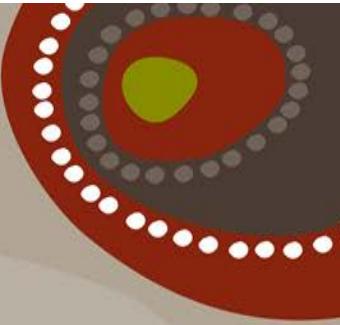


# NT Diabetes in Pregnancy Partnership Newsletter

June 2017



# Greetings !

The NT & FNQ Diabetes in Pregnancy Partnership has launched our own website. To find information about partnership activities, updates and links to the NT and FNQ Diabetes in Pregnancy Clinical Register please visit us at <http://www.dipp.org.au>

AND THE BIG NEWS IS....

Recruitment to the PANDORA (Pregnancy And Neonatal Diabetes Outcomes in Remote Australia) cohort has finally been completed! More than 1100 women have participated and our last baby was measured on February 17th, 2017. The follow-up of the mothers and children is ongoing. WAVE 1 continues to assess children up to 4 - 5 years of age. There have been assessments on around 150 children by the team.

Remember this?

Case Report

## A 5-year-old girl with type 2 diabetes

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Lancet 2013; 382: 320-326.

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In August, 2013, a 5-year-old Indigenous girl accompanied her mother to her diabetes outreach appointment in a remote community in Australia. Towards the end of her visit, the mother asked the carers to examine the child, noting bleeding sores on her daughter's thighs. Noting the child's obesity, two random blood glucose level tests were done, giving results of 10.5 mmol/L (190 mg/dL) and 10.6 mmol/L (191 mg/dL). A urine dipstick test was negative for ketones. The young mother reported that the sores had been present for roughly 5 weeks, and, notwithstanding the past 12 months of gestational diabetes, she had never seen such a child born with macromomelia (4.5 kg at 38 weeks by caesarean section after a pregnancy complicated by poorly controlled gestational diabetes). Her mother had a long personal history of refined carbohydrates and simple sugars. There was a strong family history of type 2 diabetes.

The patient was above 95th centile for weight (16.5 kg) and height (108 cm) (24–49 kg) and height (123 cm). Crusted sores on both upper thighs and right axilla were consistent with impetigo. The rest of the examination was unremarkable except for the patient experiencing fits in the axillae and around her neck (figure). The patient had high concentrations of IgM (31–9% normal range 4–13.4%), IgG (107 mg/mL [normal range 23–42]), plasma glucose (19.9 mmol/L [normal range 3.9–8.8]), C-peptide (0.06 nmol/L [0.1–1.4]), and insulin (201 pmol/L [14–160]). Urine albumin:creatinine ratio was normal (0.3 g/mmol creatinine). Fasting plasma glucose, C-peptide antibodies and genetic tests for MODY3 (*HNF1A*) and MODY2 (*HNF4A*) were negative. The patient was transferred to a tertiary centre and given intravenous insulin and oral metformin to manage her acute presentation of type 2 diabetes. When seen for follow-up in November,

2013, she was no longer taking metformin because of intolerance, but remained on insulin. Blood glucose concentrations remained above target levels until November 2013.

Driven by increased urbanisation, high calorie diets, and increasingly sedentary lifestyles, the worldwide rise in the incidence of type 2 diabetes has been most dramatic in adults. However, children are also being affected.<sup>1</sup> The combined burden of infectious diseases (eg, respiratory and diarrhoeal illnesses) coupled with an increasing prevalence of childhood obesity (both prediabetes and type 2 diabetes and type 2 diabetes) has resulted in Indigenous Australians having an additional 30% disease burden compared with non-Indigenous people.<sup>2</sup> Indigenous communities are generally socioeconomically poor yet pay high prices for fresh food because of transport costs and limited competition. In addition, adverse environmental factors and increased exposure to hyperglycaemia<sup>3</sup> probably contributed to this child's risk of developing type 2 diabetes. The US SEARCH study<sup>4</sup> provides evidence that as a society we still do not adequately support young people. In this experience with this population, compliance and good diabetic control is often difficult to achieve and maintain—the TODAY trial showed that 50% of children with type 1 diabetes required oral treatments alone, and 39% of children on combination oral treatments (insulin glycaemic control [ $\text{HbA}_1\text{c}$ ] >8% for 6 months or more) required insulin therapy by age 13 years, and 35% by 3 years.<sup>5</sup> Further longitudinal outcome studies are needed to determine the most efficacious combinations of treatments for type 2 diabetes in children who have extra social and/or genetic risk factors for diabetes.

Contributors

DCB wrote the report and mainly managed the patient. DCB and AW helped with the manuscript preparation. DCB and AW provided the funding for the project. WHW cares for patients who obtained the report. WHW consent to publish was obtained.

Declaration of interests

DCB has received research grants from Novo Nordisk and Amgen/AstraZeneca (AZ); lecture fees from Novo Nordisk and AZ; and travel expenses from Novo Nordisk and AZ. WHW has received research grants from Novo Nordisk and AZ; lecture fees from Novo Nordisk and AZ; and travel expenses from Novo Nordisk and AZ. AW and CB declare they have no competing interests.

1. Phillips-Taylor O, Zelber-Sagi S. The global epidemic of type 2 diabetes mellitus. *Diabetologia* 2010; 53: 1869–1877.
2. Bell DK, Barker P, Hodge S, Thompson A, Cooper A. Diabetes of disease and lifestyle in Aboriginal and Torres Strait Islander Peoples. *Diabetologia* 2010; 53: 1888–1896.
3. Gubhaju D, Thompson B, Liddle EF, et al. Intraoperative monitoring of blood glucose in children undergoing surgery for abdominal wall lipomatosis. *Obesity (Silver Spring)* 2010; 18: 1086–1090.
4. Pettitt DJ, Morris AP, Hadden L, et al. The SEARCH study: the first study of diabetes in children and adolescents. *Diabetes* 2000; 49: 1886–1900.
5. Tamboli P, Pettitt DJ, Morris AP, et al. The SEARCH study: the first study of diabetes in children and adolescents. *Diabetes* 2000; 49: 1886–1900.
6. TODAY Study Group. Clinical trial of metformin plus glipizide versus pioglitazone for type 2 diabetes. *N Engl J Med* 2012; 366: 2366–2376.

Figure. Axillary fits.

An article published in the Lancet (2014) described the diagnosis of type 2 diabetes in a young Indigenous girl living in Far North Queensland. Diabetes in pregnancy, diabetes in youth – is there really a connection? We are hearing more about the transgenerational cycle of diabetes, the influences of the intrauterine environment and chronic disease in the offspring of women with hyperglycaemia in pregnancy, obesity in pregnancy and the role of epigenetics. Whilst research into these associations has been undertaken in the NT by PANDORA, what do we know about similar high risk populations?

[http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(14\)60487-6/fulltext](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(14)60487-6/fulltext)



## **On September 8th, the NT & FNQ DIP Partnership will be holding our Annual Stakeholder meeting and educational symposium.**

We are privileged to host international researcher and paediatric endocrinologist **Dr Brandy Wicklow** from Manitoba Canada, whose work focuses on the intergenerational impact of type 2 diabetes in First Nations communities. Dr Wicklow has led research regarding youth onset of type 2 diabetes in First Nations families and communities which will be of particular interest to many of us working in the NT and FNQ and seeing this trend in our own workplaces.



Invitation flyers have been sent by email, so if you have not received yours please contact Cherie Whitbread whose email address is at the bottom of this page.

Other news.....

### ***NT DIP Clinical Register***

We have over 1700 women referred to the clinical register in just over 5 years. We have not managed to achieve complete coverage of numbers during that time and thus the NT DIP Clinical Register has tightened our alignment with an Opt out version of consent. This enables women to have their clinical information entered into a centralised repository for the purposes of clinical management and audits and quality assurance activities involving de-identified data. The NT DIP Clinical Register promotes best practice with regards to ensuring that whenever possible, women are informed about their referral to clinical register and that their options of participation are explained including that they can ask to have their details removed from the clinical register at any time. Women who are unable to be approached will not have any identifiable data shared via web-based clinical register programs.

If you are unsure how to refer a woman to the clinical register or have never received a clinical register report and would like to do so, please see our website [dipp.org.au](http://dipp.org.au) or email [Cherie.Whitbread@nt.gov.au](mailto:Cherie.Whitbread@nt.gov.au)

## **Models of Care**

Managing hyperglycaemia in pregnancy to improve health outcomes for women and their babies has always been a focus of partnership activities. To minimise risks associated with diabetes in pregnancy, we have advocated for early testing and pro-active interventions regarding glycaemic control. Extension of this clinical care to the inter-pregnancy interval (before the first trimester and after the third) is just as important – we are currently planning a systems intervention to support women and health professionals as we work together to improve maternal and child health. Visits from the partnership (Dr Christine Connors and Cherie Whitbread) have been held in Katherine and Nhulunbuy in collaboration with the NT Primary Health Network and activities are also planned for Darwin and Alice Springs.

## **Health Professional Survey**

In 2012, we surveyed health professionals working in the NT about improving health service delivery for women with diabetes in pregnancy in remote Australia. The published results of the survey by Edwards et al (ANZJOG 2014) discussed healthcare professionals' views and practices in DIP screening and Management. We are circulating a similar survey to assess any changes to practice in association with partnership activities and to ask about health service delivery in the inter-pregnancy interval. Please do fill out our survey <https://www.surveymonkey.com/r/N22F5X3>, thanks to those who have already done so, your feedback is invaluable.

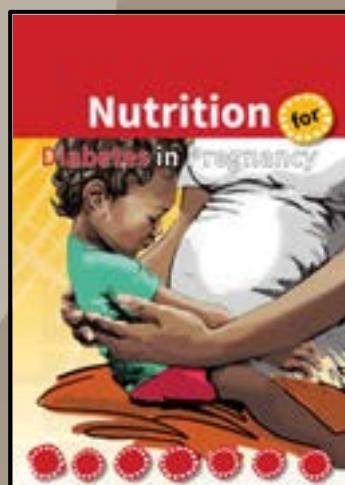
**Nutrition for Diabetes in Pregnancy** resource has been released.

If you would like to request copies for your organisation or work group, please email the below address regarding how many you require.

[Tamie.Needham@nt.gov.au](mailto:Tamie.Needham@nt.gov.au)

The electronic copy of Nutrition for Diabetes in Pregnancy resource is available to be downloaded from

[http://www.healthylivingnt.org.au/public.cfm/Indigenous\\_Resources/3/77/](http://www.healthylivingnt.org.au/public.cfm/Indigenous_Resources/3/77/)



## **Publications**

"Pre-conception Care for women with Type 2 Diabetes Mellitus: A Mixed Methods Study of Provider Knowledge and Practice" describes health practitioners practice in the NT with regard to pre-conception counselling for woman with type 2 diabetes in the NT. The article by Jess Klein, Jacqui Boyle and Renae Kirkham et al has been accepted for publication in Diabetes Research in Clinical Practice 2017.

## **Research Opportunities**

The NT & FNQ Partnership has opportunities for health professionals considering further study at PhD, Masters, or Honors degree. Research associated with diabetes in pregnancy includes qualitative research methods regarding health systems and models of care and quantitative approaches for the more detailed PANDORA study. Specific opportunities include mixed-methods of health systems intervention to improve maternal health post-partum and inter-pregnancy, and improving models of care for diabetes in pregnancy in FNQ; and qualitative research exploring women's experience of diabetes in pregnancy.

For further information please contact [Louise.Maple-Brown@menzies.edu.au](mailto:Louise.Maple-Brown@menzies.edu.au)

Once again, the partnership would like to thank you for your ongoing support. We look forward to seeing you in September!

