

NGED Health Priority Research Summit: The Increase in Susceptibility to Obesity

Meeting: July 18th 2008

The first NGED Health Priority Research Summit on the Increase in Susceptibility to Obesity was held on Friday 18th July from 10:30 – 14:30 at the Hilton Melbourne Airport Hotel. This meeting was a planning meeting.

The overall aim of the summits is to draft a policy document outlining the NGED's stance on research needs and requirements in this field. This document will be used to lobby for funding for large-scale multidisciplinary Australia-wide collaborative projects of this nature that tackle issues of high national priority.

The aim of this meeting was to identify key research questions that will become agenda items for the next summit.

Present: Prof Caroline McMillen (facilitator), Dr James Armitage, Dr Leonie Callaway, Prof Iain Clarke, Prof Paul Colditz, Dr Marina Delpin, Dr Paul Greenwood, Prof Jon Hill, Dr Chris Maloney, Dr Beverly Muhlhausler, Ms Cadence Minge, Prof Chris O'Neill, Dr Rebecca Robker, Assoc Prof Melissa Wake.

Apologies: Dr Matthew Sabin, Dr Ross Tellam.

Summary of key knowledge gaps identified by participants:

Rebecca Robker	<ul style="list-style-type: none">• What are the trans-generational effects?• What do women need to do prior to pregnancy wrt diets, types of exercise & nutrition?• Need to target adolescent girls with lifestyle message wrt obesity -> reduced fertility
Cadence Minge	<ul style="list-style-type: none">• In the presence of maternal high fat diet & insulin sensitivity, there are changes to oocyte quality – what is changing in the oocytes? Does this effect persist in humans?• How do oocyte changes impact on fetal and postnatal growth and development?
Chris O'Neill	<ul style="list-style-type: none">• What re the effects of the environment on obesity? (not genetics alone)
Jon Hill	n/a
Caroline McMillen	<ul style="list-style-type: none">• What is the epigenetic placental effect compared to the epigenetic embryo effect?
Leonie Callaway	<ul style="list-style-type: none">• High sugar intake diet -> how is it transferred to, and how does it affect, the fetus during pregnancy?
Paul Greenwood	<ul style="list-style-type: none">• Long-term impacts on body-composition in large animals• Prenatal vs early postnatal effects (confounding) and the capacity to exacerbate or ameliorate prenatal consequences• Adequate postnatal phenotyping of large animals models -> postnatal 'ontogeny' studies• Permanency of consequences of epigenetic alteration of gene expression (are epigenetic effects reversible?)• Interactions with genotype

Chris Maloney	<ul style="list-style-type: none"> • What is appropriate maternal nutrition? • Need for more human data.
James Armitage	<ul style="list-style-type: none"> • As there is a range of animal models available, judging by participants at this summit, this summit should aim to target projects at the appropriate animals to most effectively answer our research questions. • What part of the brain is involved?
Beverley Muhlhausler	<ul style="list-style-type: none"> • Strategies for interventions • Best time to introduce those interventions? • Obese fathers -> sperm quality?
Paul Colditz	n/a
Melissa Wake	<ul style="list-style-type: none"> • Can we predict which offspring will become obese? • Which offspring resolve and how? • Which components of diet would work? • How important is social programming of obesity?
Iain Clarke	n/a

Round table discussion & identification of key research questions & how summit participants can address them

What's the contribution of developmental programming to obesity?

Pre-conception to childhood study required (US study of 100 women is about to commence)

NGED could provide a policy platform to NCRIS for Biobank.

What are the features on environment that should be collected?

Callaway:

- Clinical data collection on BMIs via obstetricians
- Weight and height data of pregnant women are not currently collected.
- Would be ideal to include a section for recording this data in the standard data collections that obstetricians currently do.
- Computerised
- [Population study]

Robker:

- Collect adolescent data at cervical cancer vaccination time.

Clarke:

- Genetic screening
- 85% of obese people have a mutation in melacorticine.

Clarke & McMillen:

- Look at the interplay between epigenetics & environmental effects eg. water quality, dioxins & their contribution

How important are pre- & peri-conception, & post-natal periods for obesity development?

Animal Models:

- Ideally collaborators should "choose a species"
- Align animal studies to what's being done in humans
- Greenwood: pull together animal literature (not previously done)
- O'Neill: Introduce more animal spp. Eg. Zebrafish & Drosophila

- Colditz: use of animal models that address questions in humans
- McMillen: Use animals to do intervention studies
- Callaway: Focus on questions that can be informed by animal studies before looking at them in humans.

Policy Suggestion: Pre-pregnancy care

- Would deal with health of eggs, stress, diet, health, social issues
- Would address indigenous health

- Wake: Would be ideal to see the set-up of a national network of prenatal clinics
- Robker: Cervical cancer vaccination time would be an inlet for education on obesity.

Other suggested key research questions/foci:

Callaway:

- What is impact of rapid weight loss?

Wake:

- Why has there been an obesity epidemic over the last 50 years? -> environmental issues
- What are the main contributors & why
- Tracking is important. What is happening now & in the future?
- Identify what is needed to support high quality human research

Future meeting: Marina Delpin will prepare a summary of today's discussions & circulate to all participants, & those absent from today's meeting. A future meeting will be scheduled based on participants' availability.

OVERVIEW

NGED Health Priority Research Summit on the Increase in Susceptibility to Obesity

As reported in the NGED Newsletter (July 2008)

July 18th saw the gathering of thirteen Australian researchers who focus on diverse aspects of obesity research.

The first NGED Health Priority Research Summit on the Increase in Susceptibility to Obesity was a half-day meeting facilitated by NGED co-convenor Professor Caroline McMillen. This summit had a clear goal: to identify key knowledge gaps to shape an agenda for cross-discipline research in this area.

A strength of the NGED summits is the unique opportunity they provide for laboratory-based scientists, clinicians & epidemiologists to gain a greater understanding of each-others' research area first-hand.

It was clearly communicated to the participants, NGED members and scientists from organisations outside of the network, that the NGED wishes to sponsor initiatives that will grow out of these summits, such as focus group meetings and symposia.

Dr Rebecca Robker from the Department of Obstetrics & Gynaecology, University of Adelaide, presented the keynote address that opened the meeting, reporting on her research into the effects of diet-induced insulin resistance on oocyte quality. Following this presentation, participants gave a synopsis of their research interests and findings and described what they identify as the key knowledge gaps and research needs in their field. Topics covered included epigenetics, nutritional programming of insulin resistance and obesity, physiological effects of maternal obesity on the foetus, neuroendocrinology and human population studies.

This meeting of minds provided an ideal platform for debate and discussion about what is needed to tackle these issues and further understand the role of the environment and genetics in obesity.

"It was a great pleasure to hear about (just some of!) the great developmental biological work that's going on around Australia – it's all too rare for population 'people' researchers to have that kind of opportunity" said Dr Melissa Wake, a summit participant and the Research Director of the Centre for Community Child Health at the Royal Children's Hospital, Victoria, Associate Professor at The University of Melbourne and Senior Research Fellow at the Murdoch Childrens Research Institute.

The aims of the obesity summit were clearly achieved: (i) to introduce researchers from across Australia from different fields; and (ii) to discuss how to address the knowledge gaps & identify the NGED's role in doing so.

The key points identified and debated at this summit will act as agenda items to be addressed at the next summit.

"I'll be very interested in the aftermath – these are big questions to answer, and surely our efforts could be better underpinned by superb national systems for making the important questions seen and debated; coordination and collaboration; and fundamental access to the population human data to support the directions and answers of the animal research" stated Dr Melissa Wake.

Professor Caroline McMillen and Dr Marina Delpin are currently working towards the planning of a second summit. The main aim of the series of summits will be to refine a policy agenda for the NHMRC on the NGED's stance on this national research priority.

Marina Delpin