Paediatric focus

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Request for contributions

We welcome submissions of articles from paediatricians, GPs with a special interest in paediatrics and academics etc for publication in this newsletter. Please email articles to: Robin.Green@up.ac.za or lakeann@mweb.co.za

Editorial

Professor Robin Green (Editor)
Professor and Head Department of Paediatrics and Child Health,
University of Pretoria

Welcome to 2012. We are now into our third year and growing up strong. We have an exciting list of submitted and promised articles to keep you reading long into the night this year. We are getting going with three in this issue and a Congress report.

I want to touch briefly in this editorial on the concept of Ethics in Paediatrics since the idea of 'Ethics and Vaccination' has been raised by Prof Charles Feldman. Since we, as Paediatricians, look after the most vulnerable members of society it is important for us to continually re-appraise our ethical and legal stance to our patients. The Child Act of 2005 that was re-promolgated in 2010 has made some very interesting points.[1]

Did you know:

- That a Child at the head of child-headed household is described as a 'Caregiver' for legal purposes;
- That a Child > 12 years old or < 12 years but of sufficient maturity to understand the benefits, risks and social implications of such a test, may give consent for an HIV test;
- That a Child > 12 years old or < 12 years but of sufficient maturity to understand the benefits, risks and social implications of such a test, may give permission to disclose his/her HIV status;
- The age of consent for sex is 16 years or older and in a child < 16 years old sex is a sexual offence and a healthcare worker becoming aware of this needs to report it;
- Boys can consent to circumcision if >18 years of age while boys < 16 years can only be circumcised for "religious reasons" or "medical reasons" on advice of medical practitioner;
- Boys > 16 years old can undergo circumcision for any reason but must receive counselling and can refuse;
- A girl of any age - "any female any age" can agree to abortion. In the case of a minor they should be advised to consult with their parents;
- A child may consent to his or her medical treatment or to medical treatment of his or her child;
- Any child > 12 years of age, and is of sufficient maturity and mental capacity to understand the benefits, risks, social and other implications of such treatment, may consent to medical treatment;
- Any child may consent to his or her surgical treatment or to surgical treatment of his or her child if > 12 years of age, and is of sufficient maturity and mental capacity to understand the benefits, risks, social and other implications of such treatment, but must be assisted by his or her parent or guardian.

May I urge you to chat to an Ethicist or read the Child Act. It is both interesting and essential for all Paediatricians. But above all else may I urge you to keep adequate, if not excellent, notes on all you do, including the things you ask parents to do or consent to.

Cheers
Robin J Green (with thanks to Prof Charles Feldman)

1. Republic of South Africa Act no. 38 of 2005; Children's Act, 2005

In Memoriam

It is with profound sadness that I need to mention that our friend and colleague Dr Rene Heitner passed away on January the 13th this year. After a long battle with illness Rene passed away. Rene was a dedicated and kind Paediatrician who served the children of Johannesburg and South Africa for many years. He was our leader in the field of the storage disorders and he sourced a significant amount of local and international funding to allow children with these conditions to live and thrive.

Rene we are going to miss you and the significant contribution you made to many a medical meeting.

Dr Rene Heitner
25 April 1943 - 13 January 2012

Food allergies

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Twenty to thirty years ago people started to believe that allergic reactions, including food allergy, were increasing in prevalence. Since then a lot of research has been conducted. It became apparent that food allergy is a fact and not a myth and that there is still a constant rise in food allergy across the world.

The aim of this article is to provide you with accurate, up-to-date and as practical as possible, information on a field that is complex to understand, moving very quickly and that is still full of controversy. This article gives an overview of food allergy but focusses specifically on Non-IgE mediated food allergy. One of the best examples thereof, is Non-IgE mediated cow's milk protein allergy.

Definition

The World Allergy Organisation defines any adverse reaction to food as food hypersensitivity. This can be divided into immune-mediated reactions (true food allergy) and non-immune mediated reactions.

True food allergy can again be divided into IgE mediated food allergy and non-IgE mediated food allergy. The majority of food allergies are IgE mediated. Mixed types also occur. True food allergy is always caused by milk protein.

IgE mediated food allergy vs non-IgE mediated food allergy

IgE mediated	Non-IgE mediated
Quick onset	Delayed onset
Anaphylaxis	Eczema/reflux oesophagitis
Well defined mechanism	Mechanism unclear
Easy to diagnose	Harder to diagnose
Easy to relate typical food	Difficult to relate to specific food
Validated tests	No validated tests
Mostly persistent	Likely to outgrow

Epidemiology

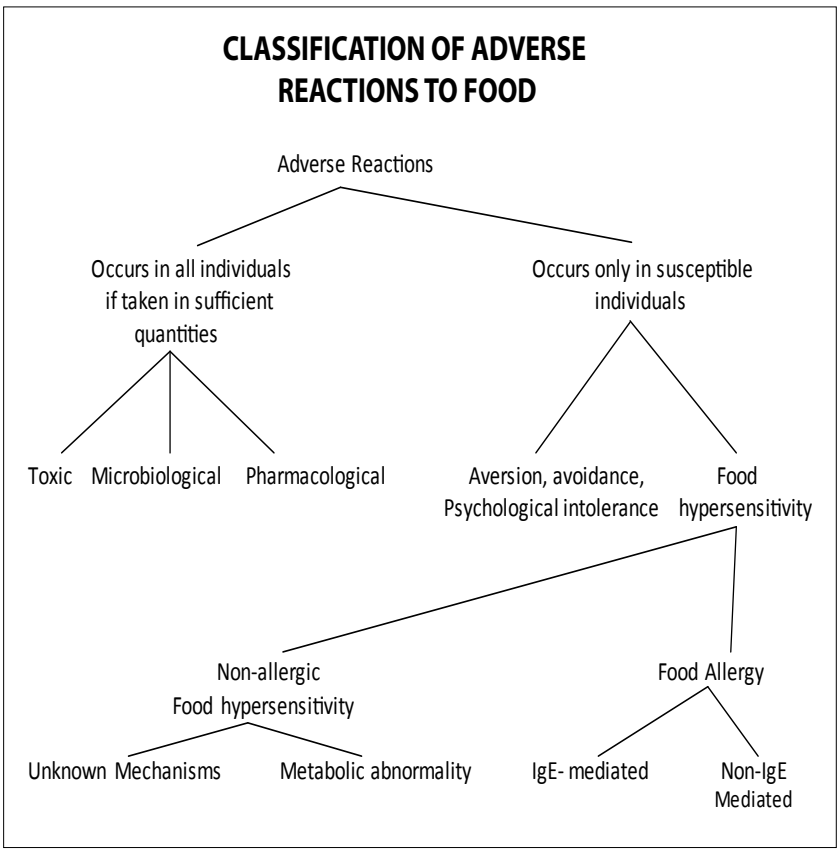
- 33% of parents think their child has a food allergy;
- 2-3% of children worldwide have true food allergy;
- Prevalence might be higher (5-8%) in western countries in the first year of life;
- Lower incidence in breastfed infants (0.5%)
- Single food allergies are uncommon;
- Universally, milk and egg allergy are the most common;
- Food accounts for more than 90% of childhood anaphylaxis;
- Non-IgE mediated food allergy is becoming more prevalent.

IgE mediated food allergic reactions

- General – skin, gastro-intestinal, respiratory and neurological signs;
- Anaphylaxis;
- Exercise-induced anaphylaxis;
- Oral allergy syndrome.
- Children seldomly present with cardiovascular compromise, they commonly have urticaria, angioedema of the mouth, wheezing and stridor;
- Approximately 50% of children with a food allergy will wheeze;
- Active asthma is the major risk factor for severe allergic reactions;
- Some severe asthma attacks are actually anaphylaxis;
- Nearly all recorded child death from anaphylaxis due to food allergy had uncontrolled asthma;
- Risk factors for severe reactions are very high levels of specific IgE to cow's milk, casein allergy and concomitant asthma.

Mixed allergic reactions

- Eosinophilic esophagitis;
- Eosinophilic gastroenteritis;
- Dietary protein enteropathy;
- Asthma;
- Eczema;



Non-IgE mediated food allergy reactions

Gastro-intestinal	Other
• Eosinophilic gastro-enteropathies • Food protein induced proctocolitis • Food protein induced enteropathy • Food protein induced enterocolitis • Gastro-intestinal motility disorders	• Eczema • Reflux, colic • Constipation • Contact Dermatitis

IgE mediated food allergy: Clinical features

Organ system involved	Symptoms
Nervous system	Dizziness, weakness, syncope, seizures
Eye	Pruritus, conjunctival redness, lacrimation
Nose	Pruritus, congestion, sneezing, clear rhinorrhoea
Upper airway	Hoarseness, stridor, oropharyngeal or laryngeal oedema, cough, airway obstruction
Cardiovascular	Tachycardia, hypotension, arrhythmias, cardiac arrest
Lower airway	Chest tightness, dyspnoea, tachypnoea, accessory muscle use, cyanosis, wheezing, respiratory arrest
Skin	Sensation of warmth, flushing, erythema, general pruritus, urticaria, angioedema
Gastrointestinal	Nausea, vomiting, cramping, abdominal pain, diarrhoea (often bloody)

Diagnosis of IgE mediated food allergy

1. History
   a. Does your child have any allergies?
   b. Is your child allergic to any food?
   c. Can your child eat a whole helping of the following food?
      i. Milk
      ii. Eggs
      iii. Nuts etc
   d. Aversion may be an allergy.
   e. Common associations:
      i. Egg with peanut;
      ii. Milk with soy;
      iii. Peanut with sesame, tree nuts.
2. Allergy testing – skin prick test or specific IgE and component testing
   a. Use cut off values sensibly – a clear history might be accompanied by a negative test
3. Food challenges

Management of IgE mediated food allergies

1. Allergen avoidance:
   a. Reading of labels;
   b. Exclusion diets with supplementation.
2. Recognition and treatment of reactions:
   a. Education of family members and carers;
   b. Have a written treatment plan;
   c. Stress early treatment.
      i. Antihistamine;
      ii. Adrenaline auto-injectors;
   d. Carry medications at all times;
   e. Medic alert bracelet;
   f. Desensitisation.
3. Comorbidities:
   a. Children with one food allergy often have others;
   b. Early severe eczema more likely in food allergic children;
   c. Food allergy predicts later respiratory allergy (50 – 80% of egg allergic children asthmatic by age 7 years).
4. Follow up:
   a. Allergy testing for possible tolerance with view to challenges;
   b. Revision of Epipen technique and allergen avoidance;
   c. Dietetic review;
   d. Review of comorbidities especially asthma;
   e. Interval depends on allergen and comorbidities.

Non-IgE mediated food allergy: Clinical features
(Symptoms can be divided in foregut, midgut and hindgut symptoms)

Babies and infants		
Foregut	• Vomiting • Gastro-oesophageal reflux - Persistent effortless vomiting - Back arching • Grimacing	• Food refusal • Breastfeeding difficulties • Drinks better at night compared to daytime • Persistent crying/colic
Midgut	• Failure to thrive • Diarrhoea with nappy rash	
Hindgut	• Diarrhoea • Blood and mucus in stools • Constipation – strain and pass watery stools	• Peri-anal rash • Crying evenings • Night wriggles
Older children		
Foregut	• Vomiting less common • Reflux oesophagitis • Halitosis • Dental caries	
Midgut	• Failure to thrive – rare sign, growth is mostly normal	
Hindgut	• Diarrhoea • Urgency (gastro-colic reflex) • Mucus and blood • Constipation	• Peri-anal redness • Flatus • Functional abdominal pain and irritable bowel syndrome

Most frequent symptoms seen in cow's milk protein allergy: Mild to moderate symptoms

Organ involvement	Symptoms
Gastro-intestinal	Frequent regurgitation
	Vomiting
	diarrhoea
	Constipation with/without peri-anal rash
	Blood in stools
	Iron deficiency anaemia
Skin	Atopic dermatitis
	Angioedema and urticaria
Respiratory	Runny nose (otitis media)
	Chronic cough
	Wheezing
General	Persistent distress or colic

Alarm symptoms and findings indicating severe cow's milk protein allergy

Organ involvement	Symptoms
Gastro-intestinal	Failure to thrive due to chronic diarrhoea/ vomiting or food refusal
	Iron-defiency due to occult blood loss
	Hypoalbuminaemia
	Endoscopic enteropathy/severe colitis
Skin	Severe atopic dermatitis
Respiratory tract	Acute laryngoedema
General	Anaphylaxis

Diagnosis of non-IgE mediated food allergy

1. All in the history:
   a. Feeding – breastfeeding or bottle feeding;
   - The history should include asking about specific symptoms;
     - Establish the severity – mild, moderate or severe;
   - Family history of atopy:
     - One atopic parent – increase risk by 20 - 40%;
     - One sibling – increase risk by 25 - 35%;
     - Both parents atopic – increase risk by 40 - 60%.
2. All in the elimination
   - Mild to Moderate symptoms:
     - If breastfeeding – exclusion diet for mother – exclude all milk and egg for 2 – 4 weeks, then slow reintroduction;
     - Extensively hydrolysed formula for 2-4 weeks – if no response change to elemental milk such as Neocate
   - Severe symptoms:
     - If breastfeeding – exclusion diet for mother;
     - If bottle feeding: Neocate challenge for 2-4 weeks, then;
     - Extensively hydrolysed milk challenge thereafter:

Casein-based formula	Whey-based formula
• Similac Alimentum	• Alfare
• Novolac Allernova	• Pepticate
• Nutramigen	

If symptoms get worse on an extensively hydrolysed formula go back to elemental milk and continue with this for at least 6 months.

Treatment of non-IgE mediated food allergy

1. Treatment should be multi-disciplinary - an allergologist, gastroenterologist & dermatologist should be involved for optimal management.
2. Patient education is extremely important – parents need to buy into diagnosis.
3. Diet:
   - Breastfeeding with exclusion diet managed by specialised dietician, calcium supplementation;
   - Extensively hydrolysed milk feeds or elemental feeds;
   - 98% response but sometimes difficult mostly due to cost issues;
   - Severe cases occasionally needs admission with naso-gastric feeds;
   - Older children – elimination of cow's milk, soy, egg, wheat for 3-6 weeks with slow reintroduction – need to check dietary adequacy;
   - If pt does have true CMPA maintain on elimination diet for at least 6 months but preferably for 9 to 12 months before rechallenging.
4. Possible treatment if dietary management has failed or the patient partially responded
   - Antihistamines;
   - Sodium chromoglycate;
   - Leukotriene antagonists;
   - Exclusion of other conditions.

Useful tips

1. CMPA definitely exists.
2. Do not tell parents a baby has no allergy just because a skin prick test or RAST test was negative – always consider the history.
3. If GORD does not improve on PPI's, think ALLERGY! ALLERGY! ALLERGY!
4. IgE mediated anaphylaxis in young babies should not be missed – they are often overlooked.
5. Allergen avoidance cannot be overemphasised.
6. Available milks for management are expensive but cost-effective in the long run.
7. Treatment of CMPA must be in conjunction with an allergy-trained dietician.
8. An HA formula has no place in the treatment of cow's milk protein allergy.
9. Extensively hydrolysed milks have a bitter taste compared to the elemental formulae.
10. Babies normally take well to the milk despite the smell or the taste of the milk.
11. Babies sometimes want to feed more frequently on these milks.
12. The stool pattern frequently changes with these milks to a more loose consistency, the stools are often also more green in colour.
13. It takes approximately 3 to 5 days for gastrointestinal symptoms to improve, not to disappear, and other symptoms takes much longer to resolve.
14. Children with confirmed IgE-mediated food allergy and previous anaphylaxis should never be challenged at home with the culprit food.

Additional reading

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Ethics and Vaccination

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The four clusters of principles on which ethics is based are autonomy, non-maleficence, beneficence and justice. Autonomy literally means "self rule" and recognises the decision-making capabilities of the autonomous person. It, together with justice, is among the more modern principles of ethics. Non-maleficence means "do no harm" - "First (or above all) do no harm" - and is arguably one of the oldest principles of ethics. Beneficence means "do good" and is hopefully what all medical practitioners strive to do for their patients on a daily basis. However, it is not always possible to only do good and never to do harm. Many of the medications we give our patients, or the interventions we perform on them, are potentially associated with harm, as a consequence of side-effects or complications. It is therefore always important to balance the potential benefits against the perceived risks to determine whether an action is likely to be ethical, with the recognition that the likely benefits should always outweigh the likely risks. Justice encompasses a number of concepts, of which one is distributive justice, which includes a consideration of how equitably to distribute or utilise benefits and/or resources, for the greatest good, particularly in the presence of resource constraints. All these principles can be evoked in discussion when giving consideration to vaccinations and their use.

Mandatory vaccination

Mandatory vaccination raises a number of ethical issues and pits the principles of "non-maleficence" against that of individual "autonomy". In the case of serious infectious diseases, such as smallpox, mandatory vaccination was associated with the disappearance of the infection and the virus from the community, with the virus now existing only in specialised laboratories. However even in the 19th century, in the presence of clear evidence of its benefit, and faced with serious smallpox outbreaks, routine vaccination against this infection was hindered by a burgeoning anti-vaccination movement. It is said that in 1910 Sir William Osler angrily challenged 10 individuals who opposed vaccination to join him and a team of 10 vaccinated volunteers to go out together to assist with the next smallpox outbreak. Compulsory vaccination laws have been withdrawn in many countries because of strenuous opposition to that concept. It appears that the only condition for which vaccination is compulsory in South Africa, at the current time, is "yellow fever" although parents wishing to enrol children into the schooling system need to show proof of valid childhood vaccination. In some countries, such as the Scandinavian countries, the need for mandatory vaccination has been replaced by very comprehensive vaccination programmes well accepted in the community through information, education and persuasion.

Seasonal Influenza infections

More recently, and particularly with the threat of an outbreak of pandemic influenza, and the sudden appearance of pandemic H1N1 ("swine 'flu"), the discussion about mandatory vaccination has once again been raised. For example, hospital patients with influenza are a potential source of infection for healthcare workers (HCW) that are not immunised, with an estimated attack rate in HCW of around 18-24%. Furthermore, HCW often continue to work even if they do develop symptoms of influenza and sometimes even asymptomatic infections may occur. The efficacy rate of the currently available influenza vaccines is around 70-90% and the vaccines are safe, with mild side effects occurring in less than 10% of recipients, being compelling arguments in favour of vaccination. Routine vaccination of HCW could be seen to be ethically justified, based on the ethics principle of non-maleficence, in order for them to avoid doing harm to their patients. However, vaccine uptake by HCW is often very poor and rarely reaches above 60% even when the vaccine is free and easily accessible. The reasons given for HCW not getting vaccinated are fear of side effects, a belief that influenza is not severe, or that vaccination is either ineffective of actually causes illness, even influenza itself, or because of a lack of time. This has suggested the need for stronger measures to be taken to get HCW vaccinated.

A number of intervention have been utilised in an attempt to improve the uptake of the vaccine by HCW, including education, and even efforts to make vaccination compulsory. There have therefore been strong recommendations supporting mandatory yearly vaccination of HCW against influenza to prevent transmission of the infection by them, should they get infected, particularly to vulnerable people in their care, including the very young, the elderly and immunocompromised patients. Some healthcare institutions have attempted to introduce mandatory vaccination of HCW in their facilities. The concept of mandatory vaccination of HCW against influenza has been supported by a number of organisations including the Infectious Diseases Society of America, the American College of Chest Physicians and the New York State Department of Health. There have been attempts not only to make vaccination mandatory, but also legislating this as a requirement for licencing, wth institutions hoping to introduce it as a condition of employment. However, these measures have often been successfully challenged in court by HCW, particularly citing the case that mandatory vaccination is contrary to individual HCW autonomy.

However, some experts in the field have suggested that the time has come to change this negative paradigm of mandatory vaccination, given the fact that there are compelling arguments in its favour and few compelling ones against. Such experts cite the fact that HCW accept a range of other moral and professional responsibilities, including some restrictions on their own liberty, such as a myriad of workplace rules (e.g. uniform and dress codes, enforcement of alcohol and smoking ban and many others) but yet, for some reason, are averse to mandatory vaccination. These experts counterbalance the ethical discussions against mandatory vaccination by indicating that the right of individuals to accept or refuse such an intervention and to have their own freedom to choose what they do depends on a number of factors, not least of which is how these choices may impact on others.

Pandemic influenza and the new "pandethics"

Pandemic influenza itself comes with a myriad of important decisions and it is considered important to base all these decisions on sound ethical values. There are four main ethical issues that need to be comprehensively addressed as part of pandemic planning, Decision makers and the public need to be part of these deliberations so that most people would consider that the plans are both fair and most beneficial for public health. These four main ethical issues are:

- The duty of HCW to provide patient care during an outbreak of a communicable disease (the duty to treat);
- Restricting the liberties of individuals in the greater interest of the public by measures

that may include quarantine (coercive social distancing) – similar considerations also in the fourth issue below;

- Prioritisation and the fair allocation of resources that are scarce during an outbreak, which may include, among other factors, limited availability of vaccination, antiviral agents, antibiotics, and mechanical ventilators (should include discussion on mandatory vaccination of HCW, as discussed above);
- The issuing of global governance ordinances, such as travel advisories;

Within the debate regarding pandemic influenza vaccination comes the consideration of who should receive priority for vaccination should only limited amounts of the vaccine be available. Would a child first policy succeed? There has been a consideration that maybe children should be prioritised for influenza vaccination, based not only on the recognition that the attack rate of influenza in children is high and that the infection may be more serious, with significant consequences, but also the idea that children may be the "mixing vessel" for the dissemination of the infection, acquiring the infection from other children that they are in contact with, such as at school, and then taking the infection home, potentially to vulnerable individuals in their household. There would also be the question about whether prioritising childhood vaccination would be sellable to the public or even whether it would be taken up by parents.

Parents sometimes face difficult internal dilemmas when deciding on voluntary vaccination for their children. While on the one hand they may consider that the vaccine may be effective in preventing infection in their child (beneficence), they may counterbalance that by a concern that there may be significant side effects of the vaccine that may do harm to their child (maleficence). These concerns may also be reinforced by anti-vaccinationists, who believe that vaccination, in general, is harmful. As mentioned earlier, immediately after the very first vaccines were introduced, opposition to vaccination has existed. The provision of accurate information is a major aspect of helping parents make immunisation decisions.

MMR vaccination

One area that has raised considerable concern in childhood vaccination has been the debate about the use of the MMR (measles, mumps, rubella) vaccine and whether its use is associated with the subsequent development of autism. This concept was published in an hypothesis paper in the Lancet 1998 by Doctor Andrew Wakefield and his team of researchers. The concept arose following the anecdotal reports of some parents that the autism in their children appeared to arise following MMR vaccination. The explanations suggested as to the mechanisms by which this may occur included the possibility that the vaccine damaged the lining cells in the bowel allowing enteropathic molecules to enter the circulation, or through the agent thiomersal, (also known as thimerosal) a mercury related compound that was contained in the vaccine, or through the fact that administering multiple vaccines together may overwhelm the immune system. Subsequent to these reports many parents stopped vaccinating their children against MMR, with a subsequent increase in such infections in many parts of the world. Subsequent studies failed to confirm the association between MMR vaccination and autism and the possibility that thiomersal caused autism was recently ruled scientifically unsupportable in a court of law in the US. Subsequently 10 of the 13 authors of the Lancet article retracted the interpretation of the data, and recently, in 2010, the Lancet has retracted the article. Doctor Wakefield was recently found guilty by the General Medical Council in the UK of "dishonesty and irresponsibility" (BMJ 2010; 340: c593).

Conclusions

Many claims, including unsubstantiated claims, against vaccines have fuelled concerns about the safety of vaccination and have done much harm for the vaccination cause in general. Clearly appropriate vaccination has saved many lives. Most of the conditions for which vaccinations are developed are potentially very serious conditions, even life-threatening and, in general, any perceived side effects need to be counterbalanced against the enormous benefits that effective vaccination has brought.

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Vitamin and mineral supplementation in children

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The use of vitamin and mineral supplements is growing rapidly.[1] The market is fuelled by media interest and claims by "alternative therapists" who promote their use as part of a cure for various diseases and ailments – with very little scientific evidence supporting their use – and a public that has become increasingly jaded with the ability of traditional medicines to help an increasing number of lifestyle diseases.

Our country is also an amalgam of both first and third world health environments where malnutrition in some areas is rife. Vitamin deficiencies are well-described and certainly evident in many parts of the country and vitamin supplementation in these areas should be used.

It is the use and perhaps "abuse" of supplements in the overnourished areas of South Africa that should be questioned. The majority of adults in the USA take one or more supplements every day. Their children are no different. In a dietary survey of British adults in 1999,[2] it was found that the people who take supplements are those least likely to need them.

The need for supplementation

There is also much information about the vitamin deficiencies, somewhat less information about the acute toxicity of vitamin overdoses and almost no information about the chronic long-term use of vitamins in high doses. This is due in part to the fact that until recently, there was little information about upper tolerable limits for most vitamins. There is even less data in children. In the 1950s, British foods were liberally fortified with Vitamin D and statistics at the time showed an unusually large number of cases of "Idiopathic Hypercalciuria".[3] The British Paediatric Association at the time estimated an intake of 4000IU per day in healthy children consuming milk, cereal and cod liver oil. The new guidelines by the BPA were then introduced which decreased significantly the fortification of food products and cases of hypercalcaemia dropped from 7,2 to 3 cases per month.

In addition, we are bombarded on a daily basis by information about the rising costs of healthcare and the increasing decline of the "health rand". Non-compliance with medication is also problematic and one has to wonder to what extent this is due to the increasing medication costs rather than an aversion to the use of the medication. Considering that supplements are not cheap, use of most costing a couple of hundred rands at least, discouraging the unnecessary use of supplements is an important consideration in promoting good health.

In South Africa, food fortification has become mandatory since 2004 and there is standard supplementation of cereals and porridges, many fruit juices and cooldrinks as well as in many children's yoghurts.

Regulated food supplementation in South Africa

In addition to the stand-alone supplements, an increasing amount of food is supplemented as a rule. In South Africa, food fortification has become mandatory since 2004. Iron, Zinc, Selenium, Vitamin A, Riboflavin, Thiamin and Vitamin are added to all maize and wheat bread flour. There is standard supplementation of cereals and porridges, supplementation of many fruit juices and cooldrinks as well as in many children's yoghurts.

UK guidelines

In 1991, the Deparment of Health in the UK issued a report which gave guidance on appropriate levels of all nutrients, including vitamins and minerals, for the population of the United Kingdom.[4] This estimate is likely to be an overestimate of requirements for the majority of their population, but dieticians and clinicians make use of it as a reference point for the assessment of nutrient intake. This was taken a step further in the United States when an advisory committee to the Institute of Medicine, Food and Nutrition Board in Washington DC, published a comprehensive review of suggested recommended daily allowances for a variety of vitamins and minerals – and in addition, attempted to set an upper tolerable limit for many of them. This was published in a formidable report in 2010.[5]

The RDA or Recommended Daily Allowance is defined as the average daily level of intake sufficient to meet the nutrient requirements of 98% of healthy people.

The AI or Adequate Intake is established when there is insufficient evidence to develop a RDA and is set a level assumed to ensure nutritional adequacy.

The UL or Tolerable Upper Intake Level is the maximum daily safe intake level. This is the highest average daily intake of a nutrient that is likely to pose no risk of adverse health effects for nearly all people in the general population. It is a reference level intended to guide policy makers and scientists charged with ensuring a safe food supply for the general population. The problem is that there are ethical issues associated with conducting clinical trials designed to assess the adverse effects of substances and this limits the amount of data available. For this reason, the derivation of Upper Tolerable Limits largely relies on observational data and information from animal models. The levels tend to be cautious but by establishing ULs, their safety is more readily ensured than would be the case in the absence of a UL.

Supplementation toxicity and negative health outcomes

Evidence about relationships between specific nutrients and a disease or health outcome remains elusive for a number of reasons. Even in well-designed, large scale observational studies, it is difficult to isolate the effects of a single nutrient under investigation from the confounding effects of other nutrients and non-nutrient factors. The aetiology of chronic

	RDA	30g serving Cheerios
Vitamin B1 (Thiamin)		
1-3 years	0.4mg per day	0,4mg
4-8 years	0,5mg per day	
Vitamin B2 (Riboflavin)		
1-3 years	0.5mg per day	0,4mg
4-8 years	0,6mg per day	
Niacin		
1-3 years	6mg per day	4.6mg
4-8 years	8mg per day	
Vitamin B6		
1-3 years	0.5mg per day	0,5mg
4-8 years	0,6mg per day	
Vitamin C		
1-3 years	15mg per day	15,3mg
4-8 years	25 mg per day	

disease is multifactorial and clinical trials, generally considered to provide the strongest evidence about the effects of nutrient intake in disease, are complex, time-consuming (chronic disease develops over decades) and are influenced by a host of genetic, physiological and environmental factors that affect risk. However the lack of data on the safety of higher intakes of supplements when used chronically is very concerning.

For many of the water-soluble vitamins such as Thiamin, Riboflavin and Vitamin B12, there are no reports of adverse effects and thus do not have Upper Tolerable limit values. However this does not mean that adverse effects do not exist and caution has been recommended. This table above summarises the RDAs (NOT ULs) of some of the other vitamins – they have been listed together with an average portion of a popular cereal brand in order to illustrated the levels at which many children are consuming supplements just in their breakfast cereal – discounting the addition of formal supplements.

In summary, it is well known that vitamins are required in very small amounts. Many respected academic institutions worldwide such as the American Academy of Paediatrics believe that healthy children receiving a normal, well-balanced diet do not need vitamin supplements especially since much of our food is supplemented already. There is very little data available on the ill-effects of chronic long-term use of supplements especially since upper tolerable limits in many cases are difficult to establish. There is clear evidence that nutrient toxicity from diet alone does not occur.

It would seem that many supplements are at best, unnecessary and at worst, potentially harmful.

Discouraging the unnecessary use of supplements is an important consideration in promoting good health by health care providers – especially in children where objective data is even more elusive.

Encourage our patients to eat right!

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7th World Congress of the World Society for Pediatric Infectious Diseases (WSPID)

Melbourne, Australia, 16-19 November 2011

Dr Pieter Snyman
Paediatrician in Private Practice, Pretoria

This highly prestigious congress on pediatric infectious diseases is held biennially. It was Australia's honour to host it in the beautiful city of Melbourne at the ultramodern Melbourne Convention Centre. Since its inception in 1996 the WSPID congress has grown in strength and attracts researchers, epidemiologists, microbiologists and clinicians, especially pediatricians from all over the globe. WSPID congress has a high quality scientific programme where key opinion leaders and eminent speakers worldwide, update delegates on topics encompassing the diverse field of pediatric infectious diseases.

Melbourne is the capital of the state of Victoria and was voted as the most liveable city in the world in 2011. It is one of most cosmopolitan and multicultural cities, with 140 nationalities that represent 100 religious faiths and 180 different languages. The city offers diverse cultural and art attractions, delightful parks and a beautiful botanical garden. A running track called 'the Tan' is a must for all runners and whist jogging many ardent university rowers can be seen gliding across the Yarra River at dawn. At night Melbourne offers numerous exciting entertainment options with restaurants serving many gastronomical delights from all over the world. Melbourne is also known to sports fans for hosting the Australian Grand Prix and Australian Tennis Open. The MCG, known venue for epic cricket matches, is also located in Melbourne.

Of interest to our ENT colleagues, it is in this very city that the first cochlear implant was developed. Doctor Graeme Clark, an ENT surgeon, successfully implanted the first "bionic ear" in 1978. Another Melbournian discovery was that of the first black (actually bright orange!) box/ flight recorder.

The 7th WSPID congress was held over 4 days and consisted of WSPID symposia, mini-symposia, sponsored symposia, consensus symposia, society symposia, meet the professor sessions, oral poster symposia and educational workshops for fellows in PID. South Africa was well presented by clinical pediatricians and academics, most notably Prof. Shabir Madhi who presided over the congress. Many of the sessions were run parallel and I opted to attend sessions that had lectures on topics that could be readily implemented in daily practice.

A febrile child must be one of the commonest reasons why parents bring their child to a healthcare practitioner, whether a clinic sister, general practitioner, paediatrician or ENT surgeon. Two commonly encountered problems encountered on a daily basis are fever due to acute otitis media and urinary tract infections.

During one of the "**Meet the Professor sessions**" an excellent lecture was given by Prof. Ron Dagan. He discussed the **natural course and management of acute otitis media (AOM) r**eferring to two original articles that were published in the New England Journal of Medicine in 2011,[1,2] debating the antimicrobial management of AOM, specifically whether to treat or not. The belief that AOM is a spontaneously remitting disease and withholding antimicrobial therapy was challenged by the occurrence of devastating suppurative complications of otitis media, albeit being rare. It was interesting to see how paediatricians from around the world's management of AOM, in terms of whether or not to treat with antibiotics, choice and duration of antimicrobial treatment differed.

The option of withholding antibiotics and adopting a watchful approach in mild/moderate AOM especially in the thriving baby/child whose immunisations, including pneumococcal conjugate vaccine/PCV are up-to-date, and restricting antibiotics to a small group (below age of 2 years) of younger, sicker patients, made sense to me.

A **consensus symposium** was held on **Paediatric UTI management and prevention in 2011.** Ever since I can recall consensus remains elusive and it seems that nothing has changed in 2011! Antibiotic treatment, imaging of the urinary tract and antibiotic prophylaxis were discussed. Prof. Craig from Australia expertly highlighted and critically reviewed the transatlantic differences between work-up and management of urinary tract infections in the UK and USA looking at their respective NICE guidelines[3] and AAP guidance policies.[4] It seems that less is more in terms of investigation and prophylaxis and he challenged the popular belief that vesicoureteral reflux per se will lead to reflux nephropathy and subsequent end stage renal failure.

A **Pfizer-sponsored symposium** titled "**The effect of pneumococcal conjugate vaccines on disease worldwide: assessing new data, estimating the impact, and exploring global opportunities**" was hosted by professors Klugman, Dagan, Were and Reinert and was very informative.

Having entered private practice before the availability of pneumococcal conjugate vaccine (PCV) it was great to learn from our local and African epidemiological surveillance studies how IPD has decreased. I would imagine it is akin to what our older colleagues must have experienced when the conjugated vaccine for Haemophilus influenza type b readily became available.

Serotype replacement has occurred since the launch of the seven-valent pneumococcal conjugate vaccine (PCV7). Some vaccination critics have stated "nature abhors a vacuum" and hence the occurrence of serotype replacement. Immunological pressure induced by vaccination against select serotypes may change the epidemiology of antibiotic-resistant pneumococcal strains. Serotype replacement however has occurred in the absence of any vaccine-induced immunological pressure. Numerous studies have shown that the emergence of antibiotic resistant *Streptococcus pneumoniae* strains is caused by selection of resistant strains due to overexposure and injudicious use of antibiotics, rather than serotype replacement caused by immunisation. In Israel Dagan et al reported an increase in serotype 19A from children with otitis media. This was seen in the absence of PCV vaccination and was caused by two new multi-drug clones associated with an increased use of azithromycin and frequent use of oral cephalosporins. In Ethiopia where trachoma is treated with azithromycin, the prevalence of resistance to this antibiotic increased from 6.3 % to 62.3 % in one year.

It is most likely that non-PCV13 serotypes associated with antibiotic resistance are likely to persist in the PCV 13 era and that the emergence of non-PCV13 serotypes will also occur. In the USA non-PCV 13 serotypes including 6C, 15A, 23A and 35B account to 40 % of penicillin non-susceptible clones of *Streptococus pneumoniae*. This was seen before PCV-13 immunisation was started.

Broadening PCV serotype coverage from 7 to 13 by adding serotypes 1, 3, 5, 6A, 7F & 19A, creating PCV13, will reduce antibiotic use, however ongoing serotype surveillance and antibiotic stewardship will be essential in ensuring that further non-serotype antibiotic resistant strains do not emerge.

"**Recent advances towards comprehensive prevention of meningococcal disease**" was discussed during a sponsored symposium.

Every pediatrician will recall at least one case of meningococcal meningitis/septicaemia which even in the best tertiary care settings can be rapidly fatal (approximately 10% mortality) with survivors frequently having severe sequelae. The polysaccharide-only vaccines do not work in infants less than 18 months of age. By creating

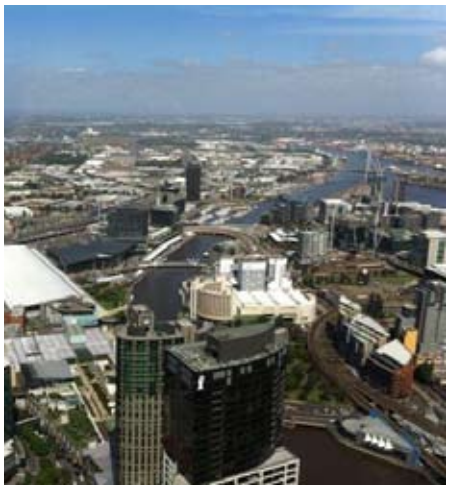
a polysaccharide-protein conjugate the vaccine's immunogenicity is markedly improved, inducing a memory response to booster doses and creating mucosal immunity. A quadrivalent polysaccharide conjugate vaccine against *Neisseria meningitidis* serogroups A, C, W-135, and Y in has been developed with robust immune responses, even in infants from 2 months of age. Creating a successful immunogenic serogroup B vaccine however has always been a major hurdle to overcome because of the remarkable diversity of the outer membrane structures of *Neisseria meningitidis*.

4CMenB, the first multi-component vaccine that potentially covers a broad spectrum of serogroup B strains heralds a major milestone in the fight against this devastating disease. This vaccine has demonstrated robust immune responses in clinical trials of all age groups, including infants 2 months of age.

No WSPID congress is complete without a lecture on antibiotic resistance. Once again we were reminded during a mini-symposium on antibiotic resistance, about judicious antibiotic usage.

Heikki Peltola from Finland reported his findings from a randomised, multicentre prospective trial that treatment with large doses of well-absorbed antimicrobials for approximately 10 days (started intravenously for a few days only) is not less effective than a 30-day treatment course for childhood septic arthritis. This was regardless of the infecting pathogen or anatomical site. Well conducted research like this challenges traditional management options and will most certainly decrease antimicrobial resistance in future.

Several poster presentations alarmingly reported the rapid emergence of neonatal bacterial resistance especially from Southeast Asia where high levels of extended spectrum beta-lactamase (ESBL) production among invasive Enterobacteriaceae have been reported. The collateral damage caused by overuse of fluoroquinolones and third generation



cephalosporins, and emergence of MRSA and ESBL-producing gram negative organisms, has now been well established. In Bangladesh, gram-negative organisms previously (2000-2004) were 100 % sensitive to carbapenems. Their sensitivity has subsequently reduced to 80% in recent months. This trend, although not as dramatic is also seen in South Africa.

It seems that not only is antibiotic resistance increasing but antifungal resistance in children and neonates is also on the increase. In South Africa Candida species, especially *C. glabrata* are becoming resistant to fluconazole. An entire consensus symposium titled "Hot topics in the diagnosis and treatment of invasive fungal infections in children and neonates" was held. Neonatal candidiasis: antifungal prophylaxis and treatment, risk factors and diagnosis of invasive candidiasis and invasive aspergillosis were discussed in depth. An entire session was also spent on appropriate treatment of aspergillosis with the newer classes of antifungal therapy.

I have just highlighted some of the topics[5] discussed, it is obviously not possible to give complete feedback on such a diverse congress. I do however believe that each delegate, whether a clinician or research scientist benefited greatly from attending. One's learning experience is not restricted to the formal lectures in halls. Informal discussions with international and national colleagues during coffee breaks, and exchanging clinical anecdotes enhanced the experience of attending a world congress.

We as South Africans are delighted that the 8th WSPID congress will be held in Cape Town at the Cape Town International Convention Centre in November 2013. It is expected that more than 3000 international delegates will attend this special world congress in our beautiful Mother City. The format of this congress caters from clinical pediatricians to research microbiologists. I am sure South Africa will be well presented both in attending delegates as well as scientific speakers.

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2012 Congresses

Congress	Location	Date	Contact/URL
Retroviruses and Opportunistic Infections 19th Conference 2012 (CROI 2012)	Washington State Convention Center Location: Seattle	5-8 March 2012	http://retroconference.org/
International Society of Paediatric Oncology (SIOP) 2012	Upper East Side Hotel Woodstock Cape Town, South Africa	21-23 March 2012	www.siopafrica2012.co.za/ Sue McGuinness Communications & Event Management +27 (0)11 447 3876
30th Annual Meeting of the European Society for Paediatric Infectious Diseases 2012 (ESPID 2012)	Helexpo, Thessaloniki, Greece	8-11 May 2012	www.kenes.com/espid2012 Tel: + 41 22 906 0488 Fax: + 41 22 906 9140 E-mail: espid2012_reg@kenes.com
European Academy of Allergy and Clinical Immunology 31st Congress 2012 (EAACI 2012)	Geneva Palexpo Geneva, Switzerlad	16-20 June 2012	http://www.eaaci2012.com/SiteSpecific/EAACI2012/StartPage.aspx

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