NHMRC/Global Alliance for Chronic Diseases Request for Applications for Hypertension in Low and Middle Income Countries – Successful Grants for funding in 2012

A smartphone-based clinical decision support system for primary health care workers in rural India.

**Chief Investigator A:** Dr David Peiris

**Chief Investigators:** Professor Anushka Patel, Professor Stephen MacMahon, Dr Dorairaj Prabhakaran, Dr Gari Clifford, Dr Pallab Maulik, Dr Rohina Joshi, Associate Professor Stephen Jan, Associate Professor Stephane Heritier

**Application ID:** APP1040147

**Administering Institution:** University of Sydney (The George Institute for Global Health)

**Funding:** $930,259 over 3 years

**Project Summary:**
High blood pressure can cause a number of serious heart and blood vessel diseases that are life threatening. This is a rapidly increasing health problem in India where the health care system is under resourced to fight the problem. This proposal uses novel approaches which will enhance the efficiency and capacity of the family doctor and other health care workers using smartphone technology.

Following an initial pilot intervention in rural Andhra Pradesh, a larger study in 45 villages in this area will be conducted to assess the benefits of the approach, with a view to informing a strategy for this and other low and middle income countries.

**Improving blood pressure (BP) control using a simplified treatment strategy including a three-in-one BP lowering pill in Indian patients.**

**Chief Investigator A:** Professor Anushka Patel

**Chief Investigators:** Professor Anthony Rodgers, Dr Dorairaj Prabhakaran, Associate Professor Stephen Jan, Dr Ruth Webster, Dr Pallab Maulik, Professor Simon Thom

**Application ID:** APP1040152

**Administering Institution:** University of Sydney (The George Institute for Global Health)

**Funding:** $1,067,559 over 3 years

**Project Summary:**
High blood pressure is a major contributor to the extent of heart and related diseases in India, particularly in urban settings where prevalence may be as high as 40%, with control of high blood pressure as low as 38%. The use of multiple medications and complex and costly treatment regimens to achieve blood pressure control likely represents a significant barrier to patient adherence.

Combining two or more blood pressure lowering drugs in a single tablet has been shown to be effective in improving control and improving patient acceptance and adherence to prescribed medications. Simplified treatment programs for increasing blood pressure lowering medications have also been shown to be effective by addressing the clinician’s focus on outcome improvement as well as improving patient acceptability.

Although fewer side-effects can be expected from low dose combination therapies, tailoring medication dosing to the individual is more difficult. This issue needs to be addressed in a relatively poorly resourced healthcare setting.
environment as often seen in India. This research will investigate whether use of a simplified three-in-one low dose blood pressure lowering pill, compared to usual care, can improve blood pressure control in patients with mild- moderate high blood pressure. It will also investigate patient and clinician acceptability and cost effectiveness of such a treatment strategy.

Developing a national salt reduction program for India

**Chief Investigator A:** Professor Bruce Neal  
**Chief Investigators:** Dr Jacqui Webster, Dr Dorairaj Prabhakaran, Dr Pallab Maulik, Professor Graham MacGregor  
**Application ID:** APP1040179  
**Administering Institution:** University of Sydney (The George Institute for Global Health)  
**Funding:** $912,437 over 3 years  
**Project Summary:**  
This research will precede and support the development of a national salt reduction program for India as part of a strategy to lower blood pressure in people at risk of serious heart and related diseases. The researcher team will first do a stakeholder analysis including government, industry, consumers and non-governmental organisations. This will be followed by cross-sectional population surveys of 1600 individuals in urban and rural areas of North and South India.

These surveys will estimate baseline mean daily salt consumption through the collection of 24-hour urine samples, the main sources of salt in the Indian diet using 24hr dietary recall methods and population knowledge about the effects of salt on health by questionnaire. The team will then conduct a systematic survey of the salt content of processed foods for sale in major retail outlets.

The formulation of a locally relevant implementation program will be done in conjunction with members of State and National governments, academia, the food industry, health care providers, civil society and other relevant organisations identified by the research. The potential impact of this work is enormous with the implementation of a modestly effective salt reduction program in India projected to have the same impact as plausible smoking cessation initiatives.

Improving the control of hypertension in rural India: Overcoming the barriers to diagnosis and effective treatment

**Chief Investigator A:** Professor Amanda Thrift  
**Chief Investigators:** Professor Brian Oldenburg, Dr Clara Chow, Professor Nihal Thomas, Professor Kavumpurathu Thankappan, Dr Pallab Maulik, Associate Professor Velandai Srikanth, Professor Ajay Mahal, Associate Professor Roger Evans, Dr Rohina Joshi  
**Application ID:** APP1040030 over 3 years  
**Administering Institution:** Monash University  
**Funding:** $1,033,805  
**Project Summary:**  
High blood pressure (hypertension) is increasing in prevalence in urban regions of developing countries, but little is known about its emergence in more rural regions, where 70% of the population still resides. There are
significant barriers to the diagnosis and treatment of high blood pressure in rural regions although defining, understanding and thus addressing these remains problematic.

In regions where economic and other transitions are more advanced, there is a greater prevalence of hypertension and hypertension-related factors such as obesity and physical inactivity.

This proposal is focussed on three diverse rural regions in India, each of which is at a different stage of economic and social transition. This application brings a common approach across differing settings to assess whether barriers to hypertension control in rural regions of India are similar and whether interventions to improve control are applicable across these, and other resource poor, settings in India and other countries.

With the planned multi-site study the researcher team will be able to examine how the barriers to diagnosis and management differ between settings, and how gender, socioeconomic deprivation, and education impact upon the diagnosis and management of hypertension. This information will enable us to develop an intervention program that is suitable across rural regions, and thus contribute to disease prevention at a global level.

Cost effectiveness of salt reduction interventions in Pacific Islands

Chief Investigator A: Dr Jacqui Webster

Chief Investigators: Dr Wendy Snowdon, Professor Bruce Neal, Associate Professor Marjorie Moodie

Application ID: APP1040178

Administering Institution: University of Sydney (The George Institute for Global Health)

Funding: $1,045,593 over 3 years

Project Summary:

There is broad consensus that diets high in salt are bad for health and reducing salt intake is a cost effective strategy for reducing the burden of diseases such as high blood pressure. Available data indicates that salt intake in the Pacific Islands is too high and that the World Health Organisation has been promoting the development of salt reduction strategies in Pacific Island Countries. Consultations to develop strategies have been initiated in several countries.

However, accurate assessments of sodium consumption patterns upon which such strategies can be based on and subsequently monitored are missing. This proposal is for funding to obtain accurate baseline information to inform the development and evaluation of interventions to reduce population sodium intake in Fiji and Samoa. Phase I will consist of a baseline assessment of sodium intake, consumer knowledge and behaviour and sodium levels in foods, alongside an assessment of the most effective channels to change behaviour of consumers and the food industry. Phase II will use this information to develop a comprehensive policy response with interventions targeted at (i) stores (ii) caterers and bakers (iii) food manufacturers (iv) consumers. Phase III will quantify the effectiveness of the national sodium reduction efforts by repeating the measurements done at the baseline assessment phase.

The findings from these surveys will then be used as the basis for policy review and program re-development. Whilst there is a growing body of international evidence about the effectiveness of strategies to reduce sodium, there is little work applying the lessons to developing countries generally or the Pacific Islands in particular. This project will address the urgent need for a more accurate assessment of sodium consumption patterns. This will not only ensure strategies are developed based on the best available evidence but also that the impact of subsequent interventions can be assessed.