



RACP Foundation Research Awards

YEAR 1 PROGRESS REPORT

Project Title	Strategies to reduce the burden of gastroenteritis in Aboriginal children	
Name	Bianca Middleton	
Award Received	2017 RACP P&CHD NHMRC Scholarship for 2017	
Report Date	31 December 2018	
Chief Investigator / Supervisor	Dr Bianca Middleton	
Administering Institution	The University of Western Australia	
Funding Period	Start Date:	1 January 2018
	Finish Date:	31 December 2020

PROJECT SUMMARY

My PhD thesis 'Strategies to reduce the burden of gastroenteritis amongst Australian Aboriginal children', will explore practical, ethical and implementable strategies to reduce the burden of gastroenteritis amongst Australian Aboriginal children, with a particular focus on improving the realworld effectiveness of oral rotavirus vaccine.

PROJECT AIMS / OBJECTIVES

There are three components to this work;

- 1) a systematic review of the literature to evaluate strategies to improve the performance of oral rotavirus vaccine in high rotavirus burden low resource settings.
- 2) a case control study to evaluate and compare the current performance of two licensed oral rotavirus vaccine during a recent epidemic amongst Aboriginal children in rural and remote northern Australia.
- 3) evaluation of the immunological results of a NHMRC funded clinical trial which relaxes the upper age limit of oral rotavirus vaccine administration and gives an additional dose of oral rotavirus vaccine to Northern Territory Aboriginal children aged between six and twelve months (ORVAC study – Optimising Rotavirus Vaccine in Aboriginal Children).

SIGNIFICANCE AND OUTCOMES

Northern Territory Aboriginal children continue to suffer a disproportionate burden of gastroenteritis compared to non-Indigenous children. Epidemics of rotavirus remain common in

remote central and northern Australia and place enormous strains on remote communities and health services. This thesis will explore practical, ethical and implementable strategies to improve the performance of oral rotavirus vaccine and reduce the burden of gastroenteritis amongst the vulnerable population of Australian Aboriginal children.

The retrospective case-control analysis of the G2P[4] rotavirus epidemic in Central Australia and rural/ remote Western Australia, provides a unique and important opportunity to evaluate and compare the performance of two oral rotavirus vaccines ten years after their incorporation into the National Immunisation Program. This will be the first evaluation of the performance of oral RV1 rotavirus vaccine amongst Northern Territory Aboriginal children since 2009. It will also be the first Australian study to evaluate and compare the performance of both RV1 and RV5 rotavirus vaccine amongst rural and remote Australian Aboriginal children during the same outbreak.

This thesis will also examine the preliminary immunological results of a NHMRC-funded clinical trial, which proposes to reduce the burden of gastroenteritis amongst Northern Territory Aboriginal children by relaxing the upper age limit of RV1 administration and scheduling a third dose of RV1 to children aged six to twelve months. This will be the first clinical trial to evaluate both the immunological and clinical effects of administering an additional dose of RV1 vaccine to children older than six months of age.

The pragmatic trial design seeks to evaluate the administration of an additional dose of oral RV1 rotavirus vaccine under real-life conditions, thus increasing the likelihood of a positive trial outcome being adopted into clinical practice. In addition, it will be the first clinical trial amongst Northern Territory Aboriginal children to take a Bayesian adaptive approach, meaning that no fixed sample size will be set and only as many children as required to determine the study outcome will be enrolled. It is expected that the Bayesian design will prove to be a more flexible and pragmatic trial design, resulting in fewer failed trials, and it is contended that this is both the most ethical and practical way to conduct research amongst the vulnerable population of Northern Territory Aboriginal children

PUBLICATIONS / PRESENTATIONS

No publications to date.

Proposed publications for 2019.

- ORVAC study protocol
- RV effectiveness case-control study protocol
- Retrospective case control study of G2P[4] rotavirus epidemic in Central Australia and Western Australia.

Proposed publications for 2020

- Cochrane systematic review on the impact of alternate rotavirus vaccine dosing schedules (delayed first dose) on oral rotavirus vaccine immunogenicity.
- Cochrane systematic review on the impact of with-holding breast-feeding on oral rotavirus vaccine immunogenicity.
- Narrative review of strategies to improve the real-world effectiveness of oral rotavirus vaccine in low-resource high rotavirus-burden settings.
- Analysis of the immunological outcome of an additional dose of oral RV1 vaccine given to Aboriginal children aged 6 – 12mths