

TABLE 1. Levels of Adrenal Androgens in Normal-Weight and Obese Children

|                      | Normal Weight Mean<br>(Range) | Overweight Mean<br>(Range)    | Obese Mean<br>(Range)         | <i>P</i> <sup>a</sup> |
|----------------------|-------------------------------|-------------------------------|-------------------------------|-----------------------|
| Girls                |                               |                               |                               |                       |
| Testosterone, ng/mL  | 0.11 (0.06–0.20)              | 0.14 (0.10–0.21)              | 0.16 (0.09–0.24)              | .112                  |
| DHEAS, $\mu$ g/mL    | 0.71 (0.41–1.10)              | 0.85 (0.61–1.15)              | 0.88 (0.57–1.21) <sup>b</sup> | .081                  |
| $\Delta^4$ -A, ng/mL | 0.4 (0.2–0.8) <sup>b</sup>    | 0.6 (0.4–1.1) <sup>b</sup>    | 0.6 (0.4–0.8) <sup>b</sup>    | <.05 <sup>b</sup>     |
| IGF-1, ng/mL         | 199 (140–318)                 | 236 (180–283)                 | 200 (190–266)                 | .681                  |
| Boys                 |                               |                               |                               |                       |
| Testosterone, ng/mL  | 0.08 (0.04–0.15) <sup>b</sup> | 0.17 (0.06–0.26) <sup>b</sup> | 0.28 (0.09–0.39) <sup>b</sup> | <.05 <sup>b</sup>     |
| DHEAS, $\mu$ g/mL    | 0.51 (0.21–0.92)              | 1.10 (0.82–1.24) <sup>b</sup> | 1.12 (0.20–2.12)              | .056                  |
| $\Delta^4$ -A, ng/mL | 0.4 (0.2–0.7)                 | 0.5 (0.3–0.6)                 | 0.6 (0.4–1.0)                 | .524                  |
| IGF-1, ng/mL         | 200 (89–257) <sup>b</sup>     | 170 (116–207) <sup>b</sup>    | 288 (267–369) <sup>b</sup>    | <.05 <sup>b</sup>     |

<sup>a</sup> Kruskal-Wallis test.

<sup>b</sup> Results were significant.

**CONCLUSIONS:** A higher frequency of obesity and advanced BA was observed in children with benign premature adrenarche, with a strong correlation between BA and degree of obesity. Furthermore, obese children were characterized by higher levels of adrenal androgens compared with normal-weight children.

## MANAGEMENT OF DIABETIC KETOACIDOSIS: SUCCESSFUL MANAGEMENT EXPERIENCE OF MORE THAN 32 YEARS

Submitted by Surendra Varma

Surendra Varma, Michael Bourgeois

Texas Tech University Health Sciences Center, Lubbock, Texas

**INTRODUCTION:** Diabetic ketoacidosis (DKA) in children and adolescents has a mortality rate of 1% to 2%. The proper management of DKA requires intense monitoring and clear understanding of pathophysiology related to it. Potential complications include cerebral edema, hypokalemia, hypoglycemia, and relapse.

**OBJECTIVE:** Our goal was to describe our long-term experience in the management of diabetic ketoacidosis in children.

**METHODS:** This study comprised a 32-year experience of managing DKA in the pediatric age group. More than 900 episodes of DKA were encountered during this period. The age range of patients was from 9 months to 18 years. These episodes included patients presenting with new-onset type 1 diabetes as well as known patients with recurrent DKA. All patients were managed in a PICU by residents directly supervised by Dr Varma following an established protocol, including careful monitoring and paying particular attention to avoiding complications.

**RESULTS:** In >900 admissions during this period, the mortality rate was 0%, and the incidence of cerebral edema was <0.1%. Hypoglycemia and relapse occurred in <1% of the cases. The only occurrence of severe hypoglycemia (electrocardiographic changes and arrhythmia) was in a patient who was transferred from an outlying hospital after 36 hours of inappropriate treatment.

**CONCLUSIONS:** Our experience demonstrates that children with DKA can be managed successfully with minimal complications by adhering to the following principles:

1. early recognition and rapid transport to an ICU with experienced staff and physicians; and
2. adherence to well-established standards of treatment, including:
  - proper fluid and electrolyte management aimed at avoiding overhydration and extreme levels of electrolytes;
  - cautious correction of acidosis;
  - slow, steady reductions in plasma glucose and avoidance of hypoglycemia;
  - careful monitoring of clinical status (sensorium, state of hydration, vital signs, etc) and laboratory study results; and
  - frequent reassessment of the patient with adjustments and changes in treatment as dictated by the patient's needs.

## Epidemiology

### ASTHMA IN GREEK CHILDREN FROM BIRTH TO 18 YEARS: A LONGITUDINAL STUDY

Submitted by Flora Bacopoulou

Flora Bacopoulou, Vasso Lekea, Alexandra Veltsista, George Kavadias, Chryssa Bakoula

First Department of Pediatrics, Agia Sophia Children's Hospital, University of Athens, Athens, Greece

**INTRODUCTION:** The striking worldwide variation in the prevalence of asthma and its divergent changes over time necessitates regional longitudinal studies.

**OBJECTIVE:** We aimed to examine the asthma situation in Greece.

**METHODS:** Data from a longitudinal study of a representative nationwide sample derived from the National Perinatal Survey (11 049 consecutive births in April 1983) were analyzed in an attempt to describe the prevalence and natural course of asthma from birth throughout childhood to adolescence. We followed up with 2133 children (at the ages of 7 and 18 years) by using written questionnaires. The diagnostic labeling of asthma was confirmed by a physician on the basis of a history of wheeze attacks, nocturnal cough, exertional symptoms, and response to treatment.

**RESULTS:** Prevalence rates of current asthma were 7.7% and 4.7% and of lifetime asthma were 19.6% and 26.3% at 7 and 18 years, respectively. More than half (58.2%) of the children with early-onset asthma (onset before the age of 7 years) were free of symptoms at the

age of 7 years, and only 7.6% continued to be symptomatic at 18 years. In 6.7% of the participants asthma symptoms appeared between 7 and 18 years of age (late-onset asthma). In almost half (48.2%) of these children symptoms were persisting at the age of 18 years.

**CONCLUSIONS:** These findings illustrate that asthma remains a significant health care problem for Greek children and adolescents. Continued surveillance of asthma prevalence and its longitudinal predictors is necessary to assist health care professionals with adequately informing children and their parents on the course of the disease.

### CONGENITAL MALFORMATIONS ASSOCIATED WITH PESTICIDES IN ENCARNACIÓN, PARAGUAY

#### Submitted by Stela Benitez Leite

Stela Benítez Leite<sup>a</sup>, Marta Acosta<sup>b</sup>, María Luisa Macchi<sup>a</sup>  
<sup>a</sup>Faculty of Medical Sciences, National University of Asunción, Asunción, Paraguay; <sup>b</sup>Regional Hospital of Encarnación, Itapúa, Paraguay

**INTRODUCTION:** Exposure to pesticides is a known risk to human health. The association between parental exposure and congenital malformations is described.

**OBJECTIVE:** We sought to study the association between exposure to pesticides and congenital malformations in newborns who were born at the Regional Hospital of Encarnación in Itapúa, Paraguay.

**METHODS:** This was a prospective case and control study from March 2006 to February 2007. A case was defined as a newborn who was born with congenital malformations, and a control case was defined as a newborn of the same gender who was born immediately after and was found to be healthy. The exposure to pesticides was considered along with other risk factors that are known to cause congenital malformations.

**RESULTS:** The cases (52) and controls (87) were analyzed. The average number of births per month was 216. The risk factors that were significantly associated were living near fumigated fields (odds ratio [OR]: 2.46 [95% confidence interval (CI): 1.09–5.57];  $P < .02$ ), having pesticides in the house (OR: 15, 35 [95% CI: 1.96–701.63];  $P < .003$ ), direct or accidental contact with pesticides (OR: 3.19 [95% CI: 0.97–11.4];  $P < .04$ ), and history of family malformations (OR: 6.81 [95% CI: 1.94–30.56];  $P < .001$ ). The other risk factors known to cause malformations did not have statistical significance.

**CONCLUSIONS:** The results show an association between the exposure to pesticides and congenital malformation in newborns who were born at the Regional Hospital of Encarnación. Future studies are required to confirm these findings.

### THE GLOBAL BURDEN OF CHILDHOOD OTITIS MEDIA AND HEARING IMPAIRMENT: A SYSTEMATIC REVIEW

#### Submitted by Hasantha Gunasekera

Hasantha Gunasekera<sup>a</sup>, Leigh Haysom<sup>a</sup>, Peter Morris<sup>b</sup>, Jonathan Craig<sup>c</sup>

<sup>a</sup>Children's Hospital at Westmead, Sydney, Australia;

<sup>b</sup>Menzies School of Health Research, Darwin, Australia;

<sup>c</sup>School of Public Health, University of Sydney, Sydney, Australia

**INTRODUCTION:** The World Health Organization resolved that chronic otitis media and resultant hearing impairment are significant global health problems and called for more detailed epidemiological information, particularly the association between prevalence and socioeconomic variables.

**OBJECTIVE:** We sought to determine the worldwide prevalence of otitis media (OM) and hearing impairment (HI) and their risk factors.

**METHODS:** We searched Medline, Embase, and Cinahl for population-based studies with incidence or prevalence data on OM and HI (>25 dB) in children (<18 years), without language restrictions. Studies identified through reference lists were also included. We examined the effect of socioeconomic and health variables on OM and HI prevalence.

**RESULTS:** The search strategy identified 1504 studies with substantial methodologic variation. They included studies ( $n = 108$ ) that provided a combined sample size of 250 978 children. Acute OM incidence ranged from 0.6 to 1.7 episodes per child per year. The highest OM prevalence rates were in Inuits (81%) and Australian Aborigines (84%). HI prevalence ranged from <1% (Greece) to 23% (Australian Aborigines), and HI was significantly more common in children with OM (odds ratio [OR]: 8.11 [95% confidence interval (CI): 6.91–9.52]). In meta-analysis, increased OM prevalence was associated with not breastfeeding (OR: 1.28 [95% CI: 1.03–1.59]) and parental smoking (OR: 1.73 [95% CI: 1.42–2.10]), but male gender (OR: 1.04 [95% CI: 0.90–1.20]) and urbanization (OR: 0.72 [95% CI: 0.28–1.83]) were not significant. Some studies reported increased OM prevalence with overcrowding, lower maternal education, and poorer household sanitation.

**CONCLUSIONS:** Indigenous children have the highest prevalence of OM and its complications. OM remains a significant cause of preventable childhood HI, and many of the risk factors are modifiable.

### HUMAN BOCAVIRUS IN GREEK CHILDREN WITH RESPIRATORY TRACT INFECTION

#### Submitted by Katerina Haidopoulou

**ASTHMA IN GREEK CHILDREN FROM BIRTH TO 18 YEARS: A  
LONGITUDINAL STUDY**

Flora Bacopoulou, Vasso Lekea, Alexandra Veltsista, George Kavadias and Chryssa  
Bakoula

*Pediatrics* 2008;121;S106  
DOI: 10.1542/peds.2007-202200

**Updated Information &  
Services**

including high resolution figures, can be found at:  
[http://pediatrics.aappublications.org/content/121/Supplement\\_2/S106.2](http://pediatrics.aappublications.org/content/121/Supplement_2/S106.2)

**Subspecialty Collections**

This article, along with others on similar topics, appears in the following collection(s):  
**International Child Health**  
[http://www.aappublications.org/cgi/collection/international\\_child\\_health\\_sub](http://www.aappublications.org/cgi/collection/international_child_health_sub)  
**Allergy/Immunology**  
[http://www.aappublications.org/cgi/collection/allergy:immunology\\_sub](http://www.aappublications.org/cgi/collection/allergy:immunology_sub)  
**Asthma**  
[http://www.aappublications.org/cgi/collection/asthma\\_sub](http://www.aappublications.org/cgi/collection/asthma_sub)

**Permissions & Licensing**

Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at:  
<http://www.aappublications.org/site/misc/Permissions.xhtml>

**Reprints**

Information about ordering reprints can be found online:  
<http://www.aappublications.org/site/misc/reprints.xhtml>

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™



# PEDIATRICS®

OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

## ASTHMA IN GREEK CHILDREN FROM BIRTH TO 18 YEARS: A LONGITUDINAL STUDY

Flora Bacopoulou, Vasso Lekea, Alexandra Veltsista, George Kavadias and Chryssa  
Bakoula

*Pediatrics* 2008;121;S106  
DOI: 10.1542/peds.2007-202200

The online version of this article, along with updated information and services, is  
located on the World Wide Web at:

[http://pediatrics.aappublications.org/content/121/Supplement\\_2/S106.2](http://pediatrics.aappublications.org/content/121/Supplement_2/S106.2)

Pediatrics is the official journal of the American Academy of Pediatrics. A monthly publication, it has been published continuously since 1948. Pediatrics is owned, published, and trademarked by the American Academy of Pediatrics, 141 Northwest Point Boulevard, Elk Grove Village, Illinois, 60007. Copyright © 2008 by the American Academy of Pediatrics. All rights reserved. Print ISSN: 1073-0397.

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™

