

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

David Keen, Ophelia Wilson, Alisha Smith

In August, 2013, a 5-year-old Indigenous girl accompanied her mother to her diabetes outreach appointment to a remote community in Australia. Towards the end of her consultation, the mother mentioned concerns about non-healing sores on her daughter's thighs. Noting the child's obesity, two random blood glucose level tests were done, showing concentrations of 19.2 mmol/L and 18.7 mmol/L. A urine dipstick test was negative for ketones. The girl's mother reported that the sores had been present for roughly 5 weeks, and had not healed for the past 12 months. There was no history of diabetes or vomiting. The child was born macroscopic (4.5 kg at 38 weeks by caesarean section after a pregnancy complicated by poorly controlled gestational diabetes. Her diet was high in large portions of refined carbohydrates and simple sugars. There was a strong family history of type 2 diabetes.

The patient was above the 95th centile for weight (16.4 kg), body mass index (24.5 kg/m²) 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 acanthosis nigricans in the axilla and around the neck (figure). The patient had high concentrations of HbA_{1c} (11.9%, normal range 4.3-6.0 or 107 mmol/mol, 23-42), plasma glucose (19.5 mmol/L, 3.0-7.8), C-peptide (1.6 pmol/L, 0.1-4), and insulin (201 pmol/L, 1.4-160). Urine albumin:creatinine ratio was normal (0.3 µmol creatinine, normal <1.0). Tests for type 1 diabetes autoantibodies and genetic tests for MODY1 (HNF1A) and MODY2 (HNF1B) were negative. The patient was transferred to a tertiary centre and given intravenous antibiotics for infection, and metformin and insulin for 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 at 10-13 mmol/L.

Driven by increased urbanisation, high calorie diets, and increasingly sedentary lifestyles, the worldwide rise in the incidence of type 2 diabetes has predominantly occurred in adults. However, children are also being affected.¹ The continued burden of infectious diseases (eg, respiratory and diarrhoeal illnesses) coupled with an increasing prevalence of chronic diseases (particularly cardiovascular disease and type 2 diabetes) has resulted in Indigenous Australians having an additional 30% disease burden compared with the general Australian population.² Remote-Indigenous communities are generally socioeconomically poor so pay high prices for fresh food because of transport costs and limited competition. In addition to adverse socioeconomic determinants, genetic factors and in-utero exposure to hyperglycaemia³ probably contributed to this child's risk of developing type 2 diabetes. The US SEARCH study⁴ provides epidemiological data about the incidence of diabetes in young people. In our experience with this population, compliance and good diabetes control is often difficult to achieve and sustain—the TODAY trial⁵ showed that even under ideal conditions 52% of children on metformin alone, and 10% of children on combination oral treatment lost glycaemic control (HbA_{1c} >8% for 6 months or required insulin), over an average follow-up period of 3.8 years. Further long-term outcome studies are needed to determine the most efficacious combinations of interventions for type 2 diabetes in children who have never decided to accept disabling complications.

Contributors
All four authors conceived and drafted the paper. DM and AW helped to write the report and advised with revisions, and have provided ongoing care to the patient. We thank our contacts in printouts for assistance.

Declaration of interests
All four authors are advisory boards for North Australia and Arnhemland (NT), have no competing interests, and are fully employed in their own right. DM, Wilson, and Smith are also members of research groups in diabetes and health, but our competing interests do not have any competing interests.

References
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2. Van V, Barker B, Hogg S, Daniels Z, Cooper A. Diabetes and disease and impact on Aboriginal and Torres Strait Islander Peoples: the Stagedown health gap. *Int J Epidemiol* 2009; 38: 676-70.
3. Dabelea D, Hanson RL, Lindsay RS, et al. Transgenerational impact of diabetes on offspring risk for type 2 diabetes and obesity: a study of offspring of diabetes patients. *Diabetes Care* 2010; 33: 101-10.
4. The SEARCH Group for the SEARCH for Diabetes in Youth Study Group. Prevalence of diabetes in youth in the United States. *JAMA* 2007; 297: 2716-24.
5. TODAY Study Group. Clinical trial to maintain glycaemic control in youth with type 2 diabetes. *N Engl J Med* 2011; 365: 2347-56.

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 or email 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.

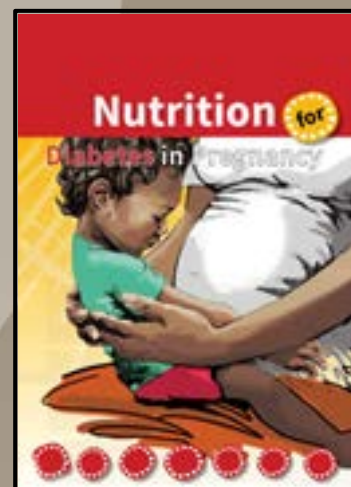
Nutrition for Diabetes in Pregnancy resource has been released.

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

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/



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

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

