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PREVENTION OF RESPIRATORY DISTRESS SYNDROME IN TWIN PREGNANCY

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The beneficial effect of antenatal steroids in relation to the risk of respiratory distress syndrome (RDS) is widely recognized. However, the current literature suggests that this effect may not be similar in children born prematurely fromf twin pregnancies, who are exposed to early interruption of pregnancy. The aim of the study was to evaluate whether the antenatal administration of corticosteroids in the dosage proposed by Liggins is capable of preventing RDS in twin pregnancies. **Patients and methods**: This is a study carried out in 13 centers and it included twin pregnancies whose gestacional age was between 25 and 34 weeks. Pathologies that could alter pulmonary maturity were excluded. Group (a) was formed by 47 twin pregnancies who received an optimal course of antenatal corticosteroids: 2 doses of 12 mg of IM betamethasone acetate phosphate 24 hours apart, with delivery taking place between 24 hours and 7 days after the last dose, independently of the number of repeated cycles administered as necessary. Group (b) was formed by 50 twin pregnancies without antenatal corticosteroids. There was no other intervention throughout the study. Sample size was 91 infants per group: in this trial 94 newborn were admitted to group (a) and 100 to group (b). There were no differences between the groups in relation to maternal characteristics: maternal age, gestational age, pathologies of pregnancy nor in neonatal characteristics: mode of delivery, birthweight, sex and Apgar score.

Results	Betamethasone N= 94 (%)	No Betamethasone N= 100 (%)	Odds ratio IC 95%
RDS	15 (16)	22 (22)	0.67 (0.31-1.47)
IPPV <48 h	18 (19)	19 (19)	1.01 (0.46-2.19)
Surfactant	16 (17)	16 (16)	1.08 (0.47-2.45)
Deaths <28 days	4 (4)	10 (10)	0.40 (0.09-1.46)

Conclusions The antenatal use of corticosteroids in twin pregnancies, at the doses used by Liggins, does not decrease the incidence of respiratory distress syndrome, its lethality, IPPV use, nor the ned for surfactant. It is possible that the gestacional age of the group studied (32 weeks) or the dose or the number of doses of corticosteroids may have been insufficient to induce lung maturity in twins. These results underline the need for controlled trials with the aim of answering these questions.

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ACTUARIAL SURVIVAL AND CARE OF PRETERM INFANTS BELOW 1500 g. Fustiñana C, Rodríguez D, La Mura G, Ceriani Cernadas JM. División Neonatología. Departamento de Pediatría. Hospital Italiano de Buenos Aires. Buenos Aires. Argentina. (Email: cfusti@hitalba.edu.ar)

Objective. Survival data do not provide information about life expectancy in premature neonates. Actuarial survival, defined as future expectancy of life for a given postnatal age has been shown to be useful for physicians and parents in the study by Cooper et al. We characterized the actuarial survival of a newborn population of very low birth weight infants (VLBWI) delivered at our hospital.
Methods: We determined the daily actuarial survival of 192 premature babies with birth weight < 1500 g admitted to the NICU of Hospital Italiano between January 1994 and December 1997. The sample was stratified by weight intervals of 250 g and gestational age intervals of 1 week.
Results: In the 500-750 grams birthweight stratum actuarial survival increased from 35 % at birth to 72 % at the end of the first week and to 95 % at 30 day of age. In the 1000 to 1250 g stratum actuarial survival increased from 85 % to 98% between the 7th and the 30th day of life. The same trends were observed when the data was stratified by gestational age.
Conclusions: Survival of VLBWI improved during the first week of life and this is more evident in the strata with the smallest birthweight and gestational age. However there is a persistent risk for late death in all groups.

3

POSTNATAL GROWTH OF HOSPITALIZED VERY LOW BIRTHWEIGHT INFANTS. IS THE NICH STANDARD ADEQUATE? Fustiñana C, Rodríguez D, La Mura G, Ceriani Cernadas JM. Division of Neonatology, Departament of Pediatrics. Hospital Italiano de Buenos Aires. Buenos Aires. Argentina. (Email: cfusti@hitalba.edu.ar)

Aim: The postnatal growth curves for VLBWI published by NICHD (Pediatrics 1999;104:280), are different from those of Dancis (1948) because the nutritional management and the overall care of these VLBWI has changed considerable since these latter were first published.
The aim of this study is to compare the NICHD curves with a sample of VLBWI managed according to local methods and criteria.
Patients and methods: Growth was prospectively assessed in 102 infants with birthweight between 500 to 1500 g admited in the NICU of Hospital Italiano between January 1994 and December of 1998. Infants were included if they survived the 7th day of life and were free of major congenital abnomalities. Anthropometric measurements (body weight, lenght and head circumference) were obtained from birth until discharge, transfer or death at age 4 months, or when their weight reached 2000 g.
Results: Postnatal growth curves were constructed for of 100 g intervals of birthweight; the set of curves obtained showed a quadratic fit similar to the new NICHD standard. Like in the NICHD curves we also found significant differences in weight gain between adequate-for-gestational-age infants without major morbidity and comparable infants with BPD, necrotizing enterocolitis or severe intraventricular hemorrage: 16 g/kg/d vs. 11 g/kg/d ($p<0.05$).
Conclusions: Our sample shows a fit comparable to the NICHD curves; we also found differences related to infant morbidity. We estimate that a multicenter study is required to confirm our results.

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CORRELATION BETWEEN MOLECULAR PARAMETERS AND EVALUATION OF PHYSICAL, BEHAVIORAL AND COGNITIVE PARAMETERS IN FEMALES WITH FULL MUTATION OF THEMR1GENE.

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The Fragile-X Syndrome (Fra-X) is the most frequent cause of inherited mental retardation (MR), X dominant linked. It involves the abnormal expansion of the (CGG)n trinucleotide repeat region of the FMR1 gene. When this is more than 200 CGG (full mutation,FM), the gene is usually methylated with associated absence of the protein it codes for. Males with the full mutation have a classic phenotype with mental retardation whereas FM females have a wide range of phenotypes, from normal to MR because of the inactivation of one of the two Xs (lyonization). **Aim**: The aim of this study was to assess the influence of the FMR1 gene full mutation size (AMP) and the proportion of normal active X chromosomes in leukocytes (AR) on a wide range of physical, behavioral and cognitive features in females carriers of a FM for the purposes of counseling and prognosis. **Patients and methods**: Twenty-four females with FM belonging to 21 families were evaluated from the clinical, behavioral and cognitive points of view. Nineteen first-degree relatives (13 premutated and 6 normal females) served as controls in cognitive testing. Physical (PI) and Behavioral Index (BI) scores were applied. Several cognitive measurements were used according to age. DNA from lymphocytes was analyzed by StB12.3 Southern blot assay using EcoR1/EagI double digests. AMP was estimated considering the smallest FM detectable fragment size. AR was calculated using the equation NA/(NA+NI). **Results**: The mean full-scale IQ was (FSIQ) ($x=65.2\pm16.6$) signicantly lower in FM females than in their paired controls ($x=98.2\pm13.2$) ($n=19$ pairs, $P<0.05$). Similar results were obtained when performance IQ (PIQ) and verbal IQ (VIQ) were compared. The linear regression analysis was performed for each phenotypical variable (PI, BI, FSIQ, PIQ and VIQ) assessed in the 24 FM females, versus the two relevant FMR1 measures (AMP and AR): a strong negative correlation was found between PI and AR ($r=-0.62$, $P=0.00158$) but not in the other categories. As AR showed a linear association with age ($r=0.55$, $P=0.0069$) the same analysis was performed in the girls included in the group (n=19, mean age=7.56±3.72yrs) with similar results. No significant correlation was found either when the difference between paired control IQ and FM female IQ was compared. **Conclusions:** A dominant effect of the FMR1 full mutation on the mental development of FM females was observed with respecto to the genetic and environmental factors. The association of lymphocyte AR with physical characteristics but not with intellectual development may be due to specific tissue inactivation of the X chromosome. Results in tissues of ectodermal origin may correlate better with IQ.

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First molecular genetic study of three families with chronic granulomatous disease (CGD) in Argentina.

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Background: CGD is an uncommon primary disorder of phagocytic cells. Superoxide anion (O_2) production by leukocytes is absent or extremely low resulting in recurrent pyogenic infections in children. The molecular defect occurs in any of the four genes encoding for the proteins of the phagocytic NADPH-oxidase.The X-linked form is caused by mutations in the *CYBB* gene which localizes in Xp21.1. This gene encodes the 91-kD glycoprotein of the NADPH-oxidase which catalizes O_2^- production of phagocytic cells. No previous studies have been conducted in Argentina to characterize this disease. **Aim:** To perform molecular genetics analyses in patients of three X-linked CGD families of Argentina. **Patients and methods**: Four male-CGD patients from three unrelated families and their mothers were studied. The patients were previously diagnosed with CGD either by abnormal NBT or oxidation of dihydrorhodamine assay by flow cytometric analyses. Two mothers had a mosaic pattern characteristic of carriers while another had nearly normal results. Genomic DNA was isolated from patients and mothers. Amplification of the 13 exons of the *CYBB gene* by PCR and SSCP of the PCR products were performed. Sequencing analyses were carried out to confirm the mutations in the patients or to define the carrier status in mothers. **Results:** Two kindred presented single nucleotide substitutions. In the first kindred this is a C880T in exon 8. The second kindred, composed by two sibling,s is a G712T in exon 7. These nonsense mutations produced stop codons. The third kindred showed an aminoacid substitution Cys328Arg in exon 9. SSCP analyses of the mutated exons in the patients was also carried out in their mothers. An abnormal band pattern of polymorphism was detected suggesting the carrier status. **Conclusions:** The mutations detected are heterogeneous; no hot spots for these mutations were recognized in the *CYBB gene.* Furthermore, the mutations detected in these patients are responsible for the functional defect of the phagocytic NADPH-oxidase. SSCP can be informative to detect carriers when functional assays are not clearcut. However, confirmation of the carrier status in mothers by sequencing of the relevant exons are needed and ongoing in our laboratory.

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EVOLUTION OF THE SLEEP POSITION IN INFANTS

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INTRODUCTION: The position of infants when sleeping is one of the factors related with the sudden infant death syndrome (SMSL). From 1992 on a consensus recommends the supine or lateral decubitus for healthy infants from 0 to 6 months. The difficulties in modifying habits in the general population are well known.
AIM: To evaluate the evolution of the attitudes of a group of parents with regard to the position in which their children have been put to sleep during the last 5 years.
PATIENTS AND METHODS: This is a descriptive, observational study on the basis of 300 surveys, 100 in every year (1996-1998-1999) to families with healthy babies between 0 to 6 months of age that attended the hospital for routine immunizations. The surveys were carried out during September-December (spring).
The supine and/or lateral decubiti were considered as recommended positions (PR) while the prone and and/or indifferent decubiti were considered as not recommended (PNR).
RESULTS: The mean age of the 3 samples was comparable (3,1 months). 49%, 69% and 91% of parents placed their children to sleep in PR in 1996, 1998 and 1999, respectively. Analyzing the recommendations of the pediatricians as stated by the parents, a growing proportion recommended the PR throughout the years of this study, 56% (1996) 71%(1998) and 79%(1999). A closer agreement is also observed between the prescriptions of the pediatrician (as stated by the parents) and the position selected to put babies to bed. The reasons parents gave to choose certain positions are that they associate this with a decreased risk of SMSL and this tripled during the years in which the survey was carried out: 18% (1996) 24% (1998) 53% (1999). Among those whose previous children had slpet prone a significant change was observed in the current selection of position, favouring the PR: 42% in 1996 and 88% in 1999 ($p < 0,05$).
CONCLUSIONS: A favorable evolution of the attitudes of a group of parents is observed with regard to the position when putting to bed their children between 1996 and 1999. This is shown by: 1) the higher numbers of babies placed in PR associated with the knowledge on the part of parents of the association between sleeping position and SMSL; 2) higher correlation between the position selected and advise by their pediatrician. 3) greater acceptance of the PR among parents whose previous children had slept prone.

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OBESITY IN CHILDHOOD: PREVALENCE OF DISORDERS OF GLUCOSE METABOLISM.

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Evidence is accumulating suggesting that the prevalence of type 2 diabetes is increasing in children and adolescents. One possible explanation for this is the epidemic increase in obesity throughout the world. The aim of this study was to evaluate the prevalence of type 2 diabetes, impaired glucose tolerance (IGT), insulin resistance and insulin secretion in obese children and adolescents.
PATIENTS AND METHODS: we studied 498 asyntomatic obese patients. Obesity was defined as a BMI greater than or equal to the 85th percentile for age and sex. Diabetes and IGT were diagnosed according to new ADA criteria. Insulin resistance indeces and beta cell function were assessed by oral glucose tolerance tests (OGTT) by using the homeostasis model assessment (HOMA), the insulin resistance index (HOMAIR), the plasmatic β-cell function (HOMA β cell), the insulin/glucose index (AUCI/AUCG), the fasting plasma insulin (FPI) and insulin sensitivity index (ISI composite).
RESULTS: We found 44 patients with IGT (8.8%) and 7 with type 2 diabetes (1.4%). The mean age and BMI were not significantly different when comparing the groups.

	Normal Tolerance	IGT	Diabetes 2	P values
N	447	44	7	
HOMAIR	3.72± 0.19*	5.37± 0.66**	9.7± 3.75**	0.0005
HOMAβcell	982± 88.3*	549.8± 153**	142± 39.7**	0.0001
AUCI/AUCG	2.1± 0.65*	2.36± 0.43**	3.98± 2.4**	0.007
FPI (μU/ml)	20.5± 1.01*	23.5± 2.5**	30.07± 6.7**	0.04
ISI composite	4.18± 0.16*	2.55± 0.23**	2.18± 0.92**	0.0001

CONCLUSION: These results suggest that insulin resistance increases and insulin secretion worsens when glucose tolerance declines. Children with obesity should undergo glucose tolerance testing for the purposes of appropriate therapeutic interventions.

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EXPERIENCE WITH BREASTFEEDING IN PHENYLKETONURIC BABIES(PKU)

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Introduction **Breastfeeding can be a successful technique to manage PKU infants, especially in those countries where mothers are encouraged to breastfeed in order to prevent infectious diseases.** Objective: **To show our experience with breastfeeding in comparison to artificial lactation in PKU babies.**
Subjects and methods: **Phenylketonuria, according to the findings of our neonatal screening program has in our country an incidence of 1:15678 newborn. Retrospective data are shown from 22 PKU babies with adequate metabolic control. In 12 (G1) diagnosis was confirmed at a mean age of 24 days. They were treated with breastfeeding and Analog XP ® according to Greeve et al guidelines till their weaning at a mean age of 6.5 months. The other 10 PKU children (G2) were weaned after diagnosis (29 days) and received phenylalanine free products and formula with known amounts of phe. Time of achievement of metabolic control (phe < 480 mmol/l), height, weight and head circumference (HC) were compared till age 2 in both groups and till age 4 in 6 patients of G1 and 8 of G2. Maturation scores (CD) obtained with Gessell test were compared till age 3 and WIPSI scale (IQ) at age 4. Statistical analysis was performed with Mann Whitney U non parametric test.**
Results: **There were no significant differences between breastfed an bottle-fed babies in the studied variables. CD at 0.5, 1 , 2 and 3 years of age and IQ at four were: G1:100±8, 102±7 ,100±10,104±9 and 110±9 ; G2: 100±7, 101±11, 97±8, 98±6 and 104±14 without differences between groups. Breastfeeding required more effort in the professional team to support the mother early in lactation giving the family more time to elaborate the arrival of a PKU baby with a better bonding.** Conclusion: **Breastfeeding was a useful technique in PKU management in our country, being safe, economic and efficient for the good control and normal growth and development of these children, improving these families' quality of life.**

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PALIVIZUMAB FOR RESPIRATORY SYNCYTIAL VIRUS (RSV) PROPHYLAXIS: COST-EFFECTIVENESS ANALYSIS.

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RSV is the leading cause of bronchiolitis during the first year of life. Prematures (Pt) and patients with chronic lung disease (CLD) have more severe episodes with higher hospitalization rates. Palivizumab (PVZ), a monoclonal antibody with neutralizing activity against RSV, reduced the hospitalization rate by 55% in high-risk infants (IMpact Trial). The American Academy of Pediatrics recently published recommendations for the use of PVZ in selected patients. The objective of this study was to determine the effectiveness and cost of a PVZ prophylaxis program in our high-risk population. The design of the study was based on the hypothetical use of PVZ in a cohort of patients. The cost-effectiveness of its use was analyzed from the perspective of benefit to society. We estimated the following costs: PVZ cost (15mg/k,vial:100mg/ml; $ 1222,10), administration cost ($10) and hospitalization costs. The 55% efficacy observed in the Impact Trial was used as effectiveness measurement. We considered the high risk RSV season between May and September of two consecutive years (1998 and 1999). Infants were included if they had remained in our follow-up program and if they had been born with GA < 28w and were < 1 year old, or GA < 35 W and < 6 month old or active CLD patients. Infants were excluded if they lived more than 100 km from the hospital. A total of 42 patients were included: 24 (57%) CLD patients and 18 (43%) Pt. Ten patients were hospitalized for RSV-related disease (23,8% CI 95%= 12-39%), one of them died. The 1998 and 1999 hospitalization rates were 33% (6/18) and 16% (4/24) respectively. The estimated cost of PVZ administration was approximately $ 185.064 compared with hospitalization costs of $ 184.777. If we assumed 55% less hospitalizations, the cost of PVZ prophylaxis in preventing one admission (CPA) was 14.829$ and the NNT 7,9. When the probability of admission varied from 16 % to 33%, the CPA ranged from $ 21.420 to $ 7.710. This study provides a good model for cost effectiveness analysis, especially for expensive and effective treatments such as PVZ.

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INSULIN SENSITIVITY AND INSULIN SECRETION AS PREDICTOR OF THERAPEUTIC RESPONSE IN CHILDHOOD OBESITY.

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We have recently shown that the hyperinsulinemia is negatively associated with the response to the treatment in obese children. **Objective:** We assessed insulin sensitivity and insulin secretion by means of different indexes to evaluate which is the defect in the insulin homeostasis that affects the therapeutic response. **Materials and Methods:** We studied obese children, 108 females and 89 males. The mean age was 10.36±3.55 years old. The obesity was defined by Body Mass Index (BMI)>95th percentile. The therapeutic response was evaluated through the changes in the z score BMI. Plasma glucose and plasma insulin values from Oral Glucose Tolerance Test (OGTT) were used to obtain A) *Sensitivity Insulin Indexes:* Insulinogenic Index (I.I), Metabolic Clearance Rate (MCR) and Insulin Sensitivity Index (ISI). B) *Insulin Secretion Indexes:* First Phase Insulin Release (1stPH), Second Phase Insulin Release (2ndPH) and Homeostatic Model Assessment plasmatic β cell function (HOMAβcell).
The indexes were obtained by means mathematical model, validated by clamp. The therapeutic response was defined as positive (R+) when the z score BMI decreased al least 1 DS at 1 year of follow up and as negative response (R-) when it did not fall. Sensitivity Insulin Indexes and Insulin Secretion Indexes were analysed by Student Test. **Results:**

	LI	MCR	ISI	1st PH	2ndPH	HOMAβcell
R+	2.3±1.5	8.1±1.8	0.009±0.002	2203±1062	545±246	669±663
R-	3.5±3.7	9.0±1.5	0.1±0.002	2177±994	538±230	618±55
P	0.04	0.003	0.003	NS	NS	NS

By using logistic regression including all variables, also clinical ones, the model showed I.I. and MCR as predictors of therapeutic response. **Conclusion:** our results suggest that insulin resistance is negatively associated with response in obesity treatment.

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ADVANTAGES OF A NEW METHOD OF HOSPITAL ATTENTION FOR PATIENTS UNDERGOING HIGHLY COMPLEX SURGERIES. Authors: Drs. Halac, A.; Gimenez, M.C.; Lira, P.; Schon, A.; Spagnollo, M.E.; Prieto, F.; Komar, D.; Klogo. Balparda, C.; Lic. Fernández, E. National Pediatric Hospital "Prof. Dr. Juan P. Garrahan".

INTRODUCTION: Highly complex pediatric surgery requires the involvement of a large multidisciplinary team. Patients are generally admitted to an Intensive Care Unit (ICU) for follow up in the immediate post-surgical period. The limited capacity of intensive care units often delays surgery for these patients and originated the need for a new method of hospital attention in a third level health care institution.

AIM: To find a solution for patients with pathologies requiring relatively urgent surgical intervention while considering costs and benefits.

PATIENTS AND METHODS: An interdisciplinary team was formed with pediatricians, surgeons, anesthesiologists, physical therapists and nurses from the national pediatric hospital "Prof. Dr. Juan P. Garrahan" and a new working area was created called Post-Surgical Special Care (PSC) unit. At periodical interdisciplinary meetings, 138 patients were assessed of whom 86 (62.3%) were included in this study. Pre-surgical status, potential risk factors and possible complications were analyzed for each case, defining strategies for solutions and/or follow up. Patients requiring invasive monitoring and/or mechanical respiration were excluded from the study.

Results: All the selected patients (100%) entered the PSC unit; the mean stay at the unit was 1.1 days (SD± .3) and showed a highly significant difference (p value =0.000000 ---) compared to patients entering the ICU. This cost-effective form of hospital care saved the institution at least $ 120.000 in the first year.

Primary conclusions: A new method of hospital attention was designed for a third level health care center treating highly complex patients; suspension of surgical interventions was avoided; there was no associated morbidity caused by complications or infections; the emotional impact on the patients and their families was decreased.

Secondary conclusions: A better redistribution of resources was possible because of a considerable saving of public funds.

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Multivariate Mixed Distribution analysis applied on the assessment of iron deficiency anemia in populations

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Several methods have been applied in assessing iron deficiency in populations, showing different results in identifying the true anemic. Normal Mixed-distribution, a cumulative distribution function in the form

$$F(x) = \sum_{I=1}^{K} p_i F_i(x)$$

has been applied in assessing anemia in populations.

The objective is to compare parameters obtained by univariate mixed distribution analysis versus those obtained by multivariate analysis including hemoglobin (Hb), Serum Ferritin (SF) and Zinc Protoporfirin (ZPP).

A sample of 268 9 to 24 months old children was selected from a survey conducted in Ushuaia City, Argentina, randomly selected based on geographic location.

The final sample, including children with complete blood sample and whose parents agreed to participate was 107. No statistical differences were observed between the final sample and the total subjects selected.

When considering three mixtures, parameters were (mean values): 1st type (λ = .26) Hb 10.7 g/dl, SF 6.6 ug/l, ZPP 117.9 ug/dl; 2nd (λ = .64) Hb 12.2 g/dl, SF 13.4 ug/l, ZPP 49.0 ug/dl; 3rd (λ = .09) Hb 11.23 g/dl, SF 37.3 ud/l ZPP 61.4 ug/dl.

Model obtained seems to be the best one in order to explore the distribution of the values (Log Likelihood-733.56, X^2 41.48, p = .000) comparing with a model with no mixed distributions or compared with univariate analysis including Hb values. Final estimates obtained are more meaningful and parameters observed in three of the mixtures can be related to three iron deficiency stages.

Multivariate mixed distribution analysis seems to be a useful methodology in exploring and analyzing distribution of hematologic indices in populations. A more appropriate methodological design will let confirm present results.

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DEVELOPMENT OF FETAL CARTILAGE TISSUE "IN VIVO" USING TISSUE ENGINEERING TECHNIQUES. German Falke M.D*.,Monica Siminovich M.D***.,Delio Aguilar M.D**.,Anthony Atala M.D*.Department of Urology* .Childrens Hospital, Boston, MA, USA. Division of Lung Transplant Division** and Dept. of Pathology*** Hospital Garrahan ,Buenos Aires, Argentina.

Introduction Chondrocytes isolated, cultured and then seeded in adequate cellular transporters (polymers) achieved therapeutic use by means of tissue engineering.

The aim of the present study is to develop fetal cartilage using an experimental model in vivo.

MATERIAL AND METHODS Minimal invasive open surgery and fetoscopy was performed to obtain fetal cartilage. An experimental model in sheep on the 95th day of pregnancy was used and a segment of cartilage 1.5 x 1.5 cm was obtained.

The tissue was treated with collagenase at 37ºC for 6 hours. Once isolated fetal chondrocytes were seeded on biodegradable polymers of polyglycolic acid. Seeding concentrations of 25, 50, 75, and 100 million cells per ml were used. The polymers were implanted in transitional animals (athimic mice) for 2, 4, 6, 8, and 12 weeks. Each test used as control the unseeded polymer.

RESULTS: all animals survived the study. Animals were sacrificed at 2, 4, 6, 8 and 12 weeks of life. The tissue grown *in vivo* was fixed, processed and embedded in paraffin, and 5 µm sections were cut. They were stained with H&E, Alcian Blue, Toulidin Blue, Masson's Trichrome, and Saphranin O. Tissue with histologic differences according to the concentration of cells seeded grew in all polymers. The polymers reabsorbed slowly and by the end of the 6th week there was no evidence of the polymer in the sections. None of the unseeded polymers was able to develop tissue

CONCLUSION: The cellular concentration with which the polymers are seeded is crucial for the *in vivo* growth of cartilage. Polymer seeded with 75 and 100 million cells were able to develop tissue with satisfactory histologic characteristics. Time is another important factor given the fact that we observed better quality of tissue by the end of the study.

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TETANUS AND DIPHTHERIA ANTIBODY LEVELS IN FULLY IMMUNIZED HIV-1 INFECTED CHILDREN. Takano DM; Succi RCM; de Moraes-Pinto MI

It is well known that children infected by the Human Immunodeficiency Virus-1 (HIV-1) have worse responses to immunization than their healthy pairs. A faster decay in antibody levels after immunization is also apparent.

PATIENTS AND METHODS: Tetanus and diphtheria antibody levels were assessed in 70 HIV-1 infected children 2 years of age or older old who were followed up at the Pediatric AIDS Clinic of the Federal University of São Paulo, Brazil. All the children had been fully immunized against tetanus and diphtheria, and were up-to-date with their booster doses.

Antibody levels were tested using a double antigen enzyme immunoassay, known to have a good correlation with *in vivo* neutralizing assays.

RESULTS: Mean tetanus antibody levels were 0.200 IU/ml, (range 0.004–3.176 IU/ml). Among the 70 children infected with HIV, 8 (11.4 %) had antibody levels below 0.01 IU/ml, 13 (18.6%) had levels between 0.01 and 0.1 IU/ml and 49 (70%) above 0.1 IU/ml. Mean diphtheria antibody levels were 0.051 IU/ml, (range 0.004 – 3.873 IU/ml). 18(25.8%) had antibody levels below 0.01 IU/ml, 26 (37.1%) between 0.01and 0.1 IU/ml and 26(37.1%) above 0.1 IU/ml.

Only 25 out of 70 children (35.7%), although fully immunized, showed tetanus and diphtheria antibody levels above 0,1 IU/ml (full protection).

CONCLUSIONS: These results indicate that a profilatic scheme might be necessary for HIV-1 infected children after wounds or contact with a diphtheria case. Moreover, more frequent boosters might be also recommended for this high risk population.

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RANDOMIZED CLINICAL TRIAL OF DIFFERENT EXCHANGE INTERVALS AND CATHETER-RELATED INFECTION IN BURNED CHILDREN: Murruni A.; Guarracino F.; Basílico H.; Demirdjian G. Burn Unit. Hospital J.P. Garrahan. Buenos Aires. Argentina.

INTRODUCTION: Catheter-related infections (CRI) in burned patients admitted to intensive care units varies between 3% and 16%, but sound scientific evidence on which to base recommendations regarding adequate exchange interval or catheter permanence time is lacking. For this reason a randomized clinical trial to compare CRI incidence in burned children with central venous catheters exchanged at two different time intervals (at 4 versus 7 days) was designed.

METHODS: All burned children with central venous line requirements admitted to the Burn Unit of Hospital J.P. Garrahan from March 1997 to March 1998 were randomized to receive catheter either every 4 (G1) or 7 days (G2). Catheters were inserted according to Seldinger technique over a guidewire. Catheter tip cultures were analyzed by Maki's semiquantitative technique. CRI was defined as a blood culture plus a catheter tip culture both positive for the same microorganism. Statistical analysis was performed using bivariate and multivariate methods.

RESULTS: One hundred and fifty two venous catheters (80 from G1 and 72 from G2) belonging to 53 children with a mean burned body surface area (BBSA) of 40% were analyzed. There were no baseline differences in BBSA, inhalation, mechanical ventilation, type of infusions or catheter characteristics (site, type, number of lumens or hubs, and distance to burned skin). Global annual CRI incidence was 3.3% (5 episodes all in G1=1.56/100catheter-days and none in G2; p=0.03, Fisher's exact test), with a RR of 0.51 (95%CI=0.44-0.60) favoring weekly exchange. A logistic regression model including potential risk factors for CRI in these patients as covariables (BBSA, catheter site, distance to burned skin, number of hubs and exchange interval) selected exchange group as the only significant variable remaining in the adjusted model (p=0.0025, LR test).

CONCLUSIONS: In burned children weekly venous catheter exchanges over a guidewire are associated with a lower incidence of CRI than shorter intervals. Changing to a weekly exchange routine in our unit represented a decrease in CRI incidence to 0.09/100catheter-days and considerable savings in catheters and antibiotics estimated in $58720 per annum.

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VALIDATION OF THE NATIONAL SCREENING TEST (PRUNAPE)

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INRODUCTION: The National Screening Test (PRUNAPE) is aimed at the prompt detection of inapparent developmental problems. It was prepared using the data bank obtained from 3573 healthy children from all over the country studied by 200 previously trained pediatricians.The test includes centiles for the age of attainment of 78 developmental milestones in the usual four areas: fine and gross motor, speech and personal-social.

PATIENTS AND METHODS: The validation was performed on 104 children attending a low risk outpatient clinic at Hospital J.P. Garrahan. All these children were administered the test, together with diagnostic examinations, carried out by five specialized Departments of the Hospital: Multidisciplinary Clinic (Bayley, Terman or WWPPSI, Gardner, ITPA), Neurology (complete neurologic examination), Mental Health (DSM IV), Ear, Nose and Throat (Audiometry, Otoacustic Otoemisions), Ophthalmology (visual acuity).

RESULTS: The Sensitivity of the test was 0.80, its Specificity: 0.93, Positive and Negative Predictive Value: 0.94 and 0.78 respectively, Percentage of coincidence: 0.86. The prevalence of developmental problems in the sample was very high (57%). The problems detected were: global delayed maturation (15 children), speech problems (20), pyramidal syndrome (12), mental retardation (6), disturbances of the mother–child bond (29), visual alterations (8), deafness (8). Some children had more than one developmental disturbance.

CONCLUSIONS: These results support recommendations for the test to be performed at the primary care level, although it will be necessary to evaluate it on groups of children with lower prevalences of developmental disturbances.

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IMPACT OF TRAINING ON ERRORS IN ANTHROPOMETRIC MEASUREMENTS Caino S*, Lejarraga H*, Adamo P*, Kelmansky D**.. Dept. of Growth and Development. Hospital J.P. Garrahan*. Institute of Calculus. U. of Buenos Aires, Buenos Aires, Argentina**.

INTRODUCTION: In order to set up adequate techniques for a study on saltatory growth based on daily measurements it became necessary to reduce errors in measurements to acceptable levels.

AIM: The aim of this study was to evaluate the effect of the training on measurement errors in three anthropometrics techniques.

PATIENTS AND METHODS: Training in measuring standing height, supine length and lower leg length was performed for 10 weeks in 325 children attending the Hospital for different health reasons. Height and length were measured twice in each child by the same observer. Lower leg length was measured sequentially five times to the nearest 0.01 mm with a knemometer with an electronic reading device. Intraobserver measurement error was calculated by three methods: standard deviation (SD) of the differences between duplicate measurements, technical error (ET= $d/2n$) and coefficient of variation (CV= DS/ x).

RESULTS: At the begining of the training period the SD of the differences for standing height and supine length were 0.41 cm and 0.31 cm, respectively in the first week of the training period versus 0.15 cm for both measuremens at the end of the period. The SD for leg length measurements was 1.35 mm in the first two weeks and 0.80 mm in the tenth week of measurements. The CV obtained at the end of learning was 0.11, 0.19 and 1.34% by standing height, supine length and leg length, respectively. The trends in technical errors were parallel to those in the three anthropometrics techniques.

CONCLUSIONS: Ten weeks of training were sufficient to achieve acceptable measurement errors for height and supine length. On the contrary, the error obtained with knemometry was not small enough to allow research on saltatory growth.

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IMMUNE AND METABOLIC STRESS RESPONSES IN MILD BURN PEDIATRIC PATIENTS. Rodríguez-Osiac, L.; Marín B, V.; Schlesinger L.; López, M.; Iñiguez, G.; Villegas, J.; Castillo-Durán, C. INTA U. de Chile y Hospital Luis Calvo Mackenna, Santiago de Chile.

INTRODUCTION: The metabolic, immunologic and neuroendocrine changes caused by burn injuries are the most severe described in critically ill patients. After the burn, a systemic inflammatory response syndrome develops which may become self-perpetuating independently of the initial injury. The main cause of death in these patients is their high susceptibility to infections, where anergy has been postulated as a major determinant.

AIM: To describe the early immune and metabolic stress response in burned children.

PATIENTS AND METHODS: Twelve children admitted to our hospital between May 1999 and July 2000, were evaluated within 48 hour after the injury, type AB or B, with total body surface area (TBSA) burn between 10% and 40%. Mean age was 28 months (17 mo- 41 mo), 9 were females, mean TBSA burn was 21.3 ± 7.8%. Items evaluated included 1) lymphoproliferative response, 2) interleukin (IL) 1 and 6 and tumor necrosis factor (TNF) blood levels, 3) metabolic stress response expressed as C-reactive protein (CRP), prealbumin, albumin, glycemia, total urinary nitrogen and insulin like growth factor (IGF-I). **RESULTS:** 3 patients were overweight (%W/H), 2 were obese and 7 normal. The immune evaluation disclosed that he lymphoproliferative responses to phytohemaglutinin (PHA) 5 ug/culture were normal and decreased in 6 children with PHA 0.5 ug/culture. TNF levels were detectable in 5 patients, IL-1 in 7, IL-6 in all. Stress evaluation showed that all the children had serum albumin < 3 gr/dl (mean = 2.4 ± 0.4 gr/dl) and 10 had prealbumin < 0.1 mg/L (mean = 0.07 ± 0.03 mg/L); nitrogen urinary losses were increased in all children (mean = 280 ± 9 mg/kg/day), glycemia and CRP were slightly increased (106 ± 33 mg/dl and 25.8 ± 22 mg/L, respectively) and IGF-I levels were in the lower limit for age (mean = 42.2 ± 11 ng/dl). A significant correlation was found between IL-6 and TBSA burn ($r = 0.62$, $p < 0.05$), CRP ($r = 0.71$, $p<0.01$), albumin ($r = -0.63$, $p<0.05$) and IGF-I ($r = -0.75$, $p<0.01$). Correlations were also found between albumin and IGF-I with TBSA burn ($r = -0.71$, $p<0.01$ and $r = -0.67$, $p<0.05$, respectively).

CONCLUSIONS: The early response in mildly burned children is characterized by a close association between burn extent, inflammatory reaction (evinced by IL-6) and metabolic stress (evinced by CRP, IGF-I and albumin).

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URINARY EXCRETION OF D (-) LACTIC ACID AFTER INTAKE OF A MILK FORMULA THAT CONTAINS PRE- OR PROBIOTICS.

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Consumption of milk products containing probiotics (such as *L. acidophilus* LA1) or prebiotics (in the form of fructooligosaccharides, FOS), has been increasing considerably in recent years. FOS specifically stimulate the growth of lactobacilli and bifidobacteria in the colonic lumen. In the other hand, mammalian enzymatic systems do not produce significant amounts of D(-) lactic acid; in consequence, its presence in the body may be attributed to its intake with foodstuffs, carbohydrate malabsorption or the metabolism of intestinal resident bacteria such as *Lactobacillus acidophilus*. In this study, we evaluated the safety of adding LA1 or FOS to a follow-up milk formula, NAN2, in a randomized double blind, prospective experimental design. Urine was collected at four month of age (time 0) and 4 weeks after initiation of feeding the study formulas in 19 breastfed infants, 15 infants who received NAN2, 19 infants who received NAN2 supplemented with 10^8 LA1/g and 12 infants who received NAN2 with 2g/L FOS added. A highly sensitive enzymatic method with fluorimetric detection was developped for measurement of D (-)lactic acid in spot urine samples (detection limit = 3.4 mM). Measurements were related to urinary creatinine excretion. In the initial samples, breastfed infants excreted D (-) lactic acid ($p<.05$, Kruskall-Wallis), which was related to their lower creatinine excretion ($p<.05$). No significant differences in mean lactic excretion were observed at 4 weeks. None of the children excreted D (-) lactic acid in amounts that exceeded the physiological, age-specific reference values. These results indicate that feeding LA1 or FOS in follow-up formulas is safe and do not increase the risk of D (-) or L (-) lactic acidosis in infants of this age group.

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"IN VITRO" DIGESTIBILITY OF MILK PROTEINS IN INFANT FORMULAS

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INTRODUCTION: Breast-feeding provides optimal nutrition to infants. However, sometimes it must be replaced or supplemented by milk substitutes, which must be carefully designed for this purpose. There is little information about the effects of the manufacturing processes on the digestibility of infant formulas and, consequently, on their nutritive value.

AIM: The aim of this study was to evaluate *in vitro* digestibility of milk proteins from infant formulas (F) available in the market. Sixteen milk-based F were analyzed (6 for preterm and 10 for term infants). Total nitrogen (TN) and non protein nitrogen (NPN) were determined by the Kjeldahl method. True protein was calculated as (TN-NPN) x 6,25. Digestibility was assessed by digestion with pepsin and pancreatin (J Pediatr Gastroenterol Nutr 1992; 15:25-33); protein digestibility was defined as the increase in NPN, after pepsin/pancreatin digestion.

RESULTS: Digestibility values varied between 59 and 93%. An inverse correlation was observed between protein digestibility and protein content ($p<0.04$). Considering the "true" protein levels (substracting initial formula NPN), 2 out of 6 preterm F had levels below recommendations (2.25 g/100 kcal). Taking into account the proportion of protein that would be digested, none of the preterm F was above that value. In term F, 6 of the 10 analyzed, would contain less than 1.8 g/100 kcal potentially available protein.

CONCLUSIONS: Even though this method of assessing "in vitro" protein digestibility represents an approximation to physiological processes, these observations constitute an alert regarding real protein utilization by newborn infants.

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IRON ANEMIA IN PRESCHOOL CHILDREN IN BRAZILIAN CAPITALS- Partial results.Fisberg,M;Braga,JAP;Nauffel,CCS;Brunken,G;Giugliani,E;Cintra,IP;Lima,FMLS; Matosinho,SG;Valle,J;Schmitz,BA;Marliere,C; Rocha,JÁ; Yuyama, LKO; Maia,J;Gusmão, RH; National Project for Nutritional Evaluation of Preschool children, U. São Marcos and UNIFESP, Sao Paulo, Brazil.

INTRODUCTION: Brazil is facing a situation of nutritional transition, with increases in anaemia and obesity and decreases in the level of infantile malnutrition. Regional studies have shown a high prevalence of anemia, but data national in scope is lacking. Based on these facts, a national survey for diagnosis of anemia was set up evaluating institutionalized children under 3 years age. **METHODOLOGY:** 20 private, federal and state university teachers, from the capital cities of Brazilian States were contacted personally by the principal investigator to organize local teams. Digital hemoglobinometers were After adquate training a survey of 400 children was carried out for each city with a total of 8000 children analyzed. **RESULTS:** Partial results in 10 states showed a meab prevalence of anemia of 48.9% (Hb < 11g/dl). The States with higher prevalence of malnutrition (North East of Brazil) had prevalences of anemia of 49% with the highest and the lowest prevalences (18-81%). Northern States, with high prevalences of malnutrition had prevalences of 51%, the same as the Central States, with satisfactory nutritional conditions. In the South of the country, the most developed area, 48% of children were anemic. No correlation was observed between nutritional status and anemia. Children below 1 year of age had significantly higher prevalence of anemia than older ones. Local food variety, feeding habits, caring and the inclusion of meat in the school meals, are factors protecting from the occurrence of anemia. **CONCLUSIONS:** High levels of anaemia observed reflects the national development, comparable to that of other developing countries.

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FEEDING DISORDERS IN CHILEAN INFANTS. Sánchez S, and Castillo C. INTA, U. of Chile, Santiago, Chile

INTRODUCTION: Feeding disorders are frequent in children, however, information about their characteristics or their impact on the growth is scarce. **AIM:** To characterize Chilean urban infants with feeding disorders (FD). **PATIENTS AND METHODS:** 67 children were studied (4-24 months of age), selected at Primary Health Care Centers and private clinics. 34 with FD constituted the study group (SG) and 33 served as controls (CG). Surveys were applied to mothers or caretakers. **RESULTS:** The begining of the FD was more frequently reported during the first semester of life (X=5.7 m), and these were associated with the introduction of new meals. Mean Z scores for weight/age (W/A) and weight/height (W/H) ($p=0.0001$), height/age (H7A) and the weight at birth were also less in the SG ($p= 0.007$ and $p=0.01$ respectively). Breast feeding for ≤4m was more frequent in the SG. Logistic regression analysis showed as significant variables weight at birth and maternal history of FD during childhood. Mothers of SG felt their maternal role more difficult and unsatisfactory than control mothers. **CONCLUSION:** FD in Chile are more frequent during the first semester of life, and are associated with growth faltering and lower birth weight, a shorter period of exclusive breast feeding and mothers with histories of FD in childhood and more unsatisfactory maternal role.

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NUTRITIONAL ASSESSMENT IN CHILDREN WITH INFLAMMATORY BOWEL DISEASE. Martinengo L; Bay L; Rocca A. Hospital "J.P.Garrahan" Buenos Aires, Argentina.
INTRUCTION: In inflammatory bowel disease (IBD), nutritional status may be altered. Appetite disminishes and a great amount of the energy consumed is spent in the inflammatory process. Corticosteroids are usually prescribed, and they may alter growth, appetite and body weight. **AIM:** Our objective was the retrospective evaluation of the nutritional status of 102 children treated between September 1987 and May 2000. **PATIENTS AND METHODS:** Their age was between 4 months and 16 years of age (X 9.03±3,88), 50% of each sex. 11 had Crohn's disease (CD), 77 had ulcerative colitis (UC), and 14 had indeterminate colitis (IC). Symptoms had appeared 15 days to 84 months before diagnosis, without significant differences between the 3 groups. In he first examination there was already a positive correlation (p 0.042) between the length of the prodromic period and Z score for height (ZS), wich was 0.61±0.6 for CD, 0.17±1.8 for UC and 0.30±1.01 for IC, without significant differences between groups. Before treatment height ZS was > -1 in 16 patients (20,8%); and weight ZS > -2 en 5 patients (7.1%) and > -1 in 20 patients (28%). When other treatments were ineffective, systemic corticosteroids were used in 67 patients. The last height ZS registered during follow-up was significantly different (p 0.01) comparing patients who received corticosteroids (X=-0.38±1.06) with those who not treated with them (X=0.33±0.8). There was significant negative correlation (p 0.001) between total corticosteroids administered and the last height ZS registered (model: ZS for height = (0.11-1.88) x corticosteroid dose). Weight and body mass index (BMI) were altered notably during treatment, although the last BMI ZS did not differ whether the patients were treated or not with corticosteroids. Children with extraintestinal manifestations of the diseases did not have different growth patterns. In the first evaluation, 21 children (31%) had plasmatic albumin <3g% and a further 36 had the same alteration at other times during the follow-up. 37 children (53%) had hemoglobin <11g% at the beginning and another 41 during follow-up. Nutritional and growth vigilance are the cornerstones in the follow-up of children with IBD. Corticosteroid therapy induces acute changes in weight without long-term alterations; stunting is dose-dependent. Albumin and hemoglobin decresed during relapses.

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DETECCTION OF VITAMIN A DEFICIENCY IN BRAZILIAN CHILDREN LIVING IN URBAN ZONES USING THE +S30DR TEST. IS Ferraz, JC Daneluzzi, H Vannucchi, AA Jordão Jr, RG Ricco, LA Del Ciampo, V Dalboni, CE Martinelli Jr, AAD Engelberg, LRCM Bonilha. Departament of Pediatrics and Child Care, Faculty of Medicine of Ribeirão Preto – University of São Paulo, Brazil.
BACKGROUND: Vitamin A deficiency (VAD), an important cause of childhood morbidity and mortality, is endemic in various parts of Brazil but has been little studied in urban areas in the State of São Paulo. **AIM:** The aim of the present study was to identify VAD by the +S30DR test in preschool children at a General Pediatrics outpatient clinic. **METHODS:** One hundred and twenty one preschool children, age 24 to 71 months and 29 days were selected. They dis not have diarrhea and/or febrile diseases at the time of blood collection and were regularly followed up at the basic health unit. The +S30DR test consists of collecting a blood sample for measurement of serum retinol levels immediately before (T_0) oral supplementation with 200.000 IU retinol palmitate followed by a new blood collection for the same purpose 30-45 days afterwards (T_1). The formula $(T_1.T_0/T_1) \times 100$ is applied to calculate +S30DR. Individual results ≥ 20% are indicative of low hepatic reserves of vitamin A. Laboratory analysis of serum retinol was performed by HPLC. Ocular inspection for signs of xerophthalmia was performed on all children, in addition to weight and height measurements for analysis of nutritional status. **RESULTS:** 74.4% (90/121) of the children had +S30DR indicative of low hepatic reserves. The proportion of children with deficient serum retinol levels according to the cut-off proposed by WHO (≤ 0.70µmol/l) before supplementation was significantly higher than after supplementation: 33.9% (41/121) and 5.0% (6/121), respectively (McNemar test). Mean pre-supplementation serum retinol levels were significantly lower than post-supplementation levels (0.87 and 1.57 µmol/l, respectively; p<0.0001, paired t test). No child was considered to be wasted or stunted and none had xerophthalmia. **CONCLUSIONS:** Supplementation with retinol palmitate succeeded in changing vitamin A status, with VAD being present in the study population and affecting children apparently without malnutrition or xerophthalmia. Furthermore, the +S30DR test proved to be more sensitive for the detection of children with VAD than the cut-off proposed by WHO for deficient serum retinol levels (≤ 0.70µmol/l). These findings indicate the need for more studies for the identification of VAD in other communities in the State of São Paulo in order to plan actions to eradicate it.

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Lamellar Body Counts (LBC) in Amniotic Fluid: Evaluation as a rapid test for the prediction of fetal lung maturity.

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Perinatal outcomes and guidelines for the management of high-risk pregnancies are mainly based on the sure assessment of fetal lung maturity.

Objectives: 1) to estimate the ability of LBC in AF as a predictor of fetal lung maturity and 2) to evaluate the agreement between Amniotic Fluid LBC and Clement' test.

Materials and methods: 111 AF samples from pregnant women between 30 and 42 gestational weeks (mean ± SD : 36.1 ± 3.7) were included.

Four tests that the Laboratory runs routinely to predict fetal lung maturity were performed: Test of Clements, Test of Freer, Foam Stability Index and Photometric Absorbance at 600 nm. LBC was performed on every sample following the technique as described.

Results: The following Diagnostic Indexes were computed: Prevalence of Positive Clements, Prevalence of Negative Clements, False Positive, False Negative, Sensibility and Specificity. Pronostic Efficiency: Predictive Positive Value, Negative Predictive Value, Efficiency, Positive and Negative Likelihood Ratios and Positive and Negative Pronostic Error.

Conclusions: LBC as compared with the lung maturity biophysical tests showed a moderate correlation degree, high concordance and pronostic efficiency, that is why we've included this test along with our parameters for assessing lung maturity due to its capacity in countings greater than 30.000/mm3 and lower than 10.000/mm3 (this fact would make unnecessary the use of L/E (cromatography)), but would always be enclosed to the traditional profile. Besides, it is rapid, low-cost test that requires a small sample volume and instrumental accessible to almost all laboratories.