MEETINGS ORGANISED ON THE OCCASION OF EXCELLENCE IN PAEDIATRICS

PLENARY SYMPOSIUM: EXPANDING THE PUBLIC HEALTH IMPACT IN BACTERIAL RESPIRATORY DISEASES PREVENTION

THE 10-VALENT CONJUGATED PNEUMOCOCCAL VACCINE: DIRECT PROTECTION DATA AND PRELIMINARY DATA ON INDIRECT PROTECTION OF PNEUMOCOCCAL DISEASE

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The 10-valent pneumococcal polysaccharide conjugate vaccine (*Synflorix*™; GSK Biologicals, Rixensart, Belgium) is licensed in over 40 countries globally for active immunisation against invasive pneumococcal disease (IPD) and otitis media (OM) caused by the vaccine serotypes. PCV10 contains three additional serotypes (1, 5 and 7F) to the 7-valent, CRM197-conjugate vaccine (PCV7) in line with the World Health Organization (WHO) minimal target product profile for new conjugate vaccines.[1] PCV10 utilises non-typeable *Haemophilus influenzae* (NTHi) protein D, a novel conjugate carrier, for 8 of its 10 serotypes. Protein D is a conserved surface protein which has demonstrated protection against NTHi in animal models[2] and clinical trials.[3] Licensure of PCV10 was based on comparative immunogenicity with PCV7 as required by the WHO.[4] Studies assessed the amount of antibody by ELISA,[5] functional capacity of antibody responses by opsonophagocytic activity (OPA), and induction of immune memory. For PCV10 and PCV7, percentages of infants with anti-pneumococcal antibody concentrations ≥0.2 μg/mL (22F-inhibition ELISA) were generally within similar ranges for the common serotypes following vaccination among different populations and with different vaccination schedules, with antibody responses also observed for the three additional serotypes.[6,7] Following booster vaccination, almost all subjects reached pre-determined ELISA and OPA thresholds.[6–9] *Synflorix*™ also elicited antibody responses against protein D.[4–6] Co-administration with a wide range of commonly used paediatric vaccines did not demonstrate differences in antibody responses or tolerability in any of the vaccines,[6–8,10] and PCV10 safety and tolerability was comparable to PCV7.[11] In a descriptive open study with PCV10, carriage of pneumococcal vaccine serotypes was reduced by 22–35% in infants during the second year of life,[12] similar to observations with PCV7 and PCV9.[13,14] These preliminary data indicate that the vaccine could potentially induce herd effect against IPD. PCV10 provides broader serotype coverage against IPD in Europe compared with PCV7 and may extend protection against OM.

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PLENARY SYMPOSIUM: EXPANDING THE PUBLIC HEALTH IMPACT IN BACTERIAL RESPIRATORY DISEASES PREVENTION

THE POTENTIAL PUBLIC HEALTH BENEFIT OF *SYNFLORIX*™. EXAMPLE FROM THE UK

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Objectives: To define the potential public health benefit of vaccinating birth cohorts with the newly licensed 10-valent conjugate vaccine (*Synflorix*™; GlaxoSmithKline

Biologicals, Belgium) when compared with the 13-valent pneumococcal candidate vaccine (PCV13).

Design: Markov model to project the impact of pneumococcal vaccination on the incidence of pneumococcal and NTHi-infections.

Data Sources: UK-specific epidemiological data, serotype and pathogen distribution per disease type and per age group.

Target Population: UK birth cohort.

Time Horizon: Lifetime.

Perspective: UK NHS (3.5% discount rate).

Intervention: 4-dose (3+1) schedule assumed for both vaccines with 100% vaccine coverage.

Herd Protection: Fixed value at vaccine steady state.

Outcome Measures:Impact of invasive disease (ID), community-acquired pneumonia (CAP) and acute otitis media (AOM) in terms of QALYs, LYs and costs.

Sensitivity/Scenario Analyses:Impact of changes in key model assumptions including NTHi infection rates in ID and CAP.

Results: Under base case conditions which include minimum conditions of NTHi infection rates in ID and pneumonia, both vaccines prevent an equal number of deaths from all causes compared to no vaccination (38 deaths prevented). Vaccinating a birth cohort with PCV10 in the UK is expected to prevent 7,150 additional myringotomies and 104,300 cases due to AOM when compared to PCV13. At price parity per dose, the total savings to the UK healthcare system over a lifetime of the cohort is estimated at £25.8M (discounted) for PCV10 compared with PCV13. Sensitivity analyses indicate that AOM, bacteraemia and NTHi-infection rates have the biggest impact on the model results.

Discussion: Under the same base case conditions, the two vaccines are comparable for excess mortality attributable to ID and pneumonia. QALYs are improved for PCV10 compared to PCV13 because of the potential greater impact on AOM. At price parity and based on the model's assumptions, PCV10 is projected to be cost-saving to the UK healthcare system compared to PCV13.

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SYMPOSIUM: HIGHLIGHTS IN PAEDIATRIC VACCINATION: MEDICAL NEEDS AND VISION

ARE WE REALLY ACHIEVING OPTIMAL PROTECTION AGAINST PERTUSSIS? THE C.O.P.E. PROPOSAL

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Despite extensive paediatric vaccination programmes, pertussis remains prevalent in many countries,[1] even those with high infant vaccination coverage. For example, in 1998–2002, >72,000 pertussis cases were reported in Europe across all age groups.[2] These figures may not truly reflect disease incidence due to heterogeneity in surveillance systems (including differences in case definitions and variation in laboratory diagnoses), mis-diagnosis and under-reporting.[3] Observed limited disease control is likely related to waning natural or vaccine-acquired immunity (after 4–12 years).[4] Adolescents and adults are particularly susceptible to infection, and while pertussis can be mild or even asymptomatic in these age groups, they represent a significant infection source for vulnerable infants and contact persons. Pertussis vaccination schedules vary between countries and although many routinely include pertussis booster vaccination for children (particularly at pre-school age), similar booster recommendations for adolescents and adults are less common. An expert European panel, the 'Consensus On Pertussis booster vaccination in Europe' (C.O.P.E.) group, therefore discussed and proposed pan-European guidance for use of reduced-antigen-content-tetanus-diphtheria-acellular pertussis (dTpa) booster vaccinations in adolescents and adults.[5] Introduction of an adolescent pertussis booster dose effectively reduced disease incidence in this population in France and Canada, reducing the reservoir of infection represented by this group.[6,7] Consequently, in France the main source of infant infection shifted to older individuals (mainly the parents).[7] Clearly, cocooning strategies (i.e. vaccinating close contacts of newborns) will continue to be necessary until immunisation coverage in adults is sufficient for herd protection.[8–10] Adolescent/adult dTpa vaccine formulations provide the opportunity to vaccinate beyond childhood and have been shown to be highly immunogenic both in previously vaccinated children, adolescents and adults, and unprimed adults.[11–14] Control of *Bordetella pertussis* circulation is crucial and requires regular boosters for the whole population.[5,15] Implementation of the C.O.P.E. booster vaccination proposals would help optimise protection throughout life.

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SYMPOSIUM: HIGHLIGHTS IN PAEDIATRIC VACCINATION: MEDICAL NEEDS AND VISION

IMPROVING THE CONTROL OF VARICELLA BREAKTHROUGHS AND OUTBREAKS

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Routine childhood immunisation with a single dose of varicella vaccine has been widely accepted in many parts of the world, including Europe,[1] significantly reducing morbidity and mortality.[2,3] However, single-dose vaccination is only 85–90% effective[4,5] and approximately 10% of children develop breakthrough varicella, defined as rash occurring more than 42 days after vaccination.[6] This mild version of the disease can spread to susceptible individuals, leading to outbreaks.[7] In a 10-year study of 2216 children, breakthrough disease was 3.3-times lower in those who had received two doses of the varicella vaccine, compared with those receiving one.[8] Furthermore, breakthrough disease was lower in children who received two doses of *Priorix-Tetra*™ (GlaxoSmithKline Biologicals, Rixensart, Belgium), a measles-mumps-rubella-varicella (MMRV) live attenuated vaccine, than in those who received a single dose of *Varilrix*™, GlaxoSmithKline Biologicals' monovalent varicella vaccine.[9] The recent availability of the MMRV combination vaccine helps to integrate two-dose varicella vaccination into the routine immunisation schedule.[10]

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SYMPOSIUM: HIGHLIGHTS IN PAEDIATRIC VACCINATION: MEDICAL NEEDS AND VISION

FROM EFFICACY TO EFFECTIVENESS: IMPACT OF HUMAN ROTAVIRUS VACCINE

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Rotavirus gastroenteritis (RVGE) is a disease of global concern. Each year, rotavirus (RV) is responsible for 2.4 million hospitalisations[1] and over half a million deaths in children aged <5 years.[2] In Europe, RVGE causes an estimated 6550 deaths and >146,000 hospitalisations each year, with 1 in 70 children from each year's birth cohort admitted to hospital because of RVGE during their first 5 years of life.[3] Collecting data on the burden of RVGE is essential to guide recommendations for RV vaccine use. The surveillance programmes SPRIK (Surveillance in Primary care centers for Rotavirus Infections in Kids) and SHRIK (Surveillance in Hospitals for Rotavirus Infections in Kids) evaluated the burden of disease in children aged <5 years in Europe.[4,5] SPRIK demonstrated that the burden of RVGE is high among European children visiting primary care centres, with 69.1% of RVGE occurring in children aged <2 years and 6.9% in infants <6 months, supporting the need for vaccination as early as possible.[4] Furthermore, RVGE places significant demands on European healthcare systems, with community-acquired acute RVGE accounting for 56.2% of hospitalisations and 32.8% of emergency department visits in children aged <5 years.[5] These results suggest that effective RV vaccination could have a major impact in reducing RVGE morbidity and pressure on European hospital services. Indeed, global randomised clinical efficacy/safety trials have demonstrated that the human RV vaccine, *Rotarix*™ (GlaxoSmithKline Biologicals, Rixensart, Belgium), administered as a two-dose schedule by 10 weeks of age, provides broad protection against diverse circulating RV strains in developed and developing countries.[6,7] In Belgium, the weekly number of RV-positive laboratory diagnoses decreased by >50% following the introduction of rotavirus vaccination.[8] These findings suggest that widespread implementation would effectively reduce the global burden of RVGE and support the WHO recommendation for the inclusion of RV vaccines in all national immunisation programmes.[9]

Rotarix is a trademark of the GlaxoSmithKline group of companies

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SYMPOSIUM: HIGHLIGHTS IN PAEDIATRIC VACCINATION: MEDICAL NEEDS AND VISION

THE BURDEN OF MENINGOCOCCAL DISEASE AND PREVENTION STRATEGIES

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Invasive meningococcal disease (IMD), including meningitis with/without septicaemia, remains endemic in Europe.[1] Most IMD occurs in infants, with a secondary incidence peak in young adults.[2] Death often swiftly follows symptom onset, and case fatality rates reach an average of 9–12%, with survivors often left with serious neurological sequelae.[3] Most IMD in Europe is caused by serogroup B and C meningococci, and serogroups A, W-135 and Y have been reported recently.[1] In addition, meningococcal epidemiology changes over time, making prediction of future threats challenging. Following a W-135 epidemic during the Hajj pilgrimage to Mecca in 2000, this serogroup to cause epidemic disease in Africa and further cases in Europe;[4] in the USA, serogroup Y disease increased from causing 2% of cases during 1989–1991 to ~37% in 2002.[5] Prevention of IMD is a public health priority. Vaccines based on the purified capsular polysaccharides of serogroups A, C, W-135 and Y are available, but have important limitations; they produce an inadequate immune response,[6] multiple doses are associated with risk of hyporesponsiveness[7] and they do not reduce nasopharyngeal carriage[7] and therefore may not induce herd immunity. Furthermore, although serogroup B is predominant in many regions globally, there is no vaccine widely available which protects against a broad diversity of strains in this serogroup. An innovative multivalent conjugate vaccine could represent an important opportunity to provide broad and effective protection across all age groups. Conjugate vaccines can be used in infants by including polysaccharide-conjugated carrier proteins[6] – effective examples include *Haemophilus influenze* type b and pneumococcal conjugate vaccines. Conjugates transform bacterial polysaccharides from T-cell independent antigens to T-cell dependent antigens thus inducing an immune response and immunological memory in infants. Additionally, conjugated vaccines reduce nasopharyngeal carriage.[8] Multivalent meningococcal conjugate vaccines have the potential to provide broad protection against IMD across all age groups in Europe.

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ORAL PRESENTATIONS

THEME: ALLERGY – IMMUNOLOGY – PULMOLOGY

OP01

THE OPTIMAL TREATMENT OF ASTHMA IN CHILDREN

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Introduction: It is well-known the better effect of the association of a long-acting inhaled β_2-agonist to an inhaled corticosteroid in the treatment of asthma. The effect is better if the combination is administrated in one single disposable and not each of them separately.

Material and method: We made a retrospective study on 138 children with moderate persistent asthma, aged between 4 and 18 years (mean age: 8.3 years), who had received only inhaled corticosteroid in low-medium dose, but the control was not complete. We administered for 12 weeks. Seretide 100/50 μg twice daily to 56 of these patients. Fluticasone 100 μg + salmeterol 50 μg separately twice daily to the other 52 patients. The children were asked to register their symptoms, PEF and the need of short-acting β_2-agonist. Every 4 weeks, we assessed: the clinical status, the pulmonary function (FEV_1, PEFR), the need of reliever medication (salbutamol).

Results: Exacerbations (breathlessness, wheezing, cough and nighttime symptoms) occurred in: Three patients (5.36%) who received seretide. Five patients (9.61%) who received fluticasone and salmeterol. None of them imposed hospitalization.

Conclusions: In asthmatic children with an incomplete control of symptoms with inhaled corticosteroids, seretide provides a more rigorous control of the disease than Fluticasone and Salmeterol administered separately. Seretide twice daily provides an efficient control of pulmonary function and asthmatic symptoms. Although seretide 100/50 contains a low dose of inhaled corticosteroid, it provides a good control of the symptoms, with few side effects. Seretide also improves the quality of life.

OP02

CAN SOLUBLE ADHESION MOLECULES BE USED AS A DIAGNOSTIC MARKER IN CHILDREN WITH BRONCHIOLITIS?

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Introduction: Adhesion molecules are membrane glycoproteins that play an important role in inflammation and have been implicated in the pathogenesis of some inflammatory diseases.

Purpose: In this study, we investigated serum concentrations of soluble adhesion molecules in children with acute bronchiolitis.

Material and methods: A total of 55 children (1.70 ± 1.05 years) with acute bronchiolitis and 34 healthy children (2.55 ± 1.20 years) were included in this study. The diagnosis of bronchiolitis is based on clinical and radiological findings. Serum levels of intercellular adhesion molecule-1 (sICAM-1), vascular cell adhesion molecule-1 (sVCAM-1), soluble L-selectin, E-selectin, and P-selectin in sera were determined through use of commercially available enzyme-linked immunosorbent assay kits. The radiographs were all examined by the same radiologist. The children were all examined by the same pediatrician at the time of diagnosis.

Results: The mean serum sICAM-1, sVCAM-1 and sE-selectin levels in children with bronchiolitis were significantly higher than the control group (419.51 ± 235.33 ng/mL vs. 173.38 ± 45.48 ng/mL; $P < 0.05$), (3315.60 ± 1170.59 ng/mL vs. 2056.27 ± 819.12 ng/mL; $P < 0.05$), (140.02 ± 61.69 ng/mL vs. 38 ± 31.37 ng/mL; $P < 0.05$), respectively. There was no difference for the serum levels of sL-selectin and sP-selectin between the patients and the control groups ($P > 0.05$).

Conclusion: Our results indicate that serum levels of sICAM-1, sVCAM-1 and sE-selectin are increased in acute bronchiolitis. Adhesion molecules can provide new insights into the pathogenesis of bronchiolitis. There is a need for further studies regarding whether they can be used to predict prognosis in bronchiolitis.

OP03

DOES A CORRELATION EXIST BETWEEN OBSTRUCTIVE APNOEA – HYPOPNOEA SYNDROME DURING SLEEP (OSAHS) AND ADENOTONSILAR HYPERTROPHY, BODY MASS INDEX (BMI) AND NECK DIMENSIONS IN CHILDHOOD?

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Introduction: The syndrome of obstructive apnoea-hypopnoea in sleep (OSAHS) is considered to be the commonest type of respiratory disturbances observed with polysomnography. Various cephalometric variables have been correlated with OSAHS and obesity and may contribute to the evaluation of the severity of OSAHS.

Purpose: The purpose of this study was to investigate the influence of enlarged adenoids/ tonsils, neck's length and circumstance, age and body mass index (BMI) on the severity of sleep disorders in childhood.

Material and methods: A total of fifteen children with snoring were studied with overnight polysomnography (73% males, 7.8 ± 2.85 years old). BMI was measured as body weight in kg to height^2 in m^2. Neck circumference was measured at the level of cricothyroid cartilage and neck length was measured from occipital bulge to the vertebra prominent. Apnoea-hypopnoea index (AHI) was calculated as the total number of hypopnoea and obstructive apnoeas during sleep. OSAHS was considered as severe if the patient had AHI ≥10 per hour of sleep.

Results: Mild OSAHS presented 7/15 children (46.7%), moderate 4/15 (26.7%) and in 4/15 (26.7%) severe OSAHS was recorded. In one child adenotonsillectomy was performed in the past, while 5 child had mild tonsilar hypertrophy (+1 according to Mallapanti), 4/15 intermediate hypertrophy (26.7%), 2/15 severe (13.3%) and 3/15 (20%) extremely severe (+4 according to Mallapanti). BMI ranged between 13.66 and 22.95 kg/m^2. There was a positive correlation between BMI and neck circumstance ($r = 0.670$, $P = 0.012$) and also between patient age and neck height ($r = 0.593$, $P = 0.033$). Although no significant correlation was found between the severity of OSAHS and age, neck dimensions, BMI and enlarged tonsils or adenoids ($P > 0.05$).

Conclusions: The findings of our study suggest that enlarged tonsils and adenoids, BMI and cephalometric variables contribute to the severity of OSAHS in children, but probably there are not defining factors.

THEME: ENDOCRINOLOGY AND GROWTH

OP04

CAROTID INTIMA-MEDIA THICKNESS IN OVERWEIGHT AND OBESE CHILDREN: CARDIOVASCULAR RISK FACTORS EVALUATION

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Introduction: Increased carotid intima-media thickness (IMT) is an early marker of atherosclerosis. In children, its measuring is not yet established as a diagnostic standard procedure, but seems a promising method in assessing cardiovascular risk (CV) and monitoring treatment efficacy.

Purpose: To evaluate carotid IMT in overweight and obese children/adolescents and compare their individual CV risk factors.

Methods: A total of one hundred and forty-nine children/adolescents were stratified in two groups according to body mass index (BMI) in overweight (56) and obese (93). Mean age of total sample was 12.8 years ± 2.14. All subjects underwent high resolution B-mode ultrasonographic evaluation of common carotid artery IMT, resting blood pressure, glucose and lipid profile and abdominal ultrasonography. Parental CV risk was assessed by clinical interview. For comparison of quantitative variables the Mann–Whitney test was used. The Chi-square test or the Fisher exact test was used to compare categorical variables.

Results: Obese patients had slightly increased carotid IMT (mean of combined sites: 0.47 mm ± 0.05 vs. 0.46 mm ± 0.05, $P = 0.094$). Considering CV risk factors, obese group had significantly higher levels of systolic and diastolic blood pressure (respectively $P = 0.041$ and $P = 0.026$), increased waist and hip circumference ($P = 0.002$ and $P = 0.001$) and higher parental BMI (father $P = 0.012$; mother $P = 0.030$). A total of 33.6% overweight/obese patients showed abnormal lipid profile (hypercholesterolemia 18.8%, elevated LDL-cholesterol 17.4%, hypertriglyceridemia 18.8% and decreased HDL-cholesterol levels in 4.0%). Hypertension was confirmed in 13.4% patients and non-alcoholic fat liver disease in 10.1%. Both groups presented marked positive familiar history for obesity (81.8%), dyslipidemia (72.5%), diabetes (57.4%) and hypertension (76.6%).

Conclusion: The authors highlight the elevated prevalence of dyslipidemia among this young population and the significant positive familiar history for CV risk factors. In this study no differences in carotid IMT children were observed between overweight and obese. This probably reflects the similarity between these two groups regarding the presence of CV risk factors.

OP05

INTEGRATED REAL-TIME CONTINUOUS GLUCOSE MONITORING/ INSULIN PUMP SYSTEM (PRT) USEFULNESS IN 122 CHILDREN WITH TYPE 1 DIABETES: A 3-YEAR FOLLOW-UP STUDY

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Background: Real-time continuous glucose monitoring and the insulin pump have been combined into the sensor-augmented pump system (PRT) (Medtronic MiniMed, Sesto San Giovanni, Italy).

Aim: The objective of the study was to evaluate the clinical effectiveness and safety of PRT in a large series of children with type 1 diabetes using insulin pump therapy.

Methods: This is a multicenter observational study. A questionnaire was sent to all paediatric diabetologic centres in Italy ($n = 65$); data was analyzed only regarding patients aged 18 or less and using PRT for 6 months or more.

Results: A total of 48 centres (73.85%) answered the questionnaire. The total number of patients with type 1 diabetes followed by the centres is 12.549, of whom 1437 (11.4%) have been using insulin pump therapy for more than 6 months. Of all patients using an insulin pump, 129 have been using PRT for at least 6 months, with a mean follow-up of 1.4 ± 0.7 years (range 0.5–3 years). Their age was 13.5 ± 3.8 years, with disease duration of: 6.3 ± 3.4 years). After 0.5–3 years of using PRT, HbA1c showed a significant improvement (8 ± 1.5% vs. 7.4 ± 0.8%, $P = 0.002$). Insulin requirement showed a significant decrease (0.88 ± 0.25 vs. 0.79 ± 0.23 U/kg/day, $P = 0.003$). BMI did not change during the observational period. Mean usage of PRT per month was 8.1 day/month and any significant correlation between sensor use and HbA1c has been observed ($r^2 = 0.0005$, $P = 0.239$). No DKA was observed during the follow-up, while episodes of severe hypoglycemia significantly decreased ($P = 0.04$).

Conclusion: The increased availability of continuous glucose sensors is likely to have a significant impact on

pediatric diabetes therapy and education in the near future. Selection of patients capable and motivated to use sensor-augmented pump with proper age-appropriate education could be the key factors for the long-term success of these new technological advances in diabetes therapy as we have seen in our large group of children using PRT.

OP06

38 YEARS OF GROWTH HORMONE THERAPY – WHAT DOES THIS EXPERIENCE TEACH US? – A SINGLE CENTER CROSS-SECTIONAL RETROSPECTIVE STUDY

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Introduction: Growth hormone has been used for the treatment of growth hormone deficiency in childhood since 40 years.

Purpose: To analyse Final height and height SDS gain achieved by growth hormone treatment, The contribution of familial short stature, The persistance of GH deficiency into adulthood, The prevalence of mutations in anterior pituitary transcription factors, Associated hormone deficiencies, Morphologic changes of the pituitary gland on MRI.

Methods: Seventy-four files of patients treated for growth hormone deficiency during childhood and adolescence between 1969 and 2007 were reviewed. Fifty-seven patients were reassessed by clinical and laboratory work up and pituitary MRI.

Results: Median final height of male/female growth hormone deficient patients with GH therapy was 169/155 cm respectively. Final height after treatment was in the range of individual target height (TH) in 78.5%; in 19.6% was lower, in 2% it was greater. Mean relative height SDS gain per year of GH therapy was 0.35, mean absolute height SDS gain was 1.79. Mean TH of GH deficient subjects was lower (173/159 cm; boys/girls) than that of healthy individuals (180/167 cm). In 89% of the subjects with multiple pituitary hormone deficiencies (MPHD), GHD persisted into adulthood, but only in 22%/5% of the patients with total / partial IGHD. In MPHD patients PROP-1 mutations were found in 43%. In IGHD patients GH-1 gene mutations were detected in 2%. In the MPHD cohort 86% had LH/FSH-, 86% TSH-, 43% prolactin- and 43% ACTH-deficiency. On MRI the anterior pituitary gland was hypoplastic in all MPHD subjects, the posterior pituitary was ectopic in 43% and the pituitary stalk not visible in 71%.

Conclusion: GH is effective in normalizing height in children with GH deficiency; nevertheless median final height remains lower than that of healthy individuals. If GH deficiency is combined with other pituitary hormone deficiencies, PROP-1 mutations may be the genetic cause.

THEME: HAEMATOLOGY – ONCOLOGY

OP07

RETROSPECTIVE ANALYSIS OF IDIOPATHIC THROMBOCYTOPENIC PURPURA (ITP) IN GREEK CHILDREN: A 10-YEAR SINGLE INSTITUTION EXPERIENCE

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Background: Idiopathic Thrombocytopenic Purpura is a self-limiting bleeding disorder in children caused by a profound platelet deficiency due to the presence of platelet autoantibodies. ITP is characterized by: thrombocytopenia with a platelet count less than 150×10^9/L, purpuric rash, normal bone marrow and absence of signs of other identifiable causes of thrombocytopenia.

Purpose: To review the natural history and response to therapy of ITP at a single pediatric institution between 1999 and 2009.

Material and methods: From a cohort of 76 children with ITP, 40 (52.6%) were male and 36 (47.4%) female with mean age 5.3 years. At initial diagnosis, 28.9% presented mild hemorrhagic manifestations. The mean platelet count was 24×10^9/L (0–129). Bone marrow aspiration was performed in 23.7% of cases. In 47.4% a recent acute viral infection was documented and 17.1% had a recent history of immunization. There was no significant seasonal variation at presentation of ITP. Thirty-six children (38.1%) received as initial treatment monotherapy consisted of: (1) corticosteroids (3.9%), (2) intravenous immunoglobulin (IVIG) (43.2%) and (3) anti D immunoglobin (1%) and 29 children (38.2%) combined therapy: (1) corticosteroids-IVIG (30.3%), (2) corticosteroids-IVIG – anti D (7.9%) and 11 children (8.3%) no therapy. Thirty-two (42.1%) patients presented the acute form of ITP, 13 (17%) the chronic (persistence >6 months) and 31 (40.8%) the recurrent one. Three children with persistent thrombocytopenia received anti CD 20 monoclonal antibody as adjuvant therapy with satisfactory response. There was no statistical difference in response to any therapy. Complete remission (CR) was defined as any platelet count $>100 \times 10^9$/L for 3 months or longer without treatment. CR was achieved in 67 patients (88.2%). Ultimately, splenectomy was curative in 1.3%.

Conclusions: Single-institution, long-term, natural history data are limited, although they may contribute to a selective management strategy for children with ITP. ITP is a common pediatric disease presenting at any age with low morbidity and mortality. Most cases can be managed by pediatricians without hematology referral. Several equally successful therapeutic options exist. Chronic cases present at an older age with higher platelet counts. Up to 50% of cases of chronic ITP will resolve with ongoing follow-up. The overall prognosis in childhood ITP is excellent. Idiopathic thrombocytopenic purpura (ITP) is an acquired hemorrhagic disorder characterized by: (1) thrombocytopenia that is defined as a platelet count less than 150×10^9/L (150,000/μL), (2) a purpuric rash, (3) normal bone marrow, and (4) the absence of signs of other identifiable causes of thrombocytopenia. ITP is classified as acute or chronic, with the latter defined as the persistence of thrombocytopenia for more than 6 months from the initial presentation of signs and symptoms. ITP is estimated to be one of the most common acquired bleeding disorders encountered by pediatricians, with the incidence of symptomatic disease being approximately 3–8 per 100,000 children per year. Acute ITP is more prevalent among children younger than 10 years of age, affects males and females equally, and is more prevalent during the late winter and spring. Chronic ITP affects adolescents more often than younger children, with females being affected more frequently than males. Unlike acute ITP, it does not show a seasonal predilection. Patients who have chronic ITP are more likely to exhibit an underlying autoimmune disorder, with up to one third having clinical and laboratory manifestations of collagen-vascular disease. Although the focus of this article is on the clinical presentation, diagnosis, and management of ITP, the pathophysiology of this condition ITP the most common self-limiting bleeding disorder in children characterized by a profound deficiency of platelets due to the presence of platelet autoantibodies resulting in peripheral thrombocytopenia and increased megacaryocytes in the bone marrow, petechiae, purpura, and mucocutaneous bleeding. ITP is classified as acute or chronic, with the latter defined as the persistence of thrombocytopenia for more than 6 months from the initial presentation of signs and symptoms. We retrospectively examined the medical records of 321 (229 females, 92 males) ITP patients. One hundred and seventy-one (53.3%) patients were lost to follow-up. When evaluating the clinical features, all 321 patients were included; however, when the response to treatment modalities was evaluated only 150 patients followed up regularly were considered. The median age of the patients on initial diagnosis was 34 years (range: 14–78). At initial diagnosis, 235 (73.2%) patients had signs of bleeding. Of patients diagnosed with ITP initially, six later turned out to have systemic lupus erythematosus (SLE) and two myelodysplastic syndrome (MDS). The median follow-up of 150 patients followed up regularly was 30 months (range: 4–396). One hundred and thirty-seven of these subjects had an indication for treatment and 94.2% of them were administered either standard or high-dose steroids as the first-line therapy. Complete remission (CR) was defined as any platelet count >100,000/mm (3) lasting for 3 months or longer without treatment. CR was achieved in 51.9% of the patients given

steroids as the initial therapy. During a median follow-up of 33 months, relapse occurred in 58.2% of these patients, and after a median follow-up of 11 months the rest of them were still in remission. Ninety-eight patients followed up regularly were administered second-line therapies. CR was obtained in 44.4% of the patients who used steroids as second-line therapy. Within a median follow-up of 15 months, 20.8% of these patients relapsed. Splenectomy was performed in 76 patients and CR was obtained in 68.4% of the regularly followed up patients. Relapse occurred within a median of 96 months in 15.4% of the patients who had CR. Kaplan-Meier curves showed that the duration of CR obtained by splenectomy was significantly higher than that obtained by steroids ($P < 0.001$). The 10-year disease-free survivals in patients who used steroids and who underwent splenectomy were, respectively, 13% and 58%. In our adult ITP patients, steroids induced nearly similar rates of CR both as first-and second-line therapies. Splenectomy seems to be effective in patients unresponsive to steroids. The duration of CR obtained by splenectomy is significantly longer when compared with the duration of CR obtained by steroid therapy.

THEME: INFECTIOUS DISEASES

OP08

HOSPITAL ACQUIRED ROTAVIRUS INFECTIONS: SUBSTANTIAL DISEASE BURDEN IN CANADIAN PEDIATRIC HOSPITALS

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Introduction: Rotavirus is very contagious, viral shedding is prolonged, and its relative resistance to environmental cleaning makes it an ideal hospital pathogen and a leading cause of hospital-acquired infections in children. Rotavirus vaccines could impact the epidemiology of hospital-acquired rotavirus.

Purpose: The study describes the disease burden in, and characteristics of children with hospital acquired rotavirus (HARV) infections in a network of Canadian pediatric hospitals.

Methods: Active case finding for laboratory confirmed rotavirus infections was conducted by the 12 Immunization Monitoring Program Active (IMPACT) hospitals for hospitalized children 0–16 years between January 2005 and December 2007. Hospital acquired laboratory confirmed rotavirus cases had to be inpatients for unrelated reasons ≥72 h before onset of symptoms.

Results: A total of 497 HARV cases were reported. Proportionally, HARV represented 26% in 2005, 24.6% in 2006 and 29.2% in 2007 of total rotavirus hospitalizations. The seasonality of HARV paralleled community acquired infections, with a yearly spring peak. The age distribution of patients was: 131 (26.4%) 0–3 months, 81 (16.3%) 4–6 months), 81 (16.3%) 7–11 months, 92 (18.5%) 12–23 months, 57 (11.5%) 2–4 years with the remaining 55 (11.1%) between 5 and 16 years. The most common underlying chronic health conditions were gastrointestinal or hepatic (56, 11.3%), cardiovascular (55, 11.1%), multisystem (55, 11.1%), and neurological/developmental disorders (51, 10.3%) and 35 (7%) were <1 year and had been premature. Abnormal immune status due to co-morbid conditions was present in 88 (17.7%). Rotavirus was acquired a median of 9.5 days after hospital admission (range 3–419 days) with a median duration of symptoms of 5 days.

Conclusions: HARV represent over 1/4 of rotavirus infections in pediatric hospitals in Canada. Children <1 year of age (59%) are disproportionally affected suggesting a rotavirus naïve population. The potential impact of rotavirus vaccine on HARV infections could be substantial.

OP09

THE SAFETY OF REPEATED ADMINISTRATION OF BOOSTRIX™, A REDUCED-ANTIGEN-CONTENT DTPA BOOSTER

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Introduction: The increasing incidence of pertussis amongst adolescents and adults represents a significant transmission risk to vulnerable infants. By replacing the commonly recommended 10-yearly tetanus and diphtheria (Td) booster with reduced-antigen-content dTpa vaccine, additional protection against pertussis could be conferred, particularly relevant to close contacts of newborns. Four trials have been undertaken to evaluate the immunogenicity and safety of repeated dTpa vaccine boosters in adults and adolescents.

Methods: Subjects who had received a previous dTpa booster, received a single dose of dTpa (*Boostrix*™) or dTpa-IPV (*Boostrix*™-IPV) in four open, phase IV trials involving a total of 498 adolescents, 239 adults. The second booster was given 5 or 6 years after the first one for adolescents, and 10 years later for adults. Blood samples were taken before and 1 month post-vaccination for the determination of antibody concentrations. Solicited local and general symptoms, unsolicited symptoms and SAEs were recorded.

Results: Seroprotection/seropositivity rates against all antigens 1 month post-booster were at least 95.2% in all subjects, and booster responses to pertussis antigens were observed in 69.7% (PRN)–97.8% (FHA) of subjects. During the 4-day follow-up, the incidence (%) of Grade 3 solicited local and general symptoms was reported in the Table 1. SAEs were recorded in one adolescent (colitis) and one young adult (hyperventilation).

Table 1: Incidence of Grade 3 local and systemic reactions following repeated dTpa booster vaccination with Boostrix™/Boostrix™-IPV

Subjects in analysis	Pain (grade 3)	Redness (≥50 mm)	Swelling (≥50 mm)	Headache (Grade 3)	GI (Grade 3)	Fatigue (Grade 3)	Fever (≥37.5°C)
415	4.1	4.6	3.6	1.0	0.0	1.2	3.4
Adolescents							
83	2.4	13.3	13.3	1.2	1.2	1.2	3.6
Adolescents							
74	10.8	14.9	14.9	0.0	1.4	2.7	9.5
Young adults							
164	1.2	5.5	9.1	1.2	0.0	0.0	2.4
Adults							

Conclusions: Repeated dTpa booster vaccination induces a strong immune response and is well tolerated in adolescents and younger and older adults. These results support the use of *Boostrix*™ and *Boostrix*™-IPV as repeated booster doses.

OP10

CAUSES OF DEATH IN HIV-1 VERTICALLY INFECTED PAEDIATRIC PATIENTS IN MADRID (SPAIN) FROM 1982 TO 2008

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Introduction: The introduction of effective therapies for HIV-infected children and adolescents has increased life expectancy, thus it is essential to monitor the underlying causes of death to identify changes.

Purpose: To describe the causes of death and the mortality/AIDS rates in HIV-1-infected paediatric patients.

Methods: A large multicenter cohort of 478 HIV-1 vertically infected paediatric patients. Mortality and AIDS incidence rate, causes of death, clinical status, $CD4^+$ T-cells and viral load (VL) were analysed over calendar periods: pre-HAART era (1982–1996) and post-HAART era (early: 1997–1998; late: 1999–2009).

Results: Overall, 155 (32.3%) deaths occurred. The total time of observation was 5722.8 person-years. The median age at death increased [pre-HAART: 3.2 years (1.1–6.3); post-HAART era: 7.7 (3.1–11.4); $P < 0.01$]. Mortality and AIDS incidence rates decreased of 10.6 time (95%CI: 6.9–16.7) and 6.9 times (95%CI: 5.0–9.6), respectively, comparing pre-HAART with post-HAART era ($P < 0.001$). One hundred and sixty-three causes of death were documented for 149/155 (96.1%) patients. The proportion of multiple causes of death increased over time: 7.1% (9/127) in pre-HAART, 13.6% (3/22) in post-HAART era. AIDS-defining causes of deaths decreased in late post-HAART (58.3%, 7/12) compared with pre-HAART era (79.7%, 110/138), while proportion of HIV-related causes increased (16.7%, 2/12 vs. 11.6%, 16/138), as well as proportion of not HIV-related causes (25.0%, 3/12 vs. 8.7%, 12/138). Among infections, the leading causes of death (61.3%, 100/163), bacteria were the most represented agents in pre-HAART (24.6%, 34/138) and post-HAART era (28.0%, 7/25). The 55.7% (83/149) of patients suffered concomitant pathologies. Median $CD4^+$ T-cell% at death were comparable between periods (pre-HAART: 8.0%, 2.0–25.5; post-HAART: 7.2%, 2.5–24.5), while the median VL decreased (5.9 $\log_{10}$ vs. 5.3 $\log_{10}$; $P < 0.01$).

Conclusions: Despite mortality and AIDS rate decline, a shift towards HIV-related and not HIV-related causes of death in our cohort highlights the importance of monitoring all causes of death to guarantee optimal health care in HIV-infected paediatric patients.

OP11

COMMUNITY-ACQUIRED METHICILLIN-RESISTANT *STAPHYLOCOCCUS AUREUS* (CA-MRSA) DIFFUSION IN A POPULATION AT RISK OF HOSPITAL STRAIN ACQUISITION

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Introduction: Methicillin-resistant *Staphylococcus aureus* is increasingly recognized in healthcare associated (HA-MRSA) and community-acquired (CA-MRSA) infections. Recent evidence indicates the emerging spread of virulent CA-MRSA strains also in patients with established risk factors for HA-MRSA acquisition, posing an additional significant threat to public health. Forty-nine MRSA strains were collected from 247 cystic fibrosis (CF) outpatients (19.8%) of the Tuscany CF Center of Florence during a one-year period of follow-up.

Aims: To evaluate the prevalence of HA-e CA-MRSA strains, antibiotic susceptibilities and epidemic lineages in a population at risk of hospital strain acquisition as CF patients.

Methods: Strains were identified as *S. aureus* by routine tests and their antimicrobial susceptibility patterns were determined by disk diffusion method. Staphylococcal

chromosomal cassette *mec* (SCC*mec*) type was determined with molecular methods, and the PVL gene 1 was also tested. Multi Locus Sequence Typing (MLST) was performed for epidemiological purposes.

Results: Linezolid, vancomycin and teicoplanin were the most active tested drugs against both CA-MRSA and HA-MRSA strains. Nine out of 12 CA-MRSA strains tested for inducible resistance to clindamycin resulted positive (Fig. 1). We found that 19 (39%) of 49 HA-MRSA isolates were SCC*mec* type I, 1 (2%) HA-MRSA was type II, 16 (33%) CA-MRSA was type IV and negative for PVL, as shown in Table 1. MLST analysis indicated that 8 of 11 MRSA isolates were sequence type 8, characteristic of both USA 500 and USA 300, a known epidemic lineage.

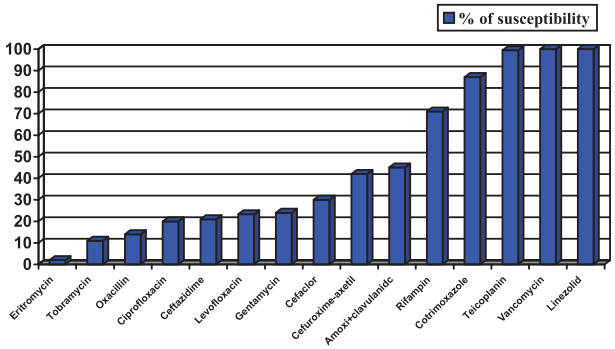

Figure 1: Antimicrobial susceptibility of the MRSA isolates.

Table 1: SCCmec typing of the MRSA isolates

SCCmec type I n (%)	SCCmec type II n (%)	SCCmec type IV n (%)	Undetermined n (%)	Not typeable n (%)	Total
19 (39%)	1 (2%)	16 (33%)	11 (22%)	2 (4%)	49

Conclusions: These results show that CA-MRSA strains are now spreading in the CF population who are traditionally considered at risk for HA-MRSA acquisition due to frequent hospitalizations.

POSTER PRESENTATIONS

THEME: ADOLESCENCE MEDICINE

PP001

A MOBILE PROPOSAL FOR PEDIATRIC OBESITY TREATMENT

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Introduction: Nowadays, about one thousand million people are obese all over the world, besides this problem is increasing dangerously among children. For that reason, powerful interventions have to be created.

Purpose: Both over consumption of calories and reduced physical activity are involved in childhood obesity. Our aim is to modify those parameters through user monitorization, designing a personalized treatment based on user profile data. That treatment will be readaptated at run time if user profile is changed.

Material and methods: Device that we have chosen for the implementation of this system is mobile phone, because it is light, attractive and easy to use. The system we propose has an accelerometer to monitor physical activity (classified by artificial intelligence techniques) and a diet design programme, that are created based on user energy expenditure. All data are modelled by knowledge representation techniques (ontology definition) and expert systems. Also, a scale is used to measure user weight and fat percentage. Collected data is sent by Bluetooth to the mobile phones of user and other involved people (parents or health professionals). Treatment target is to achieve an appropriate weight according to user height and age.

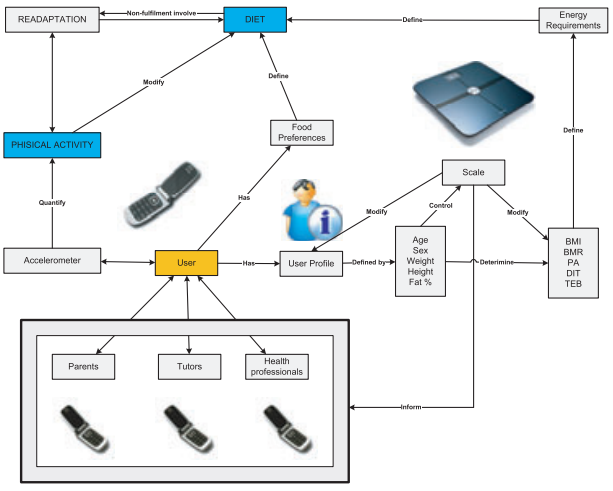

Figure 1: Childhood obesity treatment proposal based on knowledge representation and mobile solution.

Results: Implementing this system, accuracy in parameters determination, as calory consumption associated to physical activity, has increased. Futhermore, patient monitoring here is continuous, which is impossible at doctor's office.

Conclusions: Project implementation, based on the proposed model, will reduce childhood obesity prevalence, in order to reach a better quality of life, decreasing associated illnesses like diabetes, hypertension, cardiovascular diseases, respiratory problems or, even, some types of cancer.

PP002

NEUROENDOCRINE DYSFUNCTION IN EARLY ADOLESCENT GIRLS WITH PCOS: DRASTIC PITUITARY LH PRODUCTION

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Introduction: Pathophysiology of Polycystic Ovary Syndrome (PCOS) remains enigmatic. Hyperandrogenism, resulted from an alterated ovarian steroidogenesis, and hyperinsulinaemia, both primary or secondary to genetic/genomic variants, are the main effectors of the development of PCOS, but neuroendocrine abnormalities seem to play a significant role. An hellmark of PCOS is a persistently rapid GnRH pulse frequency (one pulse per hour instead of the normal cyclic variation), which favours pituitary secretion of LH over FSH, resulting in the elevated LH level and LH/FSH ratios, both observed also in adolescent hyperandrogenism. Adolescent hyperandrogenism is thought to be a precursor of adult PCOS, since both are due to a similar dysregulation of the hypothalamic-pituitary-ovarian axis with a probably partial and common genetic basis.

Purpose: The aim of the present study was to find out whether hypersecretion of LH evaluated by basal levels as well as after GnRH test may be associated with early diagnosis of adolescent PCOS.

Subjects: Thirty adolescents with gynaecological years above two and diagnosis of PCOS based on at least two clinical, two endocrine and two ultrasonographic criteria were enrolled.

Methods: Blood samples were obtained during the follicular phase of the menstrual cycle for the determination

of testosterone, DHAS, Δ4-androstenedione, estradiol, prolactin, basal LH and FSH, LH/FSH ratio and LH response to GnRH test. Group data are compared with control laboratory ranges of the same age.

Results: The mean basal LH (13.92 ± 9.58 mU/mL) was significantly ($P < 0.001$) higher than controls (1.60 ± 1.00 mU/mL), while the LH peak was dramatically elevated: 103.20 ± 111.90 vs. 20.00 ± 6.00 mU/mL, controls ($P < 0.001$).

Conclusions: These data demonstrate the dramatic pituitary LH production in adolescent PCOS, suggesting the routinary measurement of basal and LH peak in all girls with toned-down clinical feature of hyper-androgenism aimed at early diagnosis of PCOS.

PP003

ASSERTIVENESS AND ECSTASY USAGE AMONG IRANIAN ADOLESCENTS

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Introduction: Studies indicate that drug abuse is affected by assertiveness skill. Human beings need to learn and acquire skills necessary for an efficient living. These Life skills play a significant role in adolescents health promotion and have a positive effect on modifying their high-risk behaviors. Using Ecstasy is one of the risky behaviors. According 'WHO' statements there is a relationship between life skills, knowledge and attitude and substance abuse.

Purpose: This study was carried out to determine assertiveness skill and Ecstasy usage among adolescents who resided in West of Tehran City.

Material and methods: This is a cross-sectional study. Eight hundred adolescents 16–18 years who resided in west of Tehran city participated in this study. The study setting was public regions of Municipality in west of Tehran. After taking informant consent data was gathered by 'Rathus' Assertiveness Assessment' and self-structured questionnaire.

Results: Finding revealed that Mean score of assertiveness skill among most of adolescents was equal 13.05 or less than mean. About 8% (7.6%) of adolescents reported using Ecstasy at least once. There was no significant relationship between assertiveness skills and adolescents performance regarding Ecstasy. Rate of boy users (11.2%) was significantly more than girl users (2.9%) ($P \leq 0.000$). Among Ecstasy users 71.8% used it non-continuously and 80% used 1–2 tablets in every term.

Conclusions: Regarding to adolescents' vulnerability drug abuse prevention program implementation according their needs seems to be necessary.

PP004

A STUDY OF PUBERTAL TIMING AND INFLUENCING FACTORS IN ADVANCED PUBERTY IN KOREA

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Introduction: After 1950s the pubertal timing have being more and more advanced. In the literature reviews the pubertal timing in girls was reported as 9–10 year and in boys 10–11 years in the 2000s.

Purpose: We investigated the timing of puberty in adolescence and the influencing factors causing advanced puberty in Korea.

Materials & methods: The first, second and third grade students were randomly screened whether pubertal change was manifested by medical examination in one elemental school in Koyang city. We investigated obesity, junk food habits, sleep pattern, herbal medication and products associated growth. We statistically analyzed the data to seek for influencing factors causing advanced puberty.

Results: One hundred and seventy children were selected and the sex ratio of boy on girl is 1:1.2. The age distribution was between 6 and 9. There were two boy students (14.3%) who manifested pubertal feature. There were two girl students (14.3%) in 6 years old, 6 girl students (19.4%) in 7 years old, 15 girl students (39.6%) in 8 years old and 4 girl students (57.1%) in 9 years old who manifested pubertal feature. The mean age of pubertal change in girl students was 9.11 ± 1.86. As result of Analysis, the obesity, the frequency of eating fast food, herb medication and growth forcing medication had statistically significance.

Conclusions: We discovered that the mean age of pubertal change in girl students was 9.11 ± 1.86, similar to other study and the obesity, eating fast food were in proportion to advanced puberty. Specially, eating her medication promoted delayed puberty and eating growth forcing medication was promote advanced puberty.

THEME: ALLERGY – IMMUNOLOGY – PULMOLOGY

PP005

ROLE OF ALLERGIC RHINITIS AS A RISK FACTOR FOR CHILDHOOD ASTHMA

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Introduction: Bronchial asthma (BA) is one of the most important chronic diseases affecting children. BA often occurs together with allergic rhinitis.

Purpose: To investigate prevalence of allergic rhinitis and/or positive family history of allergic rhinitis in children with BA and nonasthmatic children.

Material: Cross-sectional study conducted on a convenient sample of 150 children's with BA (90 boys and 60 girls), aged 12–14, and equal number of nonasthmatic children.

Methods: Children matched by sex and age selected from three different provinces in Greece. Retrospective analysis of BA and allergic rhinitis was based on anamnesis and data from medical archives.

Results: Allergic rhinitis is presented in 42.5% of children with BA (43.3% of the boys and 41.7% of the girls). The prevalence of allergic rhinitis was significantly higher in children with BA compared to nonasthmatic children (42.5% vs. 8%, $P < 0.05$). Positive family history of allergic rhinitis had 34.5% of children with BA (35.6% of the boys and 33.4% of the girls) and its prevalence was significantly higher compared to nonasthmatic children (34.5% vs. 5%, $P < 0.05$).

Conclusions: Results confirm the role of allergic rhinitis (personal or family history) as a risk factor for childhood asthma.

PP006

MEDICAL HOME – ROMANIAN EXPERIENCE

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Medical Home is a patient-centered approach to providing comprehensive primary care for children, youth and adults. This model might be applied for managing childhood asthma, since most of the cases are encountered in primary medicine. Asthma is the most common chronic condition in children and its prevalence in Romania increased from 5% to 7% in 7 years, between 1994 and 2001. Clinical trials show that asthma can be controlled in majority of patients, but poorly controlled asthma still imposes considerable burden on the quality of life for children and their families. The level of asthma control achieved reflects the behavior of both healthcare professionals and patients. Each patient knows his/her own needs, so patients involvement is important in order to choose the most appropriate therapy. The program – Medical Home for Asthma – is based on the team approach, lead by pediatrician and coordinating people with different capabilities (specialists in allergology, pneumology, psychology, etc.) and also with specific asthma nurse interventions. In recent years, the nurses are recognized as valuable members of the multi-disciplinary team. The data represent an overview of the activities, successes and issues of implementation in a clinic from Romania. From September 2008 to March 2009 we followed 93 children (age 1–15 years) diagnosed with asthma (22), cough (5) and wheezing (9) and obstructive bronchitis/bronchiolitis (57). Medical Home for Asthma would like to show a new and higher standard for asthma care in children, which improves the quality of live through familyhealth care professional's partnership, having self-management as final objective. The whole concept proved to be cost-efficient in terms of reducing the utilisation of medical resources.

PP007

CAT OWNERSHIP AS A RISK FACTOR FOR THE DEVELOPMENT OF ANTI-CAT IGE, BUT NOT RELEVANT TO RESPIRATORY ALLERGIC DISEASES IN THE INNER-CITY COHORT AT AGE OF 5 YEARS

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Introduction: Cat ownership is inversely associated with atopy and asthma in some areas of the world, but the relevance of cat ownership to allergic disease in the inner city is less known.

Purpose: We sought to evaluate the relationship between cat ownership and the development of early sensitization and wheeze.

Material: Mothers living in Tbilisi underwent repeated questionnaires about their child from birth to age 5 years by using a prospective birth cohort study.

Methods: Sera was collected from children at ages 2 (n = 223), 3 (n = 236), and 5 (n = 142) years and were assayed for anti-cat IgE and anti–Fel d 1 IgG antibodies.

Results: Cat ownership was a significant risk factor for the development of anti-cat IgE by age 2 years [risk ratio (RR), 6.4; 95% CI, 1.9–22] but not for anti-cat IgE development between the ages of 2 and 5 years (RR, 0.88; 95% CI, 0.24–2.3). Respiratory allergic diseases were significantly more common among those children with anti-cat IgE at ages 3 (RR, 3.5; 95% CI, 2.1–6.0) and 5 (RR, 3.4; 95% CI, 2.3–4.9) years. Cat ownership was inversely associated with current wheeze at age 5 years among children without anti-cat IgE (RR, 0.26; 95% CI, 0.083–0.81). Among children with anti-cat IgE, a similar trend was observed (RR, 0.57; $P = 0.044$, Fisher exact test), although one with borderline statistical significance.

Conclusions: Despite a positive association with sensitization, cat ownership in this inner-city cohort was inversely associated with wheeze, potentially suggesting an IgE-independent protective mechanism in this prospective cohort study.

PP008

RESPIRATORY ECMO FOR A NEW POPULATION OF PEDIATRIC PULMONARY FAILURE PATIENTS

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Introduction: Bronchopulmonary dysplasia (BPD) is a chronic lung disease that develops in newborn infants treated with oxygen and positive-pressure mechanical ventilation. The introduction of new treatment modalities (surfactant, HFOV, iNO) has significantly improved the outcome for many critically ill premature infants, but the number of patients with BPD has significantly increased too.

In our center we treated two patients with BPD who had infectious pulmonary problems with important respiratory failure.

Material: We use the Levitronix system with PediVas centrifugal pump in both patients.

Method: The first patient (S.A.) is a 26 week of gestational age who was referred to our center for a respiratory failure. After 8 days of mechanical ventilation with conventional mode and HFOV and iNO we had to put her in emergency central venous-arterial ECMO. The second patient (E.V.) is a 27 week of gestational age who accessed to our center for respiratory failure, he was treated with conventional mechanical ventilation and HFOV and iNO for pulmonary hypertension without success and he was put on venous-venous ECMO. In both patients despite maximal ventilatory and medical support we obtain poor oxygenation (Table 1). The ECMO duration was of 9 days for the first patient who was successfully weaned with conventional ventilation and iNO and was extubated after 14 days. She was discharged from the hospital in good condition and without oxygen supply. The ECMO duration was of 11 days for the second patient who was successfully weaned but who died after 3 days for a cerebral hemorrhage.

Table 1: Ventilatory setting before ECMO.

S.A.	V.E.
Ppeak 20–28 cm H_2O	Ppeak 23–35 cm H_2O
PEEP 3–10 cm H_2O	PEEP 5–10 cm H_2O
FiO_2 0.5–0.9	FiO_2 0.3–0.9
Tv 6–8 mL/kg	Tv 6–8 mL/kg
P/F 60–140	P/F 70–200
$PaCO_2 > 50$ mmHg	$PaCO_2 > 65$–70 mmHg

Conclusions: Respiratory ECMO is a well known tool for some neonatal and pediatric respiratory failure, but the increasing number of patients with BPD is a potential new field of application for it.

PP009

IGA DEFICIENCY: A SILENT RISK FACTOR FOR ALLERGIC DISEASES IN CELIAC CHILDREN

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Introduction: IgA deficiency is one of the most common antibody deficiencies and the prevalence in Caucasians is around one in 500 (1). It is about 10–20 times more frequent in celiac patients than in general population (2) and these patients have a higher risk to develop allergy and autoimmune diseases (3)(4).

Purpose: To value the prevalence of IgA deficiency and allergy in a celiac children population and the real correlation between these pathologies.

Material and methods: We calculated the prevalence of IgA deficiency in a population of 204 celiac children (61 male and 143 female) aged 2–16 years. We valued the correlation between IgA deficiency, celiac disease and allergy using χ-squared test. Finally we calculated odds ratio as a measure of the association between the exposition to a risk factor (IgA deficiency) and the outbreak of allergy.

Results: Forty-one children(20%) had a selective IgA deficiency(IgA levels <5 mg/dL);among these ones, 34(88%) presented allergic manifestations. The χ^2 test found a $P < 0.05$; this suggests that is statistically significant to attribute the biggest incidence of allergic manifestations in celiac children to IgA deficiency. The calculated odds ratio was 24.74%: this indicates a strong positive

association between allergic manifestations and IgA deficiency. The prevalence of allergic symptoms observed in celiac patients with IgA deficiency compared to only-celiac ones was: rhino-conjunctivitis(50% vs. 46%), atopic dermatitis(46% vs. 25%), asthma(25% vs. 23%) and nettle-rash(3% vs. 0.7%).

Conclusions: According to our retrospective analysis, the prevalence of selective IgA deficiency in celiac patients resulted higher than in general population (20% vs. 0.2%). Moreover, allergic symptoms in celiac children with IgA deficiency were more frequent than in children suffering from celiac disease only. This suggests that the association between celiac disease and IgA deficiency may represent a silent risk factor to develop allergic pathologies, as demonstrated by odds ratio.

PP010

FREQUENCY OF ISOLATION OF RESPIRATORY SYNCYTIAL VIRUS RSV IN NASOPHARYNGEAL FLUID IN CHILDREN OF PEDIATRIC WARDS, OUTPATIENT DEPARTMENT PREMATURE DEPARTMENT OF A GENERAL HOSPITAL DURING THE PERIOD 2006 – FIRST HALF 2009

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Introduction: The RSV virus is an RNA virus that causes flu-like syndrome in infants and children. Epidemics occur during the winter and early spring. Fifty percentage of children infected by HIV by the age of 1 year, while all children are infected at least once by the age of two. RSV infection presents usually with mild symptoms, but in children 2–5 months, can cause bronchiolitis and pneumonia. It is the leading cause of hospitalization for children less than 1 year.

Purpose: The aim is to find the frequency of RSV in nasopharyngeal secretions of children that were admitted to the emergency department of our hospital or hospitalized in the Pediatric departments and premature/neonatal with lower respiratory tract infection symptoms.

Material and method: During the period January 2006–June 2009 we processed 346 samples of nasopharyngeal secretions of children and 71 samples of newborns. Testing of samples was done by rapid virus detection by the method of Immunochromatography Assay Kit (RSV Rapid Test-K of Noviview).

Results:

Samples	Total	Positive	Negative	Undefined
Pediatric	346	191 (55.2%)	143 (41.3%)	12 (3.46%)
Premature	71	50 (70.4%)	20 (28.16%)	1 (1.4%)

Conclusion: (1) A large proportion of children (55.2%) and even higher percentage of infants (70.4%), were admitted or hospitalized with symptoms of severe respiratory infection are infected of RSV.

(2) Rapid tests for detection of virus may be less sensitive and specific, however, consists an important advantage in rapid diagnosis.

(3) Rapid diagnosis is of particular importance both to control spread of infection, and in proper treatment.

PP011

A CASE OF AUTOIMMUNE HEMOLYTIC ANEMIA CAUSED BY *MYCOPLASMA PNEUMONIAE* IN A 10-YEAR-OLD FEMALE CHILD

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Introduction: Pneumonia caused by *Mycoplasma pneumoniae* is a benign and self-limited illness in children. Although most of the cases can be managed without hospitalization, extrapulmonary complications of *M. pneumoniae* infection may occur.

Purpose: We present a healthy female child, who developed an autoimmune hemolytic anemia complicating Mycoplasma pneumonia.

Material and methods: A 10-year-old female child was admitted with productive cough for 10 days, high fever and abdominal pain for three days, and red urine for 1 day. On examination, there was no organomegaly and no palpable lymph nodes. Her cardiac examination was normal. On admission, her hb was 9.3 g/dL, WBC was 20.3×10^9/L (91.7% neutrophils), PLT 302×10^9/L. Total bilirubin 3.7 mg/dL (2.7 mg/dL direct). The urea, creatinine, electrolytes, amylase, prothrombin time, activated partial thromboplastin time were normal. Erythrocyte sedimentation rate was 76 mm/h, CRP 4.3 mg/dL. Direct Coombs test was strongly positive. Chest X-ray showed infiltrations in the left base. Blood and urine cultures were all negative and free hemoglobin was detected in the urine. Positive Cold agglutinin titer >1:512 (normal <1:64). The complement fixation test for *Mycoplasma pneumoniae* was positive for IgM at 120 IU/mL.

Results: The patient was prescribed i.v. cefuroxime (100 mg/kg) and oral clarithromycin (30 mg/kg) for 10 days. She was kept in a warm room and all her fluids were warmed before being given. Her condition gradually improved, and was discharged after 15 days with a hemoglobin of 12.7 g/dL. She was followed for 5 months without any medication.

Conclusions: Autoimmune hemolytic anemia is an uncommon extrapulmonary manifestation of *M. pneumoniae* infection that may appear, producing cold agglutination hemolysis due to antibodies (IgM) against antigen I on

erythrocyte membranes. Clinical pediatricians should, therefore, be informed about this clinical entity.

PP012

BEST FOR THE CHILD OR TO REASSURE THE DOCTOR ! – SHOULD CHILDREN WITH UNCOMPLICATED PNEUMONIA HAVE A FOLLOW UP CHEST X-RAY?

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Objectives: To determine the need for follow up x rays in patients with radiological and clinical evidence of uncomplicated pneumonia or Lower Respiratory Tract Infection (LRTI).

Design: A prospective study performed in the Emergency department of the National Children's Hospital, Dublin, Ireland, from January 1st 2009 to June 30th 2009. This is a busy Paediatric Department seeing 32,000 children annually. Children aged 0–16 who attended the Emergency department with clinical evidence of LRTI for whom the Paediatric Radiologist advised follow-up X-rays were recruited.

Results: Forty-three patients were identified, 41 were suitable for the study, with a male to female ratio of 3:2. All patients were offered an appointment for clinical review and chest X-ray (CXR) 6 weeks after initial presentation. Ten patients (24.3%) did not attend follow-up. Thirty patients (96.7%) had a normal clinical examination, sixteen of these (53%) had radiological clearance, twelve (40%) patients had persisting patchy changes and two (10%) patients had unilateral consolidation. One child had clinical signs of ongoing chest infection. Twenty-eight (96.7%) patients were discharged while three (7.3%) were referred for follow up.

Discussion: Last year 1326 children a year were diagnosed as an LRTI. Our radiologist often requested a repeat CXR. We felt that this practice was time consuming and did not benefit the child. The British Thoracic Society recommend clinical follow up only, but the practice of repeating a CXR has continued in our hospital. There are only three published studies looking at this, none within the last 10 years. Our prospective study gives us the confidence to refer uncomplicated LRTI with CXR changes for clinical follow-up only, thus saving unnecessary X-rays and disruptive outpatients visits.

PP013

ACUTE LOWER RESPIRATORY TRACT INFECTION IN THE POST-PNEUMOCOCCICAL VACCINATION ERA: EXPERIENCE OF A SINGLE CENTRE IN MARCHE

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Introduction: Acute lower respiratory tract infections (ALRTI) including pneumonia, atypical pneumonia, bronchiolitis and bronchitis are responsible for much morbidity and mortality in the paediatric population world-wide. The heptavalent pneumococcal conjugate vaccine (PCV-7) was approved by the European Medicine Agency in February 2001 but schedules, recommendations and vaccine coverage vary between countries. Vaccination programme with PCV-7 was started in Italy in May 2003.

Purpose: To describe the epidemiology of ALRTI in children admitted to our centre in post-PVC-7 era.

Materials/Methods: Retrospective analyses of demographic, clinical and laboratory data of children hospitalized with ALRTI from January 2009 to September 2009 at our centre. Microbiological studies included viral (Cytomegalovirus, Respiratory Syncytial Virus), atypical (Mycoplasma, Chlamydia) and bacteriological (*Streptococcus pneumoniae*) determination by antibody assay and antigen detection on serum and urine specimens.

Results: Out of 580 children admitted to the hospital, 110 (19%) had ALRTI; 76 cases were investigated; 50% were males. Median age was 3 years (14 days–12 years). Forty-seven (62%) children were affect by pneumonia, 13 (17%) by bronchiolitis and 16 (21%) by bronchitis. Potential pathogens were identified in 15 (20%) cases: 85% in children with pneumonia, and 15% in children with bronchiolitis. *Streptococcus pneumoniae* was the commonest pathogen identified (58%) and associated with complicated pneumoniae. Mycoplasma was diagnosed in 5 (33%) cases, CMV in 2 (13%) cases. RSV was isolated once. Among children with pneumonia, bacterial infection were associated with significantly raised of white blood cell counts ($P = 0.0002$), neutrophilis ($P = 0.016$), lymphocytes ($P = 0.017$), C-reactive protein ($P = 0.0003$) and length of hospitalization ($P = 0.001$). There were no differences in age and sex.

Conclusions: *S. pneumoniae* continues to be the predominant organism identified in children with ALRTI requiring longer hospitalization even out of the traditional fall-winter respiratory season. Our data suggest consideration of expansion of pneumococcal vaccination coverage in our community.

PP014

CONNECTION BETWEEN OBSTRUCTIVE SLEEP APNEA, OBESITY AND BOTTLE FEEDING

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Introduction: Obesity in childhood has increased at an alarming rate, In the United States the rate of over weight children has tripled in the last decade. Obesity is the most frequent nutritional disorder in children, and is an important risk factor for sleep apnea and cardiovascular disease in adulthood. Preventing obesity should be a major reason to encourage breast feeding for at least 1 year.

Purpose: For the pediatric to gain better understanding of sleep apnea in children and its long term complication.

Materials: Multiple studies published in variety of medical journals compiling data from infancy to adulthood.

Methods: Analysis compiled data through multiple study groups to establish the connection between OAS, obesity and breast feeding.

Conclusion: It has been well documented that bottle feeding increases the obesity rate in children, and also it has been documented that obesity is the primary cause of OAS. Increasing the mother awareness of positive effect of breast feeding vs. bottle feeding which may, reduce the rate of obesity in children, and in turn reduce the obesity rate in adult and prevent OAS.

PP015

POST ADENOVIRUS OBLITERATIVE BRONCHIOLITIS WITH MINIMAL MORBIDITY IN A 5 YEARS OLD BOY

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Introduction: Post-infectious obliterative bronchiolitis designates a clinical syndrome of chronic airflow obstruction associated with inflammatory changes in the small airways most often caused by adenovirus type 3, 7 and 21. The characteristic course of the disease is reported to be that of rapid progressive deterioration and death in first few years. A small percentage of patients survive to show persisting features of wheeze and asthma like symptoms.

Case report: We report a case of 5 years old boy presented with proven adenovirus Bronchiolitis at the age of 15 months, who later on was diagnosed with obliterative bronchiolitis at 3 and half years of age. He only developed mild asthma like symptoms with minimal exercise intolerance and early morning cough for first 3 years. He was treated with inhaled corticosteroids and bronchodilators for his symptoms. His chest X-ray showed persistent lung parenchymal changes in the right upper lobe, right middle lobe and left lingular lobe since his initial presentation. High Resolution CT scan was done in view of persistent chest X-ray changes. CT scan showed mosaic pattern of the reduced lung marking in the lung fields particularly affecting right upper lobe together with areas of hyperlucency, consistent with obliterative bronchiolitis. Currently the child is thriving and growing along 75th centile with no respiratory morbidity. Long term follow up includes regular out patient visits to monitor progress.

Conclusion: Obliterative bronchiolitis occurs in 1% of patients following adenoviral bronchiolitis. Reported outcome include persistence of symptoms in 67.1%, remission in 22% and death in 9.7% of patients. We report a patient with minimal disease complication and a very good outcome to date.

PP016

SARCOIDOSIS: A CASE REPORT

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Introduction: Sarcoidosis is a multisystemic granulomatous disease of unknown origin, characterized by the presence of non-caseating granulomas in involved organs.

Case report: Hélio is a teenager of 13 years old referred to the Pediatric Consultation of our hospital because mediastinal adenopathies. He had controlled asthma in his medical history. He had a current history of weight loss not quantified, easy fatigue and night sweats about 4 months of evolution. The examination revealed a skinny boy, weight P25-50, an asymmetry of the right supraclavicular space with an adherent and solid mass of approximately 4 cm, a right submaxillary adenopathy adherent and multiple cervical adenopathies, sub-maxillary and inguinal soft, elastic and mobile. He made a chest radiograph that revealed hylar rounded opacities suggestive of adenopathies and chest TC images compatible with enlarged hylar lymph nodes and micronodules scattered by the lungs parenchyma. The differential diagnosis proposed was lymphoproliferative disease, sarcoidosis and pulmonary tuberculosis. Additional diagnostic tests revealed a normal complete blood count, proteins electrophoresis with gamma globulin of 20%, ACE 130 UI/L (8–52), calciuria 280.8 mg/24 h (100–240); negative standard (5TU) Mantoux test; spirometry with mild restrictive ventilatory change. The ganglionary biopsy revealed granulomatous lymphadenitis with a sarcoid pattern, confirming the hypothesis of sarcoidosis. He was treated with prednisolone (1 mg/kg/day) and had a complete resolution of symptoms and normalization of the analytical and radiological changes.

Conclusions: This case alerts us to a rare disease in children – the Sarcoidosis. Its also rare the association with asthma, although sarcoidosis seems to be an immunological disease as well.

THEME: CARDIOLOGY

PP017

PEDIATRIC CONGESTIVE HEART FAILURE – EVALUATION OF CARVEDILOL TREATMENT

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Introduction: Children with congestive heart failure (CHF), non-responsive to the conventional therapy with digoxin, furosemid and angiotensin-converting enzyme inhibitors can have beta-blocking therapy with carvedilol, little studied on the pediatric population.

Purpose: Clinical, ultrasound and pharmacokinetic evaluation of children with pediatric CHF who needed carvedilol in addition to the above mentioned conventional therapy.

Material: Sixteen children (12 aged under 3 and 4 aged 3–7) with CHF by left ventricular systolic dysfunction were studied. Since the CHF did not ameliorate during 6–8 weeks of conventional therapy, all patients received additionally carvedilol.

Methods: The patients were clinically studied, NYHA/ROSS score, 2D ultrasound left ventricular ejection fraction (LVEF) and the carvedilol pharmacokinetics were evaluated. The analytical method to determine the carvedilol was the high-throughput liqiud chromatographic tandem mass spectrometry assay, the extern standard method. The data non-compartment pharmacokinetic analysis was made and the following were calculated: Cmax, Tmax, area under the plasma concentration-time curve, elimination half-life ($t_{1/2}$), mean residence time (MRT).

Results: Carvedilol was well tollerated clinically, the NYHA/ROSS score improved from III–IV to II. LVEF raised (38% vs. 53%; $P < 0.5$). Carvedilol's non-compartment pharmacokinetic analysis emphasized a non-linear increase in the maximum concentration and in the area under the plasma concentration-time curve together with the dosage increase, but the maximum concentration reaching time is identical for all children/subjects. The average $T_{1/2}$ of carvedilol, orally administrated to children is of 3.12 h (median line 2.73 h); MRT is of 4.50 h (median line 4.23 hours).

Conclusions: Children with CHF tolerated carvedilol well, the NYHA and LVEF scores were improved. The main pharmacokinetic parameters of carvedilol, orally administrated to children with CHF emphasized the following: the maximum concentration reaching time identical with all subjects, the median line of $t_{1/2}$ 2.73 h and of MRT 4.23 h.

PP018

MRI OF THE HEART IN A 16-YEAR-OLD BOY WITH CHEST PAIN AND HIGH CARDIAC ENZYMES

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Case: A 16-year-old boy suffered from acute chest pain 2 days after onset of flulike symptoms. That's why he went to a local hospital where he presented with ST-elevations in ECG, elevated cardiac enzymes and slightly elevated CRP. He was transmitted to the cardiac unit of our hospital the following day. Here he showed besides rising enzymes and further changes in ECG a higher septum density in echocardiography. We had to distinguish between myocardial infarction and myocarditis quickly, so we did an MRI of the heart. We found subendothelial and myocardial hyperintensities in T2 sequences in inferior-lateral, septal and lateral left ventricular myocardium, which were typical for oedema as seen in myocarditis. Furthermore we could not see myocardial scars, coronary abnormalities or stenosis. We did no biopsy or catheterisation as symptoms and heart enzymes resolved quickly and clinical aspect of myocarditis was supported by MRI findings. ECG normalized within 2 days, he showed sinus rhythm all the time. We decided on antiviral treatment due to flulike symptoms, although we could not identify cardiotropic virus or bacteria in blood samples or rheumatoid reasons. We discharged him after 2 weeks in good condition with strict exercise restriction. In MRI control after 2 months oedema was not detectable any more.

Conclusion: As seen in adults, heart MRI is a quick non invasive possibility to distinguish between myocardial infarction and myocarditis in adolescents too.

PP019

COMPLETE ATRIOVENTRICULAR BLOC IN THE CLINICAL BEGINNING OF JUVENILE HEMOCHROMATOSIS

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The juvenile hemochromatosis is a rare disease, wich appears tipically in first until the third decade of life, and it is caused by mutations of the HFE2 gene, known also as HJV (not related with HFE genes) situated on chromosome 1, or mutations of the HAMP gene, situated on chromosome 19. The cardiomiopathy is frequent at theese patientsand sometimes is the way to diagnose the disease and is also the main cause of death. The authors present the case

of a patient with juvenile hemochromatosis, with multiple organic affection, wich begun with dilatative cardiomiopathy, interesting the excitoconductor sistem (complete atrioventricular bloc with syncopes), with very severe clinical evolution and he dead. For the patient with the juvenile hemochromatosis is recommended initial sreening when the iron is overload and shoud be measurement of transferin saturation after and overnight fast and genotyping to detect HFE mutation, liver biopsy.

THEME: DERMATOLOGY

PP020

INCONTINENTIA PIGMENTI: A FAMILY WITH AN UNUSUAL GENETIC PATTERN

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Introduction: Incontinentia pigmenti (IP) is a X-linked dominant genodermatosis caused by mutation in NEMO (1). IP is characterized by cutaneous manifestations (a vascicular, a verrucous, a hyperpigmented and an atrophic stage), ectodermal, central nervous system and ocular involvement.

Purpose: We report a case of IP which is unusual for the genetic pattern. The patient had a mutation in the NEMO gene, and the father had the same mutation in the NEMO pseudogene. Only four other such cases have been described in the literature (2,3).

Material and methods: On September 2007, a 47-day-old health girl developed hyperkeratotic, vesicular and,hyperpigmented lesions. The diagnosis was confirmed by skin biopsy and by genetic test. The infant underwent screening according to our staging and follow up – protocol (4). Genomic DNA, obtained in EDTA tubes, was extracted using conventional techniques. Gene mutation analysis using PCR amplification demonstrated deletion of exons 4–10 in the NEMO gene of the proband. The same deletion of exons 4-10 in the NEMO pseudogene was found in the proband's healthy father. No other family members had a mutation in the NEMO gene or in the NEMO pseudogene.

Conclusions: We report a case of IP, without extra cutaneous involvement, which is the fifth described in Literature. The infant had typical deletions of exons 4–10 in the NEMO gene, and her healthy father had the same deletions in the NEMO pseudogene. Since the two events are so rare, one can suspect a relationship between the pseudogene mutation in the father and the disease in the daughter. Some authors speculate that NEMO pesudogene is protective during meiotic recombination, when its absence could be related to the tendency of NEMO to be lost. So, a father/mother carrier of the NEMO pseudogene deletion might have more propensity to generate children affected with IP (5).

PP021

A NEED TO 'DIG' A LITTLE DEEPER: AN UNUSUAL CASE OF EPIDERMOLYSIS BULLOSA

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Dystrophic epidermolysis bullosa (DEB) is a rare and severe hereditary skin disorder. Conversely, oligoarticular Juvenile idiopathic arthritis (JIA) is the commonest form of inflammatory joint disease in childhood. Both diseases are characterized by severe limitation of mobility and loss of function. We report a female patient, diagnosed with autosomal recessive DEB at birth, who developed oligoarticular JIA at 7 years of age and discuss the diagnostic and treatment challenges of this unusual case. Our patient was diagnosed with DEB at birth and presented with indeterminate inflammatory bowel disease at the age of four, for which she received sulphasalazine and low dose prednisolone. She already had contractures and significant loss of mobility and function due to DEB. Diagnosis of JIA was based on localized pain in the right hip joint, antalgic position of the affected limb and rapid deterioration of function, and was confirmed by radiography and MRI findings. Inflammatory markers were normal and autoimmune profile was negative. She was treated with intra-articular steroid joint injection. A year following diagnosis, she presented with arthritis involving both knees and right wrist; meanwhile her bowel symptoms were inadequately controlled. She was treated with intra-articular joint injections and methotrexate which failed to control her disease. Anti TNF treatment was discussed; infliximab was chosen. However, the severe risk of staphylococcal sepsis in DEB precluded a permanent line and venous access was extremely difficult. Therefore, methotrexate and adalimumab were chosen for their subcutaneous administration. This has controlled both arthritis and inflammatory bowel disease. Nevertheless, prolonged use of immunosuppressive medication and its mode of delivery are two independent risk factors associated with poor prognosis, for her DEB. This report, besides presenting a unique case, also highlights the important issues that need to be taken into account when assessing and managing patients with such complex conditions.

THEME: ENDOCRINOLOGY AND GROWTH

PP022

PATTERN OF PUBERTY AND FINAL HEIGHT OF GIRLS WITH EARLY ONSET OF PUBERTY

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Introduction: A trend towards earlier age onset of puberty has been observed worldwide, including in Thailand. The median age of onset of the larche in Thai girls ranges from 9.4 to 10.3 years. The onset of the larche at 7.0–9.3 years is defined as early puberty.

Purpose: To study the pattern of puberty and final height of girls with early puberty.

Material: One hundred and eight girls with breast development at 7.0–9.3 years attended from January 2003 to December 2005.

Method: Observational longitudinal study. The girls were followed-up every 4–6 months until they attained their final height.

Results: The mean age at the initial evaluation was 8.7 ± 1.0 years. The majority of girls were overweight for height with an average weight-for-height of 119.7%. The average age at menarche was 10.2 ± 0.9 years. The average age at the time of attaining final height was 12.6 ± 0.4 years. The average final height was 154.0 ± 4.9 cm which was the same as their midparental height of 153.1 ± 4.8 cm. Comparing girls who were normal weight (weight-for-height ≤120%) and obesity (weight-for-height >120%), obese girls significantly had earlier age onset of menarche (9.8 ± 0.8 vs. 10.5 ± 0.8 years, $P < 0.01$) and significantly reached their final height at a younger age (12.2 ± 0.4 vs. 12.9 ± 0.4 years, $P = 0.02$). However, normal weight and obese girls were about the same final height (153.0 ± 4.0 vs. 155.8 ± 4.8 cm, $P = 0.056$). A height loss (final height – midparental height) of more than 5 cm (1 SD) was found in eight girls which was explained by markedly advanced bone age at the time of initial presentation.

Conclusions: Girls with early puberty were averagely overweight for their height. The average final height of these girls was at their genetic potential.

PP023

SOME DETERMINANTS OF GROWTH RATE AND MATURING OF BOYS IN PUBERTY PERIOD

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Introduction: Data about change of rates of biological maturing (CRBM) for the puberty are insufficiently studied or discrepant. For example information on the raised fatness (Roche A.F., 1998) and greater peak height velocity (PHV) (Tanner J.M., 1976) at early matured boys, will not be coordinated with data about lower PHV at obese teenagers (Prusov P.K., 1993).

Purpose: To study growth velocity, CRBM of boys in the puberty in view of physical development and activity.

Material: Analyzed data of longitudinal researches of 170 boys from 11 years to stop of growth of body height.

Methods: Anthropometry and caliperometry. CRBM for the puberty was defined on growth duration from achievement of 85% of adult height (85% AH) till the moment 99% AH. Upon our and (Vismanos R., 2001) data on the average about 85% AH corresponds to puberty beginning. Individual parameters of height process were calculated on a logistic model (Preece M.A., Baines M.J., 1978). Groups of physically active and hypokinesia (30 and 39 persons) were chosen.

Results: Average duration of growth from moment 85% AH up to 95% AH was 3.55 ± 0.56 years, a range of fluctuation is 2.15–5.7 years. At physically active group this period was shorter than at gypokinesia on 1.1 SD. Delay in RBM for a puberty is connected with relative values of fat, total mass of body, length of leg, AH. Acceleration is connected with PHV and muscular tissue value. Age of 85% AH had no value for CRBM whereas ages of PHV and 99% AH are positively connected with it, coefficient of correlation accordingly are 0.33 and 0.54. Boys with the high %fat $P > 90$ in the beginning of puberty had acceleration of RBM on +0.56 SD, and by the moment of puberty end delayed on -0.32 SD.

Conclusions: Features of physical development and character of physical activity influence on CRBM of boys in puberty.

PP024

IMPORTANT PARAMETERS IN THE DIAGNOSIS OF EARLY PUBERAL MATURATION BY GENERAL PAEDIATRICS: OUR EXPERIENCE ON 162 CASES OF PRECOCIOUS PUBERTY

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Introduction: Precocious puberty (PP) has a growing trend.

Finality: Important parameters for paediatricians for the selection of pts to send to higher level diagnostic centre for puberal disorders have been examined retrospectively.

Methods: Since 2002–2008 162 pts (145 female, 17 male, age to the diagnosis 7.5 ± 1.1 years) with PP diagnosis (presence of secondary sexual signs before 8 years (F) or 9 years (M) and LH peak >6.5 mU/mL and/or inversion of the relationship LH/FSH after GnRH test) were involved in this research. Detailed anamnesis and objective examination have confirmed PP: pelvic or testicular echography, bony age Rx, thyroid and adrenal function and cancer markers exam, skull encephalon RMN.

Results: Average BMI was 18.2 kg/m^2, pts overweight and obese were 7.1% and 2.1% respectively. A genetic base for PP has been found in the 25%. No correlation has been found between BMI and uterine longitudinal diameter (ULD), BMI and ovarian volume (VO), VO and stadium of Tanner, VO and LH peak, FSH peak and relationship LH/FSH and between stadium of Tanner and bony age.

An important correlation has been found between LH peak and ULD, ULD and VO ($P < 0.001$ and $P < 0.005$ respectively). Anticipation of puberal maturation is relevant in the 19% of the F (advanced maturation uterus-ovaries) and 23% of the M. A delay in sending to specialized paediatrician is evident. Advance in the stadium of Tanner is lower than maturation level of ovarian echography.

Conclusions: The stadium of Tanner isn't completely a reliable tool, even if it's useful for diagnosis of a suspected PP. If the pelvic echography is made by paediatric radiologist, it's the most reliable tool for medical investigation.

PP025

AN OVERLOOKED CAUSE OF HYPONATREMIA

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Introduction: Hyponatremia is the most common electrolyte disturbance seen in children. A patient with hyponatremia is usually assessed for plasma volume depletion or overloading, adrenal insufficiency, syndrome of inappropriate ADH secretion and urinary or gastric loss of sodium. Hypoaldosteronism is often an overlooked cause of hyponatremia.

Case report: A 3-week-old male newborn presents with a history of poor weight gain. He is the first son of a healthy, unrelated, young couple. Pregnancy and delivery were uneventful. Physical examination revealed an irritable thin boy with sunken eyes and fontanel, decreased skin turgor and dry mucous membranes, without hyperpigmentation of skin creases and genitalia. Laboratory evaluation revealed hyponatremia (sodium 114 mmol/L), hyperkalemia (potassium 7.82 mmol/L) and normal serum 17-hydroxyprogesterona, cortisol, ACTH, dehydroepiandrosterone and androstenedione. The presumptive diagnosis of a defective terminal step in aldosterone biosynthesis was made by the presence of plasma renin activity markedly increased (500 μUI/mL; RV:15.5–103.2 μUI/mL) and normal plasma aldosterona levels (51.10 ng/dL; RV:7–99 ng/dL) but inappropriately low for the degree of hyperreninemia. He was started on fludrocortisone and sodium chloride replacement therapy with normalization of the electrolytes and renin values (58.3 μUI/mL).

Conclusions: Isolated hypoaldosteronism is a rare cause of salt wasting in infancy and may be life-threatening, especially in the newborn infant; therefore, it should be considered in the differential diagnosis in infants with dehydration and failure to thrive. Hence, estimation of plasma aldosterona constitutes an important investigation for hyponatremia.

PP026

THE EFFECT OF ORAL IODIZED OIL, ZINC ON URINE IODINE EXCRESSION, SOMATIC GROWTH AND CARDIO RESPIRATORY HEALTH IN SCHOOL-AGED CHILDREN WITH IODINE DEFICIENCY DISORDERS

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Introduction: Iodine deficiency disorders have become a worldwide scope problems since their prevalence grow continuously, either in developing or developed country. Elementary students are one of the most vulnerable group of lack of iodine. Based on World Health Nation, with lack of iodine district usually suffere from other micronutrient

deficiency (Fe, Zinc, Selenium, Magnesium, etc). The disorder impacts of lack iodine among elementary students are lower cardio respiratory health and somatic growth (WAZ, HAZ, WHAZ).

Purpose: The study was aimed to determine the influence of iodine and zinc supplementation to urine Iodine excression, somatic growth and cardio respiratory health among elementary students with iodine deficiency disorders.

Material: Subjects are elementary school children in goiter endemic area in Cangkringan District, Sleman Regency, Yogyakarta, Indonesia. The are divided to two treatment groups, Iodine + zinc and Iodine only.

Methods: This was true experimental study with randomized controlled trial. Value of urine iodine excression, somatic growth and cardio respiratory health measured twice, of the beginning and in the final phase of experiment. Data analysis among variables, we used bivariat analisys with chi-Square test, yet to measure the difference, T-test was used.

Results: There was an impact of Iodine supplementation to urine iodine excression ($P < 0.05$). There was in impact of treatment difference between iodine and zinc supplementation group and zinc group toward somatic growth (WAZ, HAZ, WHAZ) ($P < 0.05$), but There was no in impact of treatment difference between iodine and zinc supplementation group and zinc group toward urine iodine excression ($P > 0.05$) and cardio respiratory health ($P > 0.05$).

Conclusions: Iodine and zinc supplementation may influence urine iodine excression, somatic growth (WAZ, HAZ, WHAZ) but not the cardio respiratory health.

Key Words: Iodine, cardio respiratory health, urine iodine excression. somatic growth.

PP027

EVALUATION OF THE PREDICTIVE FACTORS FOR CHILDHOOD OBESITY IN CONSTANTA COUNTY, ROMANIA

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Introduction: The problem of childhood obesity in Romania has grown considerably. A variety of environmental factors could potentially contribute to childhood overweight, including home, school, and the community, low-income families, lack of safe places for physical activity, and consistent access to healthful food choices, especially fruits and vegetables.

Purpose: To examine the prevalence of overweight and obesity in 2500 Romanian schoolchildren (6–18 years of age) from Constanta County, and to identify the determinants.

Material and method: During the 6 months evaluation, children and parents filled in questionnaires and children underwent an assessment of anthropometric measurements. We tested the impact of several predictors including: diet, TV watching, levels of average hours per day spent alone after school, parental BMI, stressful life events or changes, and physical activity on children's BMI, using multiple linear regression models.

Results: In Romanian children from Constanta County, 16.3% of boys and 19.9% of girls were overweight or obese (BMI>95th percentile of the Romanian reference population). In both girls and boys BMI was predicted by being raised by grandparents, not eating the breakfast, watching TV in the own room and playing computer games while staying home alone, watching TV while eating. Maternal smoking and obesity at start of pregnancy and being large for gestational age represent important risk factors. In girls, BMI was predicted by maternal BMI, soft drink consumption, watching TV, being physical inactive; in boys by maternal BMI, fruit and chocolate consumption, frequent snacking. We did not find any correlation between being small for gestational age and the prevalence of obesity nor between the breastfeeding and the protective effect against obesity.

Conclusions: Although there are a number predictive causes of obesity in children, unhealthy diet, watching television, family dysfunction, lack of physical activity and genetic predisposition, must be addressed in every case.

PP028

RECCURENT EOSINOPHILIA DUE TO TREATMENT WITH GROWTH HORMONE

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Introduction: Eosinophilia is defined as peripheral blood eosinophil count >450/μL. There is a lot of causes of eosinophilia, but often is representing an allergic reaction or parasitic infection. Other less common causes are drug hypersensitivity, malignancy, non-parasitic infections, connective tissue disorders, immune disorders, endocrine disorders, and others.

Case report: A 12-year-old girl, treated with growth hormone, admitted to our clinic due to abdominal pain, with no other symptoms. According to the physical examination there were no pathological findings. The laboratory work-up revealed eosinophilia (11100/μL eosinophil count) of the peripheral blood. Due to the abdominal pain the treatment with the growth hormone was discontinued. Short after, the eosinophil count returned to normal. Eight months later, the girl came back to our clinic due to abdominal pain once again. The blood tests revealed again eosinophilia (4356/μL). The last 5 months the girl had restarted treatment with growth hormone that is discontinued because of the pain. We run a new cycle of tests, such as cellular immunity, parasitological tests, allergy tests,

gastric endoscopy, abdominal ultra-sound, tests for celiac disease, karyotypic analysis, immunological tests, bone marrow aspiration, in order to define the cause of eosinophilia.

Results: No pathological results were revealed except from the high level of serum IgE: 943 kU/L, (normal values <85 kU/L). It is remarkable that on regular follow-up the eosinophil count returned to normal.

Conclusion: The fact that the eosinophilia appeared simultaneously with the growth hormone treatment raises the question whether this agent can cause eosinophilia. According to current literature there were few similar reports. We can hypothesize either an allergic reaction to the pharmaceutical product, or an action of the growth hormone itself as a growth stimulator to the bone marrow to increase the production of eosinophils. Considering the high value of IgE, the first hypothesis seems more rational.

PP029

PROGRESS OF BREAST FED BABIES COMPARED TO THOSE WHO WERE NOT

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Introduction: Breast feeding gives to an infant optimum food, protection against infections, maturity of organism.

Purpose: Detection of infant's progress, those who were breast fed compared to those who were not in first 5 months of life.

Material: Infant's health cards.

Methods: One hundred and forty-one of infants had been observed through consulting-room, in period of 6 months. Sixty-five mail and 76 female infants had been observed.

Results: Forty-three of mail infants of 65 in total had been breast fed (66.16%), while 22 were not (33.85%). 31 (72%) of all breast fed mail infants after first 5 month had their birth weight (BW) doubled, while 14 (32.5%) had their BW overcome significantly more than double. Those infants who were not breast fed had their BW doubled in 82% of all cases. 17 of those (77%) had BW overcome more than double. Among 76 female infants in total, 36 (47.37%) were breast fed, while 40 (52.44%) were not. 28 of all breast fed female infants (77.7%) after first 5 months had their BW doubled, while 10 of those (27.7%) had their BW overcome more than twice. 27 (67.5%) of all female infants who were not breast fed had their BW doubled, while 17 of those (42.5%) had their BW overcome more than twice.

Conclusions: Mail infants had been breast fed more often then female (66:47). Approximately same number of both mail and female had their BW doubled after 5 months (those who were breast fed), 72:77. Approximately the same number of male and female infants was more than good fed. (32:27). Among those who were not breast fed, male infants had doubled BW in more cases than female infants (82:67), but it was more corpulent female than mail infants (42.5 :17).

PP030

MALE, 9 YEARS OLD, WITH TWO EPISODES OF SEPTIC SHOCK AND SEIZURES

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Introduction: Adrenocortical insufficiency can be primary or secondary. Destruction of the adrenal cortex during childhood is one of the more common causes of adrenal insufficiency. There are congenital and acquired causes and the most common are autoimmune diseases.

Case report: Male boy 9 years old, was presented with fever up to 39.7°C, status epilepticus and apnea. He was mechanically ventilated and transferred to PICU. He had persistent low blood pressures, that needed crystalloids and dopamine, but with normal cardiac function. He had normal biochemical profile, elevated inflammation factors and started intravenous treatment with antibiotics and hydrocortisone, for possible septic shock. From the atomic history he had a hospitalization 4 years ago in PICU because of septic shock and seizures, hypoglycemia, persistent low blood pressure and elevated needs in sodium. From the laboratory tests IgM antibodies for enteroviruses were positive and the diagnosis was viral encephalitis. From the clinical examination during the second hospitalization the boy had hyperpigmentation in the interdigital folds, elbows, scrotum, knees and mucal bucosa. He also complained about fatigue that started 1 year before the first hospitalization. With the suspicion of Addison disease, laboratory work up confirmed the diagnosis: ACTH = 885.3 pg/mL (normal rates = 9–52), renine = 2.4 pg/mL (3.6–20), aldosterone = 0.3 ng/dL (3–28). ACTH stimulation tests were consistent with Addison disease. He started treatment with hydrocortisone and fludocortisone.

Discussion: The onset of Addison disease in older children is gradual and is characterized by weakness, loss of weight, general wasting and low blood pressure. This case is interesting because of the acute onset and the clinical resemblance with septic shock. Important signs for the differential diagnosis are the persistent hypotention that requires repeated administrations of dopamine and crystalloids, hypoglycemia and elevated needs in sodium. Although Addison disease is rare, a high index of suspicion should be raised in such cases.

PP031

RESULTS WITH THE READY TO USE FOOD TO TREAT ACUTE MALNUTRITION IN THE SAHEL REGION OF KANEN – WESTERN CHAD

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Background and purpose of the study: Climate change and economic meltdown have impacted negatively on the nutrition situation of children in Kanem, a Sahelien region of western Chad. UNICEF has responded by supplying ready to use therapeutic food (RUTF), an internationally recognized lipid based peanut paste to treat children suffering from severe acute malnutrition (SAM). The purpose of this study is to evaluate results of treating SAM among children aged 6–59 months using RTUF in 33 nutrition rehabilitation centers between May and August 2009.

Results and comments: Monthly data on treatment outcomes of 5024 children was analyzed and compared with international SPHERE humanitarian standards. The table described below compares observed treatment outcome indicators with sphere standards. From these results, the use of RUTF has accomplished the objective of meeting international standards on treatment outcomes by far.

Table 1: Treatment outcome indicators in relation to the SPHERE humanitarian standards

	Proportion cured (sphere >75%)	Proportion dropping out (sphere <15%)	Proportion dying (sphere <10%)
May	87.8	9.3	0.7
June	91.2	4.2	0.9
July	89.8	4.6	0.4
August	94.3	1.7	0.5

Conclusion: According to our data in Kanem region, the use of RUTF seems to be a very promising intervention in treating SAM. Such intervention may have a great impact when taken to scale. Thereafter it may help heavily affected countries in achieving objectives one and four of the Millenium Goals. However, more studies are needed to evaluate the cost-benefit ratio and the sustainability of such approach.

PP032

PREVALENCE OF OVERWEIGHT AND OBESITY AT THE AGE OF 6 AND 10 YEARS AND ITS CORRELATION TO OBESITY AT THE AGE OF 3 YEARS IN SOUTHERN ISRAEL (2002–2009)

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Introduction: Obesity among children has become a worldwide epidemic. That impairs health and quality of life.

Purpose: (1) To evaluate yearly trends and prevalence of overweight/obesity in 6 and 10y old children (2002–2009).

(2) To correlate children' pBMI at age ~6 and 10 to their pBMI at age of ~3 years.

Materials: A community child health center in southern Israel serving a population of 6000 children aged 0–18 years.

Methods: All children who were born in 1996–2003, were invited for measurements at the age of ~6 years. Those who were born in 1996–1999 were reinvited at the age of ~10 years. Measurements of these children, at the age of ~3 years, were collected from the medical records.

Results: A total of 1568 children were measured at the age of 6 years (61.5% of the cohorts). The prevalence of obesity and overweight ranged from 34% in the year 2002 to 27% in 2008. Obesity (BMI ≥95%) was recorded in 14.1% of the children. At the age of 10 years, 34.5% of the children had BMI ≥85% and 16.3% had BMI ≥95%. Eighty-five per cent of the overweight or obese children at the age of 6 years continued to have BMI ≥85% at the age of 10 years. At the age of 3 years 19% of the toddlers had BMI ≥85% (n = 363). A BMI ≥95% was recorded for 13.2% of them. Eighty-four per cent of the toddlers with BMI ≥95% continued to have BMI ≥95% at the age of 6 and 10 years.

Conclusion: Overweight/obesity is highly prevalent from early age and continues for years. Early intervention should therefore start in the first years of life.

PP033

CHILDHOOD OBESITY: IS THYROID FUNCTION AFFECTED?

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Introduction: In recent years, considerable attention is being paid to the study of thyroid function in obese patients, and some studies report a smaller increase of thyroid stimulant hormone (TSH) in obese children when compared with the healthy control patients.

Purpose: To evaluate the thyroid function (TSH, fT4, fT3) in a group of obese children and adolescents and to establish the prevalence of positive thyroid antibodies.

Methods: A group of 173 obese children and adolescents (aged 5–17 years) with nonorganic, nonsyndromic obesity with BMI indicative of obesity (Cole 2000) and a control group consisting of 150 healthy, normal weight children. Both groups underwent thyroid function evaluation (TSH, fT3, fT4) included thyroid antibodies (thyroid peroxidase and thyroglobulin).

Results: Median TSH levels for both groups were within normal range, but significantly higher ($P < 0.001$) in the obese patients than in the controls, while fT4 and fT3 levels were normal and did not differ in the two groups. A total of

21 patients within the obese group (12.1%) and only one in the control group (0.7%) had elevated TSH levels (≥4 μU/mL, reference interval 0.3–4.0). In the obese patients the prevalence of positive thyroid antibodies was 17.9% (31/173) and 0.7% in the control patients (1/150), only two out of the 21 obese patients with hyperthyrotropinemia had positive thyroid antibodies. The control patient with elevated TSH also had the positive antibodies.

Conclusions: Elevated TSH levels (≥4 μU/mL) appear to be more frequent in obese children (11%) than in controls (respectively 11 and 0%, excluding the patients with positive thyroid antibodies), with median TSH being significantly higher in the former. High TSH in obese patients was associated with positive thyroid antibodies in only two cases. Therefore hyperthyrotropinemia with normal fT3 and fT4 levels in childhood obesity is not completely accounted for by autoimmune processes and the role of obesity on thyroid function should be further studied.

PP034

AUTOIMMUNE THYROIDITIS PROGRESSION IN PATIENTS TREATED WITH GNRH ANALOGUES

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Introduction: In the pediatric population, autoimmune thyroiditis (AT) is at least 100-fold more frequent than idiopathic central precocious puberty (ICPP). The pathogenetic role of estrogens in both diseases is well-known. GnRH analogues (GnRHa) are considered the gold standard treatment for ICPP.

Purpose: To evaluate AT development/progression in the ICPP patients during GnRHa treatment.

Materials: ICPP was defined by standard criteria (e.g. GnRH-induced LH peak >10 mU/mL with LH/FSH >1, E2 > 25 pg/mL, T > 3.6 μU/mL, advanced bone age ≥2 years, etc.). ICPP patients were treated with 0.1 mg/kg/28 days leuprorelin acetate or triptorelin.

Methods: Gonadal (LH, FSH, E2, T) and thyroid (fT3, fT4, TSH, thyroid peroxidase antibodies (TPOAb), thyroglobulin antibodies (TGAb)) function were 6-month assayed. AT diagnosis cut-offs were TGAb >150 U/L, TPOAb >100 U/L and TSH >6.0 μU/mL.

Results: In 80 ICPP patients (F/M ratio ≃8.1:1), 15 were AT-affected before GnRHa therapy start (TGAb >1500 U/L, TPOAb >400 U/L and TSH >6.0 μU/mL). Twenty-four (23 F and 1 M) ICPP patients (all with normal iodine intake) developed AT after 1.9 ± 1.31 years of GnRHa therapy. Independently to ultrasound evaluation, 15 (62.5%; group 1) subjects firstly presented isolated TGAb (157 ± 46.1 U/L) increase before TPOAb one (1.9 ± 1.35 years later), 4 (16.7%; group 2) both antibodies increase (TGAb 272 ± 117 U/L; TPOAb 415 ± 278 U/L) and 5 (20.8%; group 3) started with positive TPOAb (362 ± 252 U/L) before TGAb increase (after 1.8 ± 1.27 years). All 3 groups showed TSH increase (>6.0 μU/mL) after 2.5 ± 1.45 years from both TPOAb and TGAb were positive.

Conclusions: We confirmed similar time-steps of AT progression in GnRHa-treated subjects than in untreated ones. Regard to AT risk, most diagnostic parameter was TGAb value (estimated test sensibility 0.792). To control health expenditures for AT evaluation after neonatal hypothyroidism screening, we may only check TGAb levels in GnRHa-treated subjects till they are openly increased and then, we complete thyroid function evaluation.

PP035

ASYMPTOMATIC HYPERCALCEMIA IN AN OVERWEIGHT ADOLESCENT

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A 12.2-year-old overweight adolescent (BMI 25.8, >90th percentile), during a routine blood test, is discovered to have moderate and asymptomatic hypercalcemia (serum total calcium 12.2 mg/dL, n.v. 8.5–10.5). Physical examination showed abdominal striae rubrae and acanthosis nigricans in the neck region. Further blood tests showed hypercalcemia with serum phosphate in the lower levels of normal range (2.7 mg/dL, n.v. 2.5–5.0) and elevated parathyroid hormone levels (106 pg/mL, n.v. 10–65), normal calcitonin levels, hypovitaminosis D (25-idrossivitaminD 8.5 ng/mL, n.v. 20–100). Thyroid function was normal. Urine samples showed hypercalciuria (7.1 mg/kg/die) with phosphate excretion in the upper level of normal range. Suspecting primary asymptomatic hyperparathyroidism, a neck ultrasound was performed. It revealed an oblong hypoecogen mass (8 × 3 mm) with endonodular vascularization, compatible with an upper right hyperplastic parathyroid gland. 99mTc-pertechnetate scintigraphy confirmed the finding (Fig. 1). A radiological examination of the skull and upper and lower limbs, as well as a DXA scan of the lumbar spine were also performed. All of them were in the normal range (lumbar BMD Z-score-1.2). A renal ultrasound showed nephrolythiasis (3 mm non-obstructing calculus in the lower major calyx of the left kidney). The patient underwent upper right parathyroidectomy by video-assisted neck surgery. Histological examination demonstrated benign parathyroid adenoma. Normal serum calcium levels were maintained during follow-up.

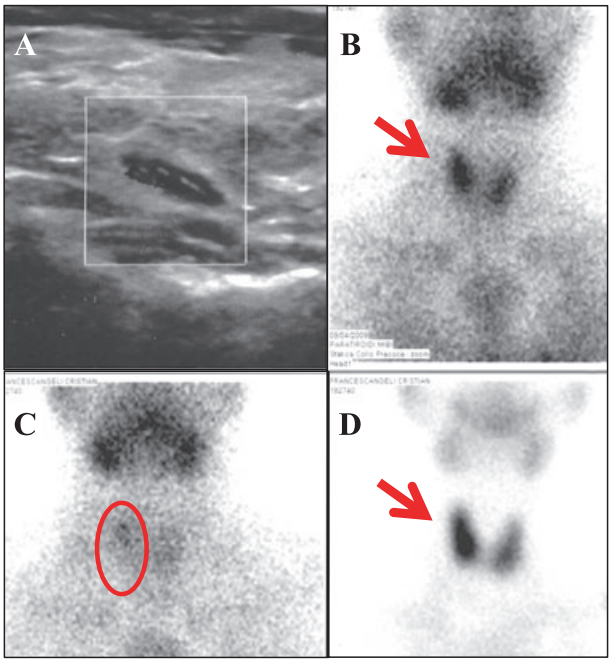

Figure 1: Neck ultrasound (A) and 99mTc-pertechnetate scintigraphy (B–D) reveal an upper right hyperplastic parathyroid gland.

Comments: Hypercalcemia may be an incidental finding in asymptomatic patients, necessitating further examination, such as neck ultrasound and, less operator-dependent, 99mTc-pertechnetate scintigraphy. As recommended in a recent international workshop on asymptomatic primary hyperparathyroidism (Silverberg SJ et al. JCEM 2009;94:351–365), surgery is indicated in cases of tissue damage, such as low bone mass for chronologic age (BMD Z-score <-2.0) or nephrolythiasis. Isolated hypercalciuria should not be considered as necessitating surgery. Only a bioptic test can differentiate between parathyroid hyperplasia and adenoma.

THEME: GASTROENTEROLOGY

PP036

PERCUTANEUS ENDOSCOPIC GASTROSTOMY – INDICATIONS, COMPLICATIONS AND BENEFITS

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Introduction: Percutaneous endoscopic gastrostomy (PEG) is a procedure that enables a long-term enteral feeding.

Aim: The aim of the study was the analysis of indications for PEG insertion, assessment of complications related to this procedure and an attempt to evaluate the efficacy of this method of nutritional therapy in children hospitalized in the Department of Paediatrics at the Medical University of Silesia in the period from 2002 to 2008.

Patients and methods: The analysis included 60 children at the ages of 2 months to 17 years (mean age 5.5 years), 21 girls (35%) and 39 boys (65%), in whom endoscopic gastrostomy was inserted.

Results: The most common indications for PEG insertion were: swallowing disturbances in the course of neurological diseases (83%) and multiorgan traumas (8.5%). Twelve patients have been followed-up in the Gastroenterology Outpatient Clinic, participating in the program of enteral feeding. Complications, usually manifested as local skin reactions, were observed in 3/60 (5%) children. The most serious complications were: intestinal perforation that occurred in 1/60 (1.6%) patient and gastric ulceration observed in 1/60 (1.6%) child. A gradual improvement of the general condition and weight gain were observed in all patients after PEG insertion.

Summary: Percutaneous endoscopic gastrostomy appears to be a minimally invasive technique associated with the low number of complications, which is worth recommending for enteral feeding in children.

PP037

STUDY THE EFFECTS OF OMEGA-3 ON GROWTH INDICATORS AND QUALITY OF LIFE IN CHILDREN WITH CYSTIC FIBROSIS

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Introduction: Cystic fibrosis (CF) is an autosomal recessive disorder which is chiefly characterized by respiratory and gastrointestinal symptoms. According to previous studies fish oil as a source of omega-3 fatty acid affects significantly on decreasing inflammation, days of admission and antibiotic therapy in patients with cystic fibrosis.

Purpose: To investigate whether Omega-3 fatty acid has effects on growth indicators and quality of life in CF patients.

Material and methods: In a prospective, case controlled study, 32 patients 6 months–6 years old were randomly divided into two groups. Seventeen case and 15 control patients were assigned to ingest three gr of either encapsulated fish oil (three capsules daily, each contains 180 mg of eicosapentaenoic acid and 120 mg of docosahexaenoic acid) or placebo oil for 3 months. Growth indicators such as height, weight, head circumference (Hc) and arm circumference (Ac) were measured both at the beginning and the end of treatment period. Quality of life was also determined using questionnaires. $P < 0.05$ was considered as significant level.

Results: There was a significant increase in case group vs. control group for Ac ($P = 0.02$) and near to significant increase in weight ($P = 0.05$). Quality of life was also improved significantly in case group($P = 0.04$).

Conclusions: Fish oil as a rich source of omega-3 fatty acid may have beneficial effects on increasing weight and Ac, as well as improving quality of life in CF patients.

PP038

GASTROINTESTINAL TRACT OBSTRUCTION AS MANIFESTATION OF PEUTZ-JEGHER'S SYNDROME IN 12-YEAR OLD GIRL

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Introduction: The most common gastrointestinal symptoms observed in the course of Peutz-Jeghers syndrome are bleeding and abdominal pains, and less frequently – subobstructive conditions as well as a full obstruction caused by intussusception.

Results: We are presenting the case of a 12-year-old girl admitted to hospital due to paroxysmal abdominal pains and vomiting. The family history revealed gastrointestinal polyposis in patient's father. On admission, the physical examination revealed epigastric tenderness and discolouration within the red part of the lips. The endoscopy of the upper alimentary tract demonstrated a polypoid structure protruding from the duodenum into the lumen of the

stomach, which blocked completely the pyloric lumen. During hospitalization the clinical symptoms of obstruction were observed. The girl was immediately sent to the Department of Paediatric Surgery, GCZD. During the surgery, a polyp of 5 cm in diameter located on the posterior wall of the duodenum was removed. Moreover, an intussusception involving 40 cm of the small intestine was found; after removing the intussusception, two polyps were detected, located 30 and 45 cm below the ligament of Treitz. Palpation did not reveal any other polyps within the small and large intestines. Colonoscopy was scheduled. The histopathological examination of the removed polyps showed a lesion corresponding to the Peutz-Jeghers polyp.

Conclusions: The aim of this study is to present a rare cause of gastrointestinal obstruction – intussusception, i.e. polyps occurring in the course of Peutz-Jeghers syndrome.

PP039

THE NUTRITIONAL DEFICIENCIES OF THE NICOTINE EXPOSED INFANTS

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Introduction: Maternal smoking influences the infants nutritional condition.

Purpose: To identify the nutritional deficiencies (malnutrition, anemia, rickets) of the infants who originate in smoker mothers.

Material: The subjects were 132 infants of smoker women controlled with 102 nonsmoker mother's infants borned between February and March 2005.

Methods: A prospective case control randomized study was conducted. Hospital interviews and general practicer's records provided information. Data underwent statistically methods: chi square test, relative risk, corelation.

Results: The average birth weight of the smoker women's newborn is 2895 ± 607 g, significantly lower than in control newborns whose average birth weight is 3182 ± 560 g ($P = 0.0018$). The average weight at 1 year of age is normal in both groups of infants (9477 ± 831 g, irrespective 9202 ± 1027 g), but the control infant's weight superiority is significant ($P = 0.0287$). The average weight index is normal at 1 year in both groups (1.0353 ± 0.0927, irrespective 1.0387 ± 0.0781) ($P = 0.1389$). Relative risk for malnutrition at 1 year is 1.42 in smoker mother's infants. Almost a quarter (24.42%) of the case infants and 13.72% of the control infants were diagnosed with anemia (relative risk 1.80); the average hemoglobin level of case infants was 10.85 ± 2.13 g/dL and 11.23 ± 1.74 g/dL in control ones ($P = 0.0870$). There is no significant difference between the onset age for anemia in the two groups ($P = 0.5131$). Infants weight at 1 year and anemia are positively correlated with maternal economical and educational level, gestational age, birth weight, weaning age ($P < 0.005$) and negatively correlated with the number of the family members and of the respiratory tract infections ($P < 0.005$). Nicotinuria is not correlated with them. Vitamin D deficiency rickets was noted in eight case subjects and six control ($P = 0.9125$; relative risk 1.26).

Conclusion: The nutritional deficiencies of the smoker mothers infants depend rather on the maternal economical and educational level than on the nicotine ingestion.

PP040

IS MATERNAL SMOKING INFLUENCING REGURGITATIONS IN BREASTFED INFANTS?

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Introduction: Nicotine containing breast milk ingestion is responsible for functional disorders of the digestive tube.

Purpose: To identify the effects of ingestion of the smoker mothers' breast milk on their infants' regurgitation.

Material: A total of 132 smoker mothers' infants and 102 control infants borne in Maternity from Oradea, Romania, between February and March 2005.

Methods: Study design: Prospective, case–control, randomized. Data was personally obtained by individual inquiry of the mothers and completed with the family doctors records information. A gravity scale was proposed for a more accurate quantification of the regurgitations. Nicotinuria and cotininuria were determined by gas chromatography when the infant was aged between 5 and 12 weeks. Used statistical analysis: comparison using chi-square test, correlations and evaluation of relative risk.

Results: Almost half (48.85%) of the smoker mother's infants had regurgitations, significantly more than the control infants case, where only 28.43% accused this disorder ($\chi^2 = 10.732$; $P = 0.0133$); relative risk is 1.71. When comparing the regurgitation of the infants who where breastfed at least 1 month long, so the nicotine ingestion was more prolonged, the difference is not significant anymore ($\chi^2 = 6.210$; $P = 0.1018$). The highest incidence of regurgitation is noted in the formula fed infants whose mothers where smoking during the pregnancy ($\chi^2 = 5.675$; $P = 0.0172$). The longer is the breastfeeding period, the lower is the regurgitation frequency (relative risk = 1.4 if the infant is breastfed until the end of the first year of life). The severity of the regurgitations is positively correlated to nicotinuria ($P = 0.0066$) and cotininuria ($P = 0.0003$). The maternal and neonatal variables are not significantly correlated to the regurgitation frequency and severity ($P > 0.05$).

Conclusion: Early bottle feeding and not the nicotine ingestion from the breast milk is the most important risk factor for the smoker mother's infant regurgitation.

PP041

MELATONIN: THE NEW ERA AND THE NEW HOPE IN INFANTILE COLIC

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Introduction: Infantile colic, the most common complaint in infants which has not yet been explained quite well physiopathologically, can be a disturbance both to parents and doctors and cause both economical and emotional distress as well. It does not have an effective treatment yet. Melatonin has an antagonist effect to the serotonin's contractile effect on the gastrointestinal system but unlike serotonin, which is secreted since birth, melatonin's circadian rhythm does not start until 3rd month.

Purpose: The effects of melatonin drugs given to breastfeeding mothers with children who suffer severe infantile colic attacks were investigated. We report the first results of the ongoing study.

Patients and methods: Healthy babies between 21 and 40 days old, who are breastfed and has no other medical problem was taken under study. Healthy mothers were given single dose of synthetic melatonin (3 mg) at 5:00 pm everyday and later the babies were followed about their sleeping and alimentary habits and colic situation everyday for 60 days. Informed consent obtained from all voluntaries. The study was approved by institutional ethical committee.

Results: Ten babies were included in the study. Nine of ten babies showed good response to treatment on the seventh day of the study and crying crisis disappeared. Melatonin was good tolerated by mother and babies. No side effects were seen but only one mother stopped the melatonin because of sleeping.

Conclusion: This preliminary data showed melatonin given to breastfeeding mothers by per oral have an antagonist effects to the contractions in children's GIS and good improvement on infantile colic. All data will be presented after the study completed.

PP042

MIXED PANCREATIC CARCINOMA (ACINAR AND ENDOCRINE CELLS): A RARE CAUSE OF OBSTRUCTIVE JAUNDICE IN CHILDHOOD

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Aim: Obstructive jaundice is rare in children. Tumor of the head of the pancreas is extremely rare the cause of obstruction. An unusual type of pancreatic cancer, mixed with both acinar and endocrine cells, was described in adults and very few cases in childhood have been previously reported.

Methods: This report describes a case of obstructive jaundice in childhood due to a rare form of pancreatic carcinoma with favorable evolution after surgery.

Results: An 11-year-old girl presented for intermittent jaundice, pruritus and skin lesions due to scratching, dark urine and acholic stools, asthenia, loss of appetite and decrease of weight for 3 weeks. Laboratory tests revealed important cholestasis, mild increase of transaminases and negative tests for other causes of cholestasis. Abdominal ultrasound revealed a 23/18 mm solid tumor, very well delineated in the head of the pancreas with retrograde dilatation of the biliary and pancreatic ducts, confirmed by ecoendoscopy and computer tomography. Ursodeoxicholic acid was administered and surgery was decided for tumor resection. Microscopic examination and imunohistochemistry revealed mixed histology of the tumor: cells of endocrine pattern associated with groups of small acini. Tumor stage was pT1N0M0L0V0. Extensive resection in healthy tissue was done after confirmation of the malignancy. Chemotherapy with gemcitabine, a cytostatic drug used in adult pancreatic carcinoma, was associated and was well tolerated with good evolution.

Conclusions: Mixed acinar and endocrine pancreatic tumor is extremely rare in childhood. Formulation of standard treatment guidelines for this kind of tumor in children has been prevented by the rarity of the tumor. The onset of the jaundice due to localization in the head of the pancreas, with early diagnosis and complete resection of the tumor represented a favorable prognostic factor compared with the other two cases in the literature with tumor localized in the body of the pancreas.

PP043

CHRONIC POUCHITS PRESENTING AS REFRACTORY ANAEMIA IN A CHILD WITH DOWN'S SYNDROME

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Introduction: Our case is a 14-year-old boy with Down Syndrome (DS) and Hirschsprung's Disease (HD) who presented with symtomatic microcytic anaemia refractory to iron treatment. He was the first child of a healthy unrelated couple, born at 32 weeks gestation. The patient developed necrotizing enterocolitis (NEC) and had a colectomy. Histopathology of the excised bowel showed total colonic aganglionosis, the most severe form of HD. He underwent ileorectal anastomosis with J pouch formation at 18 months. Since then he was hospitalized twice with

enterocolitis. The child never acquired sphincter control. Due to his underlying diagnosis he underwent extensive investigation to define the cause of his anemia. Lower gastrointestinal endoscopy showed diffuse inflammation and multiple hemorrhagic ulcerations localized at the site of anastomosis, findings consistent with pouchitis. Histopathology confirmed the diagnosis. Of note, he never developed haematochezia but fecal occult blood test was positive on two occasions. The child was successfully treated with antibiotics, sulphasalazine and steroids but symptoms reoccurred following steroid reduction. We proceeded with formation of a permanent ileostomy. He underwent, had uneventful recovery and he remained symptom free.

Discussion: Inflammation of the anastomotic pouch following colectomy is a well defined entity in adult patients mainly treated for ulcerative colitis or colon cancer. Typical findings are diarrhea, abdominal pain, urgency and bacterial enterocolitis; iron deficiency anaemia is an uncommon finding. In our case, fecal incontinence may have masked some of the salient features of pouchitis.

Conclusion: Although pouchitis is an extremely rare complication in the paediatric population, it needs to be taken into account when investigating any child with persistent anaemia, who has previously undergone bowel excision (eg NEC, HD) even in the absence of typical findings.

PP044

HYPERTRIGLYCERIDEMIA: A SPOT DIAGNOSIS

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Introduction: We present a case report of a 2 months old girl with failure to thrive. The differential diagnosis of failure to thrive is long and often needs many further investigations. The diagnosis was made by the clinical chemical laboratory technician on the spot with an uncommon finding. A very rare cause of failure to thrive was found early in the work up.

Case report: A 2-month-old girl was presented in the outpatient clinic with failure to thrive. Neonatal period was uncomplicated. She had no feeding difficulties and drank very well. (Breastfeeding) Despite that she did not gain weight. Physical examination showed a dystrophic baby girl with a large abdomen and thin buttocks.

Work-up failure to thrive: The laboratory gave us a phone call that the very first obtained blood sample looked like fatty milk. The amount of triglycerides was increased up to 7 mmol/L (normal value $<$1.7 mmol/L) After a few days even increased up to 35.9 mmol/l. All other lipids in the spectrum were normal.

Conclusion: Isolated hypertriglyceridemia.

Diagnosis: Hypertriglyceridemia is caused by lipoprotein lipase deficiency. The patient cannot take up triglycerides into the cell. Differential diagnostic one has to think of apo-CII-deficiency. It is a rare disorder with an incidence of 1:1000,000. The diagnosis LPL deficiency was confirmed in our patient by the Genetic Metabolic Laboratory of the Academic Medical Centre, Amsterdam.

Therapy and prognosis: The treatment of this disorder is a diet with medium chain fatty acids. Triglycerides are taken into the peripheral tissue cell without the need of LPL. Complication of the diet is pancreatitis. Our patient is growing well after starting the diet.

Conclusion: We present a very rare cause of failure to thrive, diagnosed very early in the work-up because of excellent collaboration between clinician and laboratory technician.

THEME: GENETICS

PP045

A COMPARATIVE STUDY OF FINGER PRINT PATTERNS IN PARENTS OF CLEFT LIP AND PALATE CHILDREN AND CONTROL GROUP

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Introduction: Cleft lip and palate is a common birth defect with a complex etiology. Dermatoglyphics is a new way to assess the etiology of some polygenic or multifactorial diseases.

Purpose: The aim of this study was to compare finger print patterns of parents with non syndromic cleft lip and palate children with parents of healthy children.

Material: In this case–control study, forty-five unaffected parents (45 males and 45 females) of children with non-familial bilateral cleft lip and palate were enlisted. A control group of forty-five unaffected parents with at least two unaffected children and no prior family history of clefting were also simultaneously selected.

Methods: Finger prints were taken from each participant and their pattern types were determined. Then, asymmetry scores between right and left hands were defined and compared statistically with the controls, using Mann–Whitney and Chi-square tests.

Results: The results of this study showed that asymmetry of patterns in patients' mothers were significantly higher than controls. Furthermore, patients' fathers had significantly more arches than the controls, but there were no significant differences in dermatoglyphic patterns of patients' mothers and the controls.

Conclusion: The findings suggest that an increase in the asymmetry of pattern types in parents of sporadically affected children may reflect more the genetic base of this congenital malformation.

PP046

A STUDY OF CHROMOSOME ABERRATIONS ASSOCIATED WITH EPILEPSY

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Introduction: Epilepsy of various types is one of the most feature associated with chromosome aberration (CA). However few aberrations feature a specific type of seizures and/or a specific EEG pattern.

Objective: We describe the clinical features and EEG patterns in 14 patients with epilepsy and CA followed in the Department of Child and Adolescent Neurology (National Institute of Neurology of Tunis, Tunisia).

Patients and methods: All patient files with the diagnosis of epilepsy and CA were reviewed. The clinical features, electro-clinical pattern and response to antiepileptic drugs were analysed.

Results: Fourteen patients are diagnosed with epilepsy and CA: Angelman sd (4), Trisomy 21 (3), surnumber marker chromosome (2), Miller-Dieker sd, Klinfelter sd, Pallister Killian sd, ring chromosome 18 and duplication–inversion of chr 8 (one patient in each case). A total of 75% of patients have generalized seizures; 33% have focal seizures. West sd is noticed in Miller-Dieker sd and Lennox Gastaut in Angelman Sd. Three patients have no seizure.

EEG was abnormal in 75%. A characteristic EEG pattern was observed in Angelman sd. Epilepsy was resistant to treatment in 60% of cases. There was dysmorphic features in 88% of cases. All patients had mental retardation and language delay.

Discussion and conclusion: Epilepsy can be part of the phenotypic spectrum of CA. It is constant in Angelman, Miller-Dieker and Pallister–Killian sd. CA must be evocated in patients with severe epilepsy with or without dysmorphic features. Recognition of CA in epileptic patients is important for clinical follow-up and genetic counselling.

PP047

RECOGNITION OF INBORN ERRORS OF METABOLISM AS A NEW CONCEPT IN A PAEDIATRIC INTENSIVE CARE UNIT IN A DEVELOPING COUNTRY

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Introduction: Inborn errors of metabolism (IEM) are relatively rare in the paediatric population; these disorders are being increasingly identified and responsible for potential life-threatening consequence. This makes it essential that the neonatal and paediatric intensivists be familiar with the clinical presentation of these disorders.

Purpose: To focus on information that characterizes these patient at time of admission, and the basic laboratory studies necessary to arrive at an initial diagnosis.

Patients and methods: Elkhadra Hospital is a university teaching hospital with six bedded paediatric intensive care unit (PICU), it admits neonates and children (from birth to 15 years). Patients admitted to PICU are subjected to analysis during the period from 01.01.2007 to 30.08.2008 in ElKhadra Hospital. Where subset of patients was identified with suspected IEM at admission or diagnosed IEM at time being in hospital by using the flowchart for hyperammonemia. All the following information was extracted from all the admitted patients: symptoms and signs, consanguinity, length of hospital stay, biochemical characteristics at admission, need for assisted ventilation and finally Outcome at PICU discharge.

Results: The study population comprised 16 patients (3.4% of all admissions during the study period) including 4 neonates and 12 children. The commonest symptoms were lethargy, poor feeding and tachypnea; Parental consanguinity was present in (9/16), metabolic acidosis in (8/1) and hyperammonemia in (7/16). IEM diagnosis was known at time of admission to the PICU in three patients. Use for assisted ventilation in (8/16). The median length of PICU stay was (6) days (range 1–20 days) and five patients (31.25%) died (two cases died after discharged from PICU).

Conclusion: IEM diseases are not usually diagnosed prior to PICU, and require aggressive measures and support; also these patients constitute a significant diagnostic and therapeutic challenge for paediatric intensivists.

PP048

PSYCHOMOTOR DEVELOPMENT OF CHILDREN BORN AFTER PREIMPLANTATION GENETIC DIAGNOSIS (PGD) AND PARENTAL STRESS

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Introduction: PGD technique represents an alternative to conventional prenatal diagnosis, appropriate for couples at risk for transmitting a specific genetic condition, allowing selection and transfer of unaffected embryos established from in vitro fertilization (IVF). Although more than 2000 unaffected children have been born after PGD for monogenic diseases, the developmental outcome of these children is poorly documented beyond the neonatal period. The growing cohort of children conceived after PGD techniques underlines the importance of evaluating potential risks for their development.

Material: In the Department of Medical Genetics of Athens University, PGD cycles were performed in couples at risk for transmitting homozygous b-thalassaemia, sickle cell thalassaemia or cystic fibrosis. Thirty-one children aged 2 months–7.5 years born after PGD were assessed developmentally and their parents' stress level was also estimated.

Methods: Developmental evaluation included detailed physical and cognitive assessment using Greek version of Bayley Scales of Infant Development. Parental stress was measured using the Parent Stress Index and 32 parents of naturally conceived healthy children matched for age and socioeconomic status were used as controls.

Results: High rates of caesarean deliveries, increased incidence of prematurity, multiples and low-birth weight were found. No increased risk for perinatal complications was noted. Overall, 24 out of 31 PGD children showed normal cognitive skills (GDQ: 86–115), one had high abilities (GDQ = 135), while 6 out of 31 – mostly multiples, premature and SGA-experienced low levels of cognitive abilities (GDQ <85). No singleton had severe mental retardation (GDQ <65). Concerning parental stress, PGD parents showed lower levels of parenting stress compared to controls ($P < 0.01$).

Conclusions: Although the majority of children born after PGD techniques seem to develop normally, the increased risk of prematurity, multiple gestations and low birth weight found among them suggests the need of systematic follow-up for early intervention whenever that is indicated.

PP049

CARNEVALE SYNDROME

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Introduction: Carnevale syndrome is a rare autosomal recessive malformation syndrome associated with short stature, cognitive impairment, a tendency to clefting and unusual facies, fingers, toes, umbilicus and genitalia. Molecular characterization remains outstanding.

Purpose: Due to the dearth of literature on Carnevale the natural history is not fully appreciated. The purpose of our report is to describe the adult phenotype with particular reference to medical complications and intellectual outcome in addition to highlighting the most useful clinical

diagnostic clues to this uncommon but probably under-recognised condition.

Materials and methods: Clinical history, detailed physical examination and clinical photography on a now 19-year-old male followed throughout childhood by the Paediatric services for short stature, relative macrocephaly and initial mild speech delay and in adolescence by the endocrine and urogenital teams for delayed puberty and an array of genital abnormalities and diagnosed as having Carnevale syndrome by the Genetics service after referral in his late teenage years.

Results: The fourth child to non-consanguineous healthy Irish Caucasian parents, physical examination is remarkable for short stature, macrocephaly, dysmorphic and asymmetrical facial features, bilateral cryptotia, bulky nose, an M shaped posterior hair line and gum hypertrophy. Clefting is evident in his bilobed tongue, bifid uvula and deeply cleft lozenge shaped umbilicus with diastasis of the recti. He is described as having an underaverage performance in mainstream school, enjoys good general medical health and now lives independently.

Conclusion: Previous reports have focused on the early and mid childhood phenotypic presentations of Carnevale. We report an adult male in whom the fundamental clue to the diagnosis was the striking abdominal abnormality of a large lozenge-shaped diastasis around the umbilicus. Further clinical reports are still needed to delineate the condition through middle and old age for adequate counseling of parents and patients.

THEME: HAEMATOLOGY – ONCOLOGY

PP050

THE FREQUENCY AND SEVERITY OF SIDEROPENIC ANEMIA IN CHILDREN WITH IDIOPATHIC ULCERATIVE COLITIS

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Introduction: Sideropenic anemia presents a frequent complication of idiopathic ulcerative colitis. Beside rectal bleeding and insufficient iron intake, chronic inflammation also significantly participates in its pathogenesis.

Purpose: The study analyzed the frequency and severity of sideropenic anemia in children with idiopathic ulcerative colitis during the diagnosis at the onset of the disease.

Methods: The investigation goals were studied on a sample of 17 children, 11 male and 6 female, aged 3.58–5.00 ($x = 11.26 \pm 3.68$) years with idiopathic ulcerative colitis diagnosed based on characteristic endoscopic and pathohistological findings. Blood count and iron concentration in serum were determined using the standard laboratory methods from a blood portion taken in the morning and before breakfast. The diagnostic criterion for anemia was Hb level in blood below 110 g/L. Hb rate of 100–09 g/L signified a mild, 70–9 g/L moderate and below 70 g/L severe anemia. The referent value of mean RBC (MCV) was 70–80 fl., and for iron concentration in serum 10.7–31 μmol/L.

Results: Sideropenic anemia was detected in 6 (35.295%) patients with Hb rate of 7.49–10.32 ($x = 9.13 \pm 1.19$) g/L, MCV 73.04–82.96 ($x = 78 \pm 4.96$) fl. and serum iron of 3.21–7.11 ($x = 5.16 \pm 1.95$) μmol/L. Four children had moderate and two mild anemias. Sideropenija ($x = 5.05 \pm 1.83$ μmol/L) without anemia was revealed in four children.

Conclusion: Sideropenic anemia, either moderate or mild, occurs in one-third of children with idiopathic ulcerative colitis, while sideropenia without anemia in over one-fifth of them.

PP051

EVALUATION OF BRAIN NATRIURETIC PEPTIDE (TYPE-B) AS PREDICTOR OF CARDIOTOXITY IN CHILDREN WITH HAEMATOLOGICAL MALIGNANCIES

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Introduction: The use of intensive effective antineoplastic chemotherapy that includes anthracyclines in children with malignancies is known to be related to early and late cardiovascular abnormalities.

Purpose: Purpose of our prospective study was to evaluate BNP values as early index of cardiotoxicity after completion of intensive chemotherapy in children with hematological malignancies.

Material: Material were 20 children with hematological malignancies (mean age 7 ± 4.21 years) admitted to the Hematology-Oncology Unit of our Department.

Methods: Patients were evaluated at diagnosis ($t = 0$) and after completion of intensive chemotherapy ($t = 1$). For each patient demographic data (sex, age), underlying disease, cumulative anthracyclines dose (mg/m^2) and measurement of BNP were registered. Moreover, for each patient we evaluated systolic function of left ventricle with measurement of ejection fraction (EF) and shortening fraction (FS) by echocardiography in times 0 and 1 respectively.

Results: Pathological values for EF (<64%) and FS (<29%) were found in 4 (20%) and 1 (5%) patient in $t = 1$, while respective values were normal in diagnosis ($t = 0$). Mean BNP values at $t = 0$ were 59.09 ± 19.95 pg/mL and differ significantly from values at $t = 1$ (153.22 ± 29.14 pg/mL) ($P = 0.04$). Mean value of EF also differs significantly ($75.42 \pm 4.11\%$ vs. $69.87 \pm 10.51\%$, $P = 0.04$). No statistic difference was found regarding FS values at times 0 and 1 ($P = 0.102$).

Conclusions: Our data indicate that anthracyclines related cardiotoxicity is registered both clinically and laboratory in children with hematological malignancies. BNP represents a useful marker of myocardial dysfunction and therefore, can be used for the early identification and evaluation with echocardiography of high risk children for anthracyclines related cardiotoxicity.

PP052

TREATMENT WITH RITUXIMAB OF CHILDREN AND ADOLESCENTS WITH AUTOIMMUNE HAEMATOLOGIC DISORDERS

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Introduction: The efficacy of Rituximab in B NHL in adults and its relative lack of toxicity led to its use in a wide spectrum of B cell origin disorders i.e. autoimmune diseases. However, the experience in children is limited and few data on outcome and toxicity have been reported.

Purpose: To present our data (2004–2009) with the use of Rituximab in children and adolescents with autoimmune diseases.

Patients – method: Rituximab was administered in 6 patients (5 girls) with median age 10.9 years (range: 7.9–14.0 years) with: ITP (2), AIHA (1), s.Evans (2), s.Miller-Fisher (1). All patients had previously received 4–17 courses of other treatment. However, they were either steroid-dependent (5) or in relapse (1). Each course consisted of: REGIMEN A: Rituximab 375 mg/m^2 (max: 500 mg) iv/week*4, or REGIMEN B: Rituximab 750 mg/m^2 (max: 1000 mg) iv every 2 weeks*2. Methylprednisolone (100 mg/m^2) was also administered for 4 days.

Results: Six pts received seven courses of Rituximab (four patients REGIMEN A, two patients REGIMEN B). One patient with s.Evans received a 2nd course, 13 months later, due to severe relapse. Both pts with ITP responded immediately following the first course and remain in remission for 29 and 27 months, respectively while pts with s.Evans remain in remission for 19 and 8 months. The patient with s.Miller-Fisher seemed to be better controlled by cyclosporine and corticosteroids after receiving 1 course (REGIMEN A) of Rituximab. No severe infections or reactions occurred. No mild, neither severe neutropenia were noticed. Remarkable decrease of CD20(+)B-cells was noted immediately after the first course. Two patients required IVIG supplementation.

Conclusions: Rituximab may be an effective therapy for children with autoimmune diseases, while it seems that modifies and improves the clinical course of patients who have already received cyclosporine or steroids.

PP053

NECESSITY OF ADENOID TISSUE'S HISTOPATHOLOGICAL EVALUATION AFTER ADENOTONSILECTOMY BASED ON CLINICAL SIGNS IN PEDIATRIC AND ADULT PATIENTS

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Introduction: Tonsillectomy and adenoidectomy are the most frequent surgical operations performed in children and histopathological evaluation is carried out mainly in suspicious cases for malignancy.

Purpose: The aim of this study was to record the most common histological findings in children and adults who underwent adenotonsillectomy during 2004–2007 and to determine the clinical features that could predict the presence of tonsillar malignancy.

Materials and methods: A retrospective review of the histopathological reports of patients who underwent adenotonsillectomy during 2003–2007 in General Hospitals of Thessaloniki was undertaken. Patient age, preoperative clinical signs and symptoms were recorded. Proposed risk factors for malignancy were tonsillar asymmetry, palpable firmness, visible lesions, neck adenopathy, history of malignancy, and the presence of systemic symptoms.

Results: A total of 149 cases were registered in this study: 84 children (1.5–14 years old) and 65 adults (15–28 years old). The proportion of malignancy was similar in two age groups (9.5% and 9.2% respectively), but differences exist concerning cancer's type. In children: 3/84 had Non-Hodgkin lymphoma, 3/83 rabdomyosarcoma, one acute myeloblastic leukemia and one histiocytosis. In adults, 2/65 had Hodgkin lymphoma, one non-Hodgkin lymphoma, one rabdomyosarcoma, one chronic lymphoblastic leukemia and one carcinoma of squamous cells. All patients diagnosed with cancer had one or more positive risk factors for malignancy.

Conclusions: Cancer in Waldeyers' ring is rare in both children and adults and when is present, is usually suspected preoperatively by medical history and clinical findings. Histopathological examination of tonsils carried out mainly in suspicious specimens could contribute to the verification of probable malignancy and its treatment.

PP054

PREVALENCE AND ASSOCIATED FACTORS OF IRON DEFICIENCY ANEMIA AMONG KUWAITI CHILDREN

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Introduction: Iron deficiency anemia (IDA) affects more than 30% of the world population especially young children & adolescents can result in diminished mental, motor and behavioral functions. This study aims to determine the prevalence rate of IDA among Kuwaiti children 2–10 years old and to study the related sociodemographic, personal, nutritional and clinical factors.

Methods: The study design consisted of two components. A cross sectional descriptive one to identify the prevalence of IDA among the selected sample, attending Kifan, Khaldiya, and Suleibikhat PHC centers, from August 2004 to February 2005. And a nested case–control study to define factors associated with the disease.

Results: A total number of 356 children were included in the study. 16.3% was the overall prevalence of IDA. 17.6% in the age group 2 to <5years and 15.6% among the 5–10 year old. Rates were higher in females than in males in both groups. Anemic children were significantly younger, lower in weight and height than non anemic children, with less intake of food that enhance iron absorption.

All lab tests were significantly different in both groups. Hemoglobin, serum ferritin and transferrin were significantly correlated with age, weight for age, height for age and weight for height. Lower school performance and feeling dizzy or fainting were significantly associated with anemia.

Conclusion: Prevalence of IDA among Kuwaiti children 2–10 years is low as compared with previous studies in Kuwait and other countries in the area. Since IDA is a preventable disease, interventions should be directed to reduce it among young children and to increase the awareness of mothers to change the unhealthy food habits of their children.

PP055

HEAMATOLOGICAL FEATURES OF CHILDHOOD NEUTROPENIA

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Introduction: Neutropenia is common in paediatric patients. It is classified as inherited (i.e congenital syndromes) or acquired (i.e infection, chemotherapy, medications, autoimmune disease, malignancies, MDS). Optimal clinical management and prognosis is challenging for paediatricians.

Aim: To evaluate clinical manifestations and laboratory findings of neutropenic patients admitted to our Dept from 1995 to 2009. Seventy patients (39 girls), aged 1 month to 14 years were studied. WBC count and differential counts were determined. Duration and severity of neutropenia influenced the extent of laboratory evaluation on selected patients: bone marrow aspiration and biopsy, determination of antineutrophil antibodies, immunoglobulins, BM cytogenetics, detection of viruses with molecular methods.

Results: 17.1% of our pts had concominant leucopenia. Neutropenia was observed for 0–72 months (median 2 months) prior to their inital admission. 41.4% of patients recovered from hematological abnormalities in a median time of 14 months after diagnosis. Five patients had family history of thyroid disease, four of cytopenia, and one of autoimmune disease. One was diagnosed with Kabulci sdr, one with congenital hypothyroidism, two with congenital cardiopathy and one with neurological symptoms. Infectious agents traced in 57% of patients from which 40% were viral many confirmed with Bone Marrow PCR. EBV and or CMV infections accounted 44.25% of the cases . Anti-PMN Abs were performed in 16/70 (23%) pts and found(+) in 10 pts (62.5%). Bone marrow aspiration was performed in 26/70 (37%) patients. Hypercellularity was found in 73.7% of them. Bone marrow biopsy was performed in 13/70 (18.57%), and 60% had normal cellularity.

Conclusions: Evaluation of patients with neutropenia should begin with physical examination, family and personal history and screening laboratory tests. Regardelss the clinical course, neutropenia usually shows spontaneous remission.

THEME: INFECTIOUS DISEASES

PP056

HOT SPOT MUTATION OF HEPATITIS B VIRUS PRE-S2 GENE RELATED TO HEPATOCELLULAR CARCINOMA IN ASIAN CHILDREN

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Introduction: The risk factors and their carcinogenesis in childhood hepatocellular carcinoma (HCC) remains poorly understood. Childhood HCC, however, is a real concern as most of them behave aggressively and have a high mortality rate.

Purpose: To address these issues, we conducted a retrospective study of childhood HCCs in Asia.

Patients and methods: A retrospective study of 42 HCC cases in Asian children from Vietnam, Korea, Taiwan and Japan was conducted. Direct detection of HBV DNA and HCV RNA in tumor tissues and their genomic characterization were performed.

Results: HBV DNA in HCC tissues was detected in 36 of 42 (86%) cases tested, while no HCV RNA was detectable in any of HCCs. Twenty of 36 (56%) HCC cases were accompanied by cirrhosis. Surprisingly, very high prevalence of HBV pre-S deletion mutant was recognized in 27 of 30 (90%) HCCs examined. They occurred most frequently in pre-S2 (20/27; 74%) followed by pre-S1 (5/27; 18.5%) and both pre-S1/S2 (2/27, 7.4%). Interestingly, the pre-S2 mutant consistently appeared with deletion at nt 4–57 in all of the 20 cases with pre-S2 mutant (100%) and within this locus in the two cases with both preS-1/S2 mutant. Type II ground-glass hepatocytes in the non-tumorous livers were seen in 15 of the 22 HCCs with pre-S2 deletion mutant (68%). This hot spot mutation in the pre-S2 was further confirmed by complete genomic sequence of HBV in a Japanese boy who eventually developed HCC.

Conclusions: HBV is a major contributor to the development of HCC in Asian children. HBV pre-S2 deletion mutant at nt 4–57 which has CD8 T cell epitope, could be responsible for the emergence and aggressive outcome of childhood HCC. Determination of this hot spot mutation in the pre-S2 region could be a useful index for predicting the clinical outcome of HCC development.

PP057

CONSENSUS ON PERTUSSIS BOOSTER VACCINATION IN EUROPE (C.O.P.E.)

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Introduction: When introduced, universal infant immunisation against pertussis dramatically reduced the number of reported cases in infants and children. However, natural- and vaccine-acquired immunity wanes over time leaving older individuals susceptible to infection. In consequence, even with established infant immunisation programmes over recent years pertussis has been increasingly seen amongst adolescents and adults (peak incidence: 10–19 and 35–64 years), posing a risk of transmitting *B. pertussis* to vulnerable non-immune infants.

Methods: A panel of European experts recently reviewed the need for pertussis booster vaccinations in adolescents and adults.

Results: The panel proposed the following recommendations for consideration.

Adolescents (10–18 years) should receive a single dose of combined reduced-antigen-content tetanus-diphtheria-acellular pertussis (dTpa) vaccine instead of dT, irrespective of a complete primary vaccination schedule. Adolescents even with a clinical history of pertussis should receive dTpa according to routine recommendations. Adults (≥19 years) should receive a single dTpa dose instead of dT for active booster vaccination if their last dT dose was ≥10 years earlier, irrespective of disease history. The cocoon strategy (vaccinating close contacts of newborns with dTpa) should continue until immunisation coverage in adults is sufficient for herd protection. The need for improved surveillance with standardised biological diagnoses, health economic analyses and education to raise disease awareness and capitalise on the opportunities to administer booster vaccinations was emphasised.

Conclusions: Control of *B. pertussis* circulation is crucial and will require regular boosters for the whole population. As an initial step, practical recommendations for booster vaccination of adolescents and adults in Europe have been proposed. Implementation of these recommen-

dations is likely to increase protection of the population as a whole.

PP058

LONG-TERM (180 WEEKS) EFFICACY AND SAFETY OF FOSAMPRENAVIR IN HIV-INFECTED PAEDIATRIC PATIENTS IN CLINICAL PRACTICE

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Introduction: The assessment of fosamprenavir efficacy in HIV-infected children and adolescents is still under evaluation in ongoing clinical trials.

Purpose: To evaluate the long-term efficacy and safety of fosamprenavir/ritonavir (FPV/r) in HIV-vertically infected paediatric patients.

Methods: A multicenter retrospective study of 20 ARV-naïve and ARV-experienced children and adolescents with previous virological failure and receiving highly active antiretroviral treatment (HAART), followed at least 12 months. Analysis of $CD4^+$ T-cells, viral load and clinical status at baseline and during follow-up every 3–6 months were performed.

Results: At baseline, median viral load (VL) was 4.6 $\log_{10}$ in naïve and 4.4 $\log_{10}$ in pre-treated patients. Median $CD4^+$ T-cell was 17% and 31%, respectively. After FPV/r treatment, 18/20 (90%) patients achieved undetectable VL. Immunological recovery was observed in 5/6 naïve and 8/14 ARV-experienced patients. The rest, although showing a decrease in $CD4^+$ T-cell, maintained levels ≥500 cells/μL. Four out of 20 (20%) patients experienced adverse events: two mild skin rashes, one severe lipodystrophy and 1 suspected ABV rash reaction negative for HLA-B*5701.

Conclusions: Extended FPV/r treatment (>180 weeks) showed sustained antiviral response and immunologic improvement in our cohort of HIV-vertically infected paediatric patients.

PP059

EVALUATION OF THE EFFECT OF ENFUVIRTIDE IN HIV-1 PAEDIATRIC PATIENTS OUTSIDE CLINICAL TRIALS

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Introduction: Assessment of enfuvirtide effect in HIV-1-infected children and adolescents outside clinical trials is still scarce.

Purpose: To investigate the effects of salvage therapy with enfuvirtide on virologic, immunological and clinical outcome in heavily antiretroviral experienced HIV-1-infected paediatric patients.

Methods: A multicenter study of multiresistant HIV-1-infected patients with a median follow-up of over 2 years. Patients were divided in two categories: children (6–12 years old) and adolescents (13–19 years old). Analysis of $CD4^+$ T-cells, viral load and clinical status at baseline and during follow-up were performed.

Results: Eleven patients were included in the analysis. At baseline, median HIV-1-RNA was 4.9 $\log_{10}$ in children and 5.4 $\log_{10}$ in adolescents. Median $CD4^+$ T-cell count was 221 (13.5%) cells/μL and 226 (7%) cells/μL, respectively. After ENF treatment, 4 (36%) patients (two children, two adolescents) achieved undetectable VL that was maintained during the study. Immunological recovery of $CD4^+$ T-cell counts was observed in two of them, while immunological status remained stable in the others. ENF salvage therapy did not fully suppress viral load in three children and four adolescents who finally interrupted ENF administration. Interestingly, an increase of the median of $CD4^+$ T-cell counts was observed in three of them, differing on the decrease observed in the others. ENF administration caused in all patients but one grade 1–2 local site reactions. No systemic adverse events related to ENF were observed.

Conclusions: ENF showed efficacy in all the cases of our study but higher and stable benefit was obtained when administrated with novel drugs.

PP060

STREPTOCOCCUS PNEUMONIAE SEROTYPES IN ONTARIO, CANADA: RESULTS FROM THE CANADIAN BACTERIAL SURVEILLANCE NETWORK

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Introduction: The Canadian Bacterial Surveillance Network (CBSN) monitors the prevalence, mechanisms and epidemiology of antibiotic resistance to *Streptococcus pneumoniae* and *Haemophilus influenzae* via a group of clinical laboratories from all Canadian provinces and territories that voluntarily provide bacterial isolates for epidemiological and microbiological study.

Purpose: To evaluate trends in *S. pneumoniae* serotypes collected between 2003 and 2008 in Ontario children under 16 years of age.

Material and methods: The CBSN receives clinical isolates from up to 100 centres per year, with a representative core group of 50 laboratories having submitted annually for the entire 2003–2008 period. Laboratories are asked to submit up to 100 consecutive isolates of *S. pneumoniae* (depending on volume of testing done) from all sites, as well as all sterile isolates for the year (one per patient). Isolates are sent to the central laboratory at Mount Sinai Hospital in Toronto where they are confirmed as *S. pneumoniae* and stored frozen. Broth microdilution susceptibility testing is performed using CLSI standards. All pediatric sterile isolates collected between 2003 and 2008 were serotyped. Since the results for the province of Ontario are particularly robust, they were analyzed separately.

Results: A total of 559 *S. pneumoniae* isolates from sterile sites from Ontario children were serotyped. The proportion of isolates with serotypes in the 7-valent pneumococcal vaccine, which was introduced into the Ontario immunization program in the early 2000s, decreased from 79% in 2003 to 19% in 2008. In contrast, the number of isolates with serotypes not in the vaccine varied only between 30 and 51 throughout the study period with no obvious trend and, in particular, serotype 19A isolates remained between 6 and 14.

Conclusions: The CBSN data show that the current pneumococcal vaccine has been highly effective in Ontario and there has been no obvious replacement of serotypes between 2003 and 2008.

PP061

CIPROFLOXACIN CAN PREVENT FEVER IN CHILDREN WITH ACUTE LYMPHOBLASTIC LEUKEMIA WHO HAD NEUTROPENIA DURING INDUCTION OF CHEMOTHERAPY

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Introduction: Infection is the most common complication associated with neutropenia. Studies in adults with cancer have shown that fluoroquinolone effectively prevents febrile neutropenia. Few studies have examined the efficacy of this intervention in children.

Purposes: To determine the efficacy of ciprofloxacin in preventing febrile neutropenia in children with chemotherapy-induced neutropenia.

Materials: Children younger than 18 years with acute leukemia or lymphoma who were scheduled to undergo chemotherapy during 2007–2009.

Methods: The patients were randomized to receive ciprofloxacin 20 mg/kg/day or placebo from the beginning of their chemotherapy. Ciprofloxacin/placebo was discontinued in patients who developed fever or their absolute neutrophil count (ANC) was ≥500 cells/mm^3 after a course of chemotherapy. Patients with a history of ciprofloxacin allergy were excluded from the study.

Results: Of the 100 patients, acute lymphoblastic leukemia (ALL), acute non-lymphoblastic leukemia (ANLL), and lymphoma were diagnosed in 64, 13, and 23 patients, respectively. Of these, 51 and 49 patients were in the ciprofloxacin and placebo groups, respectively. Of the 99 patients who had neutropenia, 51 (51.5%) patients had fever and 46/51 (90.2%) patients had fever during the induction phase. The ciprofloxacin group developed febrile neutropenia less than the placebo group during the induction phase [20/35 (57.1%) vs. 26/32 (81.3%); the relative risk (RR) was 0.7; absolute difference in risk (ADR), -24%; 95% confidence interval (CI), -37 to -2%; $P = 0.03$]. Subgroup analysis indicated that ciprofloxacin can significantly prevent febrile neutropenia in the ALL patients [12/20 (60.0%) vs. 23/25 (92.0%); RR, 0.6; ADR, -32%; 95% CI, -56 to -8%; $P = 0.01$], but not in ANLL and lymphoma patients. Mortality, morbidity, and tolerability were similar in the two groups.

Conclusions: Ciprofloxacin was found to be effective in preventing febrile neutropenia in children with ALL receiving chemotherapy during induction of chemotherapy, and was well-tolerated.

PP062

INCIDENCE, RISK FACTORS AND COSTS OF NOSOCOMIAL ROTAVIRUS GASTROENTERITIS IN PEDIATRIC PATIENTS. A MULTI-CENTRE PROSPECTIVE COHORT STUDY

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Background: Little data on the incidence of nosocomial Rotavirus infections (NRVI) in pediatric hospitals and their economic impact are available.

Goals: To evaluate the incidence of NRVI in various Italian pediatric wards during the course of two peak RV infection periods; to investigate possible risk factors for NRVI; to estimate the costs caused by NRVI.

Materials and methods: Prospective cohort study. Population: all the children under 30 months of age admitted without symptoms or diagnosis of gastroenteritis in the study hospitals in the winter-spring periods 2006–2007 and 2007–2008. Serial RV rapid tests and clinical monitoring were performed on the cohort. Telephone interviews were performed between 3 and 5 days after discharge.

Results: A total of 520 children completed the study (85.6%). Overall incidence of NRVI was 5.3% (CI 95% 3.6–7.5), (7.9 per 1000 days of hospital stay, CI 95% 5.3–11.3). Children in their 9th month of life had a risk of NRVI significantly higher than others (RR 4.39 (CI 95% 1.69–11.4)). Mean hospitalization length resulted significantly greater in children who had NRVI (8.1 days, SD 5.4) compared to non infected (6.4 days, SD 5.8, difference 1.7 days, $P = 0.004$). The risk of contracting NRVI increases significantly if the hospital stay is protracted over 5 days, RR = 2.8 (CI 95% 1.3–6), $P = 0.006$. The costs caused in Italy by NRVI can be estimated in 8,019,155.44 Euros per year, (0.0081% of national health expenditure). 2.7% of children hospitalized with no gastroenteritis symptoms, were positive for RV.

Conclusions: Limiting the number of nosocomial infections by RV is important to improve patients' safety as well as to avoid additional health costs.

PP063

PRIMARY CARE-BASED SURVEILLANCE TO ESTIMATE THE BURDEN OF ROTAVIRUS GASTROENTERITIS IN EUROPEAN CHILDREN AGED <5 YEARS

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Introduction: Data on the burden of rotavirus gastroenteritis (RVGE) prior to vaccine introduction are important for the assessment of the benefit and impact of RV vaccines. Data on RVGE at the primary healthcare level are sparse, due to the absence of routine screening, testing and reporting of RVGE in this setting.

Purpose: To estimate the burden of RVGE leading to general practitioner (GP)/pediatrician visits among European children aged <5 years and to assess transmission patterns among household children <5 years of age.

Material & methods: Observational, prospective study involving 87 GP/pediatrician practices in Czech Republic, Germany, Italy, Poland, Spain and the UK. After obtaining parental consent, children aged <5 years presenting with acute GE [AGE; diarrhea (≥3 loose stools/24 h) for <14 days] provided stool samples for rapid RV testing. RV+ samples were confirmed and typed by RT-PCR. Demographic and clinical data were collected for all RVGE episodes. Household transmission patterns were also assessed.

Results: From November 2005 to May 2007, 509/4093 (12.4%) children aged <5 years presenting with AGE and tested were RV+ by PCR [mean (SD) age, 20.1 (13.3) months; 48.9% female]. 69.1% of RVGE cases occurred in children aged <2 years (30.1% <1 year, 6.9% <6 months). Most RVGE occurred between December and May (93.1%). 92.9% of RVGE was moderate or severe by Vesikari score. RV strain distribution varied between countries. The most common strains overall were G9P[8] (49.4%) and G1P[8] (28.1%). 24/122 (19.7%) children aged <5 years resident in the same household as a PCR+ study participant also developed RVGE.

Conclusions: This is the most recent European study to estimate the burden of RVGE in outpatient settings and also provides information on household transmission patterns. Results show the burden of RVGE to be high among children aged <2 years accessing primary healthcare for AGE.

PP064

IMMUNOGENICITY AND SAFETY OF THE 10-VALENT PNEUMOCOCCAL NON-TYPEABLE HAEMOPHILUS INFLUENZAE PROTEIN D CONJUGATE VACCINE (PHID-CV) FOLLOWING PRIMARY AND BOOSTER VACCINATION IN PRETERM-BORN CHILDREN

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Introduction: PHiD-CV (*Synflorix*™; GlaxoSmithKline Biologicals) is immunogenic and well tolerated in full term-

born children. These open studies (107737/ NCT00390910; 109621/NCT00609492) assessed the immunogenicity and safety of PHiD-CV in preterm-born children.

Methods: Three groups of infants were enrolled: born after gestation periods 27–30 weeks (Preterm I, N = 50), 31-36 weeks (Preterm II, N = 87) or >36 weeks (Full term, N = 149). PHiD-CV was given at 2, 4, 6 months of age coadministered with DTPa-HBV-IPV/Hib (*Infanrix hexa*™, GSK Biologicals) vaccine and at 16-18 months (booster) coadministered with DTPa-IPV/Hib. Antibodies were measured pre-vaccination and 1 month post-dose 3 and pre/post-booster using 22F-inhibition ELISA and opsonophagocytic assay (OPA). Local/general solicited/ unsolicited symptoms and SAEs were recorded.

Results: Mean (±SD) body weight at dose 1: 3.2 ± 0.8 kg (Preterm I), 4.2 ± 0.8 kg (Preterm II), 5.2 ± 0.7 kg (Full term). For each vaccine serotype, pre-vaccination ELISA geometric mean antibody concentrations (GMCs) tended to be highest in the Full term group but robust increases were observed in all groups from pre-vaccination to post-priming: range of fold increases was 16.8–51.0 (Preterm I), 14.3–81.0 (Preterm II), 8.1–60.5 (Full term). Strong increases from pre- to post-booster timepoints indicated immunological priming: range of fold increases 5.6–16.4 (Preterm I), 8.2–23.6 (Preterm II), 5.9–20.6 (Full term). These antibody responses were accompanied by increases in functional OPA responses: for each serotype, the post-booster antibody GMCs and OPA geometric mean titres exceeded those measured post-primary. Similarly, robust antibody responses against NTHi protein D post-dose 3 and post-booster were seen in all three groups. PHiD-CV was well tolerated in the pooled Preterm and Full term groups, with reactogenicity and safety profiles in line with previous PHiD-CV studies.

Conclusions: PHiD-CV is highly immunogenic and well tolerated in preterm-born children when given as 3-dose primary vaccination followed by booster dose and when coadministered with a routine childhood vaccine.

PP065

EVALUATION OF THE POTENTIAL MEDICAL AND ECONOMIC BENEFITS OF UNIVERSAL ROTAVIRUS VACCINATION PROGRAMME WITH ROTATEQ IN GREECE

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Introduction: In Greece, acute rotavirus gastroenteritis (RVGE) is responsible for 16,000 medical consultations, 10,000 emergency department visits, 2000 hospitalisations and 1200 nosocomial infections on average in children under 5 years of age, with a cost of 7.3 million euros for Health System.

Purpose: To evaluate the potential benefit of introducing a vaccination programme against rotavirus using RotaTeq® in Greece.

Material: Follow-up of a birth cohort from birth to the age of 5 years.

Methods: An analytic model, where clinical burden of RVGE before and after introduction of a vaccination program with RotaTeq® is compared (vaccination coverage 88%).

Results: RotaTeq® usage could result in 69% reduction of the total annual number of RVGE cases. More than 80% of hospitalizations and emergency department visits related to RVGE could be avoided. Cost would be reduced by 6 million euros (-81%), while 76% of cases avoided and 84% of costs avoided would be averted 2 years after RotaTeq® introduction. Adding the cost of work absence, cost reduction is increased (9.6 million euros saving). Vaccination of 7 children avoids one case seeking medical care, while vaccination of 58 children avoids one hospitalization related to RVGE. Adding herd immunity to the model has a positive impact on results in favour of the vaccination.

Conclusions: Clinical and economic burden of RVGE in Greece is important. The introduction of routine vaccination program with RotaTeq® could result in significant and rapid reduction of this burden, especially for Health System.

PP066

ESTIMATE OF DIRECT MEDICAL RESOURCE USE AND SOCIETAL COST OF OTITIS MEDIA BASED ON AN INTERNET SURVEY IN PORTUGAL

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Introduction and purpose: To estimate healthcare resources use and societal burden due to otitis media (OM) in children <5 years in Portugal.

Methods: An internet survey used in different European countries, covering the items of socio-demographic data, disease episode characteristics, medical resources use, productivity loss by care-givers and travel-related costs was selected. Working with a local agency's internet panel, 1,769 out of 45,200 people met the entry criteria to participate and filled in the questionnaire during March 2009. The questionnaire presented to parents was on symptoms of childhood diseases concerning the most recent episode of their child <5 years (maximum recall period within last 12 months) regarding medically diagnosed OM (MD-OM).

Direct medical, non-medical and indirect costs were calculated per episode.

Results: The number of subjects seeking medical advice for AOM was 334 cases, leading to 423 visits among which 36.6% were pediatric visits, 27.7% GP, 24.8% emergency room visits and 10.9% other specialists. 203 cases were MD-OM. The mean duration of an AOM event was 6.1 days. 9% of MD-OM episodes were recurrent. Nine cases (4.4%) had hospital admission for a mean duration of 3.9 days and antibiotics were prescribed in 92%. Drugs without prescription were bought in 49% of MD-OM cases. In 27% of the MD-OM episodes care-givers lost paid job days on average 19.8 h/episode. 65% of the caregivers remained working but reported productivity loss on average 21.0 h/episode. An MD-OM episode mean cost is 334€/episode. Total number of new AOM episodes/year in children <5 years was estimated at 214,648 events based on Comunidad Valenciana data (Spain). The societal cost burden was therefore estimated at around 72 million €/year of which 39% was related to indirect cost.

Conclusion: This first local study on OM in Portugal evaluated the societal impact, it helps understanding how new interventions may reduce the epidemiological disease burden.

PP067

PROCALCITONIN (PCT), C-REACTIVE PROTEIN (CRP) AND CERULOPLASMIN (CP) AS SERUM MARKERS TO DISTINGUISH BETWEEN BACTERIAL AND VIRAL NEUROINFECTIONS

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Introduction: The fast and accurate differential diagnosis between bacterial and viral neuroinfections (BACT/VIR_N) is the key of therapy.

Purpose: To identify the serum marker that best distinguishes between BACT_N and VIR_N.

Material: Blood samples from 43 children diagnosed with BACT_N (n = 24) and VIR_N (n = 19) were taken on admission (meningitides–M/meningoencephalites-ME/encephalites-E).

Methods: PCT, CRP and CP were determined by BRAHMS Diagnostica kit, radial immunodifusion and Ravin method.

Results: In VIR_N, PCT test was negative (below 0.5 ng/ml) on a 100% proportion in VIR_M, 75% in VIR_ME and 75% in VIR_E. CRP test was negative (below 1 mg%) on a 100% proportion in VIR_M, 25% in VIR_ME and 25% in VIR_E, while CP test was normal (medium value 32.3 mg%) or below normal value on a 50% proportion in VIR_M, 25% in VIR_ME and 75% in VIR_E.

In BACT_N, PCT test was positive on a 60% proportion in BACT_M and 55.5% in BACT_ME. CRP test was positive on a 90% proportion in BACT_M and 55.5% in BACT_ME. But, CP test indicated values above 32.3 mg% in 80% of cases BACT_M and 33% in BACT_ME, being a reactant of late acute phase.

Conclusions: PCT is a better serum marker to distinguish between BACT_M and VIR_M than CRP which may have moderate concentrations both in some BACT_N and in some VIR_N (VIR_M and VIR_E). The increased value of CP may be very useful in the diagnosis both of late-hospitalized BACT-N, when the PCT and CRP concentrations are significantly. On the other hand, PCT, CRP and CP may be the same degree markers of the severe prognosis.

PP068

PSEUDOMONAS INFECTIONS AND RESISTANCE OF QUINOLONE IN CHILDREN OF A GENERAL HOSPITAL DURING YEARS 2006–2007

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Introduction: *Pseudomonas aeruginosa*, constitutes a major opportunistic infection in children. Usual treatment consists of antipseudomonas antibiotics ceftazidime and gentamycin, but quinolones are contraindicated due to possible side effects. In recent years several published clinical trials in pediatric patients show revised data on use of Ciprofloxacin and reported few drug related adverse effects.

Purpose: We aimed to investigate clinical characteristics of pseudomonas infections and estimate susceptibility to different antibiotics.

Material and Methods: For this reason we studied the pseudomonas infections during the period 2006-2008. 121 total specimens were isolated.

Specimens that were examined were urine, pus, pharyngeal swabs and sputum.

Culture procedure, bacterial identification and susceptibility test were performed according to CLSI standards. Identification and susceptibility testing was performed by MicroScan® WalkAway® plus System (Siemens).

Results: Of the total of 121 samples, were: sputum-pharyngeal 15.7%, urine 25.2%, ear swabs 59.1%.

The rates of resistance were: Ceftazidime 1.8%, Gentamycin 15.7%, and Ciprofloxacin 3.9%.

Conclusion: No highly resistant strains were isolated in our hospital and resistance to ciprofloxacin is low. Furthermore, ciprofloxacin could be used as an empiric oral outpatient treatment of pseudomonas infections. However, at the moment use of fluoroquinolones should be reserved in circumstances in which infection is caused by multidrug resistant pathogens for which there is no safe and effective alternative and parenteral therapy is not feasible and no other effective oral agent is available.

PP069

PROTECTION – PROMOTION OF HEALTH OF CHILDREN 0–15 YEARS OLD IN GREEK ROMA CAMPS

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Purpose: The Ministry of Health and Social Solidarity in cooperation with the Office of Mobile Population of the Hellenic Centre for Diseases Control and Prevention, has been carrying out a program for the protection and promotion of the health of Greek Roma since July 2004. The purpose of this intervention is clinical examination and vaccination of children as well as living conditions record and treatment of social problems.

Material - Method: A group consisting of doctors, medical staff, social worker and administrative support, works inside the camps-settlements by the use of a Mobile Medical Unit or in schools and cultural centers inside the settlements. A record of the living conditions of the family, medical examination of the children including history, clinical examination, record of the existing vaccination, provision of health booklets in case there are no available and finally vaccination according to the needs of every child is being carried out. The unit visits the settlements after preparation and contact with the local authorities, made by the Direction of Social Apprehension and Solidarity. Vaccines are provided by the Directions of Health of the Prefectures. Vaccination is being carried out according to the National Vaccination Program and includes vaccines for diphtheria, tetanus, whooping cough, infantile paralysis, hepatitis B, measles, rubella, mumps and *Haemophilus influenzae*. Children's vaccination record and living conditions mapping are registered in an electronic base.

Results: During 2005, the Medical Mobile Unit of the Hellenic Centre for Diseases Control and Prevention visited thirty Greek Roma settlements all over Greece. One thousand nine hundred and seventy children were examined and 400 DTP, 520 DT, 730 Td, 450 MMR, 440 HepB, 215 HiB, 260 TETRAVAC and 615 Sabin vaccines, in total, were dispensed. It's been estimated that in every settlement, the examined children represent 75% of the Roma children population of the settlement. Three hundred and eighty five (20%) of the total amount of vaccinated children, never had a health booklet, or they've lost it. The living conditions were in their majority hard as 50% of the children lives in hutments and temporary corf houses without electricity, water and toilets.

Conclusion: This population usually settles down in improper locations where fundamental needs of every day life can not be covered. Birth declaration is deficient and the vaccination coverage in 90% of the population is incomplete, therefore, whooping cough and measles cases are often observed in this population.

PP070

MANAGEMENT OF CHILDHOOD FEVER BY TURKISH MOTHERS

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Introduction: Parents are very concerned when their children have fever. Fever is considered a main indicator of illness by many parents.

Purpose: This study was planned to determine the mothers' concern about and inappropriate management of fever.

Material and Methods: Study was carried out with 360 mothers who were admitted to the department of pediatric emergency of a university hospital in Turkey in 4-month period. Data were collected using a questionnaire form that included 20 open ended and multiple choices questions; (the results were) evaluated using the number, percentage and chi-square tests.

Results: The mean age of mothers was 31 ± 6.1 years. 44% and 43% of parents have one or two children respectively. 57% and 52% of mothers thought that temperatures 37.1–38°C as fever and 38.1–39°C as high fever respectively. More than half of mothers thought that temperature 39.1–40°C could be dangerous to their children. 65.3% and 14.4% of mothers reported the worst affect of fever it can be improve seizure and meningitis respectively. When their children have fever, mothers had inappropriate management; half the amount of mothers give antipyretics without doctors prescribed, although majority of mothers had appropriate management such as do not give any paracetamol not take kid's temperature, take a shower, take of clothes, feed with liquid food and warm applications to their kids.

Conclusions: Majority of Turkish Mothers had fever phobia, however most of them had appropriate management of childhood fever.

PP071

CAT'S SCRATCH DISEASE (CSD): DESCRIPTION OF TWO CASES IN THE SAME FAMILY

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Introduction: CSD is caused by a Gram negative bacterium, Bartonella henselae and is, mainly, a Pediatric disease.

Purpose: Presentation of two cases of CSD in the same family.

Material: The first patient, 6-year-old boy appears fever (max 40°C) since 10 days with enlarged two axillary lymphnodes on the right, palpable, between front and middle axillary line (5 cm each), pain, movement restriction of right upper limb and splenomegaly. The second patient, 3 years old girl appears 4 days later fever since 2 days with enlarged cervical lymphnode on the left (3 cm).

Methods: Both children had history of close contact with a cat, while one of them had cat, s scratches. The boy was receiving 10 days treatment with clarithromycin and cefuroxime because of CSD suspense.

Results: Blood tests, CXR, abdominal ultrasound, IgM, IgG, (CMV, EBV, Toxoplasma): negative for both children, IgM – IgG for Bartonella henselae: positive for both. The boy continued the same treatment in combination with trimethoprime-Sulfamethoxazole for 10 days. Because of the persistence of the fever until the fifth day of his hospitalization, gentamycin was added. Fever stopped 3 days later, while lymphnodes retreated after 1 month. His sister received clarithromycin p.os and trimethroprime-sulfamethoxazole IV for 10 days. Fever stopped at the second day of treatment and lymphnode retreated directly.

Conclusion: 1. Although there is a possibility of occurrence of CSD in members of the same family the disease's course differs. 2. Despite the fact that the disease is mild and self-cured in the majority of the cases, prevention's strategies that intend to the sick animals' cure – where possible- to the control of fleas that parasite in cats and to the modification of the behavior towards the cats, are necessary.

PP072

THE PREVALENCE OF INTRAHOSPITAL-ACQUIRED ROTAVIRUS GASTROENTERITIS AT A PEDIATRIC GASTROENTEROLOGY DEPARTMENT

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Introduction: Rotavirus constitutes the major etiological factor of acute diarrheal disorder affecting children aged from 0.5-3 years. Being highly contagious, it is therefore a frequent cause of infections acquired in different communities intended for the care of the youngest children.

Purpose: We analyzed the prevalence of intrahospital-acquired rotavirus gastroenteritis at the Department for Gastroenterology and Nutritive Disorders of Children.

Methods: The goals of the study was performed on a sample of 98 children with rotavirus gastroenteritis, aged from 0.1 to7.5 ($x = 1.87 \pm 1.44$) years. The diagnosis of the disease was based on a positive Rolatex test, as well as on the exclusion of other etiological factors presenting similar clinical features.

Results: Of total 98 patients, 79 (80.61%) were admitted due to rotavirus gastroenteritis, while 19 (19.39%) developed the intrahospital-acquired infection. The age of the children with intrahospital-acquired infection ranged from 0.3-3.34 ($x = 1.53 \pm 0.80$) months; of these, four patients were aged below 12 months, 11 were 1–2 years, three were aged 3-4 years and one child was aged 12 months. Of four infants with intra-hospital acquired disease, one was below 6 months of age, two were between 6 and 9 months, one was over 9 months; two of these were breast-fed and two were on artificial nutrition.

Conclusion: Our results indicate that rotavirus belongs to a highly contagious infective agent. At the Hospital Department for the Treatment of Children with Digestive Disorders, intra-hospital acquired rotavirus gastroenteritis occurs in one-fifth of the total number of patients.

PP073

MICROORGANISMS ISOLATED IN BLOOD CULTURES OF PATIENTS FROM PEDIATRIC WARDS AND OUTPATIENT DEPARTMENTS OF A GENERAL HOSPITAL IN 2008

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Introduction: Bacteremia is a significant cause of morbidity and mortality worldwide in the pediatric inpatient and outpatient population

Purpose: The aim of this study was to investigate the frequency of positive blood cultures at our Hospital and to determine the most frequent culprit microorganisms in pediatric population of our hospital.

Material and Methods: We performed a retrospective study of the data on all pediatric in- and out-patients' blood cultures that were sent to the Microbiology Laboratory in 2008. In all cultures we used pediatric Bactalert PF culture media, incubated in an autoclave Bactalert 3D up to 5 days. The positive cultures were recultured in blood, MConkey and chocolate agar and identified with an automated method in a MicroScan Walkaway System (Siemens).

Results: Of the total 2436 cultures sent to the Laboratory, 81 (18.34%) resulted positive.

Gram negative: *Escherichia coli* 1, *Salmonella* sp. 3.

Gram positive : *Enterococcus faecalis* 1, *Staphylococcus aureus* 4, Co. negative *Staphylococcus* 60, *Streptococcus pneumoniae* 7, *Streptococcus* group A 1, *Streptococcus* group C 4.

Conclusion: The percentage of positive blood cultures identified in the pediatric population if our hospital was relatively low. The gram-positive microorganisms were the main microorganisms isolated with a predominance of

coagulase negative staphylococci. These results can be a useful tool in the initial management of the pediatric patient with suspected bacteremia.

PP074

HOSPITALIZATIONS FOR COMPLICATIONS OF VARICELLA

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Introduction: Varicella is a common childhood disease, typically benign, but can lead to serious complications, affecting the hospitalization and even death. In Portugal varicella vaccine is available since October 2004, however this vaccine is not included in national vaccination program.

Purpose: Evaluate epidemiological and clinical data of children and adolescents admitted for varicella complications.

Material and Methods: Retrospective study of clinical records of children and adolescents admitted for varicella complications since January 2000 to December 2007. Newborns were excluded.

Results: During these 8 years 56 children were admitted for varicella complications, accounting for 0.42% of all admissions. The median age was 2 years and 4 months. The mean time between the onset of rash and hospitalization was 4.7 days. Most children had no previous medical observation. No child had been vaccinated against varicella. The most frequent types of complications were bacterial over infection of the skin (41%), neurological (23%) and respiratory complications (14%). *Staphylococcus aureus* was the etiologic agent most identified in skin lesions. Neurological complications occurred in older children and appeared later in the course of the disease. In two cases, Streptococcus pyogenes was isolated in blood cultures. Before admission, 21.4% were treated with acyclovir and 12.5% with antibiotics. The mean time of admission was 4.9 days. One of the children died, the others had good outcomes. Varicella is a benign disease in most cases, but can lead to serious complications and even death, as evidenced in this study. The varicella vaccine is now recommended for universal vaccination in the United States of America and some countries in Europe. This vaccine was proved to be effective in reducing the number of cases of varicella and its complications, especially mortality.

PP075

SEASONAL OUTBREAK IN A GREEK PAEDIATRIC UNIT DURING SUMMER 2007

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Objective: We describe the laboratory and clinical features of children presenting with viral meningitis during an outbreak in a Greek pediatric unit during summer 2007.

Methods: Retrospective study of children with symptoms of viral meningitis who presented to our unit from May to July 2007.

Results: We reported 20 children with symptoms of viral meningitis from which only one had a positive PCR result for enteroviruses. Sex ratio was 1.8/1 (female/male) and the median age was 7 years. The vast majority lived in a rural area and they were of Gypsy origin. The mean value of CRP was 7.2 mg/l and ESR was 22.3. The median value of leucocyte count in CSF was 123 cell/mm^3 with a prevalence of neutrofils in 70% of cases. Intravenous antibiotic treatment was initiated in all patients and was discontinued in 3–4 days when the negative PCR result for bacteria was obtained. Intravenous acyclovir was administered in 80% of children and that was discontinued again in 3–4 days when the negative PCR for HSV1 HSV2 VZV and enteroviruses was available.

Conclusions: Although viruses are the commonest cause of meningitis, usually mild, can produce outbreaks and be a threat for public health. It is remarkable that almost all children with viral meningitis who presented to our department were gypsies and lived in very poor hygiene conditions. This is the only outbreak if viral meningitis in our department in the last 10 years.

PP076

WITHDRAWN

PP077

REPRESENTATION OF ACUTE INFLAMMATION OF THE MIDDLE EAR (OTITIS MEDIA ACUTA) IN THE 1ST QUARTER OF 2009 IN ONE PEDIATRIC AMBULANCE

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Introduction: As extension of epipharynx mucosa and Eustachian tube, middle ear is often prone to infection. Due to the anatomical structure and functional feature of the ear at children, acute inflammation of the middle ear also appears as follow up and complication of acute respiratory infection.

Purpose: To analyze representation of acute inflamattion of the middle ear in the 1st quarter of 2009 (January–April) in one pediatric ambulance.

Material: Tree-month pediatric record of one pediatric ambulance of Primary Health Care Centre in Podgorica.

Methods: Retrospective analysis; analyzes are conducted according to the month, age and sex of sick children.

Results: In the 1st quarter of 2009 in the pediatric ambulance has been performed 688 first examinations of sick children. At 35 children (6.72%) was made the diagnosis - Otitis media acuta. In January were 12 sick children (34,29%), in February 14 (40%), in March nine (25,71%). Out of 35 sick children 23 were boys (65,71%), girls 12 (34,29%). In the age under 1 year old – four sick children (11,43%), all of them were boys. In the age 1 – 5 years old : 20 sick children (57,14%) – 13 boys (65%), seven girls (35%). In the age of 5 – 10 years old : nine sick children (25,71%) – six boys (66,67%), three girls (33.33%). In the age of 10 – 15 years old : two sick children and both of them were girls.

Conclusions: In the 1st quarter of 2009 in the ambulance has been performed 688 first examinations of sick children. The diagnosis - Otitis media acuta was made at 6.72% of sick. The largest number of sick children is in February (40%) and in the age of 1 – 5 years old. The boys in all ages often get sick than the girls (1.9 : 1), except in the age of 10 – 15 years old where the disease is most common at girls.

PP078

A CASE OF MRSA-PVL RESPIRATORY INFECTION IN A 10-YEAR-OLD GIRL

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Introduction: A 10-year-old girl was referred to the emergency department with a history of shortness of breath, cough and sore throat. A chest radiograph was performed and was felt to be normal and the patient was discharged home on a 3 day course of oral steroids. On subsequent review the chest radiograph was reported as showing a small abnormal density on the left side.

The patient was recalled following the chest radiograph report. At this time she had been unwell for 10 days with cough and mild temperatures. The cough had improved with the steroid treatment but had not fully resolved. History and clinical examination were unremarkable and in particular negative for tuberculosis, lymphoma and connective tissue diseases.

The chest x-ray was repeated and had shown a marked deterioration. The CT scan revealed multiple round pulmonary infiltrates with some cavitations in the mid and lower lung fields bilaterally. At this stage the investigation and management of the patient proved difficult, as the patient remained very well with no constitutional symptoms. However a bronchoalveolar lavage grew MRSA-PVL.

Purpose: We discuss the complexity of the case and the differential diagnoses which were considered. This included tuberculosis, lymphoma and connective tissue disease.

Material: The case report includes x-rays and CT thorax scans demonstrating the cavitating lesions and their appearance after treatment.

Conclusion: This case report highlights the difficulties of managing this case and also the emerging problem of MRSA-PVL. To our knowledge this is the first report of PVL causing cavitating lung disease in children.

PP079

A RARE CAUSATIVE AGENT OF PROGRESSIVE MENINGITIS IN AN INFANT: *KLEBSIELLA PNEUMONIAE*

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Introduction: *Klebsiella pneumoniae*, a pathogenic encapsulated Gram-negative bacillus, has gained an increasingly important role in adult meningitis both in community-acquired and nosocomial menengitis. Despite the use of potent antibiotics with excellent in vitro activity such as third-generation cephalosporins, the case fatality rate of K. pneumoniae meningitis remains high at 30 – 40%. Nevertheless, *K. pneumoniae* meningitis is rare in childhood. Herein we presented in an infant with *K. pneumoniae* meningitis.

Case: A 4-month-old girl was admitted to our hospital because of fever, vomiting, and progressive lethargy. Her medical history was insignificant. Physical examination showed: Fever: 39ordm;C (rectal), blood pressure: 70/40 mmHg, pulse rate: 140/min. She has a bulging fontanel and her consciousness was altered (Glaskow coma scale: 8). Other systems findings were normal. Laboratory findings were: WBC: 13700/mm^3 (neutrophils 70%, bands 6%), Hemoglobin: 9.5 g/dl, platelet count: 67000/mm^3, ESR: 100 mm/h, CRP: 285 mg/dl, serum sodium 128 mEq/l. Other laboratory parameters were in normal range. Computerised tomography of brain was normal. Lumbar puncture revealed 30000/mm^3 white blood cells (%100 PML), and protein and glucose levels of cerebrospinal fluid (CSF) were 500 mg/dl and 1 mg/dl, respectively. Gram staining showed Gram negative basilli. *K. pneumoniae* was cultured in CSF. Her clinical condition was gradually detoriated and she died on 7th day of admission despite ceftriaxone and pefloxacine therapy.

Conclusion: We suggest that K. pneumoniae is maybe a rare and fatal cause of meningitis in infancy despite appropriate treatment.

PP080

ATYPICAL MANIFESTATIONS OF EPSTEIN BARR VIRUS EBV

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Introduction: EBV as a main cause of infectious disease has been discussed previously. Involvement range from asymptomatic to fatal infection; typically form is infectious mononucleosis with fever; lymphadenopathy;hepatosplenomegally; rash; sore throat and atypical lymphocytosis is common.

Our cases were a group of patients who referred with manifestations such thrombocytopenia; severe anemia and abdominal pain; so obscure and strange that preliminary diagnosis extended to problems like malignancy; appendicitis; Itp etc.

It is of interest that low level of vitamin D was detected in all patients who had been checked for that.

Purpose: Detecting the severe and atypical cases of EBV and showing the low level of VD in them suggesting its probable role in severity of the disease.

Material and methods: This study was a case series retrospective and prospective.

Results and conclusion: EBV infection may present in atypical and severe forms and VD deficiency which may lead to altered immunity responses; may causes the severity of the disease.

THEME: NEONATOLOGY

PP081

OUTCOME OF HIV-POSITIVE PREGNANT WOMEN SEEN IN A PROVINCIAL UNIT IN EAST ANGLIA

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Introduction: Increasing numbers of human immunodeficiency virus (HIV) infected women are delivering in the UK. In order to prevent maternal-to-child transmission, the Department of Heath recommended routine HIV antibody testing to every pregnant woman in 1998 and the British HIV Association (BHIVA) produced guidelines for the management and transmission prevention of HIV in pregnancy.

Purpose: It is against this background that a retrospective study was undertaken to evaluate the outcome of HIV infected pregnant women seen in James Paget University Hospital.

Material and methods: All coded new diagnosis of HIV/AIDS from January 1996 to December 2007 was identified. We retrieved relevant demographic details, antenatal and paediatric records on use of antiretroviral medications, viral load, CD4 subsets and mode of delivery. Viral subtyping was undertaken in PHLS, Colindale, from 1997 – 2000 & by Virco, Belgium, from 2001 – 2004. These were analysed with *Epi Info version 3.4* (Centre for Disease Control Atlanta, USA) software. Descriptive statistics with univariate summary was done with no inferential statistics.

Results: There were a total of 13 deliveries within the 11-year period, including 12 live births and one stillbirth, which occurred as a result of hepato-toxicity from Nevirapine at 32 weeks gestation in a late booker. All the women had HIV type 1 (HIV-1) with various subtypes and were on at least one type of antiretroviral therapy (ART). 70% of the women were delivered by caesarean section, although 38% of the total was emergency cases due to premature onset of labour. All neonates received Zidovudine (AZT) from delivery, and there were no cases of feto-maternal HIV infection.

Conclusions: The management of our cohort reflected changes in the intervention to prevent mother to child transmission in concert with other published studies and BHIVA guidelines. Low level HIV RNA copies at term invariably confer optimum protection against transmission.

PP082

RENAL GLOMERULAR AND TUBULAR FUNCTION IN NEONATES WITH PERINATAL PROBLEMS

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Introduction: Previous studies concerning the effects of various perinatal factors on renal function enrolled a small number of infants and produced inconsistent results. Nephrogenesis continues up to 36th week of gestation thus renal function may be affected by exposure to nephrotoxic factors to different degrees in full-term and preterm neonates.

Purpose: In the present study we sought to investigate perinatal risk factors that may be related with affected renal function in neonates during the first two weeks of life.

Materials: The case-notes of 150 neonates of gestational age (GA) 34 – 36 weeks and 494 > 36 weeks were studied.

Methods: Clinical risk factors were retrieved: antenatal steroid (AS) administration, chorioamnionitis, hypertensive disease of pregnancy, SGA status, suspected infection, sepsis /meningitis, necrotizing enterocolitis, perinatal stress, jaundice, respiratory distress syndrome, application and duration of mechanical ventilation and administration of aminoglycosides (AG). Indices of renal function were: serum creatinine (SeCr), fractional excretion (FE) of sodium (FENa) and potassium (FEK), and the urinary calcium to creatinine ratio (UCa/UCr). Associations were identified by logistic regression analysis.

Results: In infants with GA>36 weeks affected SeCr was related to perinatal stress, odds ratio (OR): 1.9, confidence interval (CI): 1.2-2.9,$P < 0.05$ and AGs treatment (OR 1.8, CI: 1.4-2.6 $P < 0.05$) and affected FEK and FENa with jaundice (OR:0.25, CI:0.12-0.6,$P < 0.01$) and aminoglycosides (AG) administration (OR:4, CI:1.4-8.5,$P < 0.01$) respectively. In infants of GA 34-36 weeks, affected SeCr was related with perinatal stress (OR:9 CI:1.3-38, $P < 0.05$), FEK by jaundice (OR:0.3, CI:0.18-0.8, $P < 0.01$) and FENa by AG administration (OR:4,CI:1.7-11, perinatal stress $P < 0.01$) and antenatal steroid treatment (OR:0.8,CI:0.6-0.95, $P < 0.05$). Full-term neonates with HIE and AG administration had an 80% increased OR for impaired SeCr levels.

Conclusions: In neonates, renal impairment, being multifactorial in origin, may be caused by the additive effect of different perinatal factors. The strong negative relation observed between jaundice and K excretion merits further investigation.

PP083

PAEDIATRIC MORTALITY IN CATANZARO FROM 1990 TO 2008

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Introduction: All over the world, the deaths come from: perinatal diseases, road accidents, nervous system diseases, infections, cancer, malformations (1,2).

Aim: Evaluation of mortality for all causes in paediatric age (0 – 19 years) in Catanzaro, during the period 1990-2008.

Methods: We have appraised the mortality for all the causes using the "Cancer Registry of the Municipality of Catanzaro". The data have been taken by Italian Institute of Statistics Cards, furnished by the Institute of Legal Medicine of Catanzaro. The statistic variable used has been: Crude Rate (CR) referred to 100,000 inhabitants.

Results: In 1990-2008, in Catanzaro deaths have been:

0 to ≥85 years of age: 6,004 M (CR 673,36); 5,523 F (CR 582,50)

0–19 years of age: 100 M (CR 11,21); 80 F (CR 8,43):

1**st**: perinatal: 49 M (CR 5,49); 41 F (CR 4,32) highly within 24 hours

2**nd**: road accidents: 19 M (CR 2,13); 3 F (CR 0,31) highly 15-19 years of age

3**rd**: nervous system disease: 7 M (CR 0,78); 6 F (CR 0,63) highly 0-4 and 15-19 years of age

4**th**: cancer: 8 M (CR 0,89); 3 F (CR 0,31) highly 10-14 years of age

5**th**: malformations: 6 M (CR 0,67); 4 F (CR 0,42) highly 0- 4 years of age

Conclusion: In the world the principal causes of death are: incidents, aggression, cancer suicidio, malformations. In 1990 – 2008 paediatric mortality in Catanzaro decreased, agree with Italian data, perinatal diseases decrement has been little [1990–94 CR 7.82/ 1995–99 CR 3.50/ 2000-04 CR 3.34/ 2005-08 CR 3.43] and can be explained with the concomitance of new reanimating technics for children under 25th week of life and the increase of paediatric migratory flows from the developing countries.

PP084

LUTEIN CONCENTRATIONS IN MATERNAL DIET, HUMAN MILK, AND INFANT PLASMA IN MOTHER-INFANT PAIRS: A MULTINATIONAL STUDY

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Introduction: Lutein is a carotenoid present in human milk (HM) and found in the plasma of breastfed babies. Little is known about plasma lutein concentrations of breastfed infants in different regions and the influence of maternal diet on HM lutein.

Purpose: To assess maternal dietary lutein intake and the relationship between lutein in human milk and infant plasma concentrations in mother-infant pairs from Philippines, Oman, and Mexico.

Material: Healthy mothers and their exclusively breast fed infants (1–4 months old) were enrolled in this multi-country, cross-sectional study. After mothers provided a mid-afternoon milk expression, infant blood was obtained. HM and plasma lutein concentrations were determined by high performance liquid chromatography including a saponification step for HM. Maternal lutein intake (diet plus vitamin supplements) was assessed by food frequency questionnaire.

Results: A total of 176/180 mother-infant pairs completed the study.

Regression analysis on data from all countries combined demonstrated a relationship between dietary and HM lutein ($R^2 = 0.085$, $P = 0.005$) and between HM and infant plasma lutein concentrations ($R^2 = 0.11$, $P = 0.001$).

	Unit[a]	All countries n = 178	Philippines n = 59	Oman n = 59	Mexico n = 60
Diet	Median ±sd μg Lutein/1000kcal	684 ± 978	407[b,c] ± 292	1333 ± 1154	971 ± 923
Human milk	Geometric Mean ±sd μg Lutein/L	25.2 ± 18.9	15.4[b,c] ± 14.6	29.0 ± 18.9	36.1 ± 17.6
Infant plasma	Geometric Mean ± sd μg Lutein/L	64.2 ± 44.1	44.8[b,c] ± 43.1	82.3 ± 42.0	71.4 ± 41.1

[a]HM, plasma, and diet variables were skewed; medians and geometric means ± sd are reported.

[b]Significant difference ($P < 0.001$) in mean/median Philippines vs. Oman

[c]Significant difference ($P < 0.001$) in mean/median Philippines vs. Mexico

Conclusions: In all countries combined, a positive relationship was found between maternal lutein intake and HM lutein, as well as between HM lutein and infant plasma

lutein concentrations. Dietary intake of lutein likely plays a role in infant plasma lutein concentrations.

PP085

L-CARNITINE SUPPLEMENTATION IMPROVES WEIGHT GROWTH IN UNCOMPLICATED PRETERM INFANTS

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Introduction: Uncomplicated preterm infants (UPIs) account for 12% of total births in Mexico. UPIs have a decreased synthesis of L-carnitine, an aminoacid synthesized from lysine and methionine, which is essential in ß-oxidation to transport fatty acids into the mitocondria. The main energy fuel for newborns is constituted by fat, and any reduction in their ability to oxidize fats might limit all energy-dependent processes, such as growth. Therefore, a prolonged reduction in energy production may adversely affect postnatal growth.

Purpose: To evaluate the effect of L-carnitine supplementation on the increase of weight in UPIs.

Material and Methods: A double blind, randomized trial was conducted for 60 UPIs (power 0.8), less than 1.8 kg, between 28 and 34 gestational weeks. 28 UPI were in placebo group, and 32 in L-carnitine group (dose 100 mg/kg/day PO). Both groups showed similar demographic features. Placebo and L-carnitine groups were monitored up to a weight of 1.8 Kg or a 21-day period was reached. Weight and hospital stay length were the primary outcome measures. The weight growth rate was defined as the difference in grams between two consecutive weeks. Statistical analysis was conducted by linear mixed models for repeated measures using software R v. 2.4.1.

Results: L-carnitine group showed a weight growth rate significantly higher ($P > 0.05$) as compared to the placebo group, the average weight growth rate 191.13 g/week and 156.3 g/week, respectively. In addition, the average hospital stay was 2.5 days shorter for the L-carnitine group.

Conclusions: Our results showed that oral supplementation of L-carnitine UPIs improves weight gain and decreases the hospital stay, thus showing a beneficial effect.

PP086

INSURE (INTUBATION, SURFACTANT, EXTUBATION)

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Introduction: To minimize volutrauma and barotrauma associated with resuscitation and stabilization. Early prophylactic surfactant administration and extubation can limit the oxygen toxicity and minimize CLD or BPD. So we did a retrospective study to find out INSURE technique is the safe way to Manage Premature.

Purpose: To identify the use of INSURE technique in preterm infants with respiratory distress syndrome.

Materials and methods: A retrospective analysis of the clinical courses of all inborn infants (birth weight <1500 g) with respiratory distress syndrome treated with INSURE method.

Results: 68 babies were eligible to the study over period of one year. INSURE have reduced the number of infants requiring MV by 65% ($P < 0.01$), resulted in earlier surfactant administration and increased overall surfactant use followed by NCPAP (Bubble CPAP). Also, INSURE-treatment improved oxygenation and only 12% of the infants requiring more than one dose of surfactant (two doses).

Conclusion: This analysis may suggest that a treatment strategy involving surfactant administration by transient intubation followed by nCPAP is a safe alternative to surfactant treatment followed by MV in moderately preterm infants with RDS. This management significantly reduces the need for MV with no adverse effects on the outcome. It also reduces the cost, decrease the use of MV and reduce lung injury significantly. However, a prospective randomized controlled trial is needed to confirm it.

PP087

URINARY TRACT INFECTIONS IN ASYMPTOMATIC NEONATES WITH PROLONGED JAUNDICE

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Introduction: The incidence of UTI in asymptomatic neonates presenting with only prolonged jaundice is estimated at 5.8% to 7.5%. Routine screening for UTI in such infants often has a lower than expected yield in our experience.

Purpose: To determine the incidence of asymptomatic UTI presenting as prolonged neonatal jaundice, to question the utility of routine urine screening and to describe the cases of asymptomatic UTI.

Material: Electronic records of the Children's Emergency from April 2006 to December 2008 were reviewed. Inclusion criteria: Asymptomatic term neonates, aged ≥ 14 days, with total serum bilirubin > 80 μmol/L. Exclusion

criteria: fever, irritability, poor feeding and other clinical indicators of infection.

Methods: This was a retrospective descriptive study. Midstream or catheterized urine of all neonates with prolonged jaundice is first tested with a dipstick. If leucocyte-positive, urine microscopy and culture are performed. UTI is diagnosed if there is significant pyuria in uncontaminated urine, and pure colony bacteriuria $> 10^5$ cfu/ml in midstream or $> 10^4$ cfu/ml in catheterized urine.

Results: There were 329 neonates eligible (n = 329). 218 (66%) had urine tests done as part of their workup. The remainder who were not screened did not develop symptomatic UTI in the short term. 5 (1.5%) neonates were treated for UTI based on positive urine cultures and pyuria. four cases were male. Urine cultures grew atypical bacteria in four cases, mainly *Klebsiella pneumoniae*. All remained asymptomatic and had negative blood cultures. The majority had normal renal ultrasounds (1 defaulted) and micturating cystourethrograms (two defaulted).

Conclusion: The incidence of urinary tract infections in asymptomatic neonates with prolonged neonatal jaundice is extremely low (1.5%). Those with true asymptomatic UTI remained systemically well and had normal renal US and MCU. We recommend that urine screening need not be routine in an asymptomatic neonate with prolonged jaundice.

PP088

NEONATE WITH DOWN SYNDROME AND TRANSIENT LEUKEMIA PRESENTING WITH BACTERIAL INFECTION

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Introduction: Transient leukemia (TL) is a unique disease to neonates with Down syndrome (DS). Although it is usually characterized by spontaneous remission, early death and subsequent development of acute myeloid leukemia occur in significant percentages. A leukemoid reaction is the most typical finding in peripheral blood count; however, platelet disorders may also be present.

Purpose: Description of the natural course of TL in a DS neonate with isolated thrombocytopenia, and use of GATA-1 as a marker of minimal disease.

Material - Methods - Results: We describe a neonate with TL and DS, who was diagnosed following admission in the Neonatal Intensive Care Unit due to E. coli bacteremia. Severe and persistent thrombocytopenia (13 – 80 k/μl) was the presenting finding associated with hepat*o*megaly, cholestasis and seizures during the first days of life. To the contrary, white blood cell count remained within normal range most of the time (4.9 – 20.7 k/μL). Blast cells with megakaryoblast (AML M7) features were identified in the peripheral blood at the age of 21 days (figure). No chemotherapy was given. The thrombocytopenia resolved gradually and the blasts in peripheral blood disappeared by the age of 54 days. No mutation for the GATA -1 gene, which presents exclusively in the blast cells, was detected. Thus, spontaneous regression of the leukemia was observed.

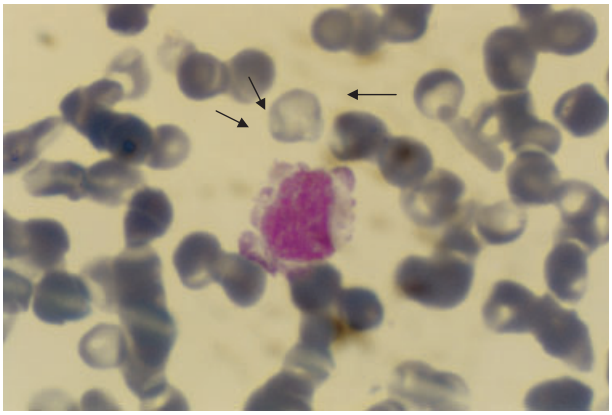

Figure: Peripheral blood smear showing circulating megakaryoblast with cytoplasmic projections.

Conclusion: Infection and DS per se are conditions associated with thrombocytopenia. However, high index of suspicion is recommended for every hematologic abnormality in any setting for infants with DS. TL, with an occurrence of up 10%, must always be ruled out. In addition, GATA 1 mutation can be useful not only in establishing the diagnosis of TL but also in monitoring minimal residual disease.

PP089

THE MODE OF DELIVERY AND PRESENCE OF *STREPTOCOCCUS MUTANS* IN THE SALIVA OF NEWBORNS – PRELIMINARY RESULTS

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Introduction: *Streptococcus mutans* (SM) plays a key role in the etiology of dental caries and is transmissible from caregivers to infants. It can be influenced by many factors including maternal oral health and oral hygiene, the mode of delivery, presence of oral pathology in newborns. SM requires a non-shedding surface for colonization but recent studies confirmed its presence in the mouth of pre-dentate infants.

Purpose: The aim of our study was to find connection between the mode of delivery and amounts of SM in oral cavity of newborns.

A total of 49 newborns (26 boys and 23 girls) were randomly enrolled in this study. 29 newborns were delivered vaginally (group A) and 20 with Caesarean section (group B).

Method: For all enrolled children the mode of delivery as well as the birth weight was noted. At the age of 2 days the amounts of SM in saliva were investigated in all newborns (Strep Mutans test, Orion Diagnostica). Samples of

saliva were collected with microbrushes from tongue and upper and lower alveolar mucosa, incubated 48 h in a temperature of 37°C. The birth weight and amount of SM in newborns of group A and B were compared. For statistical analysis were used standard methods - the T-test and chi-square test.

Results: SM was detected in saliva obtained from tongue in 35 newborns (71%) and from alveolar mucosa in 39 newborns (79%). Significant statistical differences were not observed between group A and B including birth weight and amounts of SM in saliva.

Conclusion: Our preliminary results do not confirm the initial hypothesis, that vaginal delivery may protect oral cavity of newborns against SM colonization by exposing them to numerous bacteria earlier and with greater intensity then in infants delivered with Caesarean section.

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PP090

APNEA IN NEONATES DURING PROSTAGLANDIN E1 THERAPY

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Introduction: Apnea is well known side effect of Prostaglandin E1 therapy in neonates with duct dependant congenital heart diseases (CHD). Although it is dose dependant and mostly seen in preterm, apnea can occur in full term neonates with birth weight over 3000 g on low dose Prostaglandin E1 therapy. The purpose of our study was to evaluate effects of PGE1 therapy, to analyze incidence of apnea in children with duct dependant CHD, and their outcome. We also took into consideration patients who received aminophyllin in therapy, and those who were sedated for different reasons, knowing that aminophyllin has protective effect towards apnea, and effect of sedation is opposite.

Patients and methods: 45 infants during 11-years period (01.01.1997–31.12.2008), at the Paediatric clinic, CCU of Sarajevo formed our study group. Exclusion criteria were: major congenital anomalies (besides heart disease), apnea before PGE1 therapy, intubation prior PGE1 therapy, as well as systemic infection and intracranial bleeding diagnosed before PGE1 treatment.

Results: 9/45 patients had apnea, 6/9 were consequently intubated, 7/9 died ($\chi^2 = 3{,}584$ (df = 1); $P = 0{,}058$)

χ^2 test meets statistical significance at the 5,8% level. There is no statistically significant difference in incidence of apnea between patients who received aminophyllin, and those who didn't ($\chi^2 = 1{,}090$ $P = 0{,}296$). Also, there is no statistically significant difference in incidence of apnea between patients who were sedated, and those who didn't ($\chi^2 = 0{,}729$ $P = 0{,}393$).

Conclusions: In this study we did not prove protective effect of aminophyllin in apnea occurrence in these children, nor opposite effect of sedation in this high risk group.

PP091

EFFECT OF LIGHT AND NOISE ON OXISION SATURATION AND HEART RATE RESPONSE OF THE PREMATURE NEONATES IN NICU UNIT

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Introduction: Nowadays prematurity is the major cause of death among infants during the first year of life and is responsible for most of admission to NICU. Having multiple neuro developmental problems, preterm infants are low birth weight because of staying in uterus for shorter time. So the stressful environment of NICU exposes preterm infants to inappropriate stimuli such as continues light, noise.

Purpose: The aim of assessing the effect of the designed program on the physiological the premature neonates

Methods: This research is a before and after quasi-experimental. The overall number of the samples is 31 hospitalized premature neonates in Esfahan AL-Zahra NICU that were chosen by continuous easy sampling method. The information was collected by interviewing, observation and recording in check lists. The validity and reliability of the check list collecting tools are confirmed and also we used the decibel meter CEL-18 – 56) and lux meter (YF- 170). First hour 12 – 13 pm with the normal work time the neonate's vital physiologic signs and movements. Were recorded and on the intervention time from 14:30 – 15:30pm with decreasing the environment light and noise and riot handling the neonate except when necessary, we recorded and measured the vital physiological signs (heart rate, 02 saturation). Descriptive and analytic statistical methods were used for the data analysis.

Results: The results show significant difference in the oxision saturation level after the intervention with ($P < 0.048$) but there was no significant difference heart rate with ($P > 0.05$).

Discussion: According to the results, applying silent period during the day comforts the premature neonate's greatly and also increases the oxision saturation. Therefore it is suggested that the development interventions such as performing the silent planed program for promoting premature neonate's health is used.

Key words: Designed program, light, noise, movement, physiological factors, premature neonate

PP092

THE METABOLIC INVESTIGATION AND DIAGNOSIS OF EARLY ONSET CATARACTS

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Introduction: Cataracts, defined as an opacification of the lens, are the leading cause of treatable blindness in children with an estimated prevalence of 1/13,000 births worldwide and 1.2 – 6/10,000 births in the U.K. In the neonatal period the aetiology behind the majority of cataracts remains undetermined, the most common known cause being familial autosomal dominant cataracts estimated to be responsible for 30 – 40% of cases, while 5% of cases are thought to be due to inherited metabolic disorders and 3% to congenital infections. Some inherited metabolic disorders manifest cataracts in the first few months of life. Appropriate and prompt investigation facilitates early diagnosis and optimal outcome.

Purpose: The aims of our study were to determine which inherited metabolic disorders cause cataracts in the neonatal period in the Irish population and to develop a formal approach to the investigation of these.

Materials and Methods: The case notes of all patients seen in the NCIMD, between July 1st 2006 and December 31st 2007, who as one of their clinical features had congenital or early onset cataracts, were reviewed and metabolic diagnoses recorded. A literature search on the association between cataracts and inherited metabolic disorders was conducted.

Results: A total of six patients with a history of onset of cataracts before 3 months of age were seen during the study period. Diagnoses were galactokinase deficiency (n = 1), mitochondrial disorder (n = 1) and autosomal dominant cataracts (n = 2). In two patients the diagnoses remain undetermined.

Conclusion: Inherited metabolic disorders deserve appropriate consideration as the aetiology behind cataracts presenting in the first month of life. However, our study suggests that cataracts are an uncommon feature of inherited metabolic disorders in the Irish population.

PP093

THE EFFECTIVENESS OF THE PROBIOTIC DRUGS IN PREMATURE INFANTS

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Introduction: Biocenosis of gastrointestinal tract in premature infants is developing after the birth. A lot of factors can lead to imbalance of microorganisms in infant's intestine and to its colonization by pathogenic microorganisms. This can result in functional disorders - diarrhea, constipation, colic, meteorism. The correction of intestinal biocenosis in newborns, which receive antibacterial drugs, is necessary for satisfactory postnatal adaptation.

Purpose: To evaluate the effectiveness of probiotic drug Bifiform Baby ("BB") in the early adaptation of premature infants.

Material: 25 premature infants (GA<34 weeks) were studied during 10 days, starting from the 5-6th day of life. All infants had intestinal disbiosis and functional gastrointestinal disorders. The infants were randomly divided into two groups: in the 1st one the infants (n = 15) received basal therapy and "BB" – 0.5 g ones a day; the 2d group was control.

Method: Clinical examination, evaluation of physical development, microbiological study of faeces, coprology.

Results: Infants receiving "BB" had faster restore of the birth weight and earlier development of sucking reflex. All infants had a good tolerance to "BB" – they had neither allergy nor the enhancement of diarrhea and meteorism.

The complex therapy, which included "BB", led to good clinical results – the elimination of colic, meteorism and diarrhea. Clinical effectiveness was proved by normalization of coprology and of the microorganism's balance to the 7 – 9th day of the study. In the control group coprology became normal only to the 19 – 23d day of life, dyspepsia continued to the end of the study.

Conclusions: 1. All infants had a good tolerance to "BB"; this drug is safe even for extremely premature infants.

2. Adding "BB" leads to the fast and effective normalization of the intestinal biocenosis and to the elimination of functional gastrointestinal disorders.

3. Including "BB" into the complex therapy has positive effect on the physiological maturation of premature infants.

PP094

SUCCESSFUL WEANING OF PARENTERAL NUTRITION IN A NEONATE WITH 10 CM OF SMALL INTESTINE

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Introduction: Short bowel syndrome (SBS) is a clinical syndrome resulting from inadequate gut absorption of enteral nutrients due to functional or anatomic loss of extensive segments of the small intestine.

Purpose: We report a case of a SBS secondary to a Type III jejunoileal atresia in a preterm neonate, with only 10 cm functional small bowel, who has been successfully weaned from parenteral nutrition.

Case report: A 34 weeks gestation female infant with a birth weight of 2340 g was transferred to our hospital on day 3 of life (DOL) with a history of bilious vomiting. Imagine studies suggested intestinal obstruction and the diagnosis of malrotation and Type III jejunoileal atresia was established during exploratory laparotomy. She underwent surgical correction on DOL 5, with a Ladd procedure and bowel resection with end-to-end jejunoiliac anastomosis. The total length of the remaining small bowel

was only 10 cm of terminal ileum. Her postoperative course was complicated by stenosis requiring reconstruction of the anastomosis on DOL 33. Enteral feeding intolerance led to a prolonged need for total parenteral nutrition (TPN) and length of hospitalization. Metabolic (hepatic colestasis, liver failure) and septic complications associated with PN therapy further extended her hospital stay. She was discharged at the age of 14th months with enteral and complementary PN to allow appropriate growth. PN nutrition was successfully discontinued 6 months later. She is currently 2.5 years old thriving $<3^{rd}$ percentile on a full enteral regular diet.

Conclusion: The overall prognosis for patients with jejunoileal atresia is depended upon the amount of residual functional bowel that exists after surgery and survival of children with SBS is possible nowadays. Although 40 cm of functional small bowel is considered adequate neonates with as little as 10 cm of small bowel can be successfully weaned from PN.

PP095

SEPSIS IN PRETERM NEWBORN IN NEONATAL UNIT

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Introduction: A major cause of morbidity and mortality in newborns, particularly in preterm and low-birth weight continues to be bacterial sepsis and meningitis.

Methods: From January 2007 to December 2007 a hospital based study was conducted at Neonatal Unit of Pediatric Clinic University Medical Center Sarajevo, Bosnia and Herzegovina. The aim was to evaluate the incidence and distribution of neonatal sepsis according to gestational and postnatal age, time of onset and type and frequency of causing agents in all culture – proven sepsis during this period.

Results: Culture-proven sepsis was diagnosed in 52 newborns, out of which 25 preterm, among the total number of 681 admissions to Neonatal Unit. The three causative agents regardless of the time of onset were: *Staphylococcus aureus*, Klebsiella species and Serratia species. Most common risk factor for onset of sepsis was prematurity, especially if accompanied with invasive procedures, congenital anomalies and asphyxia. Mortality rate in newborns with culture – proven sepsis was 14/52.

Conclusion: The adjunctive therapies for septic preterm infants including the prevention and reliable detection methods should be a primary goal in research efforts in neonatal septic medicine in years to come, regardless of gestational and postnatal age, time of onset or causing agents of culture proven sepsis.

THEME: NEPHROLOGY – UROLOGY

PP096

VESICOURETERAL REFLUX:THE ROLE OF CRANBERRY PROPHYLAXIS

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Introduction: The prevention of urinary tract infection (UTI) in children with vesicoureteral reflux (VUR) is still matter of discussion. In vitro studies have confirmed the main mechanism of action by cranberry(inhibition of bacterial adhesion).Recent randomized controlled trials demonstrate that cranberry juice has been shown to prevent UTI especially in elderly women and the efficacy of this prophylaxis in pediatric patients with severe uropathy is still matter of study.

Purpose: (1) To evaluate the protective effect of a commercially available standard concentrated cranberry juice (ivumir)on urinary tract infections in young children with VUR attended by two department of pediatric nephrology (Milano and Cagliari).

(2) To verify possible side effects in these patients.

Methods: The group included sixty three children (24 boys and 39 girls) aged between 1 and 97 months years old(mean 20)with primary VUR receiving 0.5 ml/Kg ivumir per day.

Medium follow-up: 24 months. Fifty seven patients underwent voiding cystourethrogram after initial episode of UTI,six in consequence of fetal diagnosis of pyelectasia. In these children 90 refluxing ureteres were involved(grade I:3,II:31,III:39,IV:16,V:1).10 patients had other associated urogenital malformations(1 bladder diverticulum, four duplications of the collecting system, one ureteropelvic junction obstruction, one horseshoe kidney, one ureterocele, one megaureter, one polycystic kidney).

Results: The incidence of UTI was 4.7% (3/63).Technetium-99m dimercaptosuccinic acid scan, performed in 36/63 children (58%) 6 – 12 months after urinary tract infection, found renal abnormality in seven patients.

Conclusions: We conclude that administration of standard concentrated cranberry juice is free from side effects and effective in preventing UTI in pediatric patients with VUR including high grade VUR and urinary tract malformations associated. Larger prospective randomized controlled studies are needed to confirm our preliminary results.

PP097

CENTRAL AND NEPHROGENIC DIABETES INSIPIDUS – A RETROSPECTIVE STUDY OF A PEDIATRIC NEPHROLOGY DEPARTMENT

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Introduction: Diabetes insipidus (DI) is a rare childhood syndrome characterized by excretion of large volumes of dilute urine (polyuria), often associated with proportional increase in fluid intake (polydipsia). The central DI is due to complete or partial failure of secretion of antidiuretic hormone (ADH), while nephrogenic DI is a disorder of hydric metabolism, characterized by an inability to concentrate urine in response to ADH.

Purpose: Evaluation of the children followed with the diagnosis of central/nephrogenic DI during a period of 15 years and 6 months, in a Pediatric Nephrology Department.

Material and Methods: Retrospective study of clinical records of children hospitalized with the diagnosis of central and nephrogenic DI since January 1993 to June 2009.

Results: During the study period four cases of central DI and two cases of nephrogenic DI were diagnosed. In nephrogenic DI, the cases were male, with age at diagnosis of 1 and 4 months, the clinical presentation was characterized by irritability, failure to thrive, vomiting, polyuria and polydipsia. The study of the evidence of water restriction and concentration with desmopressin led to the diagnosis. In the genetic study performed two genetic mutations not previously described were identified. Of the four cases of central DI, two were male, the median age at diagnosis was 3 years old, family history was found in two cases, clinical presentation was characterized by polydipsia and polyuria. Performed MRI brain studies and periodic evaluation of the hypophisis were normal, so it was diagnosed with idiopathic central DI in four cases and therapy with desmopressin has been initiated.

Conclusions: Water deprivation test remains the cornerstone in the differentiation between central and nephrogenic DI. Recent advances in genetic characterization of nephrogenic DI allow a diagnosis and treatment earlier, with improved survival of patients.

PP098

URINE CULTURE AND SENSITIVITY PATTERN IN PAEDIATRIC UTI AT STAFFORD HOSPITAL, UK

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Introduction: Though Paediatric UTI is predominantly caused by *E. coli*/coliforms, there is a wide variation in the choice of first line antibiotic when urine sensitivity is not available. We analysed all the paediatric urine cultures from 1st January 2008 to 31st December 2008 at Stafford Hospital to ascertain the recent urine sensitivity pattern for this area.

Material & methods: We analysed all the paediatric urine cultures presented to our laboratory from 1st January 2008 to 31st December 2008.The data was collected for organisms, method of urine collection and the antibiotic sensitivity.

Results: There were 139 positive urine cultures collected from paediatric ward and Paediatric assessment unit. Out of this 11 (7.91%) were clean catch samples, 1 (0.7%) bag urine collection and 25 (17%) were mid stream collections. 102 urine samples were non-specified on mode of collection. There was no bag urine sample sent for culture from assessment unit.

Of total positive cultures, 61 (43%) grew *E. coli*, 29 (20%) grew coliforms, 6 (4.31%) grew *Enterococcus faecalis* and *Pseudomonas* each, 2 (1.4%) grew *Proteus*, 8 (5.75%) grew *Klebsiella*, 5 (3.5%) grew *Enterobactor* and *Candida* each. There was 1 case growing MRSA and B-haemolytic streptococci each. 2 (1.4%) cases grew yeast and *Staphylococcus saprophyticus* each.

The sensitivity pattern suggested a sensitivity of 84/91(92%) for augmentin, 134/136 (98.5%) for cephalexin, 97/111 (87%) for amoxycillin, 94/118 (79%) for nitrofurantion and 101/116 (87%) for trimethoprim. The case with MRSA was sensitive to gentamycin, fucidin, mupirocin, chloramphenicol and tetracycline, but resistant to ciprofloxacin.

Conclusion: We need an improvement in documentation on mode of collection of urine samples. *E. coli* is the most predominant organism to cause UTI in our population followed by other coliforms. Cephalexin seems to be the superior to other antibiotics in managing UTI when sensitivity pattern is not known, followed by augmentin.

THEME: NEUROLOGY – SOCIAL AND ENVIRONMENTAL PAEDIATRICS

PP099

MANAGEMENT CARE PLAN OF PAEDIATRIC EPILEPSY IN UK

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Introduction: Epilepsy is common with 70% of the patients having seizures by the age of twenty. Management can be complex. Children diagnosed with epilepsy can be referred to Paediatric Epilepsy clinic in Northampton General Hospital; one of the biggest district general hospitals in United Kingdom for the care of childhood epilepsy. Special needs children with epilepsy are managed in special needs school.

Aim: To find out if we comply with the National institute of clinical excellence (NICE) guidelines (2004) on management of paediatric epilepsy.

Methodology: Review of the management of 100 patients in Epilepsy clinic and special needs school. Details were obtained from the clinical database, case notes and clinic letters to the parents and appointment letters. Patients referred to the clinic after 2004 were included.

Results:

Abnormal EEG	86%
Abnormal MRI	42%
Anti epileptic drugs(AED) prescribed	92%
Clear prescription of drugs and documentation	86%
Consultation and copy of letter to parents	85%
Combined treatment due to failure of monotherapy	23%
Newer AED prescribed	47%
Poor tolerance from older AED	52%
Seen within 2 weeks of referral	65%

Conclusion: We complied with the NICE guidelines in epilepsy clinic and special needs school. Special needs children with epilepsy were well managed by Community Paediatrician by regular school visits and epilepsy nurses.

Recommendations: Staffs are being educated on the new NICE guidelines. A concise protocol based on NICE guidelines has been formulated for junior doctors and is available on the hospital website. Staff have been emphasised on the need to improve the documentation of discussion with families and to ensure a copy of the letter is sent to parents. All efforts are being taken to see the patients in the clinic within the recommended 2 weeks time. A review is planned after 2 years to see if the implemented recommendation have brought a change.

PP100

FURTHER DELINEATION OF THE XQ28 DUPLICATION SYNDROME

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Introduction: Small duplications at Xq28 including the MECP2 locus are associated with a phenotype of X-linked severe mental retardation, absence of speech, infantile hypotonia with later onset seizures and spasticity. Typically patients develop recurrent upper and lower respiratory tract infections leading to death in the second decade.

Purpose: We report seven affected males from three different families who presented as non-dysmorphic infants with global developmental delay. Our aim was to establish whether there are clinical or radiological characteristics or otherwise novel observations which may assist clinicians in the recognition of this difficult and easily overlooked condition.

Material and methods: Detailed history, including family pedigree, findings on clinical examination and serial neuroradiological images over several years on all seven patients were recorded. Molecular status was established by MLPA studies.

Results: A specific clinical phenotype and a characteristic neuroradiological phenotype emerges, the former of infantile hypotonia, recurrent infections, severe mental retardation and seizures in a non-dysmorphic male and the latter, reduced white matter volume and mild ventricular dilation common to all affected individuals with progressive cerebellar degeneration changes seen in boys aged 9 to 14 years.

Conclusion: Patients with mental retardation, recurrent respiratory infections, hypotonia, seizures and neuroradiological changes, specifically of progressive cerebellar degeneration should be investigated for the Xq28 duplication syndrome, the prevalence of which awaits further elucidation.

PP101

RISK FACTORS AND PROGNOSTIC PREDICTORS OF UNEXPECTED ADMISSION WITHIN 24 HOURS AFTER EMERGENCY DEPARTMENT DISCHARGE

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Introduction: The adverse events in medical had a great threat to patients safety in emergency department (ED) in recent year. Those ED revisit and unexpected admission lead to death and permanent disability.

Purpose: To investigate the incidence, risk factors, and prognostic predictors for unexpected admission of pediatric patients within 24 hours after ED discharge

Material and Methods: Retrospective reviewed of ED revisit and unexpected admission of pediatric patients during January 1, 2008 to December 31, 2008 was performed. The aspect reviewed were age, sex, transportation, accompany family, ambulatory status, residence, insurance, initial triage, type of illness, Acute Physiology and Chronic Health Evaluation (APACHE) II score, ED stay and comorbidity.

Results: During study period, 11,672 patients visited our ED; 48 cases (0.41%) were revisit and unexpectedly admitted within 24 hour. There were 31 male and 17 female respectively. The mean age was 5 ± 4.4 years. There were patients' ages less than 1 year 13 cases (27.1%) and more than 1 year 35 cases (72.9%). The rate caused admission by medical error was 16.7% (8 cases) of all revisit. Risk factor of unexpected admission within 24 hours after ED discharge were APACHE score ≥ 20 (OR, 1.2; 1.02–1.27) and ED stay > 4 hours (OR, 1.1; 1.09–1.21) respectively.

Conclusions: In our study, the risk factors of unexpected admission within 24 hours after emergency department discharge were APACHE score ≥ 20 and ED stay ≥ 4 - hours. Further strategies for decreasing the incidence of serious event should be constructed and applied in the treatment of patients according to the risk factor.

PP102

FACTORS AFFECTING VACCINATION COVERAGE IN ALBANIAN IMMIGRANT AND ROMA SCHOOL CHILDREN IN A GREEK COUNTY

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Purpose: To evaluate the vaccination coverage in two subpopulations of different culture in a Greek county (Roma and Albanian immigrant children), to compare it with the general Greek population and to investigate the effect of various factors on it in order to organize a local vaccination campaign.

Material: A representative stratified sample of 100 Albanian and 100 Roma children (5–12 years old) was randomly selected.

Methods: Children's vaccination-card and personal interviews were used to record vaccination and socioeconomic data.

Statistics: ANOVA, Multiple Regression Analysis.

Results: Most children lived in urban areas, mothers were unemployed and most fathers were manual workers. Almost all children of Albanian origin (99%) have completed the standard doses in regard to DTP and Polio vaccination, while $> 90\%$ of them were vaccinated on time, comparable results as the general population. On the contrary the percentage of unvaccinated Roma children increased every next dose, whereas $< 50\%$ were vaccinated on time, a characteristic of all kind of vaccinations. 20% of Albanians and 26% of Rom were unvaccinated for measles; mumps and rubella while only 1% of the general population. All Rom children were unvaccinated against pneumoniococcus, 55% against meningitidococcus and 50% against Haemophilus B, versus 83%, 10%, 50% in Albanians and 45%, 30% and 10% in general population respectively. Albanian children were fully vaccinated against hepatitis B (95%) versus 66% of Rom and 97% of general Greeks, while 58% of both groups against hepatitis A and only 42% of general Greeks. Vaccination index is much better in Albanians 1.38 (1.33–1.43) than in Rom children 0.80 (0.71–0.90) $P = 0.000$ Nationality, unemployment and paternal profession to a lesser extent have an effect on children vaccination coverage.

Conclusion: Albanian immigrant children and especially Roma are behind in on –time vaccination of all vaccines even in case of the oldest and well established vaccinations.

PP103

POSSIBILITY OF DETECTING OF THE STRUCTURAL LESIONS OF THE CENTRAL NERVOUS SYSTEM IN CHILDREN BY ELECTROENCEPHALOGRAPHY

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Introduction: It is very important to take preventive measures and expand available system of early outpatient diagnosis of CNS diseases, which allow to prevent further complications.

Purpose: Assessing the factual resources of electroencephalograhy (EEG) investigations and their correlation with magnetic-resonance imaging (MRI) findings.

Material and Methods: The EEG investigations were carried out on digital electroencephalography machines Bravo NicOne (Nicolet, USA). Children under three and some children over three undergo EEG during the day sleep.

MRI was carried out on modern Signa Twin speed Excite 1.5 T1 Tomography Machine (GE, USA). The were investigations of 182 children aged from 7 months to 18 years old with minor neurological symptoms Patients' main complaints included headaches (27%), rare or single or groundless cramps (25%), hyperexcitement (14%), fatigability (13%), syncope (10%). All children had pathology according to perinatal anamnesis.

Results: Children with minor neurological symptoms and minimal change of EEG had damage of structure or/and vessels of brain (89.6%). 140 patients (76.9%) had pathological disorders revealed on EEG accompanied by structural deviation on MRI, herewith 36 children (26%) with angiopathy. Among structural disorders local subatrophy and ventriculomegalia were dominant. 23 (12,6%) patients with EEG disorders had only vessels deviations (S-shape deformation of Internal Carotic Artery (ICA), flexura ICA or vertebral artery (VA), hypoplasia VA and combination of hypoplasia and deformation of ICA and VA, (narrow ICA)

Conclusion: We recommend to carry out EEG for children under 3 years only during the sleep and send children with EEG disorders to MRI investigation in the following cases: minor local disorder or resistant lateralization changes in basal EEG; pathological EEG with revealed hypersynchronisation of β or θ type, disorganized EEG with absence or decrease of α-rhythm; paroxysmal types of EEG of children of any age, even if there is absence of deviation during wakeful state.

PP104

EPIDEMIOLOGY AND CHRONOBIOLOGICAL ANALYSIS OF TRAFFIC ACCIDENTS IN CHILDREN ATTENDED BY THE EMERGENCY SERVICE IN CASTILE-LEON (SPAIN): STUDY OF 912 CASES

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Introduction: Traffic accidents are an important cause of injury in children all over the world. The analysis of circumstances in which they happen and the identification of time trend in traffic accidents allows to improve both medical attention and prevention of this pathology.

Purpose: To assess the epidemiological aspects and to investigate the relation between traffic accidents in children and time dimension in a wide population.

Material: A total of 4,419 accidents in children aged 0 to 14 years were attended by the Sanitary Emergency Service in Castile-Leon in 2007 and half of 2008. We analyzed the traffic ones.

Methods: Univariate statistical descriptive analysis to obtain the epidemiological information and spectral analysis (with Fourier transform) and cosinor method in order to search the rhythm of traffic accidents.

Results: There were 912 traffic accidents (21% of children accidents). Three of every 1000 children suffer a traffic accident. Age-specific rates show peak incidence among 7 to 11 years (20%). 23% of accidents in children younger of 12 months are traffic ones. 63.7% of injured child are boys. One half of traffic accidents (51%) occur during the weekend, from Friday to Sunday.A total of 42% happen at evening hours, between 17 and 22 o'clock. In Castile-Leon, the province, which has the highest incidence of traffic accidents in children is Soria and the one with the fewer is Palencia. The analysis of the time dimension in traffic accidents show a significant circadian rhythm with acrophase at 19 h 19 minutes and batiphase at 1 h 45 minutes.

Conclusions: The results obtained in this study can be useful to prevent traffic accidents in children by having different resources ready at the time of highest incidence.

PP105

SYMPTOMATIC HYPONATRAEMIA FOLLOWING HYPOTONIC FLUID INTAKE IN CHILDREN – PROFILE AND OUTCOME

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Introduction: Serious complications following hypotonic fluid intake have been widely reported. Awareness of the problem among health professionals and lay public is important in prevention. However, no such studies have been reported from this country.

Purpose: To study the profile and outcome of children presenting with symptomatic hyponatraemia caused by hypotonic fluid intake.

Material: Children admitted to a tertiary care referral Hospital from 2000 to 2005 with symptomatic hyponatraemia resulting from hypotonic fluid intake.

Methods: All consecutive admissions as indicated above were studied prospectively to identify the duration and nature of abnormal fluid intake; and clinical and laboratory profile were analysed. These children were followed-up for clinical and developmental outcome.

Results: Two boys and two girls, aged between 3 and 15 months at presentation were found to have symptomatic hyponatraemia resulting from intake of hypotonic fluids including plain water, glucose water and fruit juice for 1 day to about 1 year. Clinical manifestations included hypothermia, shock, seizures - focal and status epilepticus, abdominal distension and macrocephaly. Among investigations, there were CT brain and EEG abnormalities besides hyponatraemia. All the manifestations resolved completely and all the children were neurodevelopmentally normal on follow-up ranging from 5 months to 5 years and 3 months.

Conclusions: 1. Symptomatic hyponatraemia resulting from intake of hypotonic fluids is not uncommon in this country.

2. Complications included potentially life-threatening conditions like status epilepticus and shock.

3. Preventive measures are therefore of utmost importance.

4. Education of the public, especially of parents of young children, on the dangers of excessive intake of hypotonic fluids is vital.

5. Awareness of the problem among health professionals should be the first step and it is hoped that this study will facilitate this.

PP106

ELEMENTAL FORMULA DIET IN AUTISTIC CHILDREN

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Introduction: Autism is a complexed neurodevelopmental-neurobiological disorder of behaviour, which is characterized from loss in three domains: social behaviour, status of contact-speech, interests. Also, autistic children have a strong hyperactivity status and many nutritional problems.

Purpose: The investigation of the correlation of the autistic children's hyperactivity status with major nutritional changes using elemental formula diet and testing these children for food allergies using Rast/Cap IgE tests.

Material: A total number of 45 children aged 2.5 to 8 years were checked. All of them were diagnosed with pervasive developmental disorder (international criteria 1994). Also, all these children were checked for food allergies.

Methods: From the 45 children, 17 were found having positive Cap IgE tests for cow milk allergy (class 1–3) and 3 of the 17 children had multinutritional allergy. Further, the 17 children group was randomly divided in two subgroups, nine of the children started elemental formula (containing free aminoacids-Neocate®) diet with exclusion of all milk products or milk containing food (group A) and the rest eight children continued their previous diet (group B).The other 28 children group was also randomly divided in two subgroups, 13 children started elemental formula (containing free aminoacids-Neocate®) diet with exclusion of all milk products or milk containing food (group C) and the rest 15 children continued their previous diet (group D).

Results: After 4 months of observation, statistical significant differences ($P < 0.001$) were found in hyperactivity status (measured using properly arranged questionnaire model and special scoring system for the therapist and the parents) between groups A and B, also between groups C and D, even comparing A+C to B+D groups.

Conclusions: Children suffering from pervasive developmental disorder have increased hyperactivity status but it seems that oligoantigenic diet have much to offer in order to lower hyperactivity levels, not only in autistic children with proven food allergy, but in all of them.

PP107

VISUO-SPATIAL DIFFICULTY IN WILLIAMS SYNDROME: DIFFICULTY IN COPYING A JAPANESE CHARACTER KANJI AND ITS INTERVENTION

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Introduction: Williams syndrome (WS) is known for its uneven cognitive abilities. Visuo-spatial cognition is more disturbed, whereas cognition of colors or shapes of objects is relatively preserved. This tendency is attributed to the greater deficits of functions in the dorsal pathway compared to those in the ventral pathway in the visual system. When patients with WS are asked to copy two dimensional figures, they often show difficulty in locating components of the figures to make global shapes. Similar findings are observed in copying kanji, Japanese semantic characters. Patients with WS often can copy only the components of a kanji character, but can not locate the components properly and fail to make appropriate global shape even though they can read it.

Purpose: In order to ameliorate the difficulty in copying objects or kanji characters, ways to compensate for the difficulty were investigated by using preserved function, such as the cognition of colors.

Material: Four patients with WS, who have difficulty copying two dimensional figures, joined the study.

Methods: Kanji written on a square, which is divided into four sections, was used as a copy model. Each divided part of the square was colored red, green, yellow and blue, respectively. A similarly colored square was given to copy the kanji on. Similar kanji models with square without colors or only with gray scaled back ground were also used. Answering sheets with similar squares to the models were given. In addition, kanji with differently colored components was also presented as a model.

Results: Kanji copying was successful only when kanji was presented on a colored square. The other interventional methods did not work.

Conclusions: The method with colored squares made it easier for participants with WS to copy a given character as it became easier to realize where to locate each component.

PP108

THREE PATTERNS OF MIRROR MOVEMENTS OF THE HAND IN HEMIPLEGIC CEREBRAL PALSY EVALUATED BY FUNCTIONAL MRI AND DIFFUSION TENSOR IMAGING

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Introduction: Mirror movements of the hand (MM) indicate central motor reorganization.

Purpose: To evaluate the MM as an indicator of central motor reorganization in hemiplegic cerebral palsy (CP), using functional neuroimaging techniques.

Material: Ten cases with hemiplegic CP whose fMRI were successfully examined.

Methods: Conventional MRI, fMRI activated by the hand grasping and diffusion tensor imaging were examined in each case. The MM grade was classified by the Woods&Tauber method. Pyramidal tracts were evaluated by axial fractional anisotropy (FA) images at the level of the cerebellar peduncle.

Results: Six of 10 patients showed various MM patterns. (1) In three cases, MM were observed in each hand. Paretic hand movements activated ipsilateral primary motor area (PMA) in fMRI and FA images scarcely showed the affected side of the pyramidal tract. (2) In two cases, MM were observed only in non-paretic hands. Paretic hand movements activated bilateral PMA in fMRI, and the pyramidal tracts showed distinct asymmetry in FA images. (3) In one case with unilateral cortical dysplasia, MM was observed only in the paretic hand. In fMRI, non-paretic hand movements activated bilateral PMA and paretic hand movements activated only the contralateral PMA. FA showed distinct asymmetry of the pyramidal tracts. (4) Four of the 10 cases did not show any MM during each hand movements. In two cases, each hand movements activated the contralateral PMA in fMRI and FA showed no asymmetries. In two cases with neonatal intracranial bleeding, paretic hand grasping activated residual brain tissue other than PMA of the contralateral hemisphere in fMRI, whereas the FA showed distinct asymmetries.

Conclusion: Three MM patterns were observed in hemiplegic CP. These patterns may represent central motor reorganizations, which are influenced by the stage of injury and the residual function of the pyramidal tracts, the cortices and the corpus callosum.

PP109

CENTRAL PRECOCIOUS PUBERTY ASSOCIATED WITH HYPOTHALAMIC HAMARTOMA AND AUTISM – TWO CASES WITHOUT EPILEPSY

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Introduction: Hypothalamic hamartomas (HH) are non-neoplastic heterotopic nodules resembling the normal hypothalamic gray matter, which can give rise to the classical triad of central precocious puberty (CPP), epilepsy – gelastic seizures being the most crises characteristic – and behavioural and cognitive deterioration, with very few cases of autistic spectrum disorders (ASD) reported in the literature. A predominant hypothesis for the origin of the cognitive and behavioral disorders in children with HH has been that it is a direct effect of their seizure activity, which could cause excitatory damage that would progressively disrupt the thalamocortical loop and the limbic structures. It has also been described a sympathetic system activation and hormone release during seizures, as well as behavioral improvement after lesion resection.

Case Report: We report two cases of children with cognitive deterioration, behavioral disorder and ASD, who were referred to the outpatient service of Endocrinology because of central-type precocious puberty. Both were diagnosed with sessile HH, located in the tuber cinereum region, but, unlike the other cases described in literature, the cognitive and behavioural symptoms were not associated to any clinical or neurophysiologic evidence of seizures.

Conclusion: Due to the many connections of the hypothalamus with the amygdala, hippocampus, thalamus and reticular formation, it has a key role in the functioning of the limbic, rhinencephalic, autonomic and endocrinological systems. Thus, these two cases suggest that multiple factors other than the epileptogenic activity of the HH contribute to the cognitive and behavioral problems of these children.

Key words: Hypothalamic hamartoma, central precocious puberty, autism, seizures

PP110

PREVENTION AND TREATMENT OF ACUTE POISONING IN CHILDREN: THE ROLE OF COMMUNITY EDUCATIONAL PROGRAMS IN IMPROVING PARENTS' KNOWLEDGE AND EFFICIENCY

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Introduction: Unintentional childhood injuries remain a serious public health concern.

Purpose: Purpose to determine the parent's knowledge regarding the risk of children's poisoning and the influence of a kindergarten educational program on household hazards associated with unintentional childhood injuries.

Material & Methods: A total of 385 questionnaires were evaluated.A total of 239 were completed by parents not attending the program and 146 questionnaires were completed by parents before and after an educational program on household hazards contacted in kindergartens. The questions included evaluated the knowledge status about the prevention and management of household poisoning, the safe storage of medications, pesticides, detergents and dangerous chemicals and various demographic and social data.

Results: A total of 108 males and 277 females answered the questionnaires. Three hundred and thirty three were native Greek and 52 were foreign Greek residents. The median age was 38 years in men and 30 years in women. The 45% of parents had basic education. 51% had two children. 13% reported a previous case of poisoning. The general knowledge display was 39% and it was defined by a sum of critical questions regarding the absolute safe storage of medications, detergents and pesticides Availability of the Poison Information's Center public line was reported by 48.5%, and rightful orientation for immediate assessment in case of poisoning was reported by 93% of the participants. Estimated hazard exposure in hydrocarbons-chlorates was 61.2%, in alcohol drinks 71.3%, in tobacco in general 37.6% but especially in cigarette ingestion was 4.3%. After the completion of the Kindergarten educational program the knowledge regarding the safety in the storage of medication was improved by 42.7%.

Conclusions: The parents' knowledge regarding household hazards is generally limited, but can be improved by educational programs. The knowledge concerning hydrocarbons and caustic products is quite good, for alcohol drinks satisfying, but limited regarding the hazards from nicotine products ingestion.

PP111

"TAKING CHARGE": AN "ALL-INCLUSIVE" EXPERIENCE IN PAEDIATRIC HOME ENTERAL NUTRITION (HEN) IN TUSCANY

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Introduction: Home enteral nutrition (HEN) is the only possible alternative to staying in hospital for patients with malnutrition due to several diseases.

Purpose: To ensure at home the same standard of nutrition than hospitalization

Material & Methods: In pediatric patients HEN is usually requested by the specialty medical team or by the general pediatrician. The nutritional team, pediatrician, home care staff, and hospital specialists collaborate to give the patient effective treatment. When dealing with malnourished pediatric patients we must consider both their metabolic and anabolic needs. In HEN-related risk management, the nutrition method, device handling, nutritional products, mechanical and septic complications must be considered. With "Taking Charge" the child on HEN and his or her family are provided with training in feeding-tube management, pumps and nutritional products, and they are controlled by a team of doctors, nurses and dieticians (control of nutritional status, treatment of complications, medications, replacement of devices, evaluation and correction of the diet, etc.) through outpatient visits, admission to day hospital and, if necessary, home visits.

Results: The benefit for the family of the child on HEN assisted in the manner of "Taking Charge" is to have a single point of reference for both medical and dietary advice and for the supply of products and devices.

Conclusions: "Taking Charge" ensures a better quality of life not only to the patient but also his family.

PP112

EFFECTS OF ENVIRONMENTAL TOBACCO SMOKE ON RESPIRATORY SYMPTOMS AND FUNCTION IN SCHOOL CHILDREN

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Environmental tobacco smoke (ETS) and maternal tobacco smoking during pregnancy (MTS) are risk factors for respiratory disease in childhood. We investigated, in a sample of schoolchildren from a general population, the effect of ETS and MTS on respiratory health in a cross sectional survey. We studied 1357 students (672 males), aged 10–16 years, randomly selected from 16 junior high schools of Palermo, South of Italy. All of them performed spirometry and skin prick tests (SPT) and their parents fulfilled a respiratory questionnaire including questions on MTS and ETS at home. We found that 12.6% of the students were exposed to MTS, 27.2% to ETS in the first year of life (eETS), 30.6% had at least an acute episode of respiratory disturbances (asthmatic bronchitis, bronchiolitis, bronchitis, pneumonia) during the first 2 years of life (RD), and 4.3% had current asthma (doctor diagnosis plus at least one wheeze episode in the last year - CA) at the time of survey. Mean $FEF_{25-75\%}$ was 84.7 ($\pm$ 19.5 SD, % of predicted). In a multiple linear correlation model, $FEF_{25-75\%}$ at the time of survey was significantly and inversely correlated to MTS ($P = 0.0012$), RD ($P = 0.0001$), and CA ($P < 0.0001$). After adjustment for confounders, in a multiple logistic regression model Odds

ratios and confidence intervals were computed for evaluating the independent effect of RD (8.4, 4–18), the combination of MTS and eETS (1.8, 1–3.7), and atopic sensitization (2.8, 1–6) on the presence of CA. In conclusion, our results show that both MTS and RD independently decrease respiratory function in childhood, and that RD and MTS and/or eETS influence the presence of CA in childhood.

PP113

KNOWLEDGE AND RISKY BEHAVIOR OF CHILDREN ACCOMMODATED IN INSTITUTIONS FOR CHILDREN WITHOUT PARENTAL CARE IN SERBIA

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Introduction: Serbia, as a country in transition, faces not only socio-economic problems but also rapid changes in behaviour, especially among adolescents.

Purpose: The aim of this study was to analyze difference in knowledge and behavior of children aged 12–14 and 15–19 years, accommodated in institutions for children without parental care, in relation to risk of HIV infection.

Methods: The research was performed in Serbia in the period of November to May, 2007. By the use of random sampling procedure in this cross-sectional study were included 483 children 12–19 years old (78% of all children without parents in Serbia) who were accommodated, at least one month before interview, in the 16 of the 22 institutions for children without parental care. Data were gathered from all respondents by questionnaire. In the statistical analysis chi square test and 95% confidence interval were used.

Results: Among 483 children without parental care 30.6% were less than 14 years. The mean age at first sexual intercourse was 11.8 for children aged 12–14 and 14.9 for children aged 15–19 years. The use of condom at last sexual intercourse with irregular sexual partner was reported by 70.8% of children 15–19 years old during the last year. Only two of younger children had irregular sexual partners in the last year and no one of them used condom. The difference between these two age groups was statistically significant. Correct answers to 5 questions about HIV transmission were significantly more frequent among children 15-19 years old (34.6%) than among younger children (15.5%). Of the total number of participants 35.2% were previously included in HIV preventive programs. Significantly more frequently were included children 15-19 years old (45.4%) than younger children (12.2%).

Conclusions: It can be concluded that HIV/AIDS preventive programs are especially necessary for children without parents aged 12 to 14 years.

PP114

UNUSUAL IATROGENIC ATROPINE – INDUCED POISONING

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Introduction: A case of an unusual iatrogenic poisoning with atropine eye drops in a 5 year-old child is described.

Purpose-Materials-Methods: Atropine eye drops 1% were administered in six doses of two drops in each eye, every twenty minutes, in order to create mydriasis for ophthalmologic examination of strabismus. After the 6th dose, the child presented symptoms of atropine poisoning (confusion, vomiting).

The total dose of atropine that was administered was approximately 12 mg, while the maximum approved dose is 1 mg. The patient was treated with fysostigmine in two doses and presented gradual improvement with remission of the symptoms within 48 hours, while mydriasis insisted for 10 days.

Results-Conclusions: As the conjunctiva absorbs perfectly the administered medicines the maximum approved dose should not be exceeded, especially for such toxic drugs as atropine.

THEME: RHEUMATOLOGY

PP115

HEPATITIS A VACCINATION IN JUVENILE IDIOPATHIC ARTHRITIS

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Introduction: Juvenile idiopathic arthritis (JIA) is the most common rheumatologic disease of childhood. It is diagnosed on the basis of clinical findings and with excluding other possible diseases according to American Rheumatology College and International League of Associations for Rheumatology (ILAR) criteria. Hepatitis A is an acute, usually self-limiting disease of the liver caused by hepatitis A virus (HAV). In patients with JIA, both autoimmune mechanisms and drugs used in treatment increase the risk of liver toxicity. Immune-suppression increases the risk of infection, therefore vaccination gains importance.

Purpose: In this study, we aimed to determine the safety and efficacy of Hepatitis A vaccine comparison to normal children and define the relationship of the efficacy of this vaccine with disease subtypes, drugs used in treatment and disease activity.

Material – Methods: The study group consists of 47 children with JIA (23 male and 24 female) diagnosed according to ILAR diagnostic criteria. Control group consisted of randomly selected 67 healthy children (31 female, 36 male) who did not have a history of hepatitis A infection or vaccination. Children with chronic disease other than JIA and children that did not regularly come to follow-up were excluded. Anti-HAV IgG $>$ 80 MlU was accepted as positive response. Children with negative anti HAV IgG titers were included in the study. None of the children had anti HAV IgM positivity. Children that did not have any complaints in the last 6 months with Childhood Health Assessment Questionnaire (CHAQ) scores less than 0.5 were accepted in remission. Children that had symptoms of JIA in the last 6 months and children that had to take additional drugs with CHAQ scores higher than 0.5 were accepted in active phase. Informed consents were taken from parents of all of the children.

Results: There was no significant difference between the groups in terms of age and gender. None of the patients with JIA had fever, clinical worsening or disease activation after vaccination. AntiHAV IgG positivity rate was significantly higher in control group ($P < 0.05$). AntiHAV IgG was negative in only 4 cases and they were all male patients with systemic JIA who had active disease under anti TNF treatment.

Discussion: Vaccination is an important process in children and adolescents with inflammatory rheumatologic disease. Russo RA, et al reported two cases with JIA that developed macrophage activation syndrome after hepatitis A infection. One of them had entered remission after high-dose steroids and immune-suppressants and the other died. In another case from England, 20-year-old female with Still's disease who had contracted hepatitis A was diagnosed as virus-associated haemophagocytic lymphohistiocytosis an done case from China with systemic onset JIA had developed macrophage activation syndrome (MAS) after Hepatitis A infection. In clinical trials, the most frequently reported side effects include soreness at the injection site, headache, and malaise. In our patients, we also did not encounter any side effects, even in patients receiving anti TNF drugs.

Conclusion: We can say that, hepatitis A vaccine is safe and immunogenic in patients with JIA and response to vaccine did not differ between healthy children and patients with JIA except children with active systemic JIA receiving anti TNF alpha drugs.

PP116

ANAFYLACTOID PURPURA IN CHILDREN

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Introduction: Anafylactoid purpura (AP) - Sconlein Henoch purpura - is the most common vasculitis in children. While the cause is unkown, it affects the small vessels of many systems.

Purpose: The study of the clinical manifestations of AP as well as its connection to age, sex, seasonal causes and prognosis.

Material: The study was conducted during a 5 year period (2003–2008) with 25 children who presented AP.

Results: From the 25 children, 18 of them (72%) were boys 3.5–11 years old and 7 (28%) were girls 4–9 years old. 19 children fell ill during autumn and winter whereas six during spring and summer.

One child developed abdominal pain and vomiting while 5 more children showed signs of mild hemorrhage from the rectum. No other symptoms associated with the gastrointestinal system were detected.

The most common symptoms from joints were pain and swelling, especially in the knees and ankles with 1 child developing signs of sciatic arthiritis.

Those children that reacted to AP with signs of kidney involvement showed only minute quantities of blood in the urine.

Finally, two children (8%) with AP showed signs of deterioration within a period of 6–8 months, but were resolved successfully.

Table 1. Provocative causes

Provocative causes	n	%
Viral infections of the upper respiratory system	10	40
Streptococcal infections	2	8
EBV infection	1	4
Bacterial infections of the lower respiratory system	1	4
Unknown causes	11	44
Total	25	

Table 2. Purpuric rash distribution

	n	%
Lower extremities and buttocks	16	64
Lower extremities	5	20
Upper extremities, lower extremities, body and face	4	16
Total	25	

Table 3. Systemic AP manifestations

	n	%
GIS	12	48
Joints	13	52
Kidneys	3	12
CNS	0	0
Other systems	0	0

Conclusions: AP is rather not common and with a good prognosis. Manifestations from CNS were absent and the renal involvement was rare.

PP117

THE PREVALENCE OF COMPLEMENTARY ALTERNATIVE TREATMENT IN JUVENILE IDIOPATHIC ARTHRITIS AND FACTORS ASSOCIATED WITH

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Introduction: Diagnostic, therapeutic and preventive applications that contribute to general medical techniques and conceptually not included in classical medicine, are called Complementary-Alternative Medicine (CAM).

CAM is increasingly used in adults and children. More frequently preferred CAM techniques in general population are herbal medicine, dietary supplement, special diets, yoga, acupuncture, aromatherapy, spiritual healing and meditation.

Juvenile idiopathic arthritis (JIA) is the most common chronic rheumatic disease in children and affects the entire family, all of whom must cope with the special challenges of this disease, thus parents seek for alternative ways.

Aim: The aims were to determine the frequency of use of CAM in children with JIA, to evaluate type of the alternative therapy, the effectiveness from the parents point of view; to explain the factors associated with continued use.

Method: Children with JIA (n:120 mean age:11.8) who attended rheumatology clinic and followed at least for one year were included in the study. We used a questionnaire, including demographic properties of families and factors associated with use of CAM. Also several techniques of CAM were examined.

Results: The mean age of the patients was 11.8 ± 4.44 years and the mean follow-up was 4.8 ± 3.4 year. The prevalence of CAM use was %36 and was higher in patients whose parents used CAM. The most preferred CAM technique was the traditional way by the prevalence of % 14.3. We found statistically significant correlation of CAM with ages, place of residence and dissatisfaction from medical treatment. Use of CAM was more higher in older children (mean age 13.26 ± 4.0 years) and patients lived in rural areas.

Conclusion: CAM use is a considerable practice among JIA children. The physician should be aware of the use of CAM and parents should share with their physician, if this approach has value and is not harmful, it can be incorporated into the treatment plan.

PP118

IMPAIRED B CELL DIFFERENTIATION IN JUVENILE IDIOPATHIC ARTHRITIS (JIA)

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Introduction: B cells play a notably role in the pathogenesis of juvenile idiopathic arthritis (JIA) (Lemoine *et al.* 2009). Moreover, the therapeutic use of anti B cell antibodies in JIA indicates their possible harmful effects.

Purpose: To study the regulatory role of B cell subsets in JIA we compared quantities of specific B cell differentiation states in JIA patients with those in healthy controls.

Material: Peripheral venous blood was drawn from 87 JIA patients of our pediatric rheumatological outpatient clinic and 105 healthy volunteers. The study protocol was approved by the Ethics Committee of Mainz University Hospital. Included subjects fulfilled the ILAR classification criteria for JIA subgroups and provided written informed consent before enrollment.

Methods: BD Multitest™ IMK Kit and BD Trucount™ tubes (BD Biosciences, Heidelberg) for flow cytometry was used to determine absolute counts and percentages of the following human B lymphocyte subsets in erythrocyte-lysed whole blood: B lymphocytes (CD19 +) in total, naïve B cells (CD19 + IgD+ CD27-), non switched memory B cells (CD19 + IgD+ CD27 +), switched memory B cells

(CD19 + IgD- CD27 +), and innate B1a cells (CD19 + CD5 +).

Results: Compared to healthy controls, characteristic B cell differentiation phenotypes were demonstrated in JIA subgroups: in systemic JIA we found increased absolute B cell counts, in oligoarthritis (persistent and extended type) naïve B cells were significantly elevated, while non switched memory B cells were raised only in RF+ JIA. In polyarthritis (RF+, RF-), innate CD5 + B cells were notably enhanced. In contrast, switched memory B cells were significantly decreased in all JIA subgroups.

Conclusions: Our results demonstrate that the discovered B-cell disbalance may be responsible for the susceptibility to JIA; special B-cell differentiation patterns determine the development of JIA subtypes. The contribution of related inflammatory cytokines to the impaired B cell differentiation is still under investigation.

THEME: SPECIAL INTEREST

PP119

NAVA (NEURALLY ADJUSTED VENTILATORY ASSIST) VENTILATION IN INFANTS WITH PARESIS OF N. PHRENICUS AFTER CORRECTION OF CONGENITAL HEART DISEASE

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Introduction: Paresis of the N. Phrenicus may occur after correction of congenital heart disease and causes prolonged weaning.

Purpose: Mechanical ventilation in new-borns and children as well as weaning strategies are still challenges to PICU.

Material: We present two cases of new-borns after correction of congenital heart disease.

(Details Table. 1). As we failed to wean the patients using ASB Ventilation we changed to NAVA ventilation. On both new-borns we found positive EMG of the diaphragm and we deduced that they developed a functional paresis.

Methods: The key for successful weaning is to avoid patient-ventilator asynchrony. Although common flow sensors detect minimal changes in gas flow, it might happen that the respirator is not able to trigger a patients (neuro-electrical) effort to breath.

NAVA ventilation uses the electrical activation of the phrenic nerve. This trigger mechanism does not depend on any neuromuscular effect. The level of pressure support is proportionally adjustable to the electric impulse of the diaphragm measured breath by breath.

We assumed that this ventilation mode compared to other methods can facilitate the weaning of patients suffering from functional paresis of the N. phrenicus.

Results: Both new-borns could be weaned from the respirator in an adequate time. The patients tolerated weaning with sedation on a low level, in combination with adequate gas exchange.

Table 1. Two cases of new-borns after correction of congenital heart disease

Initials	Diagnosis	Procedure	Problems	Weaning with NAVA
G.J	Pulmonary atresia, VSD	REV Procedure, TAP	Small VSD persists, Unilateral Paresis	6 days
S.L	TAPVR	Correction	Bilateral Paresis	13 days

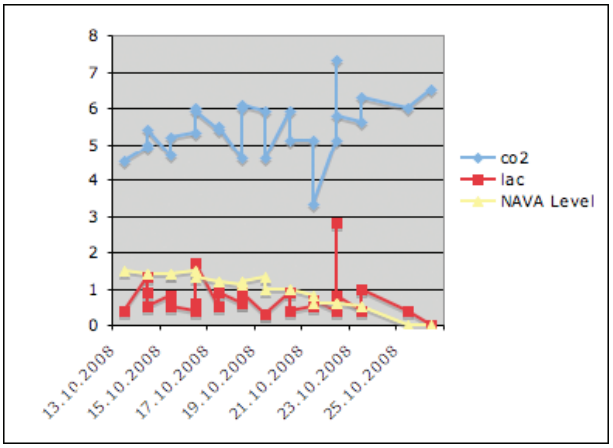

Figure 1. Context between pCO2, lactate, NAVA level.

Conclusions: Paresis of N. phrenicus after correction of congenital heart disease is leading to a prolonged weaning period. With NAVA ventilation we reached extubation in a shorter period of time than in comparable cases.

We conclude that NAVA is apparently an appropriate method for difficult weaning.

PP120

ROLE OF PUBLIC PRIVATE PARTNERSHIPS IN PAKISTAN HEALTH CARE SCENARIO: A QUALITATIVE STUDY

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Objective: To review the situation of public private partnership in health services of Pakistan.

Introduction: In most countries of world, financing as well as provision of health services has historically involved both public & private sector actors. The nature of interaction is variable but mostly lies within parallel, collaborative, competitive and complementary activities. In parallel, the two sectors coexist with little contact between each other due to different objectives among them in compare to collaborative where both sectors work together on the basis of agreed objectives, strategies as a joint venture. While competitive activities have similar objectives, cater to the same clientele which may have a capability of situation in control and compete with each other whereas complementary collaboration between the sectors is independent & complement to situation.

Pakistan Scenario: Public Private Partnership is a health sector reform to setting long term, task oriented, and formal relationships to mutually accepted direction among public and private sectors in contributing, sharing their

core competency and resources including some degree of joint decision-making and innovative interaction to provide sustainable improvement in providing and utilizing health care services and also to address emerging health challenges for the benefit of the society. Public Private Partnership as a health sector reform in Pakistan had instituted to national health policy in 1960 and started in corporate social responsibility to serve nation till date. The government is unable to fulfill its constitutional promise that the state shall provide basic necessities of life including provision of health care and bringing reform in health sector of Pakistan. National priority of government is to spend money on national security over human development. Pakistan is facing double burden of diseases and fail to overcome the poliomyelitis disease etc and facing challenges to combat chronic diseases. The partnership is considered to be a successful health reform in health sector, but the policies in Pakistan remain largely unexamined and insensitive to the concerns of accessible, available, affordable, acceptable quality basic health services e.g. District Rahim Yar Khan. It could be due to disparity in power, lacking trust, downsizing of social capital and others like financial resources between the public and private sector. As a result, health sector in Pakistan is far from developing a consistent form of interaction between public and private sector and suffers from a persisting political polarization along three major, intersecting fault lines, are technocrats, beurocrate and the military reflecting burden of diseases and the gaps between the openness for collaboration at the policy and operational level in health care services since the partition of the subcontinent in 1947. As far as health indicators are concerned the infant and maternal mortality rates for Pakistan are 80/1000 live births and 340/100,000 live births very high as compared to other developing countries.

Conclusion: Public Private Partnership is a multidisciplinary and multi-sectoral approach in health services requires highly significant institutional development, socialisation, monitoring and evaluations systems. Therefore it is suggested to promote and practice standardized public private partnerships in health care services, when health care is inelastic and leading to greater benefit and improvement in health status of our society to meet the challenges of globalization and finally prosperous Pakistan in the 21st century.

Key Words: Health policy, Burden of Diseases, Pakistan.

PP121

HOSPITALIZED CHILDREN WITH ACUTE NON POST – TRAUMATIC LIMP: 3 YEARS STUDY

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Introduction: Limp, non-symmetric deviation from normal walking type, is a common problem, 7% of a pediatrician's visits. Acute non post-traumatic limp is a usual reason of children's hospitalization and its clinical picture is a diagnostic problem for the Pediatrician.

Purpose: Recording of the sequence, investigation of the epidemiology, causative diagnostic approach of limp at hospitalized patients at pediatric ward during 2005 – 2008.

Methods: In the years 2005–2008, 38 children were hospitalized with acute limp of non post-traumatic reason to be their basic symptom. Children were taken a thorough history and were submitted in a full orthopedical and by systems physical examination, while investigations were made FBC, ESR, CRP, ASTO, pharyngeal and blood cultures, hip u/s and Ro and bone scan, where it was necessary.

Results: A total of 38 children were hospitalized (boys: girls = 2, 75: 1) with an average age 5.5 years old. The pain location was on the right at 20 children (52.6%), on the left at 11 children (29%), bilateral at 7 children (18.4%). At 60.5% the pain was focused on the hip. The most common diagnosis was transient hip synovitis (52.6%). Septic arthritis of the hip was found at 13.1% of the cases, discitis at 5.3%, myositis from Coxsackie virus at 5.3%, arthritis from *Brucella melitensis* at 2.7%, other causes 10.5%.

Conclusions: Very few children without systematic symptoms and no objective findings of arthritis have something severe. However, attention and further investigation is needed at some cases because more serious diseases may be hidden (like arthritis from *Brucella melitensis*).

PP122

MEDICINES FOR CHILDREN ADRS: FROM SPONTANEOUS REPORTING TO ACTIVE SURVEILLANCE

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Introduction–Purpose: Pre-marketing trials cannot define the safety profile of drugs sufficiently. It follows that the spontaneous reporting and active surveillance of suspected ADRs become an important means to promote reasoned warning signs for regulatory agency.

Materials and Methods: Family Paediatricians (FP)-ADRs-Case Reports mainly involving vaccines followed by antibiotics, antipyretics, certain nasal products for colds and some gastrointestinal drugs.

Epidemiological FP post-marketing Clinical studies give estimates of the risk of ADRs much more reliable than those resulting from spontaneous reports.

The primary objective of FP- Antibiotics Tolerability Profile Study (FP-ATPS) was to assess in patients with pharyngotonsillitis (FT) and rhinosinusitis (RS) the tolerability profile of Cefaclor and Amoxicillin + Clavulanic acid after the days of administration.

A different, more proactive, approach is needed to use of disease databases (Dumbo Otitis and Asthma FP studies) and a long-term follow up (LTFU) treatment registries (ADHD Register, Rare Disease Register).

Another FP-LTFU is Influenza A (H1N1) Survey including possible ADRs after its treatment and after healthy children vaccination.

Results: After ADRs-reports, FP (AIFA-PWG) contributed to regulatory activities with a critical revision of the benefit/risk profile of some relevant paediatric drugs (e.g. sympathomimetic nasal decongestants banned below 12aa, metocloparamide prohibited below 16aa, recommendations on tropicamide and phenylephrine, domperidone and oxatomide).

Post-marketing clinical studies give estimates of the risk of ADRs much more reliable than those resulting from spontaneous reporting. In FP-ATPS were enrolled 537 children (4–14 years), including 435 FT-diagnosed and 102 RS-diagnosed. Minor adverse reactions, mainly gastrointestinal plead for a better Cefaclor tolerability ($P = 0.002$). FP-Dumbo Otitis Study, FP-Asthma Study, Treatment Registries and FP-Influenza A (H1N1)-Survey are ongoing.

Conclusions: Having a proactive approach means to organize FP to anticipate the possible identification of the problems of safety reducing the risks to the community.

PP123

OCCURRENCE OF MYCOTOXINS IN INFANT FORMULA MILKS IN ITALY

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Introduction: After birth, infant formulas constitute an important or often sole food source for infants during the first life months. Aflatoxin (AFM1), ochratoxin (OTA) and zearalenone (ZEA) are mycotoxins produced by several fungi that can be found in different commodities including cow's milk. AFM1 level in milk and in milk products is established (<0.025 mg/kg) by the European Union while, no regulation exists for OTA and ZEA in milk.

Purpose: A survey on the presence of AFM1, OTA and ZEA metabolites in infant formulas marketed in Italy was conducted.

Materials: From 14 commercial brands, we collected 185 samples of milk-based formulas: 17 and 20 powders and ready-to-use preparations, respectively.

Methods: Mycotoxins were HPLC-determined with fluorescence detection.

Results: AFM1 was found in two of 185 samples, but at levels below the European legislation limit of 25 ng/l. OTA was detected in 133 (72%) samples (range 35.1–689.5 ng/l). 5% of infant formula milks were contaminated by ZEA, while 20% and 28% by α-zearalenol (αZOL) and β-zearalenol (βZOL), respectively. In infant formulas, βZOL levels (6760 ± 14170 ng/l) were higher than those of ZEA (20 ± 110 ng/l) and of αZOL (350 ± 1580 ng/l). A preterm ready-to-use milk was the most contaminated by ZEA (470 ng/l), αZOL (600 ng/l) and βZOL (276 ng/l).

Conclusions: Our findings indicate significant OTA and ZEA presence in the infant cow's milk-based formulas and therefore, they point out the need to perform occurrence surveys in this area. Analysis of infant cow's milk-based formulas hence may serve as a marker of exposure to mycotoxins. At the same time, mycotoxins levels in milk indicate the exposure of newborn infants, which needs to be considered in the overall risk characterization. The children food quality is extremely important for health development and lifelong repercussions in the next generations.

PP124

THE MACHINE THAT GOES 'BEEP' USING A METAL DETECTOR IN THE PAEDIATRIC EMERGENCY DEPARTMENT

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Introduction: Every week in emergency departments (ED) we see children who have ingested metallic foreign bodies (MFB). To safely diagnose and manage these children we rely on history and the use of x-rays. X-rays can be time consuming and a source of parental anxiety. The purpose of the chest x-ray is to ensure that the MFB has safely passed the gastro-oesophageal junction into the stomach.

Purpose: Using published guidelines and a hand held metal detector, we hoped to shorten the time that children who ingest a MFB spend in our department and reduce radiographic test requests.

Method: A prospective study was performed and data was collected on patients in whom MFB ingestion was suspected, Guidelines on the use of the Handheld Metal Detector (HMD) were drawn up based on those published by Ramlakhan et al [(1)] Comparison was made with children who met the criteria for the study in previous years. We noted time spent in our department, number of x-rays and evaluated the economic cost of these x-rays.

Results: The hand held metal detector was introduced to the department on the 11th July 2008. Data was collected prospectively for 13 weeks, until the 10th of October 2008. In this study period there were 20 patients who fitted the study criteria (75% ingested a coin). The metal detector was used in 17 of the 20 cases and radiography was avoided in 50% of cases. The time spent in the department for this group of patients was reduced.

Conclusion: By introducing a Hand held Metal detector (cost less than €80) we reduced x-ray requests and waiting time for patients who had ingested a MFB. This was a more cost effective and patient friendly approach.

THEME: SURGERY – TRANSPLANTATION

PP125

BLEEDING FOLLOWING TONSILLECTOMY IN CHILDREN

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Introduction: Bleeding is a common complication following tonsillectomy in otorhinolaringology in children.

Purpose: To determine cause, incidence, intensity, time and degree of bleeding following surgical tonsillectomy.

Method and material: The prospective study covers 1,132 tonsillectomized patients in the period from 2005 to 2008. The patients were average growth from 7.49 ± 2.68 (5–16 years). Bleeding, according, to intensity, was classified according to Windfuhr and Seehafer (2001) in V degrees: I degree bleeding (spontaneous ceasing), II degree (infiltration anesthesia), II degree (hemostasis in general anesthesia), IV degree (ligature a.carotis externa), and V degree bleeding (fatal outcome). According to time when bleeding appears, it can be primary (≤24 h) and secondary (≥ 24 h). Surgical tonsillectomy was performed in conditions of general endotrcheal anesthesia by standard cold dissection technique. Statistical analysis was performed with the *SPSS 10.0* for Windows (SPSS Corporation, Chicago, IL). The values for the observed variables are presented as arithmetic means and standard deviations. The data were analyzed with Chi square test (χ^2). Significance levels were 95%.

Results: We observed statistically significant differences between patients with and without bleeding following tonsillectomy ($\chi^2 = 937.191; df = 1; P < 0.01$). The incidence of hemorrhage following tonsillectomy was 4.50%. Differences in bleeding according to sex was statistically insignificant ($P > 0{,}05$). In 86.35% of the cases, the cause of the bleeding was the tonsil's rest. Primary bleeding was more frequwnt than secondary, the difference in frequency statistically proved to be very significant ($\chi^2 = 10.373; df = 1; P < 0.01$). The intensity of hemorrhage ranged between I and IV degree: 34 patients had first degree bleeding, 11 patients had second degree, five patients had third degree, one patient had fourth degree, and there was no five degree bleeding. First degree intensity bleeding was the most common ($\chi^2 = 29.647$; df = 2; $P < 0.01$).

Conclusion: Bleeding was usually primary during the first 24 hours; intensity was up to the IV degree, which was promptly and effectively treated.

PP126

WHICH INFLAMMATORY MARKER HAS A BETTER DIAGNOSTIC VALUE IN VERY OBESE CHILDREN WITH APPENDICITIS – WHITE BLOOD CELL COUNT, SERUM C-REACTIVE PROTEIN OR LEUCOCYTE COUNT?

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Introduction: The diagnosis of acute appendicitis by physical examination can sometimes be difficult in extremely obese children. Inflammatory blood markers (including C-Reactive Protein (CRP), white blood count cell (WCC) and leucocyte count) are commonly used to support the clinical diagnosis of appendicitis. However, obesity has been widely recognised as a chronic inflammatory condition and associated with elevated inflammatory indicators.

Purpose: The aim of this study was to analyze the association between obesity and the diagnostic accuracy of CRP, WCC and leucocyte count in very obese children presenting with suspected appendicitis.

Materials: The hospital records of 947 consecutive patients, who underwent appendectomy for acute appendicitis between 2002 and 2008 were retrospectively analysed. 164 children (17.3%) were extremely obese. Extreme obesity was defined, as greater than 2 standard deviations above the standardized mean weight for age. Eighty-five (10.8%) of the 783 non-obese children were found to have a histologically normal appendix, and 42 (25.6%) of the 164 very obese children had normal appendix.

Methods: To assess the accuracy of CRP, WCC and leucocyte count, receiver operating characteristic curves (ROC) were used. The areas under curve (AUC) were compared in non-obese and very obese children using the maximum likelihood estimation method.

Results: Table represents AUC of CRP, WCC and leucocyte count in non-obese and very obese children group with appendicitis. Between CRP, WCC and leucocyte count, there were not significant differences in diagnostic value in non-obese children. In very obese children, WCC and leucocyte count had significantly better diagnostic value than CRP. Between non-obese and very obese patients, there were significant differences in CRP diagnostic value. There were no significant differences between WCC and leucocyte count in non-obese and very obese children group.

Table. AUC of inflammatory markers in non-obese and very obese children with appendicitis

	AUC of constructed ROC		
	CRP	**WCC**	**Leucocyte count**
Non-obese n = 783	0.842#	0.852	0.860
Very Obese n = 164	0.722	0.851*	0.852*

*CRP versus WCC and Leukocyte count in very obese children ($P < 0.05$).
#CRP in non-obese children versus CRP in very obese children ($P < 0.05$)

Conclusion: WCC and leucocyte count are a better diagnostic marker of inflammation in extremely obese children presenting with suspected appendicitis than CRP.

PP127

SYNDACTYLY IN AMNIOTIC BAND SYNDROME

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Introduction: Amniotic band syndrome (ABS) is a set of congenital malformations that occurs in approximately 1:1200 to 1:15000 live births. Early rupture of amnion is probably the cause of these birth defects which can range from mild to severe including syndactyly, cleft lip and palate, cranial abnormalities, congenital amputations or even embryonic death. Syndactyly interferes with normal hand function and requires surgical intervention. This can be scheduled from the age of 5 months. Early release is mandatory to prevent malrotation and angulation between the involved fingers and their different growth rates and most authors suggest that for better results syndactyly must be released before the first 18 months of life. Prolonged syndactyly is the cause of permanent deformities.

Purpose: The comparison of treatment strategies for minor deformities, such as syndactyly, along with their psychological and social cost.

Case reports: Two children with syndactyly, as a result of ABS, were examined at the emergency department with symptoms not connected to the syndrome.

A 12-month-old infant from Denmark, on a vacation in Greece, with both fingers having syndactyly (Figures 1, 2). One hand had already been repaired at the age of 6 months. The fingers on the other hand are scheduled for release before the child is 18 months old.

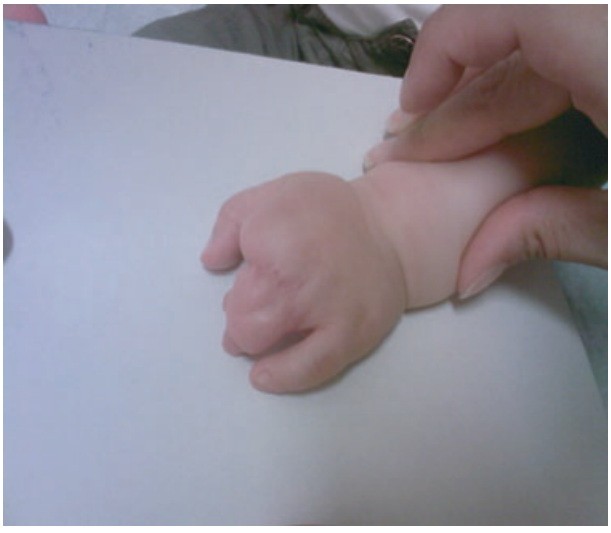

Figure 1. A 12-month-old infant from Denmark, on a vacation in Greece, with both fingers having syndactyly.

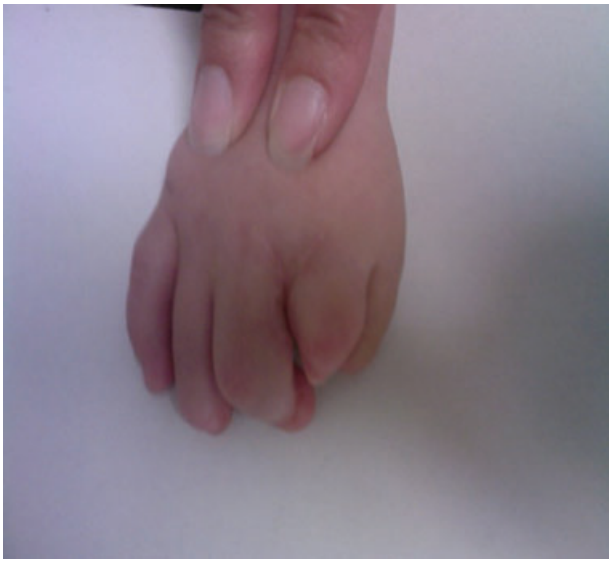

Figure 2. A 12-month-old infant from Denmark, on a vacation in Greece, with both fingers having syndactyly.

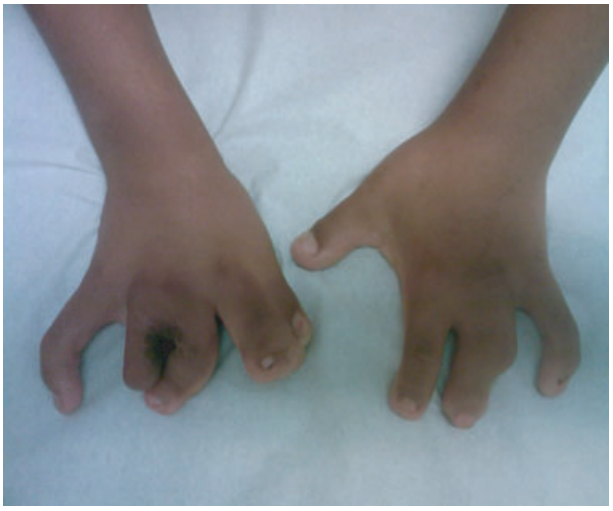

Figure 3. A 6-year-old Greek girl with fingers syndactyly.

The second case was a 6-year-old Greek girl with fingers (Figure 3) and toes (Figure 4) syndactyly. The first set of surgical interventions were done by the age of 3. However, the important border digit acrosyndactyly is yet to be planned.

Conclusions: Syndactyly is a rather frequent complication of ABS.

In the case of the 6-year-old Greek girl refusal to attend school due to being isolated by children of her age and banned from playing with them, was reported.

Psychological consultations began a year ago, but with poor results.

However the reason for the delay in scheduling the surgical procedures is unknown.

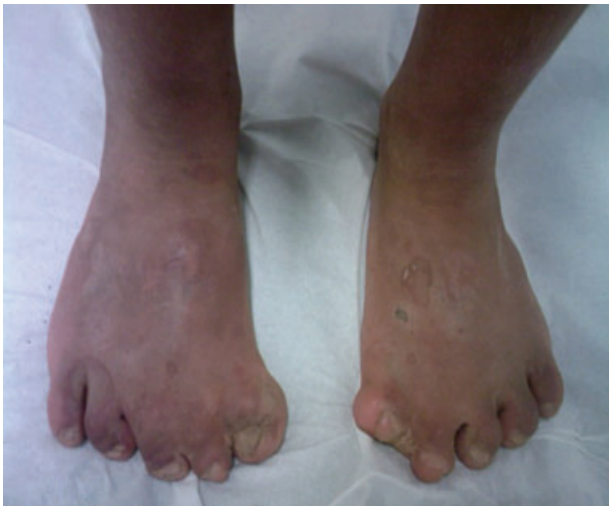

Figure 4. A 6-year-old Greek girl with toes syndactyly.

PP128

THE USE OF BIOBRANE™ IN THE PAEDIATRIC BURNED PATIENTS

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Introduction: Burns are a very common event in the paediatric age group and in many cases surgery is required. Early surgical approach and the use of skin substitutes such as *Biobrane*™* as temporary dermal covers represent effective tools for the treatment of these patients.

Purpose: This paper describes a *Biobrane*™ protocol used in our Unit, illustrated by a report of some cases.

Material and methods: According to our protocol, children with partial thickness burns are taken to the OR within 24–48 hours after the accident for dermabrasion. The debrided areas are then covered with *Biobrane*™ which is kept in place with a secondary dressing. *Biobrane*™ is a temporary biosynthetic, conformable wound cover constructed of a silicone film bonded to a three-dimensional cross-linked nylon fabric, coated with porcine collagen peptides. In the post-op period, dressings are moistened daily with a Nitrofurazone solution and are inspected on the third day after surgical procedure. On the basis of a schedule, a hydrotherapy session is performed and *Biobrane*™ is gently removed. This appears to be an almost painless manoeuvre. As soon as possible, tangential necrectomy and skin grafting are then performed on the areas not yet completely healed.

Results: According to our experience, *Biobrane*™ is beneficial in reducing pain and provides a good adherent wound cover, thus allowing the area to re-epithelialise while protected.

Conclusions: *Biobrane*™ has a definite role in the management of children with burns, skin loss, soft tissue injuries, and in complex cases such as Lyell's syndrome. In our experience, it appears to be an extremely effective and safe temporary dermal cover.

SPEAKER ABSTRACTS

THEME: ADOLESCENCE MEDICINE

INTERACTIVE CASE STUDY: MENTAL HEALTH ISSUES IN ADOLESCENCE

MANAGEMENT OF DEPRESSIVE DISORDER IN ADOLESCENCE

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Depressive Disorders are common in adolescence, with a prevalence of 3–8% at this time. The core symptoms are similar to those of depression in adulthood, namely pervasive sadness, low energy, loss of interest. A range of other associated features such as sleep and appetite disturbance, poor concentration, feelings of low self-worth and hopelessness and suicidal thoughts can also occur. Symptoms can fluctuate over a short period of time, and comorbidity with other psychiatric and psychosocial difficulties is common. The management of depressive disorder has proved controversial with significant changes in recent years, particularly following controversies over the release of unpublished trial evidence regarding the use of antidepressant medication. Recent large scale trials have moved the field forward, but there remain significant uncertainties regarding the optimal treatment for which different groups of adolescents. The uncertainties include: which psychological treatments to use, and when to use antidepressant medication? The presentation will include discussion of a clinical case to illustrate some of these challenges in treatment.

PLENARY LECTURE: TRANSITION INTO ADULT CARE INCLUDING ADHERENCE TO TREATMENT

TRANSITION INTO ADULT CARE INCLUDING ADHERENCE TO TREATMENT

R Fine

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Transitioning from a Pediatric to an adult caregiver for children who require ongoing medical care from either a congenital, hereditary or acquired medical condition is a potentially traumatic experience that can lead to catastrophic clinical consequences. With significant advances in therapy many medical conditions that previously led to death in childhood are now having the lives of such children prolonged to adulthood precipitating the need to develop adequate strategies for smooth transitioning of care from the Pediatric to the Adult caregiver. Utilizing solid organ transplantation in children as a paradigm, this presentation will address the following questions: What is the definition of transition? What is the aim of transition? What are the potential models of transition from pediatric to adult care? What are the barriers to successful transition from pediatric to adult care? Does transitioning to adult care have an adverse impact on the course of the disease (graft function)? What are the potential risk factors for non-adherence in adolescents/young adults transitioning to adult care? Does non-adherence increase in older adolescents/young adults following transitioning to adult care? At what age should discussion regarding the need for transition be initiated? What are the challenges for transitioning a cognitively delayed adolescent recipient? Transitioning to adult care is challenging for the patient, parent/guardian, pediatric caregivers and adult caregivers. It is imperative that a plan agreed upon by all involved be in place so that a smooth transition occur over a period of time that is embraced by the patient, parent/guardian and all current and future caregivers.

WORKSHOP: USE AND ABUSE OF THE INTERNET BY ADOLESCENTS

USE AND ABUSE OF THE INTERNET BY ADOLESCENTS

D E Greydanus, M M Greydanus

Michigan State University, East Lansing, Michigan, USA

Widespread internet utilization has rapidly revolutionized access to knowledge and means of communication and this has stimulated research in both positive and negative aspects of this expanding contemporary technology. Modern internet use includes various forms of resources and social networking such as e-mail, instant messages, chat rooms, Facebook, MySpace, twitter, sexting, blogging, gaming, others. This WORKSHOP considers current adolescent internet use and abuse in order to help clinicians understand potential negative consequences of internet abuse which can include addiction to or dependence on this technology to the detriment of other aspects of the youth's life, being victims of sexual abuse by others, stalking by the teens themselves, bullying activity, online gambling, and access to pornographic sites. Early 21st century youth have grown up with the computer and are very savvy regarding its use for socialization, playing computer video games, and internet gambling. The internet is affordable, convenient, and may be anonymous–all of which can encourage excessive use by adolescents. Resources as *Second Life* or *World of War Craft* allow youth to live lives in fantasy worlds. Internet addiction and abuse may involve 20% of the world's youth with potential consequences such as depression, anxiety, social phobia, increased irritability and hostility, academic dysfunction,

loss of sleep, deteriorating family and peer relationships, and gambling-induced debt accumulation. Though some attempts have been made in the United States and other countries to limit online wagering, internet gambling has exploded worldwide especially due to the easy access to the internet and societal acceptance of gaming. Online gambling among US college students is reported as high as 10%. Strategies for prevention and management of internet abuse by adolescents are presented in this workshop.

THEME: ALLERGY – IMMUNOLOGY – PULMOLOGY

MEET THE EXPERTS: INVESTIGATION AND MANAGEMENT OF FOOD ALLERGY

INVESTIGATION AND MANAGEMENT OF FOOD ALLERGY

P Eigenmann

Geneva University Hospitals, Geneva, Switzerland

Food allergic diseases are diagnosed in up to 8% of children. They can be distinguished into IgE-mediated and non IgE-mediated, i.e. mostly gastrointestinal allergic diseases. The diagnosis is predominantly based on the history of the reaction as well as on skin prick test and specific IgE determination in the serum for IgE-mediated disease. Test results should always be correlated to the clinic, in order to avoid unnecessary elimination diets. Food challenges represent, in some patients, the "*Gold standard*" necessary for a correct diagnosis of food allergy. Current management of food allergy is based on an avoidance diet. However, several studies show a promising future for either oral tolerance induction, or possible immunotherapy in selected children.

INTERACTIVE CASE STUDY: INDICATION FOR SLEEP STUDIES IN CHILDREN

INDICATIONS FOR SLEEP STUDIES IN CHILDREN

R Ersu

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Obstructive sleep apnea syndrome (OSAS) in children is a disorder of breathing during sleep characterized by prolonged partial upper airway obstruction and/or intermittent complete obstruction that disrupts normal ventilation during sleep and normal sleep patterns. Snoring is common in childhood with reported prevalence between 3.2% and 12.1%. Prevalence of OSAS ranges from 0.7% to 10.3%. Epidemiological studies identified substantial morbidities associated with OSAS in children that primarily affect cardiovascular and neurobehavioral systems and growth. Recognition of the signs, symptoms, and complications of OSAS in children is an essential role for the primary care provider. In this talk, methods for diagnosing OSAS and indications for sleep studies in children will be discussed.

Questionnaires: Studies showed that clinical evaluation had high sensitivity and lower specificity and questionnaires cannot be used to diagnose or exclude OSAS.

Audiotaping and Videotaping:The use of home audiotaping and videotaping has been inadequately investigated.

Pulse Oximetry Home Polysomnography and Nap Polysomnography: More studies are needed to evaluate the usefulness of these tests but there is a suggestion that they could provide an accurate screening for OSAS.

Polysomnography: Polysomnography involves the recording and assessment of both sleep and respiration. These measurements are undertaken simultaneously in a sleep laboratory with the continuous observation of a trained sleep technologist. Polysomnography is the gold standard in diagnosis of OSAS. In addition to establishing the diagnosis of OSAS, it may be used to determine its severity. The severity of OSAS is an important predictor of complications in the immediate postoperative period.

WORKSHOP: LONG TERM MANAGEMENT OF CHILDREN WITH CHRONIC LUNG DISEASE (CLD)

CHRONIC LUNG DISEASE OF PREMATURITY: LONG-TERM RESPIRATORY OUTCOME

E Baraldi

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Bronchopulmonary dysplasia (BPD) is a chronic respiratory disease that develops as a consequence of perinatal/neonatal lung injury, and it is one of the most important sequelae of premature birth. The diagnosis of BPD is currently based on the need for supplemental oxygen for at least 28 days after birth, and its severity is graded according to the respiratory support required at 36 postmenstrual weeks. Bronchopulmonary dysplasia almost always occurs in neonates who are delivered at a gestational age of less than 30 weeks and who have a birth weight of less than 1500 g. These are about 1.5% of all newborns and BPD develops in about 20% of them. The "new BPD" is mainly a developmental disorder in which the immature lung fails to reach its full structural complexity. Longitudinal studies on children with BPD identified, at all ages, increased rates of chronic coughing and wheezing, a greater need to use inhaled asthma medication and a significant airflow obstruction. Children who have survived BPD and children with asthma share some clinical and functional characteristics, but available evidence suggests that the two obstructive lung diseases do not have the same underlying airway inflammation. Spirometric values reflecting airflow, such as FEV_1, are consistently lower in survivors of BPD into adolescence and young adulthood than in controls born at term. Whether survivors of BPD and prematurity have a risk of developing a COPD-like phenotype with aging is a question that only lung function studies extended to middle-age and beyond will answer.

References:
Jobe AH, Bancalari E. Bronchopulmonary dysplasia. AJRCCM 2001;163:1723–1729.
Baraldi E, Filippone M. Chronic lung disease after premature birth. NEJM 2007;357:1946–1955.

PLENARY LECTURE: THE SCIENCE OF INHALED MEDICATION

DELIVERY OF DRUG AEROSOLS TO CHILDREN

C O'Callaghan

Division of Child Health, Institute of Lung Health, Department of Infection, Immunity and Inflammation, University of Leicester, Leicester, UK

It is essential to choose the correct drug and the most suitable aerosol drug delivery device. With drugs such as beta 2 agonists the margin of safety is wide. In the case of inhaled steroids the risk of side effects are greater and it is of concern that depending on the drug delivery device chosen the dose the child inhales may vary by a factor of four or more despite the same nominal dose of drug being prescribed. Knowledge of drug delivery is likely to be even more important with the development of therapies such as gene therapy for cystic fibrosis and for inhaled insulin where the lungs are used as a systemic portal. With regards to asthma therapy there is now increasing agreement with regards to the most appropriate delivery devices and these will be discussed. It is important that the prescriber has: Information on the dose of drug a child is likely to inhale from each spacer device and drug combination. This is the ex-spacer dose and must take into account the breathing pattern of the child. The effect of using different face masks should also be available. The effect of drug dose variation during prolonged routine use must be available. For example with spacer devices, as static charge varies so will the drug output. This variation may be by as much as five fold. The effect of washing regimens during prolonged use on drug output must also be defined. The effect of various nebuliser designs on the delivery of drug solutions and steroid suspensions should be assessed for every drug nebuliser combination. Taking into account breathing pattern in addition to drug aerosol characteristics. Such information is essential to help evaluate clinical response, potential side effects and the results of clinical trials.

PARALLEL LECTURE: ROLE OF DIAGNOSTIC SKIN TESTING AND DESENSITISATION AS A THERAPEUTIC MODALITY IN CHILDHOOD ALLERGIC DISEASES

ROLE OF DIAGNOSTIC SKIN TESTING AND DESENSITIZATION AS A THERAPEUTIC MODALITY IN CHILDHOOD ALLERGIC DISEASES

P Eigenmann

Geneva University Hospitals, Geneva, Switzerland

Allergic diseases are one of the most common chronic diseases in childhood in Westernized countries. Proper diagnostic testing is essential in identifying children with allergic diseases. Test results related to the history of disease will then allow an optimal care including desensitization. Prick skin tests are commonly applied for diagnosis of IgE-mediated disease and can be done in children of all age. The choice of allergen tested is dictated by the history of the child, as well as epidemiological data and the prevalence of allergen in a specific region. Skin tests should be done by a well-trained and experienced person who has an ongoing practice of this otherwise easy-to-perform procedure. The principal of desensitization is initiation of tolerance to a common allergen (mostly respiratory or hymenoptera venom allergen) in allergic patients. Various protocols can be applied but should be envisaged according to results from well-designed and controlled studies.

ROUND TABLE: ADVANCES IN THE MANAGEMENT OF CHILD WITH ASTHMA

DIFFICULT TO CONTROL ASTHMA

J Henderson

University of Bristol & Bristol Royal Hospital for Children, Bristol, UK

Aim: The aim of this session is to give delegates an overview of a stepwise approach to the diagnosis, investigation and therapeutic options in children presenting with poorly controlled asthma. By the end of the session, the delegate should be able to devise a systematic and stepwise approach to managing the majority of these children, including whom and when to refer for specialist investigation and management.

Content: The primary goals of asthma management are control of symptoms and prevention of exacerbations. In the majority of children, this can be achieved by a stepwise approach to pharmacological intervention. Difficult-to-control asthma has been defined as the persistence of symptoms despite the equivalent of budesonide ≥800 μg per day. In such cases in children, the reasons for poor control can be multifactorial and a systematic approach to management is required. This presentation will consider the factors associated with difficult-to-control asthma in a stepwise approach (5 'A's – see Table), including illustrative case-based discussions. A minority of children presenting with difficult-to-control asthma will have asthma that is resistant to treatment with high-dose inhaled corticosteroids (ICS) and add-on treatments, such as long-acting beta-agonists (LABA) and leukotriene-receptor antagonists (LTRA). The role of investigations to define the inflammatory phenotype in determining approaches to treatment will be considered in principle and guidance on when and whom to refer for further investigation will be given. Treatment options include manipulation of conventional approaches, such as the use of combination therapy with ICS/LABA for maintenance and treatment, additional add-on therapies, including macrolides, ipratropium and anti-IgE monoclonal antibody, and systemic

corticosteroids. In children who rely on systemic corticosteroids to control their asthma, the use of steroid-sparing agents should be considered, which may include alternative immunosuppressants, such as ciclosporin in selected cases.

Table 1. Factors associated with difficult-to-control asthma in children.

1	Adherence to treatment
2	Appropriateness of treatment & delivery (devices, etc.)
3	Alternative diagnosis (is it Asthma?)
4	Additional factors (environment, psychology, co-morbidities)
5	Asthma that is resistant to treatment

MEET THE EXPERTS: BRONCHIOLITIS

BRONCHIOLITIS

P Openshaw

Imperial College, London, UK

Viral bronchiolitis is the single commonest cause of hospitalisation of infants in the western world, but its treatment has not changed significantly for 50 years. Most cases are caused by respiratory syncytial virus (RSV), for which there are no vaccines or antiviral drugs. The global morbidity from bronchiolitis is enormous. Hospital admission rates in the USA and Europe are consistently around 30 per 1000 for children younger than one year, generally November, December and January. These infants may become extremely sick requiring supplemental oxygen. Around 3% require intensive care treatment and ventilation. Prevention of RSV infection and its consequences is possible in identified high risk groups by injections of a humanised monoclonal antibody (palivizumab or Synagis), but this is not an economically viable option in most cases. The preferred option of vaccination is complicated and challenging. In the 1960s, clinical vaccine studies were halted abruptly because infants vaccinated with the formalin inactivated RSV developed severe lower respiratory tract disease with significant mortality and the field is still moving slowly towards effective vaccines. Many promising antiviral drugs are in development, but these would have to be given at a very early stage of infection before it is clear that the baby is going to get bronchiolitis. The study RSV bronchiolitis has been hampered by the difficulty of conducting detailed clinical studies in very small infants during their acute respiratory illness. In the last 10 years, studies based largely on bronchoalveolar lavage from infants who are ventilated have led to important insights into the immunopathogenesis. It seems that there is a critical role for airway neutrophils which, for example, produce the Type 2 cytokine IL-9. These and similar immunological insights are now opening up the possibility of new therapeutic targets and specific therapies that modify the immunopathological responses.

PLENARY LECTURE: IMPACT OF PASSIVE SMOKING ON RESPIRATORY DYSFUNCTION IN CHILDREN

IT SHOULD BE ILLEGAL TO SMOKE IN CARS WHEN CHILDREN ARE IN THE VEHICLE

T Stephenson

Royal College of Paediatrics and Child Health, London, UK

Recent research published by the Ontario Tobacco Research Unit showed that with drivers smoking just one cigarette, the pollution created inside a car was 100 times greater than the U.S. Environmental Protection Agency accepted standard for fine particle exposure. New Brunswick is the latest province in Canada to introduce legislation banning smoking in cars with children. This change in legislation will prohibit smoking in a car when there is a child under the age of 16 in the vehicle. Passive smoking has been linked to chest infections in children, asthma, ear disease and sudden infant death syndrome. We should be making cars totally smoke free if there are children travelling in them. California, South Australia and Cyprus have introduced such legislation successfully. This would be legislation on behalf of children and we would quickly realise the benefits as with other extremely successful motoring interventions – wearing seat belts, not using mobile phones and not driving under the influence of alcohol. Looking at our attitudes and behaviour around smoking, we should always consider the health issues related to our actions, the example we are setting and the consequences that our behaviour may have on our children throughout their adult lives. Smoking at work was seen as normal a few year ago and is now viewed throughout the EU as incredibly intrusive, not the norm. Many changes designed to make life safer – seat belts in cars, health warnings on cigarette packets – were initially met with scepticism or even derision when they were first proposed. Those of us in the medical profession, who see the results of passive smoking or of violence to children first hand, need to be ready to lead and make a convincing case.

PLENARY LECTURE: HOW DO YOU DIFFERENTIATE A CHILD WITH ASTHMA VS. REACTIVE AIRWAY DISEASE

HOW DO YOU DIFFERENTIATE A CHILD WITH ASTHMA VERSUS REACTIVE DISEASE

M Gappa

Children's Hospital & Research Institute for the Prevention of Allergies and Respiratory Diseases in Children Marien Hospital Wesel GmbH, Germany

Wheezing disorders affect almost 50% of children before school-age, most commonly in association with a respiratory tract infection. Not all that wheezes is asthma – and what has been taken as facts has been questioned by recent

data. Our understanding for this hotch-potch of disorders has been greatly advanced by a number of excellent cohort studies, yet there is poor agreement on definitions of different phenotypes of preschool wheezing disorders. A Task Force of the European Respiratory Society has recently published a consensus report discussing ''Definition, assessment and treatment of wheezing disorders in preschool children: an evidence-based approach (Brand, PLP et al, Eur Respir J 2008). In this report it is recommended to describe preschool wheeze according to the temporal pattern of wheeze rather than using the epidemiological terms (''early transient'', ''early persistent'' and ''late persistent wheeze'') which can only be identified retrospectively. It is recommended to use the term ''episodic wheeze'' for children who wheeze intermittently and are well between episodes, and multiple-trigger wheeze for children who wheeze both during and outside discrete episodes. Several scoring systems have been proposed to assess prognosis. Investigations are only needed when in doubt about the diagnosis. Based on the limited evidence available, symptoms may be treated with inhaled short-acting *b*2-agonists by metered-dose inhaler/spacer combination. Large multi-center trials have questioned the effect of using inhaled corticosteroids in unselected wheezing young children. The approach suggested by the task force helps clinicians to identify children who may benefit from such treatment. Maintenance treatment with (low-dose) inhaled corticosteroids is recommended as first line treatment for multiple-trigger wheeze; in episodic wheeze where children usually are at low risk for developing allergic asthma, Montelukast is recommended as first line treatment.

Key Notes: An ERS Task Force has recently published a consensus statement regarding evidence based diagnosis and treatment of preschool wheeze. This session will provide an overview based on recent data. At the end of the session the participants will be able to describe phenotypes and make treatment decisions based on available evidence.

ROUND TABLE: ADVANCES IN THE MANAGEMENT OF CHILD WITH ASTHMA

WHEEZING DISORDERS IN PRESCHOOL CHILDREN

E Baraldi, S Bozzetto

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Population studies have shown that approximately one in three children has at least one episode of wheezing prior to their third birthday. Most wheeze in preschool children is associated with viral upper respiratory tract infections. As a result, recurrent wheeze is a very common clinical problem facing practitioners throughout the world. Despite its high prevalence, there is a lack of evidence regarding the pathophysiology and treatment of preschool wheeze. A recent document of the European Respiratory Society (1) proposes to use the terms episodic (viral) wheeze to describe children who wheeze intermittently and are well between episodes, and multiple-trigger wheeze for children who wheeze both during and outside discrete episodes. There is a large overlap in these phenotypes, and patients can move from one phenotype to another in few months. In the assessment of these children history is the main diagnostic instrument to investigate the pattern and triggers of wheeze. Tests of allergic sensitisation (prick test or antigen-specific IgE antibody) should be performed because an early sensitisation may increase the likelihood of the presence of asthma at the age of 6 years. Rapid-acting inhaled beta2-agonists are the most effective bronchodilators available and are the drugs of choice for acute symptoms of wheezing. Maintenance treatment with inhaled corticosteroids is recommended for multiple-trigger wheeze and leukotriene modifiers are recommended for the treatment of episodic (viral) wheeze and can be started when symptoms of a viral cold develop. These treatments should be discontinued if there is no clear clinical benefit and further investigations should be carried out.

Reference:

(1) ERS Task Force. Definition, assessment and treatment of wheezing disorders in preschool children: an evidence-based approach. Brand P *et al*. *Eur Respir J* 2008; 32: 1096–1110.

ROUND TABLE: ADVANCES IN THE MANAGEMENT OF CHILD WITH ASTHMA

PHENOTYPES OF ASTHMA IN SCHOOL AGE CHILDREN

R Ersu

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Asthma is characterised clinically by combinations of cough, wheeze and breathlessness. The underlying pathology includes bronchial hyperreactivity, airway inflammation and alterations in underlying baseline airway calibre or compliance. Asthma can be phenotyped based on clinical patterns such as age at onset, severity, atopy, etiology, exacerbation-prone, cough-variant, obesity, trigger-defined phenotypes and difficult asthma. Type of inflammatory cells in the airways (neutrophilic, eosinophilic, mixed inflammatory, paucigranulocytic asthma) can also be used for phenotyping. The best prophylactic treatment for children with moderate asthma is an inhaled corticosteroid. When a moderate dose fails, the options include (1) increase in the dose of inhaled steroids; (2) addition of a long-acting b-2 agonist; (3) addition of a leukotriene receptor antagonist; (4) addition of a theophylline for its anti-inflammatory effect. A phenotype-specific approach for the individual may be helpful. For example, the child with marked bronchial lability but no evidence of ongoing inflammation might

benefit from addition of a long-acting b-2 agonist, whereas if inflammation is not controlled, then a leukotriene antagonist or more inhaled steroid may be beneficial. If neutrophils predominate, then perhaps theophyllines might be considered because of their effect in accelerating neutrophil apoptosis; azithromycin for its effect in reducing interleukin-8 release; and a cautious reduction in steroid therapy, because of the effect of steroids in delaying neutrophil apoptosis. In conclusion, asthma is not one disease but many, and attention to delineating clinical phenotypes may allow rational individual treatment.

THEME: CARDIOLOGY

WORKSHOP: MURMURS AND SYNCOPE AND CHEST PAIN

MURMUR, SYNCOPE AND CHEST PAIN IN PEDIATRIC PATIENTS

D Moodie

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Murmurs, Chest Pain, and Syncope are three of the most common cardiac consultations requested. Four diagnosis's account for approximately 90% of all mummer evaluations.

Innocent Murmurs, Pulmonary Branch Stenosis, Patent Ductus Arterious, Ventricular Septial Defect.

Chest pain and syncope account for anywhere between 10% and 25% of pediatric cardiac consultations. It is critically important for General Pediatricians to have comfort with the diagonics and evaluation of Innocent Murmurs. Innocent Murmurs are most commonly Pulmonary Flow Murmurs localized at the left mid left upper sternal border. They are most frequently grade 2 or less. The murmur varies with the respiration, position or for no obvious reason. Innocent Murmurs are most commonly heard in children between the ages of 3 and 15 and may occur as frequently as 65% of all healthy children. Conditions which increase the appearance of Innocent Murmurs are young children, tachycardia, fever, anemia, and unusual chest configuration such as pectus excavatum or physiologic conditions such as pregnancy. Innocent Murmurs should be diagnosed proactively and need to be differentiated from congenital heart defects such as Atrial and Ventricular Septal Defects, Aortic and Pulmonary Valve Stenosis and Patent Ductus Arterious. Pediatric chest pain is almost never cardiac in origin. The most common causes are musculo-skeletal, idiopathic, or pulmonary. Cardiac conditions that cause chest pain are extremely rare. The most common causes of syncope in pediatric patients are Vasovagal (50%) and orthostatic (25%). Syncope on a cardiac basis occurs in less than 5% of all patients. Important cardiac causes of syncope are complete heart block, Long QT Syndrome, and WPW Syndrome. Syncope with exercise is extremely important to evaluate particularly in athletes. Innocent Murmur's, chest pain, and syncope, are common in pediatric patients. General Pediatricians needs to be comfortable in the diagnosis, evaluation, and management of patients with these conditions.

PLENARY LECTURE: PREVENTATIVE CARDIOLOGY (HYPERLIPIDEMIA)

PREVENTIVE CARDIOLOGY: LIPIDS

S Daniels

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Atherosclerotic cardiovascular disease is the most prominent cause of mortality worldwide. The risk factors for the development of atherosclerosis include dyslipidemia, hypertension, diabetes mellitus, cigarette smoking and obesity. While atherosclerotic cardiovascular disease has its clinical outcomes in adulthood, increasingly pathology studies and other types of studies demonstrate that the atherosclerotic process begins in childhood and is progressive throughout life. This offers the opportunity for early primary prevention. All children should receive counseling regarding a healthy diet and appropriate level of physical activity to prevent abnormal weight gain. This should start early in life with counseling to support breast feeding and transition to a healthy diet. In addition, children should aim for 60 min of moderate to vigorous physical activity per day, while limiting television and video games to no more than 2 hours per day. To identify individuals at higher risk, previous guidelines focused on measurement of lipids in children and adolescents who had a family history of premature cardiovascular disease or dyslipidemia or in children with a presence of other risk factors. Recent recommendations are now focused on universal screening for all children between ages 10–12 years. This can be accomplished with a fasting lipid profile or non-fasting non-HDL cholesterol. Once high risk individuals are identified, treatment should be instituted with lifestyle modification. This includes a diet that is rich in fruits, vegetables, whole grain products, poultry, fish, and low fat dairy. Higher saturated fat containing foods such as red meats should be eaten in moderation. For some individuals age 8 years and above who have substantially elevated LDL-C despite lifestyle intervention, pharmacologic intervention may be needed. This may include the use of bile acid sequestrants, statins or cholesterol absorption blocking agents. Appropriate treatment with diet and medication has been demonstrated to slow the atherosclerotic process.

PLENARY LECTURE: HEART FAILURE IN CHILDHOOD – EPIDEMIOLOGY, CAUSES AND NEW THERAPIES

HEART FAILURE IN CHILDHOOD: EPIDEMIOLOGY, CAUSES AND NEW THERAPIES

S Webber

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Heart failure is an important cause of morbidity and mortality in childhood, especially infants. This may be

secondary to congenital or acquired heart disease. This presentation will focus on heart failure secondary to heart muscle disease i.e. cardiomyopathies and myocarditis. Over the last decade, there has been substantial advancement in our understanding and knowledge of the epidemiology, molecular mechanisms, genetic etiologies and outcomes of all forms of cardiomyopathy in childhood. An international consensus panel has revised the WHO classification of cardiomyopathies in a manner that takes into account the rapid growth in our knowledge of the genetic etiologies. Population-based studies from the UK, North America and Australia have carefully delineated the incidence of heart failure and cardiomyopathy in childhood. Predictors of outcome have been evaluated in detail within the North American Pediatric Cardiomyopathy Registry. Advances in medical management have been limited, but there has been rapid advancement in the field of advanced surgical therapies, most notably use of ventricular assist devices (VADs) to support the failing heart. Experience with the use of adult VADs in older children has been very successful and novel devices to support the failing heart of infants and small children are under development. This holds promise for further improvements in outcome whether used as a 'bridge-to-transplantation' or as 'bridge-to-recovery'. Mechanisms that may lead to myocardial recovery are also under active investigation. Results of transplantation for advanced heart failure have also improved, and multi-center prospective studies and registries for pediatric transplantation have taught us much about risk factors for complications and death after listing for transplantation and after transplantation. Future directions for basic research and novel therapies will be discussed.

WORKSHOP: VASCULAR TECHNIQUES – APPLICATION IN PAEDIATRICS

VASCULAR TECHNIQUES: APPLICATION IN PAEDIATRICS

M Charakida

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This workshop will provide an overview of the available non-invasive techniques which can be used in clinical practice for assessment of arterial function and structure. In particular we will highlight key issues important for accurate evaluation of flow mediated dilatation of the brachial artery, intima media thickness of the carotid artery and pulse wave velocity. The role of these methods as prognostic tools for later adverse cardiovascular events will be explored as well as the current knowledge from studies performed in patients at increased cardiovascular risk such children with familial hypercholesterolaemia, diabetes and those with chronic inflammatory conditions. Finally, we will highlight the role of these methods as surrogate markers for the assessment of physiological and pharmacological interventions in clinical practice, relevant to paediatric doctors.

THEME: DERMATOLOGY

PLENARY LECTURE: SKIN CARE AND TOPICAL DERMATOTHERAPY IN NEWBORNS AND CHILDREN

SKIN CARE AND TOPICAL DERMATOTHERAPY IN NEWBORNS AND CHILDREN

U Blume-Peytavi

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Recent years have seen continuing understanding of skin morphology, physiopathology and function of skin in newborns and infants, leading to development of age and skin adapted skin care and topical dermatotherapeutic regimens. Pediatric and dermatologic communities have not yet reached a consensus on what constitutes appropriate skin care practice of newborns and infants, however there is increasing knowledge and advancing evidence-based clinical practice in bathing and cleansing of children, thus improving clinical outcomes. Today it can be assumed that bathing is generally superior to washing in newborns and infants with psychological benefits for the infant and parents. Recent publications have even shown that twice weekly use of baby creams and ointments are helpful for maintaining and improving skin barrier function also in healthy children. Topical dermatotherapy in children must consider age-dependent maturation and functional variation of the skin barrier. Moreover, in newborns and infants the ratio of skin surface and body weight is 2.5–3 times greater compared to adults resulting in higher concentrations of penetrated drugs and molecules after topical application. Thus, consideration of safety and tolerance as well as penetration and absorption aspects are mandatory in developing topical dermatotherapeutic and skin care management in newborns and children.

WORKSHOP: BULLOUS DISORDERS IN CHILDREN

BULLOUS DISEASES IN CHILDHOOD

S Karpati

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Bullous disease in children can be confusing clinically and challenging to manage. A broad classification of inherited and acquired forms of blister formation will be presented and combined with the most recent laboratory examinations used in the diagnostic process and in the management of the diseases. Five groups of autoimmune bullous disease will be discussed with emphasis on unique features in children. Pemphigus (vulgaris, foliaceus, neonatal), pem-

phigoid (bullous and cicatricial), dermatitis herpetiformis, linear IgA dermatosis, and epidermolysis bullosa acquisita are uncommon pediatric disorders. A high index of suspicion is necessary to diagnose and treat these conditions without delay. In this first part of the talk we explore the clinical features and the classification of bullous dermatoses with nonhereditary characteristics resulting in intra- or subepidermal cleavage in the skin. To better understand the background of the so called epidermolysis bullosa group of diseases, a brief overview of the pathomechanism of inherited blister formation will be delineated. Difficulties to follow and control infants and children with different forms of epidermolysis bullosa, their life expectation, their multidisciplinary care will be discussed. The importance of pediatric and family care, the patients' self assessment groups, common health care problems and the importance of genetic counseling will be overviewed.

MEET THE EXPERTS: HAEMANGIOMAS – CURRENT MANAGEMENT

THE PLACE OF PROPRANOLOL AND CORTIOCOSTEROIDS IN THE TREATMENT OF INFANTILE HEMANGIOMAS

P Berlien[1], M Poetke[1], U Müller[1], P Urban[1], C Philipp[1], R Rossi[2]

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Since the description of Léauté-Labrèze and all about propranolol as a new therapeutic option for complicated infantile hemangiomas on the 17th meeting of the ISSVA (International society for the study of vascular anomalies) in Boston, several papers about propranolol were published. Until now for problematic proliferating hemangiomas, the first-line medical treatment were corticosteroids, followed by vincristin or interferon. We report about our first experience in using propranolol in combination with laser treatment in 10 infants with problematic proliferating hemangiomas. Three infants were treated with propranolol alone. The effect of the treatment was controlled by color coded duplex sonography. All infants had large facial hemangiomas with severe functional impairment as occlusion of the eye or destruction of the lip. Eight infants were first treated by corticosteroids with 5 mg prednisolone/kg/day. When the steroids were tappered off, there was a rebound phenomenon with regrowth of the hemangiomas, so we began propranolol at 2 mg/kg/day. Also laser treatment was continued. In contrast to the report of Léauté-Labrèze and all the effect of propranolol was not immediately observed after 24 h, but 2–4 weeks later. Also in color-coded duplex sonography we did not see a decrease of thickness at the beginning of the therapy but a decrease of vascularity. Three infants with hemangiomas on other parts of the body were treated with propranolol alone, in two cases without any effect. One of these children had a hemangioma of the arm and one child was 4 years of age with residuals of a large facial hemangioma. In our opinion propranolol will relieve corticosteroids as the first-line medical treatment in case of problematic proliferating hemangiomas.

MEET THE EXPERTS: ATOPIC DERMATITIS

PRO-ACTIVE TREATMENT OF ATOPIC DERMATITIS IN CHILDREN

A P Oranje

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Exacerbations and remissions characterise the course of AD. Advanced treatment of severe AD in children includes: frequent superfluous use of emollients, local application of corticosteroids, topical immune modulators, wet wrap techniques using diluted corticosteroids, systemic antibiotics, systemic treatment in recalcitrant disease (ciclosporin, azathioprine) and education and training of children and parents. Depending upon the severity of eczema treatment is started and then a step-down approach is advocated with a verbal and written instruction (card). Pro-active therapy by twice weekly topical corticosteroids or calcineurin inhibitors to maintenance therapy reduces the risk of relapse in children with AD. A written regimen, email support, education/training (eczema school) and eventually music/massage/spiritual healing therapy (relaxation, self-healing) are important supportive tools to continue this strategy and improve the treatment results and well-being of patients and parents. Probiotics are not useful in the treatment, if they have any effect than it could be in food-allergic children with AD only. Finally, antihistaminics do not work against pruritus in AD, they are only useful against urticarial flares and in cases with food allergy. Superfluous use of emollients probably is the main help for keeping the skin in the best condition.

Reference:

Glazenburg EJ, *et al. PAI* 2009;20:59–66.

THEME: ENDOCRINOLOGY AND GROWTH

MEET THE EXPERTS: IS ANYTHING EFFECTIVE IN TREATING OBESITY IN CHILDREN?

IS ANYTHING EFFECTIVE IN TREATING OBESITY IN CHILDREN?

F Chiarelli, A Mohn

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Given the high prevalence of childhood obesity and its metabolic and cardiovascular complications, the management of obesity in childhood has become a priority. The aim of treatment (weight maintenance or weight reduction) and the recommended modes of intervention in pediatric obese patients are variable and depend on the level of overweight and on the child's age. In the literature, there is sufficient evidence suggesting that an intensive lifestyle modification program represents the most important tool for pediatric weight control. The three identified types of

lifestyle intervention are: dietary, physical activity and behavior modification (family counseling, school-based programs promoting physical activity and healthy eating). Although few pediatric studies have analyzed the effect of diet or exercise alone on weight loss, the trials available in literature showed marginal results. Nevertheless, there is sufficient evidence that the combination of diet and exercise for treating obesity provides the most beneficial improvements in obesity management. This effect is further improved when these interventions target behavior modification, particularly family involvement. An additional approach to obesity treatment is represented by pharmacotherapy. The use of medications should be considered in obese adolescents only when intensive lifestyle modification has failed to limit weight gain or the metabolic and cardiovascular comorbidities. Although several types of medications to treat obesity are available in adults, only three pharmacotherapeutic agents are approved for use in adolescents: sibutramine, orlistat and metformin. Metformin may be beneficial in adolescents with polycystic ovary syndrome (PCOS) (hyperinsulinism and infertility associated with PCOS) and in patients with type 2 diabetes or at risk of it; nevertheless its action on weight is unresolved. The two FDA-approved medications for the treatment of obesity in adolescents are sibutramine (>16 years of age) and orlistat (>12 years of age). However, both of these drugs have been studied only in association with exercise and diet.

INTERACTIVE CASE STUDY: EARLY DETECTION AND PREVENTION OF DIABETES COMPLICATIONS IN CHILDREN

EARLY DETECTION AND PREVENTION OF DIABETES COMPLICATIONS IN CHILDREN

F Chiarelli, M L Marcovecchio

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The incidence of type 1 diabetes (T1D) is increasing worldwide and is associated with a significant burden, mainly related to the development of vascular complications. In developed countries diabetes is ranked among the leading causes of renal failure, blindness, lower limb amputation and death for cardiovascular disease. Although clinically evident vascular complications are rarely seen among children and adolescents with T1D, there is clear evidence that their pathogenesis develops during childhood and accelerates during puberty. Early subclinical manifestations include progressive increases in albumin excretion rates, glomerular hyperfiltration, subclinical alterations in the retinal microvasculature and in the autonomic nervous system. In addition, early markers of atherosclerotic disease, such as endothelial dysfunction and increased intima-media thickness, have been detected in youth with T1D. There is evidence showing that vascular complications can be particularly aggressive in adolescents with T1D, particularly in those with poor glycaemic control, and their progression is often faster than in adults. Diabetic vascular complications are often asymptomatic during their early stages, and once symptoms develop, there is little to be done to cure them. Therefore, systematic longitudinal screening for vascular complications started during early adolescence, as currently recommended, is essential. Identification of risk factors and subclinical signs of complications is essential for the early implementation of more intensive preventive and therapeutic strategies, which could change the course of vascular complications and improve the prognosis of people with diabetes. Acting on glycaemic control is one of the main ways of preventing and treating vascular complications. There is also evidence that tight control of blood pressure and treatment of dyslipidaemia can reduce complication risk, at least in adults with T1D. Future studies are required to develop new therapies, which could target specific metabolic or haemodynamic pathways implicated in the pathogenesis of diabetic complications and help in developing new therapeutic strategies.

WORKSHOP: INSULIN PUMPS AND DEVICES IN THE TREATMENT OF TYPE 1 DIABETES

INSULIN PUMPS AND DEVICES IN THE TREATMENT OF TYPE 1 DIABETES

S Greene

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The use of intensive insulin strategies in children with type-1 diabetes mellitus (T1D) to improve glycaemic control has increased considerably in recent years. Children and adolescents manage their diabetes by adjusting their insulin dose to food intake, with the knowledge of carbohydrate content of the meal and pre- and post-prandial blood glucose measurements. In an attempt to give a more physiological insulin replacement, the use of continuous subcutaneous insulin infusion (CSII), delivered by insulin pump, is now well established in children and adolescents. Technological advances have produced modern small pumps that are compact, 'user-friendly', and possess an excellent safety record. Children appear to accept readily the wearing of these devices during school and play. Recent reviews and evidence based best practice has suggested that very young patients cope well with insulin pump therapy and many parents find pump therapy the preferred option of managing their child with T1D. Continuous subcutaneous insulin infusion should be considered for many children with T1D, particularly when blood glucose control is erratic, and when frequent hypoglycaemia is a problem. Starting pump therapy from diagnosis is an option explored in several centres. Recent developments

in blood glucose monitoring using either capillary blood glucose monitors or indwelling subcutaneous glucose sensors linked to an insulin pump has opened out the possibilities of maximising further the effect of CSII. The reduction in blood glucose variability is a suggested outcome for continuous glucose monitoring systems, even in an "open loop" setting. Recent studies, however, have indicated that these systems have yet to find their place in the routine management of T1D in the young. The pros and cons of pump therapy will be discussed and I will highlight the importance of CSII being delivered as part of a comprehensive package of care by a specialist paediatric diabetes team.

PLENARY LECTURE: NEW CURATIVE TREATMENT FOR DIABETES (TREATMENT OF TYPE 1)

NEW CURATIVE TREATMENT FOR TYPE 1 DIABETES

P Pozzilli

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Immune intervention at diagnosis of type 1 diabetes (T1D) aims to prevent or reverse the disease by blocking autoimmunity, thereby preserving/restoring beta cell mass and function. Recent clinical trials of non-specific and of antigen-specific immune therapies have demonstrated the feasibility of modulation of islet-specific autoimmunity in patients with partial prevention of loss of insulin secretion. The goal of any therapeutic intervention in T1D is the preservation of insulin-secreting cells. Although several therapeutic candidates have been investigated in experimental models of T1D many of which showed promising results, a successful extrapolation of these findings to human T1D has proved to be difficult. T1D in humans is an heterogeneous disease. Thus, a younger age at onset is associated with stronger genetic susceptibility, more intense immune response to B-cell antigens, shorter duration of symptoms, more severe metabolic derangement at diagnosis and a more rapid rate of B-cell-destruction. I will present different intervention strategies ranging from antigen-specific therapies (Diape277 and glutamic acid decarboxylase (GAD), to non-antigen-specific immunoregulation (anti CD3 MoAb) and to anti inflammatory (anti-IL1 receptor antagonist). These approaches are currently being tested in large international multicenter trials, and all of them use very similar outcome in terms of a beneficial effect (C-peptide secretion as evidence of a therapeutic effect on restoration of B-cell function). In common with many other therapeutic approaches in clinical disease, there is every reason to believe that combinations of drugs with different action may be more beneficial than any single therapeutic approach. In due course the therapies herein discussed will only be of sufficient value if they reduce the micro- or macrovascular complications associated with T1D.

PLENARY LECTURE: THYROID DYSFUNCTION – MANAGEMENT OF THE ENLARGED THYROID AND MANAGEMENT OF PERTURBATIONS IN TSH LEVELS

THYROID DYSFUNCTION: MANAGEMENT OF THYROMEGALY AND PERTURBATIONS IN TSH LEVELS

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Thyroid hormone dysfunction has age-dependent consequences. Hypothyroidism in childhood frequently results from chronic lymphocytic thyroiditis (CLT), an autoimmune thyroid disease (AITD) characterised by lymphocyte and cytokine-mediated thyroid destruction which may overlap with Graves' disease (GD) the commonest cause of hyperthyroidism, where antibody-mediated thyroid stimulation occurs. Both a goitrous (Hashimoto's thyroiditis, HT) and a nongoitrous (primary myxedema) variant of thyroiditis have been distinguished, characteristically affecting adolescent females with an AITD family history (CLT or GD in 30% to 40%) but can occur even in infancy. CLT with TPO and Tg antibody positivity and normal or abnormal (subclinical and frank hypo- and/or hyper- thyroidism) thyroid function is the hallmark of AITD'S – due to interacting susceptibility genes with environmental triggers (e.g. dietary iodine). Some immune modifying genes/loci (e.g. HLA, CTLA-4) and thyroid specific genes (e.g.TSHR, Tg) are unique to GD or HT and some are common to both, often associated with other (type 1 diabetes, coeliac disease, type 2 and type 3) polyglandular autoimmune disorders. Treatment is indicated with periodic re-evaluation to assess spontaneous remission. Goitre – usually CLT or colloid- occurs in 4% to 6% of schoolchildren, often females with a family history who are usually euthyroid, but may spontaneously regress. Rarely, painful thyromegaly (less common in CLT), suggests either acute (suppurative) or subacute thyroiditis requiring prompt antibiotic therapy. Thyroid nodules are rare under 20 years age but deserve an FNA even in the presence of a cystic or "functioning, hot" nodule on ultrasound and scintigraphy, as they are more likely to be carcinomatous, especially if painless or prior family or radiation history. Follicular adenomas and colloid cysts account for most benign nodules but CLT and embryological defects (e.g. intrathyroidal thyroglossal duct cysts or unilateral thyroid agenesis) contribute. As in adults, papillary thyroid carcinoma is the most frequent malignancy but rarely unexplained cervical adenopathy, neoplasia on a background of CLT or in a MEN 2A and/or 2B family (thyroid cancer, phaeochromocytoma, mucosal neuromas, marfanoid habitus), medullary thyroid carcinoma should be considered.

MEET THE EXPERTS: MONOGENIC DIABETES IN PAEDIATRIC PRACTICE: AN UNDER DIAGNOSED CONDITION

MONOGENIC DIABETES IN PAEDIATRIC PRACTICE: AN UNDERDIAGNOSED CONDITION

M A Sperling

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Diabetes Mellitus has traditionally been viewed as Type 1,an autoimmune destruction of pancreatic beta cells that make insulin, leading to insulin deficiency and life-long insulin dependence (injections or pumps), and Type 2 diabetes, where insulin resistance, most commonly induced by obesity, leads to unmasking of limited insulin secretion requiring treatment via life style modifications(healthy eating; exercise), insulin sensitizers (such as Metformin) and occasionally insulin or its secretagogues. Research continues to clarify the genetic regulation of insulin secretion, and identifies various genetic defects that diminish the ability to secrete insulin, leading to clinical features that mimic T1DM or T2DM. These defects may be present at birth causing Neonatal Diabetes, in which almost one third of cases can be treated by oral agents to overcome the genetic block. Or they present as ''mild diabetes'' in children, often at around puberty, often with a strong family history (FH) of DM; some forms also can be treated by oral agents. Those with a FH and mild diabetes were originally called ''Maturity Onset Diabetes of Youth'' or MODY, now known to be due to monogenic defects in the regulation of insulin secretion. About 2–5% of all children with DM may have a monogenic form-over the past 2.5 years, we identified 15 families with these single gene defects causing diabetes. All had distinctive FH or clinical features that suggested MODY. Moreover, the same defects contribute to T2DM in subjects as they age, especially with insulin resistance such as occurs with obesity, pregnancy and other disorders. The regulation of insulin secretion, and examples of genetic defects will be presented and discussed, and should inform these conditions to physicians and caregivers involved with children who have diabetes. Diagnosing these defects has profound implications for management, genetic counseling, and prognosis.

INTERACTIVE CASE STUDY: EARLY DETECTION AND PREVENTION OF DIABETES COMPLICATIONS IN CHILDREN

EARLY DETECTION AND PREVENTION OF DIABETES COMPLICATIONS IN CHILDREN

J W Gregory

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It is well known that optimising glycaemic control will reduce the risk of a number of the complications associated with childhood diabetes. However, given that few children with diabetes manage to achieve HbA1c concentrations that reduce these risks to a minimum, the early detection of the complications of diabetes remains an important component of high quality clinical care. There is little disagreement about the importance of screening for the signs of retinopathy and nephropathy in the teenage years and older. It is also generally recommended that growth and blood pressure should be routinely monitored with regular assessments for the development of thyroid and celiac disease. However, there is less agreement about at what age such screening should be started or what other clinical or biochemical tests should be routinely offered in a paediatric diabetes service. This presentation will examine the current guidelines published by a number of specialist bodies, the underlying evidence and will suggest a practical protocol for such monitoring in paediatric diabetes services.

WORKSHOP: A PRACTICAL APPROACH TO METABOLIC DISEASE

A PRACTICAL APPROACH TO METABOLIC DISEASE

F A Wijburg

Academic Medical Center, Amsterdam, the Netherlands

Inborn errors of metabolism should be included in the differential diagnosis of almost all clinical signs and symptoms at any the pediatric age. Although almost all separate metabolic disorders are rare, the combined prevalence of the group of metabolic disorders is remarkably high. However, the perceived complexity of metabolic diseases and their diagnostic workup often precludes inclusion in the initial workup, frequently resulting in misdiagnoses, obstructing both therapeutic interventions as well as appropriate counseling. By applying easy to use diagnostic algorithms for the first-line metabolic workup of the different presenting signs and symptoms, such as: 'Sepsis-like' presentation in the neonatal period: Hypoglycemia, Seizures, Coma, Muscle fatigue and/or cramps, Developmental disabilities, Hypotonia. The presence of a metabolic disease can often by substantiated, and initial, sometimes life-saving, therapies can be initiated. Routine clinical chemical investigations in patients in whom a metabolic disease is included in the differential diagnosis (all patients with the signs and symptoms mentioned above) should include: plasma ammonia, lactate, glucose, acid-base balance, electrolytes (measuring anion-gap), creatine kinase (CK), ASAT, ALAT and urinary ketone bodies. Specific clinical presentations may warrant routine investigations in CSF, mainly glucose and lactate. The results of these studies may already give important clues to a metabolic diagnosis and to emergency therapy. It is often essential to secure materials for both these routine chemical investigations as well as for second-line specialized studies at the time of clinical presentation. The second-line workup includes specialized biochemical screening such as amino acid analysis, organic acid analysis, screening for mucopolysaccharides and oligosaccharides, etc. Third-line and final 'gold standard' workup consists of measuring enzyme activities and mutation analysis.

WORKSHOP: DISORDERS OF BONE METABOLISM IN CHILDHOOD

DISORDERS OF BONE METABOLISM IN CHILDHOOD

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In the last decades, disorders of bone metabolism became increasingly important in the everyday paediatrician practice. Latest knowledges in phospho-calcium metabolism, such as the better understanding of vitamin D and phosphatonines roles and recent advances in genetics ensured a better diagnostic and therapeutic approach to these disorders. Osteoporosis can affect both children and adolescents: there are primary form of osteoporosis, like osteogenesis imperfecta, and secondary forms, such as the ones due to reduced mobility or prolonged glucocorticoids therapy. Diagnosis is based on accurate history and clinical examination in addition to radiologic and densitometric evaluation. The most used densitometric technique in childhood is dual energy X-ray absorptiometry (DXA). Regarding the available drugs used in osteoporosis management, bisphosphonates have been proved effective and relatively safe. However, the experience with the use of these drugs remains limited, because of the few patients and conditions treated. Therefore bisphosphonates therapy must be used exclusively in selected cases and in centres of excellence. New advances in vitamin D physiology showed how this vitamin is important for bone health and even for many extra-scheletrics actions, like regulation of cellular proliferation and of the immune system. Therefore vitamin D deficiency, which is common in childhood, not only causes nutritional rickets, but may affects other organs and systems with important health consequences. Sun exposure provides adequate vitamin D synthesis, but its efficacy depends on latitude, season and time of exposure; besides it's not yet known how long a child should be exposed for in order to ensure an optimal vitamin D status. Nutritional rickets is still a clinical problem, mainly in adopted and immigrated children. For all these reasons in 2008 the American Academy of Pediatrics suggested that breastfed and partially breastfed infants should be supplemented with 400 IU/day of vitamin D beginning in the first few days of life. Also pubertal spurt and adolescence are at risk of vitamin D deficiency in case of poor dietary intake or low sun exposure.

THEME: GASTROENTEROLOGY

PLENARY LECTURE: COELIAC DISEASE – DIAGNOSIS AND TREATMENT

COELIAC DISEASE: DIAGNOSIS AND TREATMENT

R Troncone

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In 1990 ESPGHAN has revised its former diagnostic criteria laid down in 1970. The two requirements mandatory for the diagnosis of celiac disease (CD) remain: (1) the finding of villous atrophy with hyperplasia of the crypts and abnormal surface epithelium, while the patient is eating adequate amounts of gluten; and (2) a full clinical remission after withdrawal of gluten from the diet. However, important changes that might have an impact on the diagnostic procedures for CD, have occurred in recent years. Tests based on the detection of anti-endomysium antibodies (EMA), and subsequently of anti-tTG, have been increasingly used as an initial screen for CD. Serological tests are largely responsible for the recognition that CD is not a rare disease; moreover, with the notion of the relatively high prevalence of CD has become increasingly recognised its broad spectrum of clinical presentations. The growing contribution of serology, together with the recognition of a wider spectrum of histological changes (see below), and the contribution by genetic tests, demonstrate the necessity to move on to a revised diagnostic approach, but until serological methods are improved, the genetic make up of celiac patients is better defined, it seems wise for a diagnosis of celiac disease still rely on a combined approach based of clinical criteria, histology, serology and genetics. At the moment the treatment for coeliac disease (CD) remains a life-long strict gluten free diet (GFD) with exclusion of gluten from wheat, rye, and barley. In general, oats are safe both for adults and for children with CD, but one concern about oats consumption in a GFD is the frequent contamination of oats with gluten during the harvesting and milling process. Significant progress has been made in recent years in the understanding of the cellular and molecular basis of CD and in the consequent identification of possible targets for therapy. Recently enzyme supplement therapy using bacterial endopeptidases has been proposed to promote complete digestion of cereal proteins and thus destroy T-cell multipotent epitopes. Breeding programs and/or transgenic technology may lead to production of wheat that is devoid of biologically active peptide sequences. Other promising areas include inhibition of the innate immune response activated by gliadin peptides, preventing gliadin presentation to T cells by blocking HLA binding sites, use of TG2 inhibitors and assessing IL-10 as a tool to promote tolerance. An immunomodulatory approach will need to have a safety profile equivalent to that of the gluten-free diet, but with the advantage of increased compliance.

MEET THE EXPERTS: CONSTIPATION AND OBSTIPATION – WORK UP AND MANAGEMENT

CONSTIPATION AND OBSTIPATION: WORK-UP AND MANAGEMENT

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Constipation is a common and distressing pediatric problem. No organic cause is found in 90% to 95% of the constipated children. A complete history and physical

examination are generally sufficient for the diagnosis of functional constipation. An history of late onset of constipation, faecal incontinence, with a palpable abdominal mass and hard stool in rectal ampulla, are suggestive for functional constipation. Rectal manometry and rectal biopsy with histopathologic examination are the only tests that can reliably exclude Hirschsprung's disease. The currently recommended treatment of chronic constipation includes education, disimpaction and maintenance therapy, consisting of dietary changes, medication use and behavioral modification. The education of the family and the demystification of constipation, including an explanation of the pathogenesis, are the first steps in treatment. Disimpaction is necessary before initiation of maintenance therapy and it can be accomplished with hypertonic phosphate enemas, high dose of osmotic laxatives and PEG solution. The maintenance therapy consists of toilet training, dietary interventions and laxatives. Toilet training is recommended in children older than 3 years of age and it consists of encouraging the child to sit on the toilet for 5–10 min after meals, with proper foot support. Dietary modifications include a cow's milk free diet or fiber supplements. There are conflicting reports on the role of dietary fiber, with evidence that constipated children have a lower, equivalent or higher intake of dietary fiber. When medication is necessary, mineral oil (a lubricant) or magnesium hydroxide, lactulose, sorbitol, polyethylene glycol (PEG) or a combination of lubricant and laxative are recommended. Among osmotic agents, polyethylene glycol (PEG) 3350 appears to be the first-line drug to use in pediatrics. Maintenance therapy may be necessary for many months. Discontinuation is only considered when the child has been having regular bowel movements without difficulty.

ROUND TABLE: IRRITABLE BOWEL – RECURRENT ABDOMINAL PAIN – WORK UP AND MANAGEMENT

IBS: AN INFLAMMATORY DISORDER?

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Irritable bowel syndrome (IBS) is one of the commonest gastrointestinal (GI) problems in the western world, in both adults and children. Pediatric IBS usually presents with bouts of lower or mid-abdominal pain and diarrhea recurring for ≥12 weeks in an otherwise healthy child and in the absence of any demonstrable organic GI disorder. The etiology of IBS is still unknown and the pathogenesis is poorly understood. Abnormalities of GI motility have been demonstrated in some patients with IBS, but it is not clear whether such GI dysmotility is the underlying cause or an effect of visceral pain. Gastrointestinal dysmotility in turn could facilitate the orad migration of bacteria from the colon and the subsequent colonization of the small bowel. Indeed, small bowel bacterial overgrowth has been recently demonstrated in a proportion of adult IBS patients and in these patients treatment with intestinal antibiotics has resulted in remission or significant symptom improvement. Furthermore, 7 to 30% of IBS cases may follow an enteric infection and there is a considerable body of evidence that such enteric infection could trigger a subtle but persistent GI inflammation where neuroimmune interaction at the levels of the enteric nervous system and the spinal cord may produce a peripheral or central sensitization to pain, resulting in lowered threshold for visceral pain (visceral hyperalgesia). A number of children with IBS might therefore have a small bowel bacterial overgrowth and/or a colonic disbiosis (alteration of normal colonic flora), possibly as a consequence of a subtle primary GI motility disorder and/or a previous enteric infection. Such bacterial overgrowth and/or disbiosis could maintain an abnormal inflammatory stimulation on the gut epithelium thereby contributing to symptoms such as bloating, abdominal pain and diarrhea. Treatment with probiotics could be effective through an antagonistic effects on small bowel and colonic pathogens and through local immunomodulation.

ROUND TABLE: IRRITABLE BOWEL – RECURRENT ABDOMINAL PAIN – WORK UP AND MANAGEMENT

IRRITABLE BOWEL-RECCURENT ABDOMINAL PAIN – WORK UP AND MANAGEMENT

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Functional gastrointestinal disorders (FGIDs) are defined as a variable combination of chronic or recurrent GI symptoms not explained by structural or biochemical abnormalities. Childhood FGID are sometimes present during development (such as infant regurgitation), sometimes arise from age-appropriate but maladaptive behavioural responses to discomfort from internal or external sources (such as functional fecal retention) or sometimes present in childhood with symptoms identical to those described for adults (e.g. irritable bowel syndrome, or adult rumination in school-aged children and adolescent). In 1997, the first paediatric working team met in Rome to standardize diagnostic criteria for various FGIDs in Children. The first paediatric Rome II criteria for FGIDs were published in 1999, as Rome II criteria. Rome II criteria do not represent an end-point but a starting point to enhance new well-designed studies with the aims of screening large populations, to show that these diseases exist across time and cultures and to determine if the symptoms based criteria are accurate in separating children with functional disorders from those with disease. More publications have offered valid criticism of some disorders and provided preliminary validation of others and all this represented an appropriate background for the ROME III criteria. The revised version of the Rome criteria has separated the

paediatric criteria in two groups, based on an arbitrary division between infants/toddlers, and child/adolescent. New entities have been added, such as infant colic and childhood functional abdominal pain syndrome. The new recommendations for developing the Rome III Criteria are: (1) update the information using an evidence-based perspective; (2) provide adequate, evidence-based justification for any changes to previous recommendations; (3) provide an update in the literature beginning from 1998; (4) The use of meta-analyses when needed is recommended, but not required; (5) provide recommendations for future research.

ROUND TABLE: THE MYRIAD OF CLINICAL MANIFESTATIONS OF MILK ALLERGY

THE MYRIAD OF CLINICAL MANIFESTATIONS OF MILK ALLERGY

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Cow's milk allergy (CMA) is defined as an abnormal immunological reaction to cow's milk proteins that causes an adverse clinical reaction. The prevalence appears to be increasing in industrialised countries, although reliable, population-based data are limited. Cow's milk allergy in children present with a wide spectrum of clinical manifestations, including anaphylaxis, urticaria, angioedema, atopic dermatitis and gastrointestinal symptoms (such as vomiting, diarrhoea and failure to thrive). Gastrointestinal syndromes are becoming increasingly recognised in young infants. This group of disorders presents with symptoms related to various parts of the gastrointestinal tract. CM protein-induced protocolitis also occurs in the first few months of life but does not result in systemic illness. Infants appear healthy and present with normally formed, blood-streaked stools. Infants with this disorder are sensitive to cow's milk or soy protein and most are exclusively breastfed. The hematochezia usually resolves within 72 hours of eliminating the allergen, including that in the maternal diet for breast-fed infants, and the food are generally tolerated by one year of age. Other gastrointestinal disorders, such as eosinophilic oesophagitis (EoE), have also been shown to be associated with CMA. Eosinophilic oesophagitis was first reported in the late 1970s but has gained increasing interest over the last decade. The epidemiology of EoE remains unknown but the incidence in both the pediatric and adult populations may be increasing. A population-based study in Ohio, USA, between 1991 and 2003 approximated a frequency of one in 10 000 and a prevalence of 4.296 cases per 10 000 children. However, only 2.3% of patients diagnosed with EoE in that study were identified before 2000. It remains unclear whether the apparent increasing incidence of EoE is real or related to increased awareness and improved detection. However, it is likely that this is a true increase with a corresponding increased burden of eosinophil-related disease such as eczema over the last decade. The characteristic endoscopic appearances, a histological picture with massive accumulation of eosinophils in the esophageal epithelium, normal pH monitoring results, and the ineffectiveness of antireflux treatment separate EoE from gastroesophageal reflux disease.

WORKSHOP: GASTROESOPHEGEAL REFLUX DISEASE (GERD) – CONSENSUS AND CONTROVERSIES

GASTROESOPHAGEAL REFLUX DISEASE (GERD): CONSENSUS AND CONTROVERSIES

A Ravelli

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Over the last decades there seems to have been a considerable increase in the prevalence of gastroesophageal reflux disease (GERD) in the western world. One of the major advances in our knowledge of this disease has been the demonstration of its clinical polymorphism – besides typical forms manifesting with regurgitation and heartburn there are atypical forms presenting with extra-digestive symptoms, and GERD has been compared to a sphinx gradually revealing its secrets. However, an uncritical and unbalanced information could produce an over-esteem of the phenomenon and this in turn could lead to excessively empirical or inappropriate prescription of anti-reflux therapies, which is potentially harmful to the patient. If there are common conditions like prematurity and neurological handicap that predispose to GERD and its complications, other conditions such as *Helicobacter pylori* infection seem to have a protective role. On the other hand there are conditions such as food allergy and eosinophilic esophagitis which may present with clinical manifestations clinically indistinguishable from that of GERD. The already consistent diagnostic armamentarium for GERD has been further increased by new techniques such as impedance monitoring, which can be useful for the assessment of atypical and complex cases. However, all the diagnostic techniques should be used – and interpreted! – by experienced personnel with a critical attitude. A careful, meticulous and timely diagnostic evaluation is essential for an effective treatment, but several experiences and data from the literature show that the diagnostic and therapeutic approach to pediatric GERD is quite variable and not always guided by a thorough evaluation of the situation and a rigorous analysis of published studies. Both clinical experience and a review of the medical literature clearly show that the prescription of antisecretory drugs is steadily increasing. One last and particularly interesting aspect is that of the nature of pediatric GERD, since to date it is not clear whether gastroesophageal reflux in infancy is always a benign and

self-limiting condition and whether GERD beginning in the pediatric age may be cured or is bound to become chronic and thus continue indefinitely into adulthood. Although the drugs most widely used for GERD have an excellent efficacy and safety profile, recent studies suggest that their indiscriminate and protracted use for many years is not devoid of side effects.

THEME: GENETICS

PLENARY LECTURE: HOW IS GENETIC PROFILING GOING TO IMPACT THE PRACTICE OF PAEDIATRICS IN THE FUTURE?

HOW IS GENETIC PROFILING GOING TO IMPACT THE PRACTICE OF PAEDIATRICS IN THE FUTURE?

A Clarke

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Sequencing The Human Genome was a great achievement but was only the first step. More sequence information is being generated more rapidly and at smaller cost; the difficulty now lies in the interpretation of the sequence information. Access to this information will greatly accelerate the diagnosis of the single gene (Mendelian) disorders and the recognition of *de novo* copy number variants that may account for cases of developmental and psychiatric disorders. In the context of reproduction, the recognition of the carriers of many recessive diseases will become rapid and cheap and prenatal diagnosis may be feasible earlier in pregnancy and employ non-invasive methods. What will take much longer to impact upon regular practice, however, are the findings of the Genome Wide Association Studies (GWAS) that attempt to dissect out the genetic contribution to the common, complex disorders. The problems with the GWAS, 'common disease, common variant' approach include the assumptions upon which it rests and the difficulty of mounting definitive studies. Genetic variation recognised as relevant to disease through GWAS can be important in devising new therapeutic strategies but is of less value for identifying each individual's susceptibility to disease. It will be important to ensure that children are not subject to inappropriate genetic testing whose results could cause great distress within a family and perhaps lead to 'genetic secrets' that damage family communication for long periods. There is great scope for genome sequencing to generate diagnoses and to guide therapeutics in the future but there is vigorous disagreement about the pace at which this will occur. Sequence information will be helpful within the next decade for the treatment of cancers and numerous single gene disorders and establishing diagnoses in developmental and psychiatric disorders but it is difficult to extrapolate beyond that.

THEME: HAEMATOLOGY – ONCOLOGY

WORKSHOP: EVALUATION OF THE CHILD WITH A SUSPECTED BLEEDING DISORDER

EVALUATION OF THE CHILD WITH A SUSPECTED BLEEDING DISORDER

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The bleeding child is a challenge for physicians of every specialty. Bleeding may be the result of congenital or acquired disorders in plasma factors or/and platelets (quantitative or qualitative defects). Haemorrhage may be expressed spontaneously or after trauma. The most common bleeding manifestations are: petecheae/ecchymoses, epistaxis, gum bleeding, haemarthrosis, haematoma, cephalaematoma, intracranial haemorrhage (ICH), haematemesis, melaena, haematuria, menorrhagia, bleeding after invasive procedures (tooth extraction, surgery), or bleeding from the umbilicus cord (in neonates). A thorough *questionnaire of haemorrhagic diathesis* in the family or during patient's life-span, starting from birth, is of most importance. *Clinical examination* may unmask an underlying disease. The type, the location and the clinical presentation of bleeding, the gender, the age at first presentation, the clinical status of the child (healthy or sick), the coexistence of a known underlying disease, may suggest a diagnosis; haemorrhage from mucous membranes is indicative of platelet disorders (thrombocytopenia, thrombasthenia), vWD, congenital haemorrhagic teleaggiectasia, or disfibrinogaenemia. Haemorrhage from joints or muscles is indicative of haemophilia A or B, severe vWD, FVII or FXIII deficiency. Haemorrhage from umbilicus cord is usually the first sign of severe FXIII deficiency or may be a symptom at the setting of haemorrhagic disease of the newborn; however ecchymoses only at the front surface of legs may occur after injury or in a hyperkinetic toddler. If there is a high suspicion of an underlying coagulation defect, or a family history of a congenital coagulation disorder, a haemostasis screening (thrombin time, prothrombin time, aPTT, and platelet count, clot retraction, bleeding time or PFA) is ordered. The results are interpreted in conjunction with the family and the patient's history, clinical findings and other abnormal haematological features from the whole blood count. Nevertheless, the presence of bleeding symptoms, even if there is no family history along with a normal screening test, requires further investigation.

THEME: HAEMATOLOGY – ONCOLOGY

PLENARY LECTURE: MANAGEMENT OF LUMPS AND BUMPS

MANAGEMENT OF LUMPS AND BUMPS

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Background: Surgical management of "Lumps and Bumps" (L&B) are the mainstay of the practice of the pediatric general surgeon. Lesions vary from simple skin lesions requiring only expectant observation (hemangiomas) to those representing the "tip of the iceberg" (neuroblastoma) requiring more aggressive medical/surgical intervention. Occasionally, lumps at time of discovery are late in presentation for solid tumors and require definitive, radical resection with greater risk of short and long-term complications.

Methods: The author presents a literature review spanning all involved surgical subspecialties (ENT, General surgery). Photo- (Stills), Radio-, and Video-graphic documentation will be presented during the topic presentation.

Results: Congenital benign lesions (hemangiomas, cysts, etc.) make up the vast majority of L&B and are routinely managed, the majority via simple surgical excision with few exceptions. Short and long term results are satisfactory. Complex L&B generally require radical excision, with the exceptions being complex vascular malformation, where the role of surgery is mainly supportive.

Conclusions: The majority of L&B are managed by simple excision with successful short- and long-term outcome. L&B, ranging from complex vascular malformations to malignant solid tumors require a multidisciplinary approach with variable short- and long term outcomes depending on pathology. Surgery continues to be a mainstay in the treatment of these lesions.

THEME: INFECTIOUS DISEASES

ROUND TABLE: RECENT DEVELOPMENTS IN VACCINES

ROTAVIRUS GASTROENTERITIS

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Diarrhea is one of the most common illnesses of children worldwide. Although more than 20 different bacteria, viruses and parasites are associated with diarrhea, rotavirus (RV) is the most common cause of severe gastroenteritis and diarrheal deaths in infants and children younger than 5 years of age worldwide. Rotavirus causes 25–55% of all hospital admissions for diarrhea and more than 600 000 deaths annually, which represents about 5% of all deaths worldwide in children younger than 5 years of age. Rotavirus is a double stranded RNA virus. Two proteins that form the outer capsid are VP7, a glycoprotein (G protein) and VP4, a protease cleaved protein (P protein). Although RV strains show diversity, five strains of RV are detected commonly as causing disease and have become the most important targets for vaccine development (G1, G2, G3, G4 and G9). In developing countries the diversity of unusual strains is greater than in industrialized countries. In 2006 a live, oral, human bovine reassortant RV vaccine (RotaTeq; RV5) was licensed in the United States as a three dose series for use among infants, and in 2008 a live, oral, human attenuated RV vaccine (Rotarix; RV1) was licensed as a two dose series. The Strategic Advisory Group of Experts (SAGE) of the World Health Organization recommended that RV vaccinate be included in all national immunization programs. In the United States, physicians appear to be increasingly incorporating RV vaccination into routine well-infant visits. In addition, national, regional and local trends in RV testing and detection have been assessed before and after RV vaccine introduction. The RV season after vaccine introduction was substantially delayed, shorter and diminished in magnitude compared with seasons before vaccine implementation. Continued surveillance in all countries where RV vaccine has been introduced is needed to determine the impact of RV vaccination and to monitor change over time as infant RV immunization increases.

MEET THE EXPERTS: ANTIBIOTICS FOR ACUTE OTITIS MEDIA – PROS AND CONS OF THE OBSERVATION STRATEGY

ANTIBIOTICS FOR ACUTE OTITIS MEDIA: PROS AND CONS OF THE OBSERVATION STRATEGY

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Acute otitis media (AOM) is one of the most common childhood infections, the leading cause of doctors' consultations, and the most frequent reason for children to take antibiotics. There is lack of consensus on the definition of AOM and clinical overdiagnosis is common. Evidence from systematic reviews shows that antibiotics provide only marginal benefit; there is viral AOM and also spontaneous cure of bacterial AOM does occur frequently. On the other side, there are possible complications (e.g., mastroiditis, propagation into CNS) and sequelae (e.g., hearing impairment) of bacterial AOM. Therefore, several guidelines recommend selective use of antibiotics for AOM, especially in children aged 2 years or older: Usually observation is recommended. In children younger than 2 years however, no real consensus has been reached. Some authorities recommend antibiotics for all these infants, whereas the majority advise antibiotics only for children under 2 years if they are severely affected or have persistent signs of disease or related comorbidity. A key issue remains the certainity of the diagnosis. Prerequisites for the observation strategy are of course assurance of

follow-up (phone, appointment), and prompt availability of an effective antibiotic treatment (e.g., high-dose amoxicillin-clavulanate), if needed. Whenever possible, prevention is a preferred approach to treatment. Consequently, the importance of vaccines to assure protection against most frequent pathogens of AOM has to be underscored, also limiting antibiotic treatment including possible adverse events and development of antimicrobial resistance.

INTERACTIVE CASE STUDY: CHILD WITH FEVER – HOW TO ACCESS THE EVIDENCE

CHILD WITH FEVER: HOW TO ACCESS THE EVIDENCE

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Paediatricians wanting to use evidence based medicine (EBM), need to be able to track down and critically appraise evidence. This requires access to quality filtered resources (Cochrane Library), bibliographic databases (Pubmed) and paediatric journals. It can take 1–8 hours to find and appraise the evidence for clinical problems in paediatrics. Most paediatricians on-call have access to resources which they could use to practise EBM, but few use them as they have little time to find and appraise evidence while on-call. In order for paediatricians to practise evidence based medicine on-call they need easy access to evidence based answers to common clinical problems. There are easily digested summaries of evidence being developed into knowledge banks. The format used by many is the ''critically appraised topic''. Evidence based paediatric guidelines are also becoming available. In the United Kingdom the National Institute for Health and Clinical Excellence (NICE) has produced evidenced based guidelines for common conditions such as fever (www.nice.org.uk/CG047). These guidelines attempt to give evidence based advice about the clinical assessment, investigation and treatment of children less than 5 years-old who present with fever without focus. Information is given about how to assess children with feverish illness, with details of the symptoms and signs that can be used to predict the risk of serious illness. Adapting these guidelines for local use should enable paediatricians to practise EBM when assessing children with fever, even while on-call.

WORKSHOP: ROLE OF PAEDIATRICIAN IN TREATING INFECTIONS IN RELATION TO IMMIGRATION IN EUROPE (TB, MALARIA, ETC.)

ROLE OF PAEDIATRICIAN IN TREATING INFECTIONS IN RELATION TO IMMIGRATION IN EUROPE (TB, MALARIA, ETC.)

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The speed of international travel means that children can travel from the tropics within the incubation period for most infections. Children can thus present with 'tropical' infections which their local paediatricians may not recognize. A detailed travel history is essential for making a prompt diagnosis of a treatable infection that may have been acquired abroad. Children who travel to the tropics are at increased risk of imported infections, compared to adults. Children mostly travel to the tropics to visit friends and relatives. These children are less likely to seek pre-travel advice and are more likely to be exposed to infection, because they travel to rural areas for long periods. This group is also more likely to delay seeking medical help when they return. Common illnesses in travellers are; fever, diarrhoea, respiratory illness and rash. The likely diagnoses seen in travellers varies with the destination visited (Malaria from sub-saharan Africa, Typhoid from the Indian sub-continent). Children who present with fever after travelling to the tropics may have a cosmopolitan infection (commonly seen in Europe, e.g. urinary tract infection), an imported infection (not normally seen in Europe, e.g. malaria) or both (20%). When assessing a child with fever and recent travel, the priority is to detect and treat malaria, and to identify other treatable illnesses. A treatable cause of fever is identified in 46% children presenting to hospital with fever after returning from the tropics. Diarrhoea, malaria and respiratory infections are the commonest diagnoses. Febrile children who have travelled to the tropics in the preceding year should be investigated with; full blood count, blood film for malarial parasites, stool culture and chest X-ray. Children who have travelled in the preceding month, should also have a blood culture.

ROUND TABLE: RECENT DEVELOPMENTS IN VACCINES

PNEUMOCOCCAL CONJUGATE VACCINES

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The key features of *Streptococcus pneumoniae* are its high frequency as nasopharyngeal colonizer, especially in children promoting horizontal spread, its potential to become invasive, and its pronounced adaptability responsible for the development of both, antibiotic resistance and vaccine serotype escape. *Streptococcus pneumoniae* is the most common cause of invasive bacterial disease in children, including bacteremia, meningitis, and bacteremic pneumonia. Globally, the pneumococcus has been estimated to account for around 1 million deaths annually in children <5 years-old. The incorporation of 7-valent pneumococcal conjugate vaccine (PCV7) into the routine childhood vaccination schedule in the USA, many European and other countries, has been shown to be effective in preventing invasive and mucosal (e.g., otitis media and pneumonia) pneumococcal diseases in infants and young children. In addition to protection against pneumococcal disease, PCV7 increases herd immunity and decreases

antibiotic resistance. The safety profile of PCV7 is excellent. Besides these dramatic benefits there are substantial drawbacks of PCV7: insufficient serotype coverage for many countries (e.g., developing world), not affordable price for many countries (e.g., developing world), and the phenomenon of serotype replacement for both, carriage and disease. Therefore, the medical needs for "new" pneumococcal conjugate vaccines include increased serotype coverage, higher efficacy at the mucosal level affecting both, nasopharyngeal carriage and herd immunity, and efforts towards lower pricing.

ROUND TABLE: RECENT DEVELOPMENTS IN VACCINES

VACCINES TO PREVENT MENINGOCOCCAL DISEASE

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Throughout the world, capsulate *Neisseria meningitidis* strains of serogroups B and C (as well, in some settings, as serogroups A, W-135 and Y) are a major infectious cause of disability and death in previously healthy infants, children and young people. Effective vaccination to prevent these infections is a universal goal. A year-on-year increase in infections caused by serogroup C strains in the UK towards the end of the 1990s provided a major impetus to the development of effective MenC polysaccharide-protein conjugate vaccines, which were deployed with gratifying effect as the century drew to a close. However, while MenC conjugates elicit bactericidal antibody and establish long-lasting immunological memory even in infants, conjugate vaccines based on the serogroup B polysaccharide, α-2 $\rightarrow$ 8-linked polysialic acid, are essentially useless. Polysaccharide chains with the same linkage are expressed on different human cells, incorporated, for example, in a developmentally regulated manner in human neural cell adhesion molecules. They are accordingly recognised as self antigens, and fail to elicit an effective immune response. Frustratingly, apart from their capsular identity, serogroup B meningococcal strains are extremely diverse, and prolonged efforts by traditional means to find alternative individual antigens for a vaccine have failed to identify any that elicit an immune response cross protective from one serogroup B strain to another. Vaccines based on outer membrane blebs prepared from whole meningococci hold theoretical promise, but have proved disappointing in clinical trials outside an epidemic setting. Real hope of a solution has come from a radically different approach to the problem – so-called Reverse Vaccinology. Mining the whole genome sequence of a prototype serogroup B strain has allowed identification of candidate vaccine antigens hitherto undreamt of, directing insightful experiments on a large but manageable scale to assess their immunogenicity and cross-protective efficacy. In studies that have proceeded hand-in-hand with crucial molecular epidemiological surveys, mixtures of several recombinant meningococcal proteins have been identified which promise to provide reasonable protection. Preliminary trials have established immunogenicity and the capacity to establish immunological memory in healthy infants, and there is for the first time a realistic prospect of preventing serogroup B meningococcal disease.

MEET THE EXPERTS: THE STATE OF ART IN PERINATAL HIV INFECTION

THE STATE OF ART IN PERINATAL HIV INFECTION

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About 2 500 000 infants, children, and adolescents are now living with the human immunodeficiency virus-type 1 [HIV-1] worldwide. The large majority of infections is the consequence of mother-to-child transmission [MTCT]. In industrialised countries prevention of MTCT has been successful. According to the data of the Italian Register for HIV Infection in Children, prenatal testing, elective caesarean section, avoidance of breast feeding, and antiretroviral treatment in mothers and infants have reduced the MTCT rate from 20% to 2%. By contrast, the access to these opportunities is not often possible in the developing world. Thus most of new perinatal infections occur in Africa. In some African areas, the prevalence of HIV-1 infection in pregnant women is up to 40%. But only in few selected areas the best coverage rates for much-needed services for these women is 31%. At least 75% of them worldwide have an unmet need for antiretroviral drugs. Treatment strategies in infants and children living in industrialised countries have expanded from a single medication to the highly active antiretroviral therapy [HAART]. Twenty-five antiretroviral drugs in five different classes of agents [nucleotide and nucleoside reverse transcriptase inhibitors, non-nucleoside reverse transcriptase inhibitors, protease inhibitors, entry and fusion inhibitors, and integrase inhibitors] have been approved for the use in adolescents and 16 for the use in children. The Italian Register for HIV Infection in Children demonstrated that HAART decreases HIV-1 mortality in children by 70% through a dramatic reduction of opportunistic infections. We also demonstrated that the best clinical results are acquired when the treatment is started very early in infancy. Parallelly, the management of infected children increases in complexity and more and more needs a multidisciplinary highly experienced assistance. Since the availability of paediatric formulations is still limited, the development of new drugs and drug formulations [allowing a less dosing frequency and fewer side effects] will further improve clinical outcomes improving adherence and decreasing HIV-1 resistance.

MEET THE EXPERTS: IS THERE POST VACCINE ERA FOR PNEUMOCOCCAL DISEASE?

IS THERE POST-VACCINE ERA FOR PNEUMOCOCCAL DISEASES?

R Dagan

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Any evaluation of pneumococcal conjugate vaccine (PCV) effect needs to take into account that PCVs do not only target invasive pneumococcal disease (IPD; i.e. sepsis, meningitis), but also mucosal infections (i.e. otitis, pneumonia), nasopharyngeal carriage and antibiotic resistant pneumococcal strains. In this regard, extensive use of the 7-valent PCV (Prevenar; PCV7) resulted in an impressive reduction of IPD, otitis, pneumonia and antibiotic use in all populations when this was studied. However, we are far from having reached our goals with PCVs globally. In this regard, we must overcome three main obstacles: (1) Increase vaccination rates. Globally, PCVs are not yet provided in most countries. However, even in countries where PCV7 is provided, vaccine coverage rates are not maximal. Suboptimal vaccination rates result in reduction of both direct and indirect protection (the so-called herd immunity). Only national immunization plans can result in maximal effect; (2) Insufficient serotype coverage: PCV7 covers only a few serotypes, resulting in the potential to reduce between 40% and 85% of other IPD globally. However, two new generations of PCVs are available (PCV10-Synflorix [licensed]) and PCV13 [Prevenar-13 [to be licensed soon]) that can improve considerable coverage, especially for some entities such as complicated pneumonia; (3) One of the main obstacles is understanding the phenomenon termed ''serotype replacement phenomenon''. This phenomenon needs to be viewed in the right perspective. Much of the replacement in serotypes in due to antibiotic pressure (mainly for serotype19A) and to secular trends (mainly for the epidemic serotypes 1,5 and 7F). Much of this phenomenon could be observed even before PCV7 introduction. It is also important to understand that this phenomenon has only a limited effect on pneumococcal disease burden and that the overall results of PCV introduction is an impressive reduction of the pneumococcal disease burden. Continuous surveillance will assure better understanding of the future needs and overall success of PCVs.

ROUND TABLE: INFLUENZA PANDEMIC

INFLUENZA PANDEMIC (H1N1) 2009: GLOBAL IMPACT AND MITIGATION

C Penn

WHO Global Influenza Programme, Geneva, Switzerland

A novel influenza A (H1N1) virus of swine origin emerged among people in Mexico during the spring of 2009 and spread among travellers worldwide, resulting in the first influenza pandemic since 1968. As of October 2009, 195 countries have reported confirmed human cases of pandemic H1N1 2009. While the majority of illnesses caused by pandemic H1N1 2009 virus infection have been self-limited mild-to-moderate uncomplicated disease, severe complications including fatal outcomes have been reported, and over 4735 deaths reported to WHO. The pandemic H1N1 2009 influenza virus differs in its pathogenicity from seasonal influenza in two key aspects. As the majority of human population has little or no pre-existing immunity to the virus, the impact of the infection has been in a wider age range, and in particular in children and young adults. For the same reason there may be more prolonged virus replication and slower clearance of virus. Secondly, the virus has a tropism for cells in the lower respiratory tract, resulting in difficult to treat and progressive viral pneumonitis being a common presentation of the more severe cases. A global effort to develop vaccines that will effectively provide protection against the new virus has been highly successful, and vaccines are now available. The experience of the past few months has also demonstrated that antiviral drugs (oseltamivir and zanamivir) can be effective in reducing the severity of illness, and preventing hospitalization and death when used promptly. The pediatric population has been particularly affected by this pandemic, with higher infection rates and severity of disease than other age groups. These data, and the role of vaccines and antiviral agents in this population, will be discussed.

THEME: NEONATOLOGY

WORKSHOP: LONG TERM FOLLOW UP AND MANAGEMENT OF THE LBW INFANT

LONG-TERM FOLLOW-UP AND MANAGEMENT OF THE LBW INFANT

L-A Papile

Baylor College of Medicine, Houston, USA

As survival rates have improved, there has been increasing emphasis placed on the long-term outcome of very low birth weight (VLBW) infants. Medical, physical, neurological, cognitive, academic, neuropsychological, motor, social, emotional or behavioral, functional, and health-related quality of life are all outcomes of interest. Early childhood follow up studies highlighted major disabilities, including moderate or severe mental retardation, cerebral palsy, blindness and sensorineural hearing loss. Over the past decade the incidence of these major disabilities has remained constant. Since advances in perinatal care have resulted in a decrease in mortality; there has been an increase in the absolute number of survivors with major disabilities. Other studies have emphasized that the majority of VLBW infants with poor neurodevelopmental outcome did not have evidence of white matter injury such as periventricular, intraventricular hemorrhage or periven-

tricular leukomalacia on ultrasound screening in the neonatal period. In addition, more subtle impairments have been detected in survivors without major disabilities. Thus, there is increasing evidence that premature birth, *per se*, and subsequent neonatal care may adversely affect the developing brain. Contemporary studies have focused on a more comprehensive assessment of outcome at a later age and have demonstrated an inverse relationship of birth weight/gestational age and the frequency of behavioral, emotional and social problems, as well as functional and academic difficulties. Despite high disability rates, VLBW adolescents report a quality of life minimally different from that of adolescents born at term gestation. In summary, longitudinal follow-up that considers a broad range of functions and practical outcomes is needed to ascertain the impact of being born prematurely.

MEET THE EXPERTS: BRAIN COOLING – RECENT EVIDENCE

BRAIN COOLING: RECENT EVIDENCE

L-A Papile

Baylor College of Medicine, Houston, USA

Three large randomized controlled trials of induced hypothermia for the treatment of perinatal asphyxial encephalopathy have been reported. In the CoolCap study there was no significant reduction in the rate of death or severe disability at 18 months of age in neonates assigned within 6 hours of birth to selective brain cooling with mild systemic hypothermia. Infants were included if they had severe acidosis or required resuscitation at birth, clinical signs of moderate or severe encephalopathy, and abnormal results on amplitude-integrated electro-encephalography (aEEG). The method used to cool the brain included fitting a cooling cap around the head and maintaining the rectal temperature at 34°C to 35°C. In a pre-specified subgroup analysis there was no effect of treatment on the outcome in infants with the most severe changes on aEEG, but infants with less severe changes showed significant benefit. However, the study had insufficient power to assess subgroup effects definitively. A subsequent trial induced cooling systemically. Infants with clinical signs of moderate or severe encephalopathy who were six hours of age or younger, had either severe acidosis or perinatal complications and a need for resuscitation at birth were included. Systemic hypothermia (33.5°C) resulted in a significant reduction in the rate of death or severe disability at 18–22 months of age. The most recent trial (TOBY) combined elements of the two previous trials. Eligibility criteria included aEEG changes as defined in the CoolCap trial; however the method of cooling was systemic. The combined primary outcome of death or severe disability was not different between the groups. The results were unchanged when adjusted for severity of aEEG abnormalities. On secondary analyses survival without any neurologic abnormality was significantly higher among treated infants. Induced hypothermia is a promising therapy. Long-term neurodevelopmental outcome studies are needed before induced hypothermia can be considered standard of care.

THEME: NEPHROLOGY – UROLOGY

MEET THE EXPERTS: HYPERTENSION

HYPERTENSION

S D Marks

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Renovascular hypertension is an important cause of hypertension in children, accounting for up to 10% of all cases. Children usually present asymptomatically with very high blood pressure measurements, which are discarded as inaccurate thereby, delaying diagnosis. Renovascular hypertension is usually caused by fibromuscular dysplasia and is associated with certain syndromes, although there may be a genetic cause for non-syndromic patients. Many children with renovascular hypertension have abnormalities of blood vessels throughout their body (such as aorta, cerebral, intestinal or iliac vessels). Children should be managed by a multidisciplinary team of paediatric nephrologists, interventional radiologists and vascular and transplant surgeons. Children should undergo investigations including checking for presence of renal dysfunction and proteinuria as well as evidence of target organ damage (including left ventricular hypertrophy and hypertensive retinopathy). Renovascular hypertension should be considered in children with associated syndromes or vasculitis and/or where there is evidence of hyperreninaemic hyperaldosteronism and hypokalaemic metabolic alkalosis. Suspected patients may present with cerebral symptoms, cardiac failure or facial palsy or have had previous vascular insults. Other clinical clues include bruits heard over the renal artery or arteries and/or severe hypertension which is poorly controlled on at least two anti-hypertensive agents. Radiology tests include Doppler renal and abdominal ultrasonography, renal scintigraphy (before and after administration of an angiotensin converting enzyme inhibitor [ACEi]) and angiography (computerised tomographic, magnetic resonance, but preferably digital subtraction). Initial treatment is with anti-hypertensive drugs although most children have poorly controlled blood pressures. Clinicians should utilise ACEi and angiotensin receptor blockers with care as there is a major risk to renal dysfunction (although if unilateral disease renal function will need to be monitored by renal scintigraphy). Most children will require interventional (endovascular treatment with or without stenting) and/or surgical treatment, which should be delayed until the child is fully grown.

PLENARY LECTURE: FETAL HYDRONEPHROSIS – SHOULD WE DO A POST NATAL WORK UP OR NOT?

FETAL HYDRONEPHROSIS – SHOULD WE DO A POST NATAL WORK UP OR NOT?

P Winyard

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Background: Hydronephrosis, or renal pelvis dilatation (RPD) occurs in 1% of fetuses, and represents not just pathological aetiologies such as obstructive uropathy and vesicoureteric reflux (VUR) but also benign or transient dilatation. Severe fetal hydronephrosis (>15 mm) appears more likely to indicate obstruction/pathology, but smaller RP size does not consistently discriminate between conditions that need treatment and those that either resolve or may be a variant on normal. Such uncertainties cause needless anxiety plus variability in postnatal investigation and management for mild through moderate RPD (i.e. 5–9, 10–14 mm).

Study Design:We performed a systematic review and meta-regression of risks of postnatal RPD, obstruction and VUR in cohorts of fetuses with RPD <15 mm.

Results: About 506 potentially relevant papers; 18 met the inclusion criteria, including 12 reporting routine screening. Unsurprisingly, risk of postnatal RPD rose with the size of dilatation at presentation and was more likely to persist if diagnosed at an earlier gestation. We generated unique odds ratios demonstrating that risk of persistent postnatal RPD doubled per mm increase in fetal RP size, and decreased by 16–18% per gestational week. For example, one-third of 20 week gestation, 6 mm RP size fetuses had RPD 6 weeks postnatally (95% CI 14–54%), compared with almost all those with 12 mm RPD (97%; 89–99%). Risks of obstruction and VUR also increased per mm fetal RP size or earlier week of gestation, but the large majority of persistent RPD children had neither of these pathologies.

Conclusions: These outcome odds ratios should be helpful in antenatal counselling, but definitive prediction of prognosis needs to account for factors such as progression during gestation and associated abnormalities (calyceal dilatation, lower tract pathology). The low risk of obstruction and VUR is encouraging and lead us to ask: is it time to re-evaluate aggressive, invasive postnatal assessment of mild RPD?

MEET THE EXPERTS: HYPERTENSION

HYPERTENSION

E Wuehl

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In infancy arterial hypertension is very likely to be secondary, mainly due to renal parenchymal or vascular disease, cardiac or endocrine disorders. Thus a comprehensive diagnostic work-up is mandatory in each hypertensive child. Renoparenchymal disease is the most common cause of secondary hypertension in children and adolescents. The prevalence of hypertension in children with mild to moderate impairment of renal function is almost 50%. Since hypertension and proteinuria are the most important independent risk factors for renal disease progression, current treatment strategies to prevent progression should aim for a strict blood pressure control in the mid normal range and for reducing urinary protein excretion. Antagonists of the rennin–angiotensin-system (angiotensin converting enzyme inhibitors or angiotensin II receptor blockers) are first choice medication in hypertensive children with chronic kidney disease. RAS antagonists preserve kidney function not only by lowering blood pressure, but also by their antiproteinuric, anti-fibrotic, and anti-inflammatory properties.

DEBATE: VUR – DOES IT NEED TO BE DIAGNOSED OR TREATED?

VUR – DOES IT NEED TO BE DIAGNOSED OR TREATED?

R Beetz

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Vesicoureteral reflux (VUR) is associated with renal dysplasia and increased susceptibility to pyelonephritic scarring in children. However, in recent years the importance of VUR as the main risk factor for acquired renal scarring has been questioned. Young age, female gender, bladder dysfunction, high reflux grade and pre-existing renal damage are predisposing factors for renal damage in pyelonephritic episodes as well. Diagnostic strategies today must therefore take these factors into consideration enabling the selection of risk patients for reflux diagnostic. Surgery and long term antibacterial prophylaxis have been concurring therapeutic measures in VUR, using reflux grade as a main decision criteria. However, antibacterial prophylaxis as the supporting pillar of conservative reflux therapy was not efficient in preventing pyelonephritis in recently published prospective studies (still, the results of running studies like the RIVUR and PRIVENT study as well as the Gothenburg Reflux Study are pending and might provide contradictory results). At the same time, new surgical techniques have been established extending the spectrum of therapeutic alternatives. All this seems to encourage a global trend towards endoscopic therapy as a substitute for conservative concepts. In this situation, strategies for a risk-oriented approach are urgently needed to avoid nihilism as well as over-diagnostic and over-treatment. VUR should be diagnosed and treated in the individual child if it compromises renal parenchymal integrity by acting together with further risk factors. The main future task in diagnostic might be the identification of these risk factors by non-invasive measures as laboratory

parameters, i.e., proteomics. Regarding therapy, the most effective, least invasive method for each individual situation will be accepted by health carers and parents.

DEBATE: VUR – DOES IT NEED TO BE DIAGNOSED OR TREATED?

VUR – DOES IT NEED TO BE DIAGNOSED OR TREATED?

F Emma

Ospedale Bambino Gesù, Rome, Italy

Since the early 1970s VUR has been the object of many studies in pediatrics. The interest in VUR was originally based on the concept that VUR is a modifiable risk factor for urinary tract infections (UTI) and for the development of chronic renal failure (CRF) in children. On these bases, surgical and medical treatments have been proposed and wildly implemented. In particular, prophylaxis has been advocated for all grades of refluxes while surgery has been performed extensively for severe grade IV and V refluxes. However, several studies have shown that surgery was not superior to medical treatment in modifying the rate of febrile UTIs, the incidence of renal scars or the degree of CRF. It has also been recognized that most children that progress to renal failure are born with an underlying renal defect that is associated with VUR and the concept of ''reflux-nephropathy'' has been progressively abandoned. It is now clear that UTIs *per se* do not cause end-stage renal disease (ESRD) and that the incidence of ESRD associated with VUR has not been modified over the past 4 decades, since VUR has been treated aggressively. More recently, even the evidence supporting prophylactic treatment has been questioned. Several studies have failed to demonstrate a clear benefit in treating with prophylactic antibiotics children with low-grade reflux to prevent febrile UTIs or renal scars. Moreover, it has also been shown that these treatments favor the appearance of microbial resistance. Based on principals that invasive diagnostic test should not be performed in children if no benefit can be gained from their results, there is very little rationale left for diagnosing and treating low-grade VUR.

WORKSHOP: ENURESIS

ENURESIS

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In the last twenty years we have observed an explosion of scientific papers on nocturnal enuresis with more than 4700 reviewed articles published. The new scientific insights focus on hereditary, hormonal, detrusor activity and arousal mechanisms involved in the pathophysiology of enuresis. Both monosymptomatic (MNE) and non-monosymptomatic enuresis (NMNE) are often hereditary. Nocturnal polyuria, related to vasopressin deficiency, is common in MNE, but some bedwetters may also have an increased solute excretion. A reduced bladder reservoir function, due to nocturnal detrusor overactivity, had been detected in particular in NMNE. Sleep mechanisms are involved in all these patients and enuresis can be grouped among parasomnias. There are also recent data that indicate that the arousal disturbance ''*per se*'' may have subtle detrimental effects on the daytime cognitive function. According with the results of the recent epidemiological data the International Children's Continence Society identifies two subgroups of enuresis: MNE and NMNE. Enuresis in children without any other low urinary tract symptoms (LUTS) is defined as MNE. Other children with enuresis and any other LUTS are said to suffer from NMNE. However, there is a large grey-zone between MNE and NMNE. Although only 15–30% of enuretic children also experienced day time incontinence, far more can be suspected to have more day time symptoms of bladder disturbance such as urgency or decreased/increased voiding frequency reducing the subgroup of truly MNE to less than half of all bedwetting children. Constipation and attention deficit hyperactivity disorder (ADHD) are more frequent comorbid conditions and both reduce the chance of successful therapy. A focused diagnosis and a tailored long-term treatment have been also suggested. All studies confirm that enuresis is not caused by psychological problems, but it may contribute determine relevant psychological problem in untreated children. It has been demonstrated that children with nocturnal enuresis have had lower self-esteem compared with children with chronic childhood disorders, but after successful treatment their self-esteem is normalised. A life-span approach to this problem demonstrates a significant correlation between incontinence problems in adult life and dysfunctional voiding symptoms, in particular enuresis in paediatric age. . It derives that it is now mandatory to correctly assess and subclassify the enuretic patients to achieve a tailored treatment based on the evidence of the new updated knowledge.

THEME: NEUROLOGY – SOCIAL AND ENVIRONMENTAL PAEDIATRICS

MEET THE EXPERTS: INVESTIGATION OF A CHILD WITH A DEVELOPMENTAL DELAY

INVESTIGATION OF THE CHILD WITH A DEVELOPMENTAL DELAY

M Shevell

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Developmental delay are detected by a combination of dynamic surveillance and screening practices incorporated into routine child care and are a common reason for referral to the pediatric specialist for detailed evaluation. This evaluation focuses on determining, if possible, an underlying cause for the child's developmental delay. Determination of a cause has important implications regarding recurrence risk counselling, prognostication

and formulating a more precise programmatic approach. The etiologic evaluation of a child's developmental delay is guided by the child's specific neurodevelopmental disability. Basically there is a dichotomous distribution into two groups in terms of the frequency of a successful etiologic determination; (1) cerebral palsy, global developmental delay, mental retardation/intellectual disability, and (2) autistic spectrum disorders, developmental language impairment. For the former, an underlying etiology can be found more often than not, whereas for the latter, it is rare to find an underlying cause. Guidelines exist to assist the practitioner in selecting investigations in a rational fashion and these will be reviewed. Finally, newer testing methodologies (i.e., comparative genomic hybridization), especially from the realm of genetics, are being introduced and their potential applicability and impact on the evaluation of childhood developmental delay will be presented.

ROUND TABLE: TREATMENT OF ADHD – DRUGS OR NO DRUGS?

THE SCIENTIFIC BASIS OF NICE AND EUROPEAN GUIDELINES

E Taylor

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Longitudinal population studies have shown both that untreated hyperactive behaviour is a risk for several kinds of adolescent and adult maladjustment, and that the majority of cases in Europe are unrecognised. Systematic review of randomised controlled trials indicates that behaviour modification, social skills training, CNS stimulants, atomoxetine and certain other drugs are effective treatments. A good service will include all these modes of intervention, together with effective psychoeducation. The choice of initial therapy will be governed by several factors, reviewed in this talk: (1) The effect size and degree of risk of the different interventions, (2) The economic costs of interventions, (3) Evidence on differential subgroup responsiveness: data will be presented on the moderation of response by diagnostic subtype (hyperkinetic disorder v milder ADHD), (4) Types of comorbid problem: eg conduct disorder, tics, Tourette's syndrome, anxiety disorder, stimulant misuse or risk of stimulant diversion, (5) Evidence on long-term effects: the follow-up of a large comparative study (the MTA trial) has been interpreted as suggesting equifinality of therapies but the validity of this interpretation will be reviewed and challenged. The synthesis of these sources of evidence will be taken in the light of recommendations from NICE and European Guidelines, suggesting that the first choice of specific therapy in severe cases will usually be stimulant medication; while the first choice in mild to moderate cases will usually be behavioural modification and advice to parents and schools, with medication in reserve for those who do not respond.

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MEET THE EXPERTS: MANAGEMENT OF CHILDREN WITH HEADACHES

CHRONIC DAILY HEADACHE AND EPISODIC MIGRAINE

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Aims: Chronic daily headache is a condition that is often seen in teenagers and younger children, and is quite debilitating for the patient. Many patients will complain of a combination of severe migraine episodes, in addition to a milder, more constant headache.

Materials and methods: A review of the literature.

Results: Episodic migraine headaches occur in 10% of school aged children. Chronic daily headache may affect 4% of young women and 2% of young men. Current evidence suggests that many of these patients suffer from co-morbid symptoms such as anxiety, sleep disturbance, stomach pain, and dizziness. Daily preventative medications can decrease these symptoms.

Conclusions: Educating the patient and their family about the nature of these headaches, identifying co-morbid symptoms, prescribing an appropriate preventative medication, and providing routine follow-up are cornerstones of appropriate therapy.

PLENARY LECTURE: ENVIRONMENTAL EXPOSURES AND CHILD HEALTH – ESTABLISHED EVIDENCE AND OPEN ISSUES

ENVIRONMENTAL EXPOSURES AND CHILD HEALTH: ESTABLISHED EVIDENCE AND OPEN ISSUES

G Tamburlini

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Biological and social factors greatly influence children's susceptibility and exposure to environmental factors in their different developmental stages, from conception to adolescence. Some of these factors act in a very specific way and contribute to specific health effects (see table), others are the result of the combination of multiple

exposures and their interaction with social factors. An overview is provided of the available evidence about the main effects on health deriving from exposure prior to conception, during pregnancy, and after birth from infancy to adolescence, as well as of the available estimates of the burden of disease in children associated with some of the main environmental factors in the European Region. The health effects of exposure to environmental risk factors are not completely known. Causal relationships are in some instances still a matter for research. Even when a causal relationship is clearly established, the magnitude of the effect on health may not be known, given that most human diseases are multifactorial and it is difficult to establish the exact contribution of each single factor to a particular health effect. Moreover, exposure and risk are different in the various developmental stages and unequally distributed across countries, social groups and communities. The reasons for the existing uncertainties about the causal relationship, the dose-response relationship and the magnitude of the health effects are discussed, as well as the current main research challenges and methodological approaches to address these uncertainties. Finally, current developments in assessing the evidence of interventions to address children's environmental health issues are illustrated. Environment and health policies aimed at protecting children and the reproductive period need to take into account the existing body of evidence base as well as supporting further studies to improve our knowledge basis.

Table. Main health effects resulting from exposure to environmental risk factors.

Risk factors	RD	DD	ND	PG	C	CV	I	Overall BoD[1]
Indoor air pollution	X				X			High
Outdoor air pollution	X				X			High
Lack of W&S		X		X				High
Inadequate Nutrition	X	X	X	X		X		High
Unsafe foods		X						Moderate
Unsafe buildings	X				X		X	High
Hazardous chemicals			X		X			High
Radiation					X			Moderate
Noise			X				X	Moderate
Transport\mobility	X			X		X	X	High
Natural disasters				X			X	Moderate
Child labour	X		X	X	X		X	High

RD, respiratory diseases, including asthma; DD, diarrhoeal diseases; ND, neurodevelopmental disorders and cognitive impairment; PG, physical growth, including stunting and obesity; C, cancer, including in adult life; CV, cardiovascular diseases, including in adult life; I, injuries.

[1]BoD, Burden of Disease. High refers to at least 2% of all deaths or of all DALYs in any age group 0 to 19, and in at least one subregion of Europe; moderate refers to any less than that or to instances where available information on BoD is lacking.

WORKSHOP: BEHAVIOURAL THERAPY WORKSHOP

BEHAVIOURAL THERAPY WORKSHOP

J W Gregory

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The management of children with chronic disease such as diabetes remains challenging despite recent technological advances. Any aspect of treatment which requires practical input from the patient to optimise their outcome is at risk from poor adherence particularly during the teenage years. Using diabetes as an example, psycho-educational interventions have been shown to have a modest benefit on many outcomes including HbA1c. Techniques designed to facilitate behaviour change such as Motivational Interviewing (MI) have been shown to be beneficial in both teenagers and young adults with diabetes. Given the shortages of psychologists appropriately trained in techniques such as MI, this workshop will explore how some of the key principles which underlie these methods might be incorporated into routine consultations by all clinic staff. These principles have been incorporated into a training package for use by health-care professionals in routine clinic consultations. The effectiveness of this intervention is now being tested in the UK across 26 clinics with outcomes to be measured in 697 children and teenagers with diabetes (The DEPICTED Trial).

ROUND TABLE: OPTIMUM MANAGEMENT OF EPILEPSY

OPTIMUM MANAGEMENT OF EPILEPSY

R Guerrini[1,2]

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Growing evidence indicates that the effects of antiepileptic drugs on childhood epilepsies are partly linked to the specific type of epilepsy or epilepsy syndrome. Most (but not all) types of epilepsy can be classified into categories that are conceptually meaningful. It is likewise logical to set treatment targets and to estimate the risks according to the main syndromic groups, as they share common, electroclinical presentations and long-term prognosis. Treatment should then be adjusted to each patient's clinical characteristics. Treatment should be started soon, whenever there is indication that delay would harm the child. However, if seizures are not disabling, treatment may be delayed, in order to acquire more knowledge about the spontaneous expression of the disorder and the plan thoughtfully explained to the parents. In children presenting with partial symptomatic or cryptogenic epilepsy, it is important to fully assess the response to several different drugs and combinations if control is not achieved with the initial monotherapies. However, in patients regarded as having refractory epilepsy, possibilities for a surgical solution must be evaluated early and not delayed too much while waiting for the results of endless drug manipulations.

In severe epileptic encephalopathies, complete seizure control is often impossible and, ideally, treatment should aim at providing as much integration and autonomy, with alleviation of frequent seizures. Again, this should be carefully explained to the parents. In children with severe epileptiform EEG abnormalities coexisting with brain dysfunction (diffuse or specific), the extent of EEG-related neurological dysfunction should be determined, and vigorous treatment should be started to abate its effects. Finally, seizures could be worsened by inappropriate drugs, paradoxical reaction or intoxication. Severe childhood epilepsies are particularly at risk and mild idiopathic epilepsies may be transformed into severe disorders, priming a vicious circle of heavy treatment, whereby the original disorder is no longer recognizable.

MEET THE EXPERTS: CHILD ABUSE – HIGH INDEX OF SUSPICION

ABUSIVE HEAD TRAUMA

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Professor Alison Kemp is the Director of The Welsh Child Protection Systematic Review Group which has produced a series of systematic reviews around the clinical indicators, diagnosis and investigation of physical child abuse. Key findings and included studies are summarised on www.core-inf.cf.ac.uk and core-info leaflets have been produced jointly with the NSPCC to highlight the indicators of physical abuse to allied professionals. This session will address the benefits of the systematic review process and concentrate on Abusive Head and spinal trauma as well as ophthalmological findings in physical abuse. Data will be presented about the clinical and neuro radiological findings in abusive head trauma and abusive spinal trauma. The most recent review confirms the strong association of retinal findings with abusive head trauma which will be detailed. The data will be drawn together into an evidence based argument for an investigation strategy for suspected abusive head trauma or spinal trauma in children.

MEET THE EXPERTS: CAUSES AND MANAGEMENT OF SLEEP PROBLEMS IN CHILDREN WITH DEVELOPMENTAL DISABILITIES

CAUSES AND MANAGEMENT OF SLEEP PROBLEMS IN CHILDREN WITH DEVELOPMENTAL DISABILITIES

D E Greydanus

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Sleep problems (SP) are more common in children with developmental disabilities (DD) than in controls. Children with DD have a significant association with neuropsychiatric conditions as mood disorders, ADHD, and epilepsy that can complicate underlying SP. ADHD can be associated with insomnia and nocturnal enuresis. Children with autistic spectrum disorders (ASD) may demonstrate frequent awakenings worsened by overreaction to environmental noises. Obstructive sleep apnea (OSA) is noted in children with Down Syndrome, Fragile X Syndrome, cerebral palsy (CP), and meningomyelocele. Disordered breathing in children with meningomyelocele can also be due to central apnea or hypoventilation. Children with cerebral palsy (CP) often have OSA due to pharyngeal collapse and adenoid or tonsillar hypertrophy; other factors worsening SP in children with CP include chronic aspiration, gastroesophageal reflux, and abnormal sleep schedules. Management of SP in children with DD depends on the underlying issues based on a comprehensive evaluation including a polysomnogram. Parents need training to establish good sleep hygiene in these children and physicians need to correct underling physiologic issues as much as possible. Melatonin may help some children with CP and there is limited research support for the use of antihistamines or ramelteon (melatonin receptor agonist). For example, research notes that management of insomnia in children with ASD includes the use of melatonin or clonidine. Management of those with OSA may include otolaryngological evaluation, adenotonsillectomy, use of CPAP (nasal continuous airway pressure to keep airways open), weight loss (if appropriate), and nasal steroids. Tracheostomy is also performed in select situations to bypass the obstruction. Some note improvement with clonidine if ADHD is also present while sedative-hypnotic drugs tend to worsen sleep dysfunction. This session also considers other SP in these children.

INTERACTIVE CASE STUDY: MENTAL HEALTH ISSUES IN ADOLESCENCE

MENTAL HEALTH ISSUES AND DISORDERS IN ADOLESCENCE

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The role of the pediatrician in the diagnosis and management of adolescent mental illness is considered in this interactive session. Pediatricians are often consulted to identify normal behavior versus that reflective of overt mental health disorders in adolescents. Current research declares that 20% of children, adolescents, and adults have mental illness based on DSM-IV or ICD-9 criteria. Complicating this situation is that there are numerous comorbidities for these various perturbations and many of these disorders persist into adulthood. The prevalence of depression is 3–8% and anxiety is as high as 7% in the adolescent age group. The lifetime prevalence of oppositional defiant disorder in the United States is about 8.5% in the general population, with symptoms usually apparent before the age of 8 years. The lifetime prevalence of conduct disorder is about 9.5% (12% among males and 7% among females), and the median age of onset is around 11½ years of age. Lifetime prevalence estimates that intermittent explosive disorder is noted in 5% to 7% of the general population. Although the first major anger

attack is typically between 14 and 15 years of age, much younger patients may be seen in the clinical setting. Autism is noted in 2 to 6 per 1000. Schizophrenia occurs worldwide, with adult prevalence in the range of $1 \pm 0.5\%$; the first psychotic "break" is in the early twenties in males and late twenties for females. However, it is estimated that psychosis occurs in about one out of every 10 000 children and adolescents. Management of these various conditions includes *perspicacious* diagnosis, *comprehensive* psychotherapy for the adolescent and family, and *judicious* utilization of medication that may involve antidepressants, anxiolytics, mood stabilizers (i.e., lithium salts, anticonvulsants), and/or antipsychotics.

PLENARY LECTURE: GENETIC TESTING OF CHILDREN WITH A FAMILY HISTORY OF PROGRESSIVE NEUROLOGIC DISEASE

GENETIC TESTING OF CHILDREN WITH A FAMILY HISTORY OF PROGRESSIVE NEUROLOGIC DISEASE

A Clarke

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Genetic testing is used both to establish a diagnosis in the sick and to predict an individual's likely future state of health or disease. Diagnostic testing may raise social difficulties but is usually necessary when a child is ill. Concerns do arise, however, about the potential misapplication of predictive testing if the competence of the person to be tested is in doubt or if their understanding and expectations of testing are unrealistic. There is a broad consensus in many countries that the genetic status of a healthy (so far unaffected) child should not be investigated in relation to a serious, late-onset disorder for which early intervention makes little difference. We consider scenarios relating to Charcot-Marie-Tooth disease, Becker muscular dystrophy, myotonic dystrophy, Huntington's disease and ataxia telangiectasia. In handling contentious requests for testing, it is important to discuss the case with colleagues and to document the deliberative process; discussion in a forum with ethicists or counsellors may often be helpful. There may be good grounds for testing if the condition often develops in childhood or if a useful medical intervention can be made for the direct benefit of the child (for disease prevention or surveillance for complications). It would be particularly difficult to justify a single blanket policy to fit all cases. Difficulties may arise if the test is requested by an adoption agency or by one parent in the course of a marital dispute. Difficulties may also arise in the face of cultural differences. While it would in principle be helpful to collect evidence of the outcome of testing and of not testing children and young people at risk of neurodegenerative conditions, there are potentially serious problems with both the collection and interpretation of data; we may need to rely upon precept and principle to guide us where the 'evidence' is lacking.

ROUND TABLE: OPTIMUM MANAGEMENT OF EPILEPSY

FITS ANS FAINTS IN TEENAGERS

K J Mack

Department of Neurology, Mayo Clinic, Rochester, MN, USA

Aims: To review common "episodic" events involving teenagers, including forms of epilepsy, othostatic intolerance, and unusual migraine events.

Materials and methods: A review of the literature and personal experience.

Results: Teens may present with difficult to characterize recurrent events. A discussion of frequent epileptic and non-epileptic phenomenon that are seen in teenagers is presented.

Conclusions: Educating the patient and their family about the nature of these symptoms, identifying co-morbid symptoms, prescribing an appropriate treatment, and providing routine follow-up are cornerstones of appropriate therapy.

MEET THE EXPERTS: AN APPROACH TO THE CLINICAL MANAGEMENT OF THE CHILD WITH NEURODEVELOPMENTAL DISABILITIES

AN APPROACH TO THE CLINICAL MANAGEMENT OF THE CHILD WITH NEURODEVELOPMENTAL DISABILITIES

M Shevell

McGill University, Montreal, Canada

Neurodevelopmental disorders are a group of chronic heterogeneous disorders that share a disturbance, either quantitative or qualitative, in one or more of the core developmental domains. Collectively they are common in the pediatric age group and represent a frequent reason for referral for evaluation to pediatricians and pediatric sub-specialists. Aspects of their clinical management include the following: (1) confirmation that a delay does exist, (2) categorization of the precise type of neurodevelopmental disability, (3) rational laboratory investigations and consultations to search for a possible underlying cause, (4) referral to appropriate rehabilitation service providers, (5) counselling of the family regarding diagnosis, causation, needs and realistic expectations, and (6) identification and management of co-existing or intercurrent medical and behavioural conditions that may limit the optimization of the child's full intrinsic developmental potential. For the medical service provider, it is the work up for possible causation and the identification and management of co-existing conditions that are the focus of major efforts. The evaluation of causation is determined largely by the neurodevelopmental disability subtype and is greatly assisted by established practice parameters and guidelines. Co-existing conditions that arise frequently in this population include; epilepsies, spasticity, sleep disorders, attentional limitations and oppositional behaviours that can challenge caregivers. While much practitioner time can be ex-

pended on these efforts, outcomes can be modified leading to improve functional status for the child and a lessening of burdens of care for the family.

ROUND TABLE: TREATMENT OF ADHD – DRUGS OR NO DRUGS?

TREATMENT OF ADHD: DRUGS OR NO DRUGS?

D E Greydanus

Michigan State University, East Lansing, Michigan, USA

Attention Deficit Hyperactivity Disorder (ADHD) is a chronic, worldwide, neurobehavioral disorder and epidemiologic studies suggest a prevalence of 3% to 9% in children and adolescents. This Round Table reviews various issues related to use versus non-use of drugs for ADHD and provides provisions for the role of medication (i.e., *stimulants, antidepressants, alpha$_2$* agonists, and *norepinephrine reuptake inhibitors*, others) for these pediatric patients. Why is there such worldwide controversy with regard to using these drugs for pediatric patients with ADHD? Is it related to an appropriate or atrabilious backlash against the modern movement in psychiatry for its emphasis on drugs versus psychotherapy in general for mental health problems? Research has long noted that not all patients with ADHD are improved with medications, some are unable to tolerate drug side effects, and positive effects are limited – noted in only a few domains of function. Also, approximately half of these patients have co-morbidities (i.e., learning disorders, depression, anxiety disorders, conduct disorders, others) that do not improve with these medications and may render use of such drugs ineffectual or even induce negative results in some. Those with overlapping achievement and behavioral problems need behavioral therapies aimed at promoting academic success and ameliorating negative behavior. Complicating such issues is the lack of research on long term effects of anti-ADHD drugs on children and youth. Since the core symptomatology of ADHD often lasts a lifetime, use of such medications for extended periods of time is unacceptable to many clinicians, patients, and parents. Some research concludes that any kind of measurable positive effects from these drugs occur only if combined with non-drug treatment options. Finally, another factor in this complex clinical conundrum is the limited training in mental health and psychopharmacology provided for most pediatricians.

ROUND TABLE: TREATMENT OF ADHD – DRUGS OR NO DRUGS?

PARENTAL ADHD AND ITS IMPACT ON TREATMENT OF CHILDREN

P Ramchandani

Department of Psychiatry, University of Oxford, Oxford, UK

Attention Deficit Hyperactivity Disorder (ADHD) or Hyperkinetic disorder is a common reason for referral to child and adolescent mental health services in the US and Europe, particularly for the referral of boys. In recent years it has been recognised that a significant proportion of children with ADHD have persisting difficulties through adolescence and into their adult lives. Many of these people will then become parents, and their children will be at increased risk of developing ADHD themselves. Parental symptoms can present challenges to the usual management of children with ADHD as parents are a key partner in the treatments available, whether psychological, medical or educationally based. This brief presentation will review some of the research literature about adult ADHD and consider key challenges points in the management of hyperkinetic disorder in child mental health services, where a parent also has symptoms of the disorder.

ROUND TABLE: TREATMENT OF ADHD – DRUGS OR NO DRUGS?

TREATMENT OF ADHD: DRUGS OR NOT DRUGS? PRESCRIBING OF METHYLPHENIDATE

I C K Wong

Centre for Paediatric Pharmacy Research, The School of Pharmacy, University of London, London, UK

Methylphenidate is the most commonly prescribed medication for ADHD patients. It belongs to a group of drugs known as central nervous system stimulants. The mechanism by which stimulants act in reducing symptoms in ADHD is not completely clear, however, it is believed that they inhibit the re-uptake of dopamine and noradrenaline into the presynaptic neuron and increase their release into extraneuronal space thus increasing intrasynaptic concentrations. Many studies have examined the efficacy of stimulants in ADHD and have shown a response rate of 70%. Methylphenidate, usually used as first-line therapy has been used for over 50 years for the treatment of ADHD. It is licensed as part of a comprehensive treatment programme for ADHD in children aged 6 years and above in the UK. Normal release methylphenidate medications have a shorter duration of action of approximately four hours; some patients find the effects of the twice or thrice daily dose regimen diminish in the evening requiring an additional dose although a balance needs to be achieved as methylphenidate can cause insomnia. This multiple dosage regimen also brings with it other difficulties such as the administration of medication during school which causes problems such as storage of a controlled drug and also stigmatises the child for having to take medication. This led to the development of sustained release preparations of methylphenidate. However different sustained release preparations have different pharmacokinetic profiles and potentially affect the clinical outcomes. This presentation will discuss the pros and cons of different preparations and explain how different drug delivery systems (formulations) affect the releasing properties. Finally, we will also discuss

some of the latest findings in the adverse drug reactions to methylphenidate.

WORKSHOP: MANAGEMENT AND APPROACH OF THE FLOPPY INFANT

MANAGEMENT AND APPROACH OF THE FLOPPY INFANT

M Kinali

Chelsea and Westminster Hospital, London, UK

Infantile hypotonia remains a common but often challenging diagnosis for the general paediatrician. We recognise central hypotonia that originates from conditions affecting the brain, brainstem, and cervical spinal junction and motor unit hypotonia from the anterior horn cell, peripheral nerve, neuromuscular junction, and muscle. Following the advent of routine brain imaging in infants with abnormal neurological signs, it has become though apparent that infantile hypotonia is a non specific clinical sign as brain involvement can be also observed in floppy infants with a primary neuromuscular disorder. This can range from small and non-specific brain lesions (ventricular dilatation or mild atrophy or periventricular densities), frequently observed in infants with congenital myotonic dystrophy, congenital myopathies and spinal muscular atrophy, to structural brain changes, an invariable feature of some forms of congenital muscular dystrophy, such as Walker-Warburg or Muscle-Eye-Brain disease or can be associated with motor neurone involvement in pontocerebellar hypoplasia type I. Other clinical signs can often help distinguishing infants with primary neuromuscular disorders from those with central nervous system involvement or with other conditions such as metabolic or genetic syndromes. Reduced visual alertness, convulsions and abnormal movements are generally suggestive of central involvement. In contrast, a neuromuscular disorder should be suspected when there is a history of poor fetal movements and/or polyhydramnios and when the infants show contractures or obvious signs of weakness, with absent or reduced antigravity movements on stimulation of the limbs. The presence of these signs can help constructing a differential diagnosis targeting the most appropriate investigations. A final diagnosis in these cases can often only be reached after putting together the clinical findings and a comprehensive evaluation of the central and peripheral nervous system.

INTERACTIVE CASE STUDY: INDICATION FOR SLEEP STUDIES IN CHILDREN

SLEEP-RELATED BREATHING DISORDERS IN CHILDREN: CAUSES, CONSEQUENCES AND TREATMENT

J A Henderson

University of Bristol & Bristol Royal Hospital for Children, Bristol, UK

Aim: The aim of this session is to introduce delegates to the common disorders of breathing during sleep in childhood, to review the presentation and investigation of these patients and to consider therapeutic options. By the end of the session, the delegates should: Understand the pathophysiology of obstructive sleep apnoea syndrome (OSAS) and control of breathing disorders in childhood. Recognize the presenting features of these conditions and when to request further investigations. Know the main physical and neurodevelopmental consequences of sleep related breathing disorders (SRDB). Be able to plan the management of a patient with a confirmed SRBD.

Content: Two cases will be presented, one with obstructive SRBD and one with a control of breathing disorder. By working through each case, delegates will consider in turn the presentation of these disorders, their characteristic effects on sleep and daytime performance, including neurocognitive development, diagnosis using sleep studies and the principles of management of each condition. Obstructive sleep apnoea syndrome (OSAS) is part of a clinical spectrum of disease that includes primary snoring (PS). Approximately 10% of children have reported habitual snoring (on most or all nights) but clinical symptoms are poor discriminators between those with PS and those with OSAS. The majority of cases presenting in preschool children have associated adenotonsillar hypertrophy. Although it is now uncommon to see overt growth failure or cor pulmonale as a consequence of OSAS, there are well described cognitive impairments associated with the condition. Adenotonsillectomy is curative in the majority of cases. Congenital central hypoventilation syndrome is a rare genetic disorder that affects control of respiration. Affected individuals have hypoventilation during sleep and, in severe cases, during wakefulness also. It is important to recognise this condition as ventilation support is generally associated with prolonged survival with good quality of life.

THEME: ORTHOPEDICS, EMERGENCY & TRAUMA DELIVERED BY HMS & CHB

INTERACTIVE CASE STUDY: CHILDHOOD INJURY CARE

PEDIATRIC TRAUMA CARE – APPLICATION OF PRINCIPLES TO CASES

T H Matheney[1], D Mooney[2]

[1]*Department of Orthopaedic Surgery, Children's Hospital Boston, Harvard Medical School, Boston, MA, USA,*
[2]*Department of Surgery, Children's Hospital Boston and Harvard Medical School, Boston, MA, USA*

Mortality and morbidity from childhood injury may be decreased by the early application of an organized system of care. This session will expand on the principles presented during the previous day's round table discussion and will demonstrated their usefulness through case scenarios of injured children. Optimal care for injured children depends on prompt, efficient pre-hospital evalu-

ation, resuscitation and transportation. Once arrived in the Emergency Department, various members of the pediatric trauma resuscitation team fulfill their roles in a coordinated fashion, supplemented by diagnostic studies. The principles of Airway, Breathing and Circulation will be expanded and their application to cases will be demonstrated. The parameters of hemodynamic stability in children will be defined as will the role of laboratory and imaging studies. Orthopedic injuries will be discussed, especially as they affect the initial hemodynamic stability and measures that can be done to promptly address them in the multiply injured child. Definitive orthopedic management, including its timing and the principles of care will be reviewed. Long-term follow-up will be provided including symptoms of acute stress response and post-traumatic stress disorder in children. The long term deficits in physical functioning related to orthopedic injuries in these cases will be discussed. Through the application of pediatric injury care to patient case scenarios, the audience will gain an enhanced understanding of the real-life use of these strategies to improve their patients' outcome. The role of these strategies in patient's long term outcome and measures that can be used to help improve their function will be reviewed in detail.

ROUND TABLE: CHILDHOOD INJURY CARE ROUND TABLE

PEDIATRIC TRAUMA – AN INTERNATIONAL HEALTHCARE CRISIS

K M Ban[1], S Lazzeri[2], T H Matheney[3], D Mooney[4]

[1]*Department of Emergency Medicine, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, USA,* [2]*Trauma Center, Azienda Ospedaliero-Universitaria Meyer, Florence, Italy,* [3]*Department of Orthopaedic Surgery, Children's Hospital Boston, Harvard Medical School, Boston, MA, USA,* [4]*Department of Surgery, Children's Hospital Boston and Harvard Medical School, Boston, MA, USA*

Adult trauma centers have a lower risk of death and long-term disability for severely injured patients than non-trauma centers. The same principles have been applied to the pediatric population and studies suggest gravely injured children have better outcomes when treated in pediatric trauma centers where personnel are trained and experienced in the specific needs and unique physiology of pediatric polytrauma patients. The World Health Organization predicts that traumatic injuries will surpass infectious diseases as the leading cause of death among children by 2020, reflecting both the progress made against infections and the absence of similar progress towards preventing and treating injuries. This discussion will focus on pediatric injury as an international healthcare crisis and will explore the importance of pediatric trauma centers and pediatric trauma systems in reducing mortality and long-term morbidity. It will review the essential elements of a pediatric trauma team, center and system through a clinical case involving pre-hospital care, emergency department assessment, multidisciplinary trauma team activation, in-hospital care and subsequent rehabilitative and psychological management. Based upon the development of a pediatric trauma center in Florence, necessary steps will be discussed. Attention will be paid to issues in the development of a trauma response team and that team's management of the multiple injured pediatric patient with challenging orthopedic lesions. Supracondylar fractures with poor perfusion and femur fractures in brain injured children will be discussed. At the end of the discussion, conference participants will appreciate the importance of organizing a cohesive multidisciplinary trauma team and developing expertise into a trauma center dedicated to the care of children. They will understand the priorities for the management of the multiply injured pediatric patients and have an enhanced knowledge base of the role of specialists.

THEME: RHEUMATOLOGY

INTERACTIVE CASE STUDY: DIAGNOSIS AND TREATMENT OF A CHILD WITH A RECURRENT AND/OR PERSISTENT FEVER – IS IT A RHEUMATOLOGIC DISEASE?

DIAGNOSIS AND TREATMENT OF A CHILD WITH A RECCURENT AND/OR PERSISTENT FEVER – IS IT A RHEUMATOLOGIC DISEASE?

R Cimaz

Department of Pediatrics, University of Florence, Florence, Italy

Fever is a common symptom in children and may sometimes be prolonged or recurrent. There are many differential diagnoses, which may lead to significant diagnostic delay. Diagnosis is based on the clinical presentation as well as a panel of investigations that are necessary in order to exclude the many potential causes of fever before reaching a definite diagnosis. In particular, the physician will look for infections and malignancies before considering the disease as inflammatory. In children with recurrent episodes of fever, a common cause may be the PFAPA syndrome, that must be considered in children with periodic fevers without signs of respiratory infections. Other rarer causes include Kawasaki disease, systemic-onset juvenile idiopathic arthritis, and the hereditary periodic fevers. These (also called autoinflammatory syndromes) are a group of disorders characterized by intermittent bouts of clinical inflammation with focal organ involvement, mainly of the abdomen, musculoskeletal system, and skin. The most common is Familial Mediterranean Fever, while TRAPS, hyper-IgD and the cryopyrin-associated periodic syndromes (CAPS) are rare.

INTERACTIVE CASE STUDY: DIAGNOSIS AND TREATMENT OF A CHILD WITH A RECURRENT AND/OR PERSISTENT FEVER – IS IT A RHEUMATOLOGIC DISEASE?

DIAGNOSIS AND TREATMENT OF A CHILD WITH A RECURRENT AND/OR PERSISTENT FEVER – IS IT A RHEUMATOLOGICAL CONDITION?

J Clinch

Bristol Royal Hospital for Children, Bristol, UK

Fever is a common symptom in childhood illness. There are many paediatric musculoskeletal conditions where a fever may be the presenting feature. A thorough evaluation can lead to a diagnosis and targeted therapy. Infection can manifest itself within a joint or lead to a secondary arthritis picture. Differentials that need to be considered within this field include reactive arthritis, osteomyelitis, septic arthritis, lyme disease and post-streptococcal disease. Systemic-onset Juvenile Idiopathic Arthritis makes up 10% of the idiopathic arthritis we see. This condition has a typical fever pattern that, when considered with its other manifestations, leads to early recognition and treatment. Fever and arthritis is also seen in malignancy, inflammatory bowel disease and the rarer immunodeficiencies. Key to recognising any of these conditions is the ability to pick up key points in the history and perform a musculoskeletal examination on a child. This presentation will cover all the areas mentioned and look at the different treatment modalities available. This will lead onto the second talk (Dr Cimaz) where systemic connective tissue diseases, vasculitides and other autoinflammatory musculoskeletal diseases will be discussed.

PARALLEL LECTURE: MANAGEMENT OF A CHILD WITH A SWOLLEN JOINT

MANAGEMENT OF A CHILD WITH A SWOLLEN JOINT

G Simonini

Department of Pediatrics, University of Florence, Florence, Italy

Arthritis (i.e. joint swelling) is not a rare condition in childhood, and over one hundred different conditions may produce signs and symptoms of arthritis in childhood. Joint inflammation can arise from multiple causes, varying from a reaction to minor infections, to injuries, and even to the presence of skeletal or systemic malignancies. In all cases the basis for diagnosis is history, including family and past medical history, and physical examination including all of the joints. Laboratory tests such as erythrocyte sedimentation rate, complete blood count, rheumatoid factor, and antinuclear antibodies, can be useful in selected situations only. Other tests will be performed with the basis of a specific clinical suspicion. Recognition of unusual syndromes is important; no child should be labeled as having juvenile idiopathic arthritis (JIA) unless there is a clear history of persistent joint (*not* soft tissue only) swelling, in appropriate sites, and only if other causes of joint swelling have been excluded. Bacterial infection should be suspected in a child with fever and a single warm and painful swollen joint; in this case synovial fluid analysis and cultures should be immediately performed in order to identify the nature of an underlying infection. Many different conditions can mimic rheumatic diseases; the talk will deal with some of the more common disorders seen by pediatric rheumatologists.

THEME: SPECIAL INTEREST

MEET THE EXPERTS: MEDICATION ERRORS IN PAEDIATRIC PATIENTS

MEDICATION ERRORS IN PAEDIATRIC PATIENTS

I C K Wong

Centre for Paediatric Pharmacy Research, The School of Pharmacy, University of London, London, UK

Medical errors are a major problem in the UK and other countries. Apart from the direct expense to the healthcare system, there are great personal costs to those involved including patients, their families and staff, and public confidence is undermined. Therefore, policy initiatives have been implemented to reduce such mistakes. Medication errors are thought to be the most common type of medical errors, with the majority of studies being conducted in adults. However, recent evidence highlights the fact that medication errors are also a significant problem in the paediatric population. Children, by the nature of their variable size and physiology, are vulnerable to overdose, as well as, underdose. Furthermore, their inability to self-advocate may increase their vulnerability. A published literature review has suggested the true incidence of paediatric dosing errors could be around 500 000 per year in England. In this presentation, we will discuss the epidemiology of medication errors in children. There are great variations in the definitions and categories of medication errors, methodologies of research, study settings and countries used in current literature which change reported error rates several-fold. We will also discuss the key factors contributing to paediatric medication errors, including lack of appropriate paediatric formulations, high risk groups, communication issues between health professionals, dose calculation mistakes and inadequate clinical practice. A systematic approach to the prevention of medication errors is needed to tackle the paediatric medication errors; hence we will also discuss risk reduction strategies such as electronic prescribing and computerised physician order entry (CPOE) systems which can significantly reduce paediatric medication errors in conjunction with pharmacist monitoring, improved communication and environments which promote best practice.

PARALLEL LECTURE: ESPID – ANTIBIOTIC USE IN CHILDREN IN EUROPE

DEVELOPING AND EVIDENCE-BASED APPROACH FOR ANTIMICROBIAL PRESCRIBING ACROSS EUROPE

M Sharland

St. George's Hospital, London, UK

Antibiotics are the commonest medicine given to children. In the UK alone, there are around 6 million antibiotic prescriptions/year prescribed for children. Across Europe on average each child receives one antibiotic prescription every year. There remains a wide variation in antibiotic prescribing rates for adults and children, both in the community and in hospital. Data from ESAC has identified a clear correlation between rates of community antimicrobial sales in different countries and the prevalence of penicillin resistant pneumococci. The European Union has highlighted the overuse of antibiotics and antimicrobial resistance as a major health problem. There are very few new antibiotics under development and most of the major pharmaceutical companies have a very limited pipeline of new antibiotics. It has always been recognised that children are at increased risk of serious bacterial infection and antibiotic treatment for major infections are life saving. Equally too many antibiotics are prescribed for minor viral upper respiratory tract infections. It is a complex balance of risks. The European Society of Pediatric Infectious Diseases (ESPID) has therefore launched a new initiative called ARPEC (Antibiotic Resistance and Prescribing in European Children), with the aim of improving the evidence base for antibiotic prescribing and not prescribing. The initial aims of the project are to conduct a Point Prevalence Survey across Children's Hospitals in Europe, to determine the variation in the choice and doses of antibiotics used to treat the same infections. The study also aims to systematically collect bacteraemia data across the EU to determine the current rates of bacteraemia and antimicrobial resistance (AMR). The study will collect data on the variation in drug and dose used by Primary Care Pediatricians to treat common childhood infections in the ambulatory setting. We will also be aiming to systematically identify the variation in community and hospital prescribing guidelines across the EU. The project will then develop a web based educational package for primary care pediatricians and those in training. ESPID and the RCPCH are already developing the Blue Book – a European wide evidence based handbook for the treatment of childhood infections. There remains little data on the variation of antimicrobial prescribing for children, although preliminary studies suggest that both the choice of antibiotic for specific clinical indications, and the dose and duration differ markedly both within and between countries. Pilot data is now available from different aspects of this project and will be presented. New initiatives on improving prescribing will be discussed. ESPID would like to develop collaborations with other professional bodies in Europe to improve the rational prescribing of antibiotics to children.

WORKSHOP: ITALIAN COCHRANE CENTRE – ROLE OF COCHRANE REVIEWS FOR EBM

ROLE OF COCHRANE REVIEWS FOR EVIDENCE BASED MEDICINE

L Moja

Italian Cochrane Centre, Mario Negri Institute for Pharmacological Research, Milan, Italy

Since its inception in 1993, The Cochrane Collaboration has grown to include 16 000 members from more than 100 countries throughout the world. Today over half the world's population has access to The Cochrane Library and a Cochrane review is viewed every 7 sec of every minute of every day. What is the role of Cochrane systematic reviews in closing the gaps exist between clinical practice guidelines and research evidence? This workshop will discuss the principles on which the Collaboration is based and the mechanisms used to make timely, accurate information about the effects of health care readily available in regularly updated systematic reviews. In addition, I will challenge The Cochrane Collaboration for its sometimes too zealous work and will propose new opportunities and commitments to substantially improve Cochrane reviews supporting the lifelong information and learning needs of the health professionals.

THEME: SURGERY – TRANSPLANTATION

MEET THE EXPERTS: NON SURGICAL VS. SURGICAL TREATMENT OF APPENDICITIS

NON OPERATIVE MANAGEMENT OF APPENDIX MASS IN CHILDREN

P Puri

The Children's Research Centre, Our Lady's Children's Hospital, University College Dublin, Dublin, Ireland

Background: The management of an appendix mass in children is controversial. We reviewed our experience of conservative management of appendix masses over the last 27 years.

Methods: The medical records of all children who presented with an appendix mass at the three Children's Hospitals in Dublin between 1982 and 2008 were reviewed. There were 687 children (451 boys and 236 girls) with a median age of 7.5 years (range 2 months to 18 years) presented with an appendix mass. About 51 children had immediate appendectomy. The remaining 636 children were treated conservatively by close observation, intravenous antibiotics and intravenous fluid or diet as tolerated. These children were considered to have responded to treatment once they were pain free and pulse rate and temperature were within normal limits for more than 48 hours. At discharge the children were booked for

interval appendectomy in 4–6 weeks time (mean 5.7 weeks).

Results: Five hundred and fifty seven (87.6%) of the 636 children responded to the initial conservative management and were discharged after a median hospital stay of 5.8 days (range 3–24). Seventy-nine (12.4%) children with appendix mass failed to respond to initial non-operative treatment and required appendectomy or drainage of an appendix abscess. The complication rate for elective appendectomy was 2.51% (14 patients). Histological examination demonstrated acute or subacute inflammation in 49.7% of appendices removed at elective appendectomy.

Conclusion: Non-operative management of an appendix mass followed by elective appendectomy is safe and effective method of management.

MEET THE EXPERTS: NON SURGICAL VS. SURGICAL TREATMENT OF APPENDICITIS

NON SURGICAL VERSUS SURGICAL TREATMENT OF APPENDICITIS

D C Liu

University of Chicago Comer Children's Hospital, University of Chicago Pritzker School of Medicine, Chicago, USA

Background: The surgical management of non-perforated acute appendicitis (NPA) continues to generate much controversy despite historically excellent surgical outcome. Timing of surgery and choice of ''open'' (traditional laparotomy) vs. ''closed'' appendectomy (laparoscopy) remains a subject of great debate. In particular, the choice of operative vs. non-operative management with delayed surgery for perforated appendicitis (PA) remains an open question with many centers adopting either or both protocols.

Methods: The author presents a review of the pediatric surgical literature to assess the short- and long-term outcomes for ''open'' vs. ''closed'' appendectomy, focusing also on cost-analysis. The literature on short- and long-term outcomes for operative vs. non-operative management for PA will also be reviewed.

Results: Surgical outcomes for ''open'' vs. ''closed'' appendectomy for NPA are similar with excellent short- and long-term outcomes. Outcomes of operative vs. non-operative management of PA have similar successful outcome based on retrospective analysis. Level 1 or 2 evidence does not currently exist for comparison studies of NPA management, albeit such trials are underway.

Conclusions: Appendectomy via ''open'' or ''closed'' technique is a matter of ''Surgeon's Choice,'' with similarly successful outcome, albeit appendectomy via laparoscopy is now more commonly performed. Surgical outcomes of operative vs. non-operative management of perforated appendicitis appear similar, although prospective, randomized controlled studies are needed and currently underway to more accurately assess outcome based on level 1 or 2 evidence.

MEET THE EXPERTS: LATE NEUROENDOCRINE EFFECTS OF CHILDHOOD CANCER

LATE NEUROENDOCRINE EFFECTS OF CHILDHOOD CANCER

H A Spoudeas

London Centre of Paediatric/Adolescent Endocrinology, Neuroendocrine Division Great Ormond Street and University College Hospitals, London, UK

Aims of session:

(1) Definitions and Challenges of Topic, Terminology and Service Delivery:

(a) '(Neuro) Endocrine' – Broad Topic
  (i) Central vs target gland –
  (ii) 2^0 Consequences – Morbidity and Mortality (e.g.) metabolic syndrome, osteopaenia, tumorigenesis, QoL
  Psychology – hormones influence mood, wellbeing, function
  Late Mortality – life-threatening hormone deficiencies

(b) 'Late' –
  (i) Diagnostic signs vs evolving- is it truly late?
  (ii) Pre-symptomatic surveillance vs symptomatic (ie late)
  (iii) Very long term? necessity and purpose of continued f/up?

(c) 'Effects' –
  (i) Cause or Consequence
  (ii) Disease or Treatment – Induced – and which therapy?
  (iii) Morbidity vs Mortality
  (iv) Quantity vs Quality of Life - ethical costs & balanced choices- whose? medical vs personal – patient empowerment

(d) 'Childhood' –
  (i) Developing organism- endocrine maturity vital process
  (ii) Timing of insult and duration of effect – cf young adult treated as child vs treated as adolescent /young adult
  (iii) Overlapping age- transitions determine symptomatology and service development, and specific electronic health record
  (iv) Reproductive Capacity and Care of Pregnancy and Offspring? as yet inadequately or not considered

(e) 'Cancer' –
  (i) Cancer only vs other Life-threatening disease or tumours
  (ii) treatment includes surgical, radiation and high dose therapies used in cancer (e.g.) 'benign' brain tumours (craniopharyngioma, low grade astrocytoma, pituitary) & bone marrow transplants for non oncological conditions

(2) (Controversial) Topics restricted to Neuroendocrine and Reproductive

(3) Interactive case presentations highlighting patient, family & physician dilemmas / choices- e.g.
(a) pubertal progress and fertility,
(b) adult GH replacement therapy,
(c) quality vs quantity of life outcomes and its determinates,
(d) late morbidity and mortality,
(e) issues of service delivery, transitional care, self-help 'empowerment',
(f) ethics of 'cost' – benefits
- reproduction techniques
(4) Suggested Strategies
(a) Introduce e-record model and SUCCESS service
(b) Recommended baseline minimum data set and patient information
(c) Transition services – integrated with oncology, neurosurgery, BMT
(d) Levels of Patient Care. – and Algorithms
(i) Treatment type and intensity, organ(s) involved and patient age and sexual maturity and choice determine
- f/u need, frequency, duration, specialty services
- mode of delivery (direct, e- or telecom, Gp, self-referral)
- personnel
- preventitive or life-enhancing (vs life sustaining) therapies
(5) Future Needs

MEET THE EXPERTS: MANAGING MRSA INFECTIONS ANTIBIOTIC RESISTANCE IN *STAPHYLOCOCCUS AUREUS*

INFECTIONS WITH TREATMENT OF MRSA INFECTIONS AS A PARADIGM

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Since the mid 1990s, an epidemic of *Staphylococcus aureus* infections has emerged in the USA. Strains responsible for epidemic disease are usually resistant to ß-lactam antimicrobials and are designated by the acronym MRSA, meaning methicillin-resistant *S. aureus*. The MRSA epidemic has allowed discovery of new mechanisms of antimicrobial resistance and has forced the creation of new antimicrobial treatment paradigms. For children, these changed treatment strategies have additional urgency as new antimicrobials frequently have not been evaluated in children and other new compounds belong to antimicrobial classes that pediatricians traditionally avoid. For treatment of skin and soft tissue infections, incision and drainage continues to occupy a central place in the therapeutic paradigm while older antibiotics such as the lincosamide clindamycin, trimethoprim/sulfamethoxazole and long acting tetracyclines such as doxycycline and minocycline as well as newer compounds such as linezolid have competed for a therapeutic niche. Understanding the optimal therapy will require the results of a large study, now underway to compare many of these treatments. Management of more severe infections still relies on vancomycin. Three mechanisms of resistance complicate therapy with this older antimicrobial, population resistance, so called low level, or intermediate, resistance (VISA) and high-level resistance (VRSA). A new lipodepsipeptide antibiotic, daptomycin, is bactericidal but development of resistance is frequent during therapy and binding to pulmonary surfactant limits its use in pneumonia. Linezolid is bacteriostatic and prolonged use increases its toxicity and the rate of emerging resistance. The newly licensed telavancin has received no evaluation in children but may be active against isolates relatively resistant to vancomycin. Tigecycline and synercid have received little evaluation in children. Epidemic MRSA disease has complicated therapeutic decision-making. A vaccine is needed to prevent invasive *S. aureus* disease in children and adults.

WORKSHOP: ANTIBIOTIC RESISTANCE AMONG COMMON PEDIATRIC PATHOGENS: MECHANISMS AND CLINICAL IMPLICATIONS

THE CHANGING EPIDEMIOLOGY AND PATHOPHYSIOLOGY OF *STAPHYLOCOCCUS AUREUS* INFECTIONS IN THE USA

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Staphylococcus aureus is well adapted to humans and is most often a commensal, asymptomatically colonizing about 30% of the population. Since the mid-1990s, an epidemic of *S. aureus* infections has emerged in the USA. Strains responsible for epidemic disease are usually resistant to ß-lactam antimicrobials and are designated by the acronym MRSA, meaning methicillin-resistant *S. aureus*. MRSA isolates were estimated to have been responsible for an invasive disease attack rate of 31.8/100.000 persons and nearly 20,000 deaths in a recent year. In San Francisco, in a recent year, about 1/300 residents had a medically attended MRSA infection. With the advent of epidemic MRSA disease has come a focus on the circulation of *S. aureus* in the community as community associated MRSA (CA-MRSA) infections have become common with a parallel decline in the traditional health-care associated disease. New high-risk groups for MRSA infections have also emerged that include children, incarcerated populations, military recruits, day care center attendees, household contacts of patients with MRSA infections, Pacific Islanders, Native Americans and athletes. During the 10-year epidemic era, two *S. aureus* genetic backgrounds have emerged sequentially. In the late 1990s, USA400 predominated. By 2001, it had largely

disappeared and was replaced by USA300 that predominates today. USA300 causes the vast majority of purulent skin and soft tissue infections cared for in Emergency Departments in the US and most invasive disease in previously healthy patients. Several hypotheses have been advanced to explain the success of USA300 including the high prevalence of genes for Panton Valentine Leukocidin (PVL), the newly recognized arginine catabolism metabolic element (ACME) and a family of phenol soluble modulins (PSMs). Another hypothesis suggests that constitutive upregulation of multiple virulence genes and global regulators may explain the apparent fitness of CA-MRSA backgrounds. Strategies for controlling epidemic MRSA disease must acknowledge this change in epidemiology. Understanding the pathophysiology of 'new' community based genetic backgrounds will be crucial for successful control of epidemic *S. aureus* infections.