



RACP Foundation Research Awards

PROGRESS REPORT

Project / Program Title		Pandora Wave 1: Assessment of the impact of maternal diabetes on growth and nutritional indicators, cardio-metabolic risk factors and developmental risk of pre-school aged children living in the Northern Territory.
Name		Dr Angela Titmuss
Award Received		2016 RACP NHMRC Awards for Excellence - Woolcock Scholarship
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Chief Investigator / Supervisor		Angela Titmuss / Associate Professor Louise Maple-Brown
Administering Institution		Menzies School of Health Research
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	Finish Date:	31 December 2018

PROJECT SUMMARY

This project explores the child health consequences of type 2 diabetes in pregnancy and gestational diabetes mellitus, in the context of a diabetes epidemic in the Indigenous population in the Northern Territory. This will inform design of future interventions to prevent the intergenerational cycle of disease within this high risk population. The project will examine the growth, cardiometabolic risk and developmental outcomes of 18 to 48 month old Indigenous and non-Indigenous children, born to mothers with and without diabetes in pregnancy (DIP).

PROJECT AIMS / OBJECTIVES

Aims:

To compare growth, cardiometabolic risk factors and developmental risk of children born to mothers with HIP to those born to mothers without HIP.

Objectives:

The project has 4 objectives and will:

1. Describe growth (height, weight, BMI) in 18-48 month old children born to mothers with and without hyperglycaemia in pregnancy (HIP), involving the whole PANDORA cohort.
2. Examine anthropometry and nutritional indicators in a subgroup of 18-48 month old children born to mothers with HIP and compare to a subgroup of children of mothers without HIP (Pandora Wave 1). Anthropometric data includes height, weight, BMI, skinfold thicknesses, body part circumferences and bio-impedance.

3. Examine cardio-metabolic risk factors in a subgroup of 18-48 month old children born to mothers with HIP and compare to a subgroup of children of mothers without HIP (Pandora Wave 1), exploring early childhood predictors of later cardio-metabolic disease.

4. Describe developmental risk in a sub-group of 18-48 month old children born to mothers with HIP and compare to a subgroup of children of mothers without HIP (Pandora Wave 1).

SIGNIFICANCE AND OUTCOMES

Hyperglycaemia in pregnancy (HIP), whether Type 1 or 2 diabetes, or gestational diabetes mellitus, provides an early opportunity for intervention in the life course for both mother and baby. However, there are no available data to inform clinical practice and design of interventions regarding follow-up after HIP among the high risk Indigenous Australian population. There is also limited international evidence regarding the impact of HIP on developmental and learning outcomes, and none within the Indigenous Australian population.

The Northern Territory has a disturbingly high proportion of mothers with Type 2 diabetes in pregnancy and so the NT context allows us to address the evidence-gap regarding early growth patterns and development of infants born to mothers with type 2 diabetes (compared to those of GDM mothers and mothers without HIP). Follow-up of their infants is particularly important in light of the evidence suggesting long term impact with regards to chronic disease, growth and developmental outcomes. Evidence demonstrates the higher risk of type 2 diabetes in youth born to mothers with type 2 diabetes in pregnancy (compared to GDM) (44).

The project aims to explore the child consequences of type 2 diabetes in pregnancy and gestational diabetes, so as to inform the timing and types of interventions to prevent the development of chronic disease and developmental risk. The study examines growth, cardiometabolic risk, and developmental vulnerability of children born to mothers with and without HIP (pre-existing diabetes and GDM). There is limited available data from this early age, on biomarker tracking for prediction of later cardio-metabolic disease (beyond the scope of this project), which could then inform future interventions in Indigenous children to prevent chronic disease in adulthood.

Further research will follow these children into adulthood and also assess the efficacy of possible interventions to prevent the development of chronic disease.