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Ivan Ferraz, MD, President  
Carlos Castillo-Duran, MD, General Secretariat

## TL005

### THERAPEUTIC DRUG MONITORING OF INDINAVIR, BOOSTED WITH RITONAVIR, IN HIV INFECTED PEDIATRIC PATIENTS

Cáceres PG, Currás V, Bramuglia G, Höchst Ch, Rubio M, Mecicovsky D, Bologna R, Bedriñana S, Mato G, Unidad de Farmacocinética Clínica, Servicio de Infectología y Control Epidemiológico y Área Farmacia, Hospital de Pediatría Garrahan, Buenos Aires. Cátedra de Farmacología, Facultad de Farmacia y Bioquímica, Universidad de Buenos Aires

**Introduction:** Indinavir shows a high interindividual pharmacokinetic variability, and there is clinical evidence that therapeutic drug monitoring (TDM) may be useful to avoid its concentration-related adverse effects, such as hepatic and renal toxicity. Besides pharmacokinetic processes are affected by growth in children. **Objective:** To evaluate results and importance of indinavir TDM in HIV pediatric patients receiving indinavir/ritonavir (r). **Methods:** In a prospective study, 18 patients were evaluated. Indinavir plasma levels (1 trough and 1 peak, one hour after the dose) were measured by chromatography (HPLC). Average indinavir/r dose: 250/100 mg/m<sup>2</sup>/12h. Therapeutic range proposed: 0.150 – 10  $\mu$ g/mL (adult patients) **Results:** 11 patients (median: 38 months of treatment) had subtherapeutic levels (< 0.15  $\mu$ g/mL). In 6 patients, dose was increased to 400/100 mg/m<sup>2</sup>indinavir/r /12 h and a new monitoring was performed one month later. Of them, 2 remained with subtherapeutic levels. **Conclusions:** pediatric dose of indinavir/r is not yet defined, but our data are close to previous works suggesting 400/125 mg/m<sup>2</sup> indinavir/r / 12h. Though indinavir is boosted by ritonavir, high variability observed in plasma levels suggests that indinavir TDM is advisable and could be useful to improve pediatric treatment, avoiding virological failure and occurrence of adverse events.

## TL014

### NUTRITIONAL STATUS, NUTRITIONAL SUPPORT AND COURSE OF DISEASE IN PEDIATRIC PATIENTS HOSPITALIZED FOR SEVERE ACUTE DISEASES

Osorio JE, Castillo-Duran C. INTA and School of Nutrition and Dietetics, Fac. de Medicina, Universidad de Chile, Santiago, Chile

**Introduction:** Pediatric patients hospitalized due to severe acute diseases are at risk of protein energy malnutrition (PEM) and consequently have a greater risk of complications and prolonged stays. **Objectives:** To evaluate the magnitude of PEM, metabolic disorders related to PEM and the effect of nutritional support on the course of disease in children hospitalized due to an acute severe disease. **Subjects and Methods:** We studied 123 children (1-188 months) admitted consecutively for a severe disease at Hospital San Borja Arriarán, in Santiago, Chile. The nutritional assessment included anthropometric (height and weight) and biochemical measurements (serum albumin and blood count) on admission and on the 5th day. Food consumption was evaluated by weighing foods and severity of disease was measured by PRISM. Therapies, complications of disease and days before discharge, were also recorded. **Results:** The mean stay was 3.0  $\pm$  2.6 days (1-20) and PRISM was 6.5  $\pm$  4.2 (0-20). Nutritional status revealed: 46% with PEM (28.5% acute, 17.1% chronic), 10% with albumin < 3.5 g/dL, 11% overweight and 33% normal. On 5th day, 35% of children decreased weight/height ratio, 55% improved it and 10% did not show any change. Children were fed with oral feedings (49%) or enteral nutrition (20%). Twenty percent received their energy requirements for disease. Those with PEM presented a greater risk of complications (RR=1.50;1.03-2.17) and a greater severity of disease (RR=1.51;1.03-2.20) than those without malnutrition. Patients with decreased serum albumin had a greater risk of prolonged stay at hospital (RR=1.50; 1.12- 2.01). **Conclusions:** Children with acute or chronic protein energy malnutrition present a worst course of disease, with more days of hospitalization and a greater risk for complications than those without malnutrition. The children repeatedly did not receive their energy requirements adapted to disease

## TL015

### INHIBITION OF IRON ABSORPTION BY ZINC: EFFECT OF PHYSIOLOGICAL AND PHARMACOLOGICAL DOSES

Manuel Olivares, Fernando Pizarro, Manuel Ruz, INTA, Universidad de Chile y Dpto. de Nutrición, Fac. Medicina, Universidad de Chile, Santiago, Chile.

**Background.** Iron and zinc deficiencies are the most common nutritional deficiencies worldwide. Supplementation is one of the strategies utilized to prevent these deficiencies. Because divalent cations share the same enterocyte transporter, there is an increasing concern about potential negative interactions between these two micronutrients. **Objective.** To measure the effects of physiological and pharmacological doses of zinc, given in a solution, on iron absorption. **Methods.** Fourteen healthy subjects were selected to participate in one iron absorption studies. Subjects received a solution with 0.5 mg of elemental iron, as ferrous sulfate, given alone and with zinc (0.59 mg), as zinc sulfate, in a molar ratio Zn:Fe 1:1; 14 day after they received a solution with 10 mg of iron given alone and with zinc (11.71 mg) in a molar ratio Zn : Fe 1:1. The double radioisotopic technique was used to measure iron absorption. Iron absorption values were referred to the iron absorption of the solution without zinc. **Results.** No significant effect of zinc on iron absorption occurred at a physiological dose. An inhibitory effect on iron absorption was observed at a pharmacological dose (Student t test paired, p <0.001) **Conclusion.** A pharmacological dose of Zn (11.7 mg), given in a molar ratio Zn:Fe 1:1, negative impacts on iron absorption. Supported by Fondecyt grant 1040879

## TL018

### COST-EFFECTIVENESS OF A FOLIC ACID FORTIFICATION PROGRAM IN CHILE

Llanos A, Hertrampf E, Cortes F, Pardo A, Uauy R. INTA, Universidad de Chile, Santiago, Chile.

**Background:** Periconceptional intakes of folic acid (FA) reduce the risk of having a fetus affected anencephaly and spina bifida by 50-70%. The Chilean Ministry of Health mandated fortification of wheat flour at a level of 2.2 mg/FA/kg starting January 2000. This fortification policy served to increase intake of FA by 427 mcg/d that was associated to an overall 43% reduction in the incidence of neural tube defects (NTD) affected pregnancies. An economic evaluation of the program should provide useful information. **Methods:** We compared the strategy of fortification with no fortification. Estimation of incremental cost per case averted (C/E ratios) were done extrapolating the incidence risk reduction from program evaluation to the total number of live births and fetal deaths occurring in 2001. C/E ranges were presented for the 95% confidence interval of risk reduction. Economic benefits to the averted costs resulting from preventing births with NTDs (medical and rehabilitation long term cost) in a one-year birth cohort were calculated. **Results:** The one year program cost was \$ 447,700. Case averted and cost (expressed in International Dollars (IS) per case averted were:

Health outcomes	Cases averted (range)	Cost*/case ratio (IS x 10 <sup>3</sup> )
Anencephaly	60 (53-67)	7.5 (8.5-6.7)
Spina bifida	103 (92-114)	4.4 (4.9-3.9)
NTDs live birth	110 (100-125)	4.1 (4.5-3.6)
Deaths averted in live birth	91 (82-123)	5.0 (5.5-3.6)

The cost per DALYs averted without and with 3% discount was 46 (44-67) and 119 (109-166) IS. The net saving at 3% discount was \$ 5.5 million. **Conclusion:** the decision of fortifying the wheat flour with FA has demonstrated significant benefits in health and economical indicators supporting the continuation of this program. Other countries with higher proportion of infant mortality explained by congenital malformation and with existing programs of micronutrients grain fortification may also benefit of FA fortification.

## TL19

### ARM, WAIST AND HIP CIRCUMFERENCE PERCENTILES, WAIST TO-HIP RATIO, AND ADIPOSITY CUT-OFF POINTS FOR ADOLESCENTS

de Padua Cintra I, Zanetti Passos MA; Fisberg M. UNIFESP, São Paulo, Brasil.

**Introduction:** For the identification and treatment of overweight and obesity is important the measurements of overall adiposity and abdominal obesity. **Objective:** Determining the percentile distribution of arm, waist and hip circumference, and waist-to-hip ratio, as well as obesity cut-off points in adolescents aged 10 to 15 years old. **Methods:** A total of 43 (32 public and 11 private) schools picked at random in the different areas of the city of Sao Paulo, participated in this study. The distributions of the circumferences were charted as 5 to 95 percentiles. The analyses of Receiver Operator Characteristic Curve was carried out in order to determine the values indicating adiposity. **Results:** A total of 8,020 adolescents (54.5% females and 45.5% males) were examined. The percentiles were charted for age and gender yielding the following measurements associated with adiposity in female and male subjects, respectively: arm circumferences 27,07 and 26,97 cm, waist circumference 74,28 and 77,5 cm, hip circumference 94,79 and 91,7 cm, waist-to-hip ratio 0,80 and 0,86. The arm, waist and hip circumference were found to be parameters of better sensibility and specificity regarding adiposity when compared with waist-to-hip ratio. **Conclusion:** The present study evidences the importance of establishing national anthropometrical parameters in order to avoid biased assessment of nutritional status in adolescents aged 10 to 15 years old.

## TL 22

### EXCLUSIVE BREASTFEEDING AND CHILD DEVELOPMENT

Clark K, Castillo M, Pino P, Lozoff B. Center for Human growth and Development, University of Michigan, Institute of Nutrition and Food Technology (INTA), Universidad de Chile and Instituto de Salud Pública, Universidad de Chile.

**INTRODUCTION:** Studies which assessed the relationship between breastfeeding (BF) and child development reported, in its majority, a positive association between BF and cognitive assessments, in infancy as well as in adults. Research has been done mainly in developed countries (Europe, USA, Australia), where BF is highly associated with socioeconomic status (SES). **OBJECTIVE:** To examine the relationship between the duration of exclusive BF (EBF) with mental and motor development in children at 51/2. **METHODS:** 812 healthy children were studied at 51/2 years, birth weight = 3,0 Kg, categorized in 4 groups according to the duration of EBF: Short: 0-2 months (n= 135; 35%); Intermediate: 2-5 months (n=244; 30%); Long: 5-7 months (n= 144; 18%); Prolonged: > 7 months (n0135; 17%). During weekly home visits information regarding EBF and socioparental characteristics was collected. When the children were 51/2 years old, motor and cognitive tests were applied; mothers were assessed for stress and depression; SES and quality of home stimulation were registered. **RESULTS:** Results of the tests applied to the children indicated that subjects breastfed for short periods (0-2 months) as well as for prolonged periods (> 7 months) are both associated with lower cognitive and motor tests scores. The only socioparental difference found between the 4 groups was in the short EBF (0-2 months) group where there was more father absence and more depressive symptomatology. **CONCLUSIONS:** EBF for short or prolonged periods doesn't seem to be optimal for child development. The interpretation of the results have to be cautious, specially for prolonged EBF. Does it related to the nutritional characteristics of mother's milk, are mothers who breastfeed longer than 7 months different or there are other key variables not measured in the study? It's necessary to replicate the study in other samples with a deeper assessment in mother-child relationship and mother's personality characteristics.