

NGED Health Priority Research Summit: Allergies

Minutes: October 8th 2008

The first NGED Health Priority Research Summit on causes of the alarming rise in frequency of allergies in children was held on Wednesday 8th October from 11:00 – 15:30 at the Stamford Grand Hotel, Adelaide.

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: Vicki Clifton (facilitator), Marina Delpin, Phil Hansbro, Richard Harding, Stuart Hooper, Klaus Matthaei, Els Meeusen, Tim Moss, Debbie Palmer, Imme Penttila, Anne-Louise Ponsonby, Mimi Tang.

Apologies: Paul Foster, Nicki Hodyl, Vanessa Murphy, Susan Prescott, Peter Sly.

Participant	Key Knowledge Gaps / Areas of Research Need
Imme Penttila	<p>(i) Early events in the neonatal period that interfere or promote the Th1/Treg /Th17 development.</p> <p>(ii) What role does breast milk /TGF beta play in allergy development. Linked to this is the question of when to introduce antigens into the diet to prevent allergic sensitization.</p> <p>(iii) Detailed analysis of the local gut or airway immune response to antigens in the neonatal period. What occurs in the gut mucosal immune system during food antigen introduction when children have an allergic vs non-allergic predisposition?</p>
Phil Hansbro	<p>(i) How do infections in early life influence the development of asthma? Permanent alterations of physiology, function, immunity, stress, sex differences Axis of immunity Th2/Tregs/Th17</p> <p>(ii) How do different infections impact on asthma development?</p> <p>(iii) Role of infections in exacerbations</p> <p>(iv) Novel therapeutic strategies; targeting infection</p> <p>(v) Translational research into humans</p>
Anne-Louise Ponsonby	<p>(i) Investigation into disparate trends with the steep and increasing food allergy and other allergy patterns but a plateau for child asthma over recent time (see Figure 1, below)</p> <p>(ii) Does abnormal early life immunoregulation reflect general or specific immuno-inflammatory upregulation?</p> <p>(iii) Other immune disorders such as type 1 diabetes are also increasing over time, as well as allergy and we should try to understand these in tandem – ie study designs that research allergy within the context of these other diseases also.</p> <p>(iv) How can we bring together mechanistic and lab studies with population work? Not how grants are currently funded.</p>

	<i>Eg. given by Clifton: Atopic asthma is not recorded in epidemiological studies so we are missing information on intergenerational impact and rate of atopic disease.</i>
Vicki Clifton	<p>(ii) Epigenetics & atopy: this is an emerging area for allergy research. Hypotheses relate to airway remodelling. What epigenetic events during pregnancy alter offspring immune function?</p> <p>(ii) Is the human immune system programmed <i>in utero</i>?</p> <p>(iii) Maternal diet during pregnancy: avoiding food allergens during pregnancy vs exposure</p> <p>(iv) How do suboptimal pregnancy conditions affect immune tolerance?</p> <p>(v) Clear gaps in prenatal research:</p> <ul style="list-style-type: none"> • Large data sets reviewing pregnancy related events and adult disease with a specific focus on atopy and its intergenerational impact • Prospective studies examining maternal health and immune profile and relating to fetal immune cell function and early life immune health • Animal studies tracking role of pre-natal epigenetic alterations of gene expression on post-natal immunity and airway remodelling. • Intergenerational impacts of allergy • Contribution of maternal and paternal gene polymorphisms to asthma and atopy
Debbie Palmer	<p>(i) Interventions. Diet during pregnancy is viewed as being important in preventing allergy via probiotics, omega-3... More research using larger cohorts is required to determine the best dosage and timing of delivery.</p> <p>(ii) Understanding of the timing of the introduction of solid foods to infants is important to reduce allergies. What are the effects on immune function.</p>
Els Meeusen	<p>(i) Why do some individuals in an outbred population become allergic and others don't?</p> <p>(ii) Do prenatal factors affect susceptibility to allergy and asthma?</p> <p>(iii) Sheep are a good animal model for investigating gender differences.... Question that arose from Clifton can be tested in sheep: investigation of male vs female mortality from asthmatic mothers.</p> <p><i>Use of a sheep model to investigate allergy and asthma based on house dust mite allergen. This model answers basic questions of clinical relevance.</i></p>
Stuart Hooper	(i) Does premature exposure to air or injurious ventilation cause chronic lung diseases such as asthma?
Richard Harding	<p>(i) What is the link between pre-term birth and asthma? Can changes to the airways be permanent and alter lung function and possibly asthma risk through life?</p> <p>(ii) Are there changes in immune function in airways? Could it be altered and influencing inflammatory pathways?</p>
Mimi Tang	<p>(i) Immune mechanisms of allergic disease – what's going on? Immune factors regulating it?</p> <p>(ii) Role of intestinal microbiota? Probiotics & prebiotics</p> <p>(iii) Role of genes and environment eg. interaction with farm animals</p>
Tim Moss	<p>(i) Effects of antenatal corticosteroids on the development of the immune system are poorly defined</p> <p>(ii) What are the long term effects of common prenatal events on development and function of the postnatal immune system?</p>
Klaus Matthaei	Mouse models

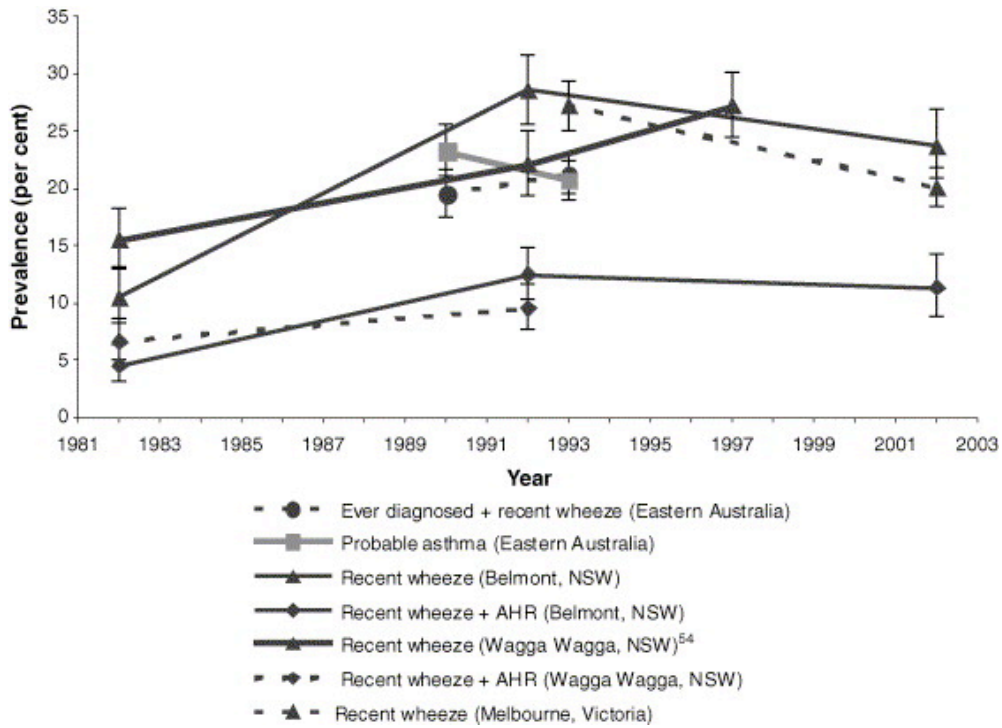


Figure 1. Trends in the prevalence of asthma, children aged 13 years and under, Australia, 1982–2002. Adapted from Australian Centre for Asthma Monitoring. *Asthma in Australia 2003*. Canberra: AIHW, 2003.³ Note: chart shows time series but different definitions are used. Ever diagnosed + recent wheeze: Asthma = ever had asthma diagnosed by a doctor plus wheeze in the last 12 months. Probable asthma: Asthma = wheeze on three or more occasions in last 12 months, or cough at least once a week in the last 12 months, or a diagnosis of asthma. Recent wheeze = wheeze in the last 12 months. Recent wheeze + AHR: Asthma = wheeze in the last 12 months plus airway hyper-responsiveness.