

guidelines (97.1%) but not the guidelines for Indigenous children (47.0%).

**CONCLUSIONS:** Aboriginal Medical Service practitioners rely on otoscopy alone to diagnose otitis media and are more likely to use antibiotics for Indigenous children despite not knowing the guidelines.

## HEALTH NEEDS OF CHILDREN LIVING IN OUT-OF-HOME CARE

**Submitted by Dimitra Tzioumi**

Dimitra Tzioumi, Dania Nathanson  
*Sydney Children's Hospital, Sydney, Australia*

**INTRODUCTION:** Children in out-of-home care have high, unrecognized, and unmet health needs. The combination of exposure to abuse and neglect and a background of social disadvantage place them at significant risk for poor health, which affects their physical, developmental, and emotional health.

**OBJECTIVE:** The aim of this study was to screen children in out-of-home care for unidentified health problems and recommend appropriate health interventions.

**METHODS:** A health screening clinic for children in out-of-home care was established in a tertiary children's hospital in 2005 in collaboration with social services. Working within a multidisciplinary framework, the children had a comprehensive physical, developmental, and behavioral health screen. Recommendations were made to social services for appropriate health care.

**RESULTS:** Of the 122 children screened, 24% had incomplete immunizations, 20% had visual problems, 30% had dental problems, and 26% had hearing loss, 45% of the children under 5 years of age had speech delay, 60% failed the developmental screen, and 54% had significant behavioral and emotional problems.

**CONCLUSIONS:** Children in out-of-home care are a vulnerable group of the child population who experience unacceptable levels of poor health. Comprehensive health screens are important for identifying previously undetected health problems and recommending appropriate health interventions.

## Critical Care

### PREDICTION OF CAPILLARY LEAKAGE IN PATIENTS WITH DENGUE VIRUS INFECTION: WHAT ELSE BESIDES HEMATOCRIT AND PLATELET COUNTS?

**Submitted by Apichai Khongphatthanayothin**

Apichai Khongphatthanayothin, Pentip Supachokechaiwattana, Chitsanu Pantcharoen  
*King Chulalongkorn University and Hospital, Bangkok, Thailand*

**INTRODUCTION:** Besides clinical examination, hematocrit and platelet counts are often used to predict if a patient with suspected dengue virus infection had dengue hemorrhagic fever.

**OBJECTIVE:** In this study, we investigated the role of Doppler study of the portal vein as a predictor for capillary leakage in these patients.

**METHODS:** Doppler studies of the right portal vein blood flow velocity were performed for 61 patients (aged  $10.2 \pm 2.9$  years; 34 boys and 27 girls) with serologically confirmed dengue virus infection at defervescence. Presence of right pleural effusion was detected by ultrasound in 32 patients 24 to 48 hours later. Binary logistic regression analysis and receiver operating characteristic (ROC) curves were constructed for the following variables as predictors of pleural effusion 24 to 48 hours after defervescence: age, gender, maximum hematocrit level, lowest platelet count, and the velocity of blood flow in the right portal vein (PVDPL).

**RESULTS:** Hematocrit level and PVDPL were independent predictors of pleural effusion. The area under the ROC curve, sensitivity, and specificity for these variables as predictors for right pleural fluid 24 to 48 hours after defervescence are shown in Table 1.

TABLE 1. Variables as Predictors of Pleural Effusion

Variables	Area Under ROC Curve	Cutoff	Sensitivity, %	Specificity, %
Hematocrit, %	0.79	>43	72	83
PVDPL, cm/s	0.88	<15.3	72	79
Hematocrit/PVDPL, s/cm	0.93	>2.66	81	83

**CONCLUSIONS:** Doppler-derived portal venous blood flow velocity may be used to predict the clinical progression of patients with dengue virus infection.

### A DOUBLE-BLIND RANDOMIZED, CONTROLLED TRIAL OF PROTEIN ENERGY-ENRICHED FORMULA ADMINISTERED TO CRITICALLY ILL INFANTS

**Submitted by Dick Van Waardenburg**

Dick Van Waardenburg<sup>a</sup>, Carlijn De Betue<sup>a</sup>, Koen Joosten<sup>b</sup>

<sup>a</sup>*Department of Pediatrics, Maastricht University Hospital, Maastricht, Netherlands;* <sup>b</sup>*Department of Pediatrics, Erasmus Medical Center-Agia Sophia Children's Hospital, Rotterdam, Netherlands*

**INTRODUCTION:** Nutritional support is an important aspect of clinical management of critically ill infants, but the nutritional requirements of these infants are not well defined.

**OBJECTIVE:** Our goal was to compare tolerance, nutritional, and metabolic effects of 2 different infant formulas in critically ill infants in a double-blind, randomized way.

**METHODS:** Eighteen ventilated infants with respiratory insufficiency caused by respiratory syncytial virus

infection were included and received an energy- and protein-enriched (PE) infant formula (Infatrini [Nutricia B.V. Zoetermeer, Zoetermeer, Netherlands];  $n = 8$ ) or standard infant formula (Nutralon 1 [Nutricia B.V. Zoetermeer];  $n = 10$ ). Daily intake and tolerance (gastric retention, diarrhea) were recorded. Resting energy expenditure, respiratory quotient, L-amino acid concentrations, and metabolic parameters were measured, and cumulative energy balance, nitrogen balance, and substrate utilization were calculated.

**RESULTS:** Baseline characteristics were similar in both groups. Both formulas were well tolerated with similar volumes of intake. Results from day 4 are presented in Table 1. Levels of several amino acids (His, Val, Met, Phe, Lys, and ornithine;  $P < .05$ ) were significantly higher in the infants who received the PE-enriched formula.

TABLE 1. Results on Day 4 of Admission

Formula	Protein Intake, g/kg per day	Energy Intake, kcal/kg per day <sup>a</sup>	Resting Energy Expenditure, kcal/kg per day <sup>a</sup>	Respiratory Quotient	Cumulative Energy Balance, kcal/kg per day <sup>a</sup>	Cumulative Nitrogen Balance, mg/kg per day
PE-enriched ( $n = 8$ )	2.61 ± 0.24	111 ± 10	59 ± 5	0.98 ± 0.02	589 ± 115	162 ± 32
Standard ( $n = 10$ )	1.46 ± 0.11	78 ± 4	49 ± 4	0.91 ± 0.01	350 ± 50	68 ± 16
<i>P</i>	<.01	<.01	.26	<.01	<.05	.08

<sup>a</sup> 1 kcal = 4.2 kJ.

**CONCLUSIONS:** PE-enriched infant formula was well tolerated in critically ill infants and effective in achieving higher nutritional intakes in the first days of admission. PE-enriched formula improved energy balance and plasma amino acid profile, and a trend toward increased nitrogen balance was found.

## Developmental and Behavioral Pediatrics

### COGNITIVE AND BEHAVIORAL ABILITIES OF CHILDREN WITH HIV INFECTION IN GREECE

Submitted by Georgia Bertou

Georgia Bertou, Loreta Thomaidis, Vasiliki Spoulou, Maria Theodoridou

*Developmental Assessment Unit, First Department of Pediatrics, Athens University, Athens, Greece*

**OBJECTIVE:** Our goal was to evaluate cognitive and behavioral abilities of HIV-positive children in Greece.

**METHODS:** The cognitive and behavioral abilities of 20 HIV-positive children (B and C status; 8 boys and 12 girls; aged 3–18 years [mean: 11.5 years]) who were vertically infected and were receiving antiretroviral treatment were assessed twice within a 7-year period. Clinical indices (CD4 lymphocyte and viral load counts) were monitored systematically. A detailed developmental assessment was performed for all children twice within a 7-year period. Cognitive abilities were assessed

by using the Wechsler Intelligence Scale for Children III and Griffiths Mental Abilities Scales. Behavioral abilities were assessed by using the Strengths and Difficulties Questionnaire, which provides individual scores for anxiety, emotional tension, conduct, hyperactivity, and social relations with peers and provides an overall index of behavioral difficulties (IBD). Detailed neurologic examination and brain imaging were performed for all children.

**RESULTS:** HIV encephalopathy was evident in 3 children, and 5 of 20 children presented with coexisting diseases (2 neurofibromatosis encephalopathy, 1 brain aneurysm, and 2 autistic disorders). HIV-positive children with normal MRI findings and without signs of HIV encephalopathy scored within the normal range for their chronological age in all measures of general and specific domain cognitive abilities. Low IQ scores showed in 15 of 20 HIV-positive children in both assessments. Factors that were associated consistently with lower scores were positive MRI results, coexistence of an organic disease, maternal education, and gender. The IBD was raised in 7 children. In detail, 9 children had raised IBD scores in emotional tension, 6 seemed to have conduct disorders, 5 had hyperactivity, and 11 presented as having difficulties in social relations with their peers. Factors that were associated significantly and consistently with abnormal IBD scores were lower IQ, positive MRI findings, and coexistence of an organic disease.

**CONCLUSIONS:** Although the sample was small, the findings of our study support the idea that HIV infection places children at increased risk for poor cognitive and behavioral outcomes only if they experience a severe illness of advancing disease stage or a coexisting disease.

### BEHAVIORAL PROBLEMS IN CHILDREN WITH LEARNING DIFFICULTIES ACCORDING TO THEIR PARENTS AND TEACHERS

Submitted by Panagiotis Diakakis

Panagiotis Diakakis<sup>a</sup>, John Gardelis<sup>a</sup>, Kiriaki Ventouri<sup>a</sup>, Katerina Nikolaou<sup>b</sup>, Georgia Koltsida<sup>a</sup>, Styella Tsitoura<sup>b</sup>, Andreas Constantopoulos<sup>c</sup>

<sup>a</sup>General Hospital of Zakynthos, Zakynthos, Greece;

<sup>b</sup>Department of Social Pediatrics, Panagiotis and Aglaia

Kyriakou Children's Hospital, Athens, Greece; <sup>c</sup>Department of Pediatrics, University of Athens, Athens, Greece

**INTRODUCTION:** Learning difficulties (LDs) are associated with increased comorbidity, especially depression and anxiety. Studies have shown that 24% to 52% of children with LDs present with behavioral problems (BPs).

**OBJECTIVE:** The aim of our study was to evaluate whether parents' and teachers' opinions concerning BPs in children with LDs are identical.

**A DOUBLE-BLIND RANDOMIZED, CONTROLLED TRIAL OF PROTEIN ENERGY-ENRICHED FORMULA ADMINISTERED TO CRITICALLY ILL INFANTS**

Dick Van Waardenburg, Carlijn De Betue and Koen Joosten

*Pediatrics* 2008;121;S99

DOI: 10.1542/peds.2007-2022AA

**Updated Information & Services**

including high resolution figures, can be found at:  
[http://pediatrics.aappublications.org/content/121/Supplement\\_2/S99.1](http://pediatrics.aappublications.org/content/121/Supplement_2/S99.1)

**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

## **A DOUBLE-BLIND RANDOMIZED, CONTROLLED TRIAL OF PROTEIN ENERGY-ENRICHED FORMULA ADMINISTERED TO CRITICALLY ILL INFANTS**

Dick Van Waardenburg, Carlijn De Betue and Koen Joosten

*Pediatrics* 2008;121;S99

DOI: 10.1542/peds.2007-2022AA

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/S99.1](http://pediatrics.aappublications.org/content/121/Supplement_2/S99.1)

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™

