OGTT at 6-8 weeks postpartum, OR HbA1c at 4 months postpartum if OGTT not feasible
    - Overt diabetes in pregnancy – finger-prick glucose checks in the postpartum period
        - If finger-prick glucose levels in diabetes range (fasting ≥7 mmol/L and/or postprandial >11 mmol/L) – confirm with plasma fasting or random glucose
        - 75 gram OGTT at 6-8 weeks if diabetes not confirmed prior, OR HbA1c at 4 months postpartum if OGTT not feasible
    - Pre-existing diabetes – HbA1c at 4 months postpartum
2. ***Healthy weight***
3. ***Breastfeeding***
4. ***Smoke free***
5. ***Contraception***

FOR FURTHER INFORMATION, including resources regarding the Partnership's Key 5, contact the Diabetes Across the Lifecourse: Northern Australia Partnership:

- NT: ntdippartnership@menzies.edu.au
- FNQ: DiPPiNQ@menzies.edu.au

References:
CARPA, Minymaku Kutju Tjukurpa - Women's Business Manual, 6th edition.
Australasian Diabetes in Pregnancy Society, 2013. ADIPS Consensus Guidelines for the Testing and Diagnosis of Gestational Diabetes Mellitus in Australia.
Queensland Health, 2015. Queensland Clinical Guideline: Gestational diabetes mellitus.
World Health Organisation, 2013. Diagnostic Criteria and Classification of Hyperglycaemia First Detected in Pregnancy.