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NURTURING THE CHILD

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NURTURING THE CHILD

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# SPEAKERS ABSTRACTS
# THEME: ADOLESCENT MEDICINE

## RT1

## ROUND TABLE: ADOLESCENT MEDICINE

## RT1.1

## THE NEW SCIENCE OF ADOLESCENCE: TRANSLATING NEUROSCIENCE INTO EFFECTIVE INTERVENTIONS FOR YOUNG PEOPLE

**R Viner**

*Institute of Child Health, University College London, London, UK*

## RT1.2

## RISKY BUSINESS: THE IMPACT OF MEDIA ON ADOLESCENTS

**VC Strasburger**

*Division of Adolescent Medicine, University of New Mexico School of Medicine, Albuquerque, New Mexico, USA*

According to the 2010 Kaiser Family Foundation study, preteens and teens ages 8–18 now spend >7 h a day with a variety of different media. If they have a TV set in their bedroom, that figures rises to >11 h per day. Media have become progressively more explicit in terms of violent content, sex and sexuality, and drug content. New technology (e.g. the Internet, cell phones, social networking sites) are important, but often they are being used to access old technology (e.g. TV, movies, videos).

Do the media merely 'reflect' the real world – as Hollywood and network executives would have us believe – or do they cause real-life problems as well? The answer lies partially in some voluminous and difficult media research and partially in the realm of common sense. This talk will try to illuminate what we know about the impact of the media on children and adolescents, what we don't know, and what we need to do to find out. The four related topics of sex, drugs, advertising, and violence will be explored, along with videotaped clips to illustrate the problems and some of the solutions. Several suggestions for clinicians, parents and for schools will be presented.

*Suggested readings:*

Strasburger VC: Why do adolescent health researchers ignore the impact of the media? J Adolesc Health 2009;44:203–205.

Strasburger VC: The importance of media in child health. Archives of Disease In Childhood (Leading article) 2009;94:655–657.

Strasburger VC, Jordan AB, Donnerstein E: Child and adolescent health and the media. Pediatrics 2010;125:756–767.

# THEME: ALLERGY – IMMUNOLOGY

## PAL1

## PARALLEL LECTURE: SHOULD PARENTS BE ENCOURAGED TO KEEP PETS?

### PAL1.1

### SHOULD PARENTS BE ENCOURAGED TO KEEP PETS?

**T Keil**

*Institute for Social Medicine and Epidemiology and Health Economics, Charité University Medical Center Berlin, Berlin, Germany*

## CS1

## INTERACTIVE CASE STUDY: FOOD ALLERGY

### CS1.1

### FOOD ALLERGY

**Z Szepfalusi**

*Department of Pediatrics, Medical University of Vienna, Vienna, Austria*

Food allergy is commonly suggested by parents and patients (10–20%), but only thorough diagnostic evaluation reduces the true prevalence of food allergy to 1–4%. How shall this be done? Clinical history and physical examination shall bring up a suspicion on the basis of which *in vivo* (skin prick, prick-to-prick) and *in vitro* (IgE antibody determination) tests are selected. The presence of specific IgE antibodies as potential causal reason for the patients symptoms might thus be determined. To ascertain the causal relationship between symptoms and the culprit food an elimination diet will be recommended for a certain period (1–2 weeks). If symptoms disappear during food elimination and reappear after reintroduction of the food a causal dependence is very likely. This procedure might be done with minor and non-anaphylactic symptoms. However, with a suspicious anaphylactic or severe systemic reaction a food challenge in a clinical setting with emergency control measures is mandatory. Thus, such procedures shall be performed in specialized centres. If diagnosis of food allergy is made, therapeutic possibilities include training for how to procede in an emergency case including handling of adrenaline autoinjector by parents, guardians and children and adolescents. In many cases the natural course of food allergy (milk, egg) will be remission by year 2–4, but in other cases (peanut, nuts, fish) clinical reactivity will not change over time. Thus, advice for patients and parents must be given on an individual basis. Diagnosis and treatment of food allergies in childhood in particular with severe symptoms is demanding and needs a teamwork between physician, dietician and psychologist.

Based on case studies the clinical relevance of the diagnostic work-up will be evaluated (history and symptoms, specific IgE levels, skin prick and prick-to-prick tests, food challenges (open and double-blind, placebo-controlled).

# THEME: CARDIOLOGY

## ME1

## MEET THE EXPERTS: PRE-PARTICIPATION SPORTS PHYSICAL SCREENING

## ME1.1

## PRE-PARTICIPATION SPORTS PHYSICAL SCREENING

**DS Moodie**[1,2,3]

[1]*Texas Adult Congenital Heart Center,* [2]*Faculty Development,* [3]*Pediatric Cardiology, Texas Children's Hospital Houston, Texas, USA*

Introduction: The primary goals of pre-participation physical examination are to detect conditions that may predispose to injury, detect conditions that may be life threatening or disabling, and to meet legal and insurance requirements.

Purpose: The purpose of this abstract will be to describe the state of pre-participation screening in the United States.

Material: Data will be reviewed related to high school, college and professional athletes as it relates to screening in those different groups of athletes.

Methods: In 49 of 50 states, athletes have been required to receive a pre-participation physical examination, however no national standard in the United States for the pre-participation physical examination exists. Both the content of the exam and the nature of the examiner vary from state to state.

Results: As of the late 1990s and early 2000s, eight had no approved history and physical examination questionnaire to guide examiners, and 12 states had screening forms that were just at the least adequate when compared with the American Heart Association recommended screening questions. At the college level, 24% of universities were deemed to be inadequate in their screening procedures. The issue of prescreening electrocardiograms and echocardiography will be discussed.

Conclusion: Currently in the United States, there are no standardized forms at the high school and college level for pre-participation sports screening, particularly as it relates to cardiovascular conditions that might cause sudden death. The relationship between primary care pediatricians and pre-participating screening programs needs to be more thoroughly evaluated in the United States, if prescreening is going to be effective. Children should undergo a complete history and physical examination by their primary care pediatrician prior to engaging in any sports activity and, if necessary, should have that done in conjunction with consultation from a pediatric cardiologist.

## LA1

## LATEST ADVANCES: CARDIOLOGY

## LA1.1

## LATEST ADVANCES IN INTERVENTIONAL CARDIOLOGY

**C Petit**

*Texas Children's Hospital, Baylor College of Medicine, Houston, Texas, USA*

Interventional cardiac catheterization has been a rapidly growing field since the first balloon atrial septostomy was performed in 1965 by Dr. William Rashkind. Whereas cardiac catheterization was utilized in the past to diagnose congenital heart disease (CHD), the laboratory is more commonly used now for treatment of many forms of CHD in infants, children and adults. One of the earliest interventions commonly in CHD was balloon angioplasty for artery dilation, employed for the past 30 years . Angioplasty, occasionally combined with intravascular stent implantation, offers a non-surgical approach to coarctation of the aorta, branch pulmonary artery stenosis, venous strictures and peripheral vascular stenoses including superior vena cava syndrome. Balloon dilation of valvar stenosis (pulmonary, aortic and mitral) has been state-of-the-art since the early 1980s. Device implantation to close cardiac defects was initially attempted in the 1970s for atrial septal defects (ASDs) and within the patent ductus arteriosus (PDA). These devices were required large delivery sheaths, and were therefore limited in application to older children. Currently, the PDA is closed non-surgically with a venous catheter in neonates. The secundum ASD can be closed transvenously,in many situations, in the toddler and young child. In addition, the muscular ventricular septal defect (VSD) can be closed in the catheterization lab in infants and young children. Currently, the interventionalist has the ability to not only dilate narrowings and close defects, but also to treat valve failure with intravascular valve implantation. The first implantable valve was developed by Dr. Philipp Bonhoeffer and this valve is now widely available for a variety of patients with CHD. Finally, the transcatheter approach has become an important adjuvant to surgical therapy in management of complex CHD. The progress in variety of devices, and their subsequent miniaturization, has allowed the interventional cardiologist to treat a wide range of CHD, allowing many patients to avoid open heart surgery, cardiopulmonary bypass, with their attendant risks.

## LA1.2

## LATEST ADVANCES IN PULMONARY HYPERTENSION

**I Schulze-Neick**

*UK Service for Pulmonary Hypertension in Children, Great Ormond Street Hospital, London, UK*

# THEME: DERMATOLOGY

## CS2

## INTERACTIVE CASE STUDY: DIFFERENTIAL DIAGNOSIS AND MANAGEMENT OF SKIN TUMOURS IN NEONATES AND YOUNG INFANTS

## CS2.1

## DIFFERENTIAL DIAGNOSIS AND MANAGEMENT OF SKIN TUMOURS IN NEONATES AND YOUNG INFANTS

**J Harper**[1], **PH Hoeger**[2]

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Neonates and young infants can present with a variety of congenital or early-onset skin tumours. These include congenital malformations (cysts and ducts), vascular and non-vascular tumours. Amongst the vascular tumours, haemangiomas are the most common (first year incidence: 5–10%). They must be differentiated from vascular malformations including syndromes such as Blue-rubber-bleb naevus syndrome, and from other vascular tumours (e.g. GLUT-1-negative RICH/NICH, tufted angioma and others). Non-vascular skin tumours can be subdivided into melanocytic and fibromatous tumours. The latter comprise a wide spectrum of diseases ranging from usually benign, spontaneously regressing tumours (myofibroma), to relentlessly progressive but not malignant tumours (fibromatoses, dermatofibrosarcoma protuberans, DFSP), and to malignant cutaneous fibrosarcoma. For their differential diagnosis, imaging studies and skin biopsy are essential in most cases. Exact knowledge of the underlying entity is required for specifically assessing associated features, and to determine whether watchful waiting (as for most myofibromas and fibromatoses) or aggressive surgery (DFSP, sarcoma) are indicated. While the majority of haemangiomas resolve spontaneously and do not require any therapy, complicated haemangiomas respond favourably to propranolol (2 mg/kg/day in three doses). The traditional alternative treatment for these haemangiomas was prednisolone but this has now been almost entirely superceded by the use of propranolol. It must be emphasized that the use of propranolol should be supervised and the child regularly monitored, in particular heart rate, blood pressure and blood glucose.

## WO1

## WORKSHOP: PEADIATRIC DERMATOLOGY UPDATE

## WO1.1

## VASCULAR BIRTHMARK UPDATE

**IJ Frieden**

*Division of Pediatric Dermatology, University of California, San Francisco, USA*

Introduction: There has been a rapid increase in knowledge regarding infantile haemangiomas and other vascular birthmarks.

Purpose: To review some of the most recent and significant advances re: vascular birthmarks.

Materials and methods: Several recently published articles including those regarding incidence of PHACE, consensus criteria for PHACE, and management of infantile haemangiomas with propranolol and topical beta-blockers – both efficacy and safety – will be reviewed.

Results: New advances in managing infants with vascular birthmarks give new options for management of patients; A randomized controlled study of propranolol is underway in Europe and North America.

Conclusions: Rapid accrual of information requires practitioners to stay abreast of the latest developments in this area of paediatric medicine.

## WO1.2

## ATOPIC DERMATITIS UPDATE: INSIGHTS INTO PATHOGENESIS AND THERAPY

**LF Eichenfield**

*University of California, San Diego School of Medicine and Rady Children's Hospital and Health Center, San Diego, California, USA*

Introduction: Atopic dermatitis (AD) is a common, complex inflammatory skin disorder characterized by xerosis, eczematous dermatitis and pruritus. Prevalence has increased to approximately 15–20%, paralleling increases in asthma and other atopic conditions.

Purpose: There has been an evolution in the understanding of the pathogenesis of atopic dermatitis, challenging disease assumptions and fueling interest in therapeutic interventions that may alter the disease onset, course and associated comorbidities.

Results: Studies of genetic abnormalities of epidermal barrier dysfunction, most prominently mutations in the

 

structural protein filaggrin in humans, and analogous mutations in animal models, support a hypothesis of fundamental barrier defects impacting on epidermal defense to allergens and microbes and resulting in cutaneous inflammation. Other studies have shown barrier dysfunction genotypes are associated with more severe and persistent eczema, as well as allergic sensitization and related atopic disorders. How these and other factors influence the sequence of biophysical, microbiologic, immunologic, and neuroperceptual effects of atopic dermatitis are not fully understood. Evolving therapies are incorporating clinical studies of skin care regimens, topical treatments targeting barrier dysfunction, anti-inflammatory and anti-infective agents, and educational interventions attempting to minimize disease impact on affected individuals and their families.

**WO1.3**

## DRUG ERUPTIONS: MAKING DECISIONS ABOUT CURRENT AND FUTURE MEDICATION CHOICES

**E Baselga**

*Department of Dermatology, Hospital de la Santa Creu I. San Pau, Barcelona, Spain*

Adverse cutaneous drug reactions are less common in children than in adults. However, recognition of the different patterns and knowledge of the most frequent implicated drugs is important in our daily practice. Drug reactions can be classified into immunologic and non-immunologic etiologies. The majority of adverse drug reactions are caused by predictable, non-immunologic effects. The remaining adverse drug events are caused by unpredictable effects that may or may not be immune mediated. Another way to classify drug reactions is into common patterns (morbilliform, urticaria), severe drug reactions (DRESS, Toxic epidermal Necrolysis), and drug reactions that have a very specific pattern (Fixed-drug eruptions, acute exnthematous drug reactions, lupus-like drug reaction). In this lecture a review of cutaneous drug reactions in children will be presented, with particular focus on when to worry in a child with a drug reaction.

# THEME: ENDOCRINOLOGY

### RT2

### ROUND TABLE: OBESITY

### RT2.1

### MEASURES TO PREDICT, PREVENT AND TREAT CHILDHOOD OBESITY

**M Rudolf**

*University of Leeds and NHS Leeds, Leeds, UK*

### RT2.2

### NO LESS BIG FOR BEING SMALLER: THE ROLE OF BARIATRIC SURGERY IN SEVERELY OVERWEIGHT ADOLESCENTS

**A Fiennes**

*British Obesity & Metabolic Surgery Society, London, UK*

### DE1

### DEBATE: SHORT STATURE IS A SERIOUS HANDICAP AND SHOULD BE TREATED WITH GROWTH HORMONE

### DE1.1

### SHORT STATURE IS A SERIOUS HANDICAP AND SHOULD BE TREATED WITH GROWTH HORMONE (PRO)

**MA Sperling**

*Children's Hospital of Pittsburgh of UPMC, Pittsburgh, USA*

Classical entities approved for growth hormone treatment include documented GH deficiency, Turner, Noonan and Prader-Willi Syndrome and some others. After excluding these or medical conditions, especially inflammatory bowel disease, short stature, defined as equal to or $<1.2$ percentile on standard growth charts, or $>2.25$ standard deviations (SD) below the mean, is an entity termed 'idiopathic short stature' (ISS). Studies show that this degree of short stature can negatively influence the psychological health of some affected children, particularly boys, with perceptions of inferiority and long lasting consequences on 'success' in personal and professional life. ISS also is an approved indication for GH treatment in the USA. The decision to initiate and continue treatment is made on an individual basis, not as an absolute. Such decisions involve mutually accepted preferences by the patient, the parents and the physician, using principles of evidence-based medicine. However, physician attitudes and family preferences markedly influence the decision to treat as much, or more than, physiological evidence. Long-term results of such treatment for ISS have shown that many children benefit by reaching adult heights within the normal range and within the mid-parental height targets, i.e. their genetic potential. The safety profile of these treatments has, so far, shown a positive risk-benefit ratio. Data highlighting each of these points are presented in favor for the proposition that GH should be offered to selected children with ISS in the expectation that they will benefit the patient physically and psychologically.

### DE1.2

### SHORT STATURE IS A SERIOUS HANDICAP AND SHOULD BE TREATED WITH GROWTH HORMONE (CON)

**DE Sandberg**

*Division of Child Behavioral Health, University of Michigan, Department of Pediatrics & Communicable Diseases, Ann Arbor, Michigan, USA*

Growth velocity in childhood and adolescence serves as an important index of overall health. Atypical growth deceleration or acceleration can trigger diagnostic evaluation and treatment of underlying disease. Increasingly, however, height itself (in particular short stature) has become a target of endocrine intervention. Recombinant human growth hormone (rhGH), alone or in combination with other growth-promoting agents, is now prescribed to physically healthy youths (as in idiopathic short stature) or to those with complex medical conditions in which short stature is an accompanying feature (e.g. Turner syndrome). Unlimited availability of rhGH and other growth-promoting agents has contributed to the disassociation of the treatment of short stature from its causes. Treatment of short youths with or without accompanying medical conditions is predicated on beliefs that short stature is an undesirable physical characteristic associated with psychosocial adaptation problems and a diminished quality of life (QoL) and treatment-induced height increases will improve QoL.

Stereotypes and assumptions about short stature are evaluated in light of empirical findings. Problems of psychosocial adjustment are relatively common in the general population. Because of the salience of short stature and its potential to serve as a lightning rod to divert attention from other factors interfering with a healthy psychological adaptation, the clinician must be watchful of

 

misattributions for ongoing problems, or unrealistic predictions of the benefits of taller stature. A hypothesis accounting for the unyielding conviction that short stature, as an isolated physical characteristic, results in negative life experiences is presented. It is concluded that potential risks (physical or psychological) of treatment to minors are unwarranted and, in such cases where a psychosocial evaluation uncovers adjustment difficulties, then recommendations for evidence-based behavioral health treatments tailored to the presenting problem should be offered.

## CS3

## INTERACTIVE CASE STUDY: DIABETIC KETOACIDOSIS: PREVENTION, RECOGNITION, MANAGEMENT & DANGERS

### CS3.1

### DIABETIC KETOACIDOSIS: PREVENTION, RECOGNITION, MANAGEMENT & DANGERS

**AL Haagensen**[1], **R Sharara-Chami**[2]

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[2]*Division of Critical Care Medicine, Department of Anesthesia, Children's Hospital, Boston, Massachusetts, USA*

Diabetic Keto Acidosis (DKA) is defined as: Glucose >200 mg/dL and moderate to large ketonuria (or beta hydroxybutyrate of >3 mM) and venous pH<7.3, arterial pH <7.35, or bicarb <15 mEq/L. In the United States, 25.5% of youngsters newly diagnosed with Diabetes present in DKA. Younger children, those with lower parental education and lower family income are at even greater risk. In known diabetics, DKA happens up to 10 per 100 patient-years. It is usually due to insulin omission, and more common in adolescents. In the USA, the combined burden of DKA diagnosis amongst new onset diabetics and known diabetics exceed 15 000 per annum. Early recognition of symptoms and intensive blood sugar monitoring have been recognized as important factors in lowering the incidence of DKA. The 'Parma Campaign' with its significant drop (78% to 12.5%) in the cumulative incidence of DKA will be discussed. Other technological advances such as blood ketone 3 beta-hydroxybutyrate and the use of SMS mobile phone reminders will also be discussed. Finally, the choice of long acting insulin analogs will also be addressed.

The approach and principles of management of patients with DKA should be the same regardless of degree of severity. Patients with severe DKA should be admitted to the Pediatric Intensive Care Unit. Severity of DKA is determined by neurologic status, degree of acidosis and dehydration. Treatment consists of isotonic fluid resuscitation, insulin infusion without initial insulin bolus, potassium and phosphate repletion, avoidance of bicarbonate and vigilant follow up of sodium concentration, volume status and neurological assessment.

Complications of DKA include cerebral edema, venous thrombosis, aspiration, cardiac arrhythmia and pancreatic enzymes elevation. The clinical presentation, treatment and potential complications of DKA will be discussed with a particular focus on the potential causes, presentation, prevention and treatment of cerebral edema.

# THEME: EPIDEMIOLOGY & ENVIRONMENTAL PAEDIATRICS

## PLL1

## PLENARY LECTURE: NEUROTOXICITY: WHAT WE KNOW AND WHAT WE CAN DO?

## PLL1.1

## NEUROTOXICITY: WHAT WE KNOW AND WHAT WE CAN DO?

**PJ Landrigan**

*Department of Preventive Medicine, Director, Children's Environmental Health Center, Mount Sinai School of Medicine, New York City, USA*

## PAS1

## PARALLEL SYMPOSIUM: NATIONAL SURVEILLANCE FOR RARE DISEASES IN CHILDHOOD

## PAS1.1

## NATIONAL SURVEILLANCE AND CHILD PUBLIC HEALTH – THE STORY OF vCJD

**C Verity**

*Addenbrookes Hospital, Cambridge, UK*

## PAS1.2

## FROM SURVEILLANCE TO POLICY: SCREENING FOR MEDIUM CHAIN ACYL COA DEHYDROGENASE DEFICIENCY

**C Dezateux**

*Institute of Child Health, London, UK*

Newborn screening for many rare diseases is now well established in developed countries worldwide. Screening seems both intuitive and attractive: it aims to detect and manage serious diseases in order to secure an outcome better than that which might be achieved following clinical presentation or diagnosis. Newborn screening programmes for phenylketonuria and congenital hypothyroidism, the former introduced in the UK half a century ago, are regarded as examples of effective preventive medicine. The recent expansion of newborn screening programmes has been driven by technologies adaptable for high through-put analyses of biomarkers in newborn dried blood spots, notably tandem mass spectrometry. Future expansion is likely to be driven by new treatments for rare disorders as well as by new approaches to identify risk for, or susceptibility to, more complex or chronic diseases. In some countries parents of newborns are offered tests for more than 30 disorders, many of them very rare. However, not all countries have implemented 'expanded' newborn screening on this scale, reflecting different screening policies and approaches to their evaluation. Despite this there is broad consensus that decisions should be informed by scientific evidence. In evaluating a proposed screening programme, policymakers need reliable information about three main aspects: the burden and natural history of the disease for which screening is being offered, the clinical validity of the proposed screening test, and the clinical utility of screening in achieving more benefit than harm. Active surveillance of rare disorders has made important contributions to evidence for screening policy across all three of these domains and this will be illustrated with reference to a UK wide surveillance study of medium chain acyl CoA dehydrogenase deficiency (MCADD) – a recessively inherited disorder of mitochondrial fatty acid oxidation – and its contribution to a new national newborn screening programme.

## PAS1.3

## NATIONAL SURVEILLANCE CHANGING CLINICAL PRACTICE – BILARY ATRESIA

**D Kelly**

*Liver Unit, University of Birmingham, Birmingham, UK*

Biliary atresia is a disease of unknown cause in which the extrahepatic bile ducts are obliterated leading to biliary obstruction. It is the commonest single cause of neonatal liver disease and the main indication for liver transplantation in children. Palliative surgery, the Kasai portoenterostomy is successful in approximately 60% of children if performed before the age of 8 weeks.

The aim of the study was to establish the frequency of biliary atresia, the outcome of portoenterostomy and ascertain the need for liver transplantation.

Methods: Cases were identified prospectively from 1993 to 1995 using the BPSU monthly card system to paediatricians, based on an agreed case definition. Follow up questionnaires were sent at 1, 5 and 13 years following case identification.

Results: Ninety-three cases of biliary atresia were confirmed, giving a frequency of 1 : 16 700 live births in the UK. Median age at referral was 40 days. Children were managed in 15 surgical centres. Only two centres treated >5 cases per year (group A).

 

Primary biliary surgery was performed in 91 children at a median age of 54 days and was initially successful in 50 (55%). Early success of primary surgery was more likely in group A centres; odds ratio 2.02 (95% confidence intervals 0.86–4.73).

Survival with native liver and overall survivalwere significantly greater in group A centres; odds ratio 0.48 (95% confidence intervals 0.27–0.86) and 0.32 (0.11–0.94). Median age at last follow-up was 12 years (range 0.25–14). 15 (16%) have died: 10 after unsuccessful portoenterostomy, one of sepsis, and four after liver transplantation. Forty-two (45%) underwent liver transplantation at a median age of 1 year (range 0.5–9), with 90% survival. All 41 children with failed portoenterostomy (and two without portoenterostomy) died or underwent liver transplantation at a median age of 0.8 years (range 0.25–6.5). 80% of those with a successful portoenterostomy are alive without liver transplantation. The 13-year actuarial survival without liver transplantation is 43.8% overall and is better in children treated at Group A centres (54% vs. 27.3%, $P = 0.005$).

Impact on disease management: These data led to a UK Department of Health directive to centralise management of this condition. A recent audit has demonstrated that .only 38% of children have been transplanted compared to 45% transplanted in the earlier series. The overall 4 year estimated survival was 89% (95% CI 82–94) compared to 85% (95%CI 77–92).

These early results indicate that estimated actuarial survival is higher following centralisation of surgery leading to a reduced need for liver transplantation and improved outcome for children with biliary atresia.

## RT3

## ROUND TABLE: CHILDREN'S ENVIRONMENTAL HEALTH

### RT3.1

### CHILDREN'S ENVIRONMENTAL HEALTH: TACKLE INEQUALITIES THROUGH ACTIVE POLICIES

**G Tamburlini**[1,2]

[1]*Evidence Based Paediatrics & Quality of Care, International Pediatric Association*, [2]*Institute of Child Health Burlo, Garofolo, Trieste, Italy*

Protecting children from undesirable environmental exposures by taking socioeconomic conditions into account has been identified as a policy priority area in Europe. A systematic literature search was conducted to evaluate the evidence on environmental inequalities among children in Europe and to discuss its policy implications. Research in this field is fragmentary, showing that insufficient attention has been paid to socioeconomic factors as influencing factors in child environmental health. The available data show that children living in adverse social circumstances suffer from multiple and cumulative environmental exposures. A low socioeconomic position is associated with an increased exposure of children to traffic-related air pollution, noise, lead, environmental tobacco smoke, inadequate housing and residential conditions and less opportunities for physical activity. For most exposures there are no studies investigating the modification of the exposure-response function by socioeconomic factors and it is not possible to quantify the magnitude of environmental inequalities. Actions to address environmental inequity among children may be included into four main policy approaches, according to their primary aim: (i) policies aimed at reducing the socially determined differences in environmental conditions in settings where children live; (ii) policies aimed at reducing the socially determined differences in children's exposure to hazardous environments; (iii) policies aimed at reducing the socially determined differences in children's susceptibility to specific environmental pollutants and risk factors; (iv) policies aimed at reducing the socially determined differences in the access to quality diagnostic, treatment and rehabilitation services for children who suffer the health consequences of being exposed to hazardous environments. Action is needed along the whole causal pathway of the social divide in environmental hazards with priority to policy measures aiming at removing socially determined differences in environmental conditions.

### RT3.2

### THE US NATIONAL CHILDREN'S STUDY: A 21-YEAR PROSPECTIVE STUDY OF 100,000 AMERICAN CHILDREN

**PJ Landrigan**, L Trasande

*Departments of Preventive Medicine and Pediatrics, Mount Sinai School of Medicine, New York, USA*

Introduction: The US National Children's Study is a prospective epidemiologic birth cohort study that will follow a nationally representative sample of 100 000 US-born children from conception to 21 years of age.

Purpose: To discover the potentially preventable environmental risk factors for chronic diseases in children. Environment is defined broadly to include chemical, physical, biological, and psychosocial risk factors.

Methods: The study is hypothesis-driven. It will seek information on environmental risks and individual susceptibility factors for multiple diseases, among them asthma, birth defects, dyslexia, attention-deficit/hyperactivity disorder, autism, schizophrenia, and obesity, as well as adverse birth outcomes. Environmental exposures will be assessed repeatedly during pregnancy and childhood through structured interviews; measurement of biomarkers of environmental exposure in maternal and child blood and urine; and analyses of air and dust samples obtained in homes, schools, and communities. Chemical assays will be performed by the Centers for Disease Control and Prevention, and banks of biological and environmental

samples will be established for future analyses. Genetic material will be collected on each mother and child to permit study of gene-environment interactions.

Results: Recruitment began in spring 2009 at 7 Vanguard Sites and is about to expand to another 30 sites.

Conclusions: The National Children's Study will produce a treasure trove of data on environmental and genetic causes of disease. These data will guide development of a comprehensive blueprint for health promotion and disease prevention in childhood and across the life span. The study will provide training for the next generation of researchers and practitioners in environmental pediatrics. It will link to planned and ongoing prospective birth cohort studies in countries worldwide.

### RT3.3

### THE WHO TABLE OF EFFECTIVE ACTIONS TO REDUCE ENVIRONMENTAL HAZARDS FOR CHILDREN

**C Schweizer**

*Noncommunicable Diseases and Environment, World Health Organization, Regional Office for Europe, Rome, Italy*

### RT4

### ROUND TABLE: WHAT HAVE WE LEARNT FROM EUROPEAN BIRTH COHORT STUDIES?

### RT4.1

### FOOD ALLERGY IN BIRTH COHORTS

**T Keil**

*Institute for Social Medicine and Epidemiology and Health Economics, Charité University Medical Center Berlin, Berlin, Germany*

### RT4.2

### FINDINGS FROM THE BAMSE BIRTH COHORT STUDY

**Anna Bergström**[1], Inger Kull[1,2], Göran Pershagen[1], Magnus Wickman[1,3]

[1]*Institute of Environmental Medicine, Karolinska Institutet, Stockholm, Sweden*, [2]*Centre for Allergy Research, Karolinska Institutet, Stockholm, Sweden*, [3]*Sachs' Children's Hospital, Södersjukhuset, Stockholm, Sweden*

Introduction: In addition to genetic factors, environmental influences are thought to play an important role for the development and prognosis of allergic disease in childhood.

Purpose: he BAMSE birth cohort was designed to investigate the impact of early environmental exposures on the onset and progression of allergic disease among children.

Material and methods: The Swedish population based BAMSE birth cohort was established during 1994–1996 by including 4089 children. Follow-up has been performed when the children were 1, 2, 4, 8 and 12 years. In the latest follow-up, web-based questionnaires were used for the first time. Information on background exposures were collected when the children were 2 months of age. Information on relevant exposures and allergic symptoms of the child was collected at each follow-up. Clinical examinations, including measurements lung function and blood sampling (for analyses of specific IgE and DNA extraction), were performed at ages 4 and 8 years.

Results: In total, 83% of the original cohort participated in the follow-up at age 12 years and the majority answered on the web. Data from the BAMSE study have been used to investigate the role of different factors for development of allergic disease such as breastfeeding, passive smoking and ambient air pollution, as well as genetic factors. Furthermore, our data indicate that it is important to consider disease-related modification of exposure (reverse causation) when studying allergic disease in children. A new follow-up including a web-based questionnaire and a clinical examination with blood sampling will be performed when the children are 16 years old (2010–2012).

Conclusions: The BAMSE birth cohort has been extensively used to study the impact of environmental and genetic factors on onset and progression of allergic disease in children. Advantages of the study include limited loss to follow-up, availability of DNA, and extensive information on exposures and phenotypes.

### RT4.3

### HOW MANY DISEASES ARE THERE IN ASTHMA?

**A Custovic**

*The University of Manchester, University Hospital of South Manchester, Manchester, UK*

### RT4.4

### SELECTED FINDINGS FROM ALSPAC

**J Golding**

*The University of Manchester, University Hospital of South Manchester, Manchester, UK*

 

**RT4.5**

## WHAT HAVE WE LEARNT FROM BIRTH COHORT STUDIES?

**G Tamburlini**[1,2]

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Over the last two decades an increasing number of longitudinal studies starting from pregnancy or birth have been started in various parts of the world, and more are in progress, such as the huge endeavour represented by the US National Children's Study. The growing interest on birth cohort studies (BCS) stems from the mounting evidence that many diseases and conditions have causes that start shortly after conception, and that factors that influence early organ and system development may have profound effects on health during childhood as well as later in life. BCS – such as the Pelotas birth cohort, the NICHD Study of Early Child Care and Youth Development, the European Longitudinal Study of Pregnancy and Childhood, the Helsinki BCS, the Danish BCS, and many others – have already provided important contributions to our understanding of how social and environmental factors, parental practices and attitudes and medical and social interventions may shape biological mechanisms and behavioural patterns and influence health outcomes. There have been a number of methodological lessons learned by the research groups involved in BCS. They include the importance of ensuring sustainability over time and of establishing bio-banks to ensure future utility of samples. Perhaps the main challenge resides in maintaining frequent contact with study participants, communicating results in a timely and appropriate manner to people involved and to the wider community, and in ensuring ethical conduct of the research. In fact, enhancing community participation to scientific research should be an objective of all BCS. There is also growing emphasis on the importance of studying the impact of early exposures on children most at risk. One of the clear lessons is that the potential of BCS for scientific output can be maximized by collaboration between studies, a prerequisite being that cohorts are well documented and that data on the existing cohorts are collected in a comparable form and easily accessible. Centres, collaborative networks and websites have been established to serve this purpose.

# THEME: GASTROENTEROLOGY, NUTRITION & METABOLISM

## PAL2

## PARALLEL LECTURE: SYSTEMATIC INVESTIGATION FOR A CHILD WITH FAILURE TO THRIVE

## PAL2.1

## SYSTEMATIC INVESTIGATION FOR A CHILD WITH FAILURE TO THRIVE

**B Koletzko**

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## PAL3

## PARALLEL LECTURE: PREVENTIVE AND THERAPEUTIC STRATEGIES IN CELIAC DISEASE

## PAL3.1

## PREVENTIVE AND THERAPEUTIC STRATEGIES IN CELIAC DISEASE

**D Branski**

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Celiac disease is an autoimmune mediated disorder due to gluten and related prolamines in genetical susceptible subjects. It is a systemic disorder which can affect beside the alimentary tract, almost all organs and systems. The incidence of CD is approximately 1%. The treatment of CD is by strict adherence to gluten-free diet (GFD), for life. However, the compliance for GFD is far from optimal. The diet is less accepted by celiac patients especially during adolescence; it is more expensive and adversely affects quality of life. Therefore, preventive strategies as well as potential therapeutic modalities other than GFD are needed.

Strategies for prevention of CD are divided into three areas:

(1) Primary prevention: Avoidance of disease development and modulation of environmental factors, such as: prevention of specific infectious diseases (Rotavirus).
(2) Secondary prevention: Early diagnosis and treatment with GFD.
(3) Tertiary prevention: Other modalities, such as: induction of oral tolerance; immunomodulation towards upgrading regulatory T-cells; modifying the gluten sequences that act as epitopes in CD; a shift of the mucosal immune response from TH1 to TH2. To use prolylendopeptidase to digest mer-33; to down regulate the mucosal permeability by anti Zonulin antibodies; and/or modulation of the flour.

Primary research studies in the above potential therapeutic modalities are quite promising.

## PAS2

## SYMPOSIUM: CLINICAL EFFECTS BY NUTRIENTS IN HEALTHY AND AT RISK CHILDREN

## PAS2.1

## OMEGA-3 FATTY ACIDS

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## PAS2.2

## NUTRITION TO PREVENT INFECTIONS IN AT RISK CHILDREN

**A Guarino**

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*In vitro* and animal studies suggest that the intestinal microflora drives the immune system development and may indirectly protect from infections. Intestinal microflora is affected by nutrition feeding could be used in the prevention or even the treatment of infections. The two main approaches to modulate intestinal microflora through nutrition is to feed probiotic bacteria or prebiotics and it is likely that an early intervention, when the microflora is being established, may have an effect even beyond the administration of a specific functional food. The main goals of such strategy are the prevention of common infections in the general population or of specific infections in selected groups of at risk children. There is preliminary evidence from clinical trials that both approaches may be effective. A mixture of prebiotic oligosaccharides added to infant formula reduced the incidence of upper respiratory tract infections and of antibiotic treatments in atopic children. GOS/FOS supplementation was associated with a reduction in intestinal and respiratory infections in infants. A recent review summarized available data suggesting that probiotics may reduce the risk of nosocomial diarrhea and concluded that conflicting results may be related to the strain and dose of probiotic used. Children attending day-care centers and consuming milk containing *Lactobacillus GG (LGG)* had reduced numbers of days of absence, frequency of complications, and antibiotics. A combination of probiotics bacteria reduced the incidence of recurrent

 

respiratory infections in otitis-prone children. Children with rhinitis receiving milk containing *Lactobacillus casei,* showed a decreased number of episodes/year. Finally we reported that LGG reduced the incidence of respiratory exacerbations in children with Cystic Fibrosis. The effects of functional nutrition in the prevention of infections require solid proof, according to the new European rules for marketing foods with clinical claims and companies and scientists should develop a close collaboration in this exciting field.

### PAS2.3

### EARLY NUTRITION FOR THE PREVENTION OF ALLERGIES

**S Koletzko**

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Several trials evaluated early infant feeding practices, particularly type of formula and solid food introduction on the later development of atopic dermatitis (AD).

Formulae based on partially or extensively hydrolyzed proteins compared to cows' milk formula (CMF) on their effect of AD have been investigated in randomized trials in infants with a familiar predisposition for allergies. By far the largest trial, the German birth cohort study GINIplus, includes 5991 children. A non-interventional arm (n = 3739) followed children with or without familial predisposition. Predisposed children whose parents agreed to participate in the double-blind intervention (n = 2252) were randomly assigned at birth to one of four formulae: partially (pHF-W), or extensively hydrolysed whey (eHF-W), extensively hydrolysed casein (eHF-C) or standard CMF. Compared CMF, the eHF-C and pHF-W significantly reduced AD, while the eHF-W was ineffective. The effect developed in the 1st year of live and persisted until 6 years. Predisposed children without nutritional intervention had a 2.1 times higher risk for AD [95% confidence interval (CI) 1.6–2.7] than children without a familial predisposition. The risk was smaller with nutritional intervention, with a HR of 1.3 (95% CI 0.9–1.9) in children fed eHF-C formula, which was not significant different to children without familiar allergy risk. It is concluded that some, but not all hydrolyzed formulae can reduce the risk for AD.The results cannot be generalized to infants without familiar risk for allergies.

Results from observational cohort studies indicate that the risk of AD increases with early introduction of solid foods within the first 3–4 months of life. Delaying the introduction of solids beyond the 6 months of life has no protective effect or may be even increase the risk for allergy. This also applies to allergenic foods like hen's egg, cow's milk, fish, wheat.

### RT5

### ROUND TABLE: EARLY FEEDING AND CONSEQUENCES IN CHILDHOOD TO ADULTHOOD. SHOULD WE BE ANXIOUS? MYTH AND REALITY

### RT5.1

### INFANT FEEDING AND LATER OBESITY RISK

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### RT5.2

### EARLY FEEDING AND CONSEQUENCES IN CHILDHOOD TO ADULTHOOD. SHOULD WE BE ANXIOUS? MYTH AND REALITY

**A Lucas**

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### CS4

### INTERACTIVE CASE STUDY: CHILD WITH CHRONIC DIARRHEA

### CS4.1

### CHILD WITH CHRONIC DIARRHEA

**O Goulet**

*University Paris Descartes-Hôpital Necker, Paris, France*

### CS4.2

### ETIOLOGY AND APPROACH TO THE CHILD WITH CHRONIC DIARRHEA

**A Guarino**, A Lo Vecchio, M Arigliani

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The approach to the child with chronic diarrhea (CD) depends on the age of the child and on symptoms and signs. The main etiologies of chronic diarrhea are:

*Enteric Infections* (including protracted gastroenteritis and postenteritis syndrome, andsmall intestinal bacterial overgrowth).

*Inflammatory bowel diseases* (Crohn disease, Ulcerative colitis and Indeterminate colitis).

*Nutrients maldigestion and malabsorption* due to primary intestinal disorders such as celiac disease, carbohydrate malabsorption or intolerance or, alternatively, to

exocrine pancreatic disorders or liver diseases leading to steatorrhea.

*Atopy* including allergy to cow's milk protein and other foods, and Eosinophilic gastroenteritis (that is strongly associated with atopy).

*Chronic non-specific diarrhea* that encompasses toddlers diarrhea in children below 4 years of age and irritable bowel syndrome in those >5 years, that runs a benign though fastidious course. The hallmark of the syndrome is normal weight growth in well-appearing diarrheal subjects.

*Intractable diarrhea syndrome* is an early onset, rare and severe condition and includes permanent defects in the intestinal structure or function, leading to intestinal failure. Etiology of CD is age-related. In infancy and until 2 years of age, infections and allergies are more common, whereas inflammatory diseases are more frequent in older children. Celiac disease and chronic non-specific diarrhea, should always be considered independently on age, due to their frequency. Once infectious agents have been excluded and nutritional assessment performed, a stepwise approach to the child with CD may be applied. Non invasive assessment of digestive-absorptive functions and of intestinal inflammation has a key role. However, the diagnostic work-up usually requires endoscopy and histology (with the exception of non specific diarrhea). The stepwise approach is important to minimize the utilization of invasive procedures, and the overall costs, while optimizing the yield of the diagnostic work up.

## CS5

## INTERACTIVE CASE STUDY: MANAGEMENT OF ABDOMINAL PAIN IN CHILDREN

### CS5.1

### MANAGEMENT OF ABDOMINAL PAIN IN CHILDREN

**M Verhave**[1,2]

[1]*Director, Ambulatory Gastroenterology, Children's Hospital Boston,* [2]*Assistant Professor of Pediatrics, Harvard Medical School, Boston, USA*

Cases will be used to illustrate both the pitfalls in diagnosis and the difficulties in the management of chronic abdominal pain. Chronic abdominal pain is one of the most common reasons for school age and adolescent patients to seek medical care. Awareness of the differential diagnosis, along with a careful history and physical examination will usually provide proper guidance of an appropriate work up. Since most chronic pain is 'functional', the initial approach with the patient and family can be crucial in helping to direct evaluation and to minimize unnecessary testing. Being able to move on to successful treatment of functional pain can hinge on the provider's confidence in the diagnosis. It is therefore also crucial to be able to recognize the 'red flags' that may point to non-functional causes. Treatment of functional pain is based on increasing evidence that alterations in brain-gut signaling trigger and perpetuate symptoms. External triggers may arise from infection, diet, and lifestyle choices. Problems with family, peer, and school interactions can also influence symptoms. Individual treatment plans should be developed that take these multiple factors into account. Treatment plans often need to be multidisciplinary; and non-pharmacologic interventions such as nutrition, exercise, and counseling can be effective, as can non-pharmacologic pain management approaches. Judicious use of medications aimed at symptoms relief can also be helpful, but often will be less effective if used in the absence of broader supportive approaches. This approach is most analogous to that of rehabilitation from serious illness or injury, with incremental goals focused on improving function and ultimate successful return to normal activities and school attendance.

# THEME: GENERAL PAEDIATRICS

## PLL2

## PLENARY LECTURE: WHAT PHYSICIANS SHOULD KNOW ABOUT THE EFFECTS OF MEDIA ON INFANTS

## PLL2.1

## WHAT PHYSICIANS SHOULD KNOW ABOUT THE EFFECTS OF MEDIA ON INFANTS

**DA Christakis**

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Introduction: In 1970, the average age at which children began to watch television was 4 years. Today it is 4 months. Most of this shift has occurred within the past 10 years. Over 90% of children begin using media as infants and the typical infant spends 2–3 h per day watching TV. Those in certain day care settings may spend an additional 1–2 h/day viewing.

Purpose: The speaker has been studying the effects of infant TV viewing on behavioral and cognitive outcomes for 10 years. His operating hypothesis is that TV exposure during this critical period of brain development has direct and indirect effects on infants' development mediated both through overstimulation and through displacement of other activities.

Methods: This talk will present data from a series of cross-sectional and longitudinal observational studies of infant TV viewing and language development and attentional capacity. In addition, preliminary results from mouse models of infant TV exposure will be summarized.

Results: Infant TV viewing – particularly faster paced shows – is associated with shorter attention spans at school entry as well as delayed language acquisition in infants 7–16 months of age. Specifically, each hour of TV viewing is associated with infants knowing about seven fewer words and a 10% increased risk of subsequent attentional problems. Furthermore, when infants are within ear shot of a TV they speak less and are spoken to less by adult caregivers.

Conclusions: Despite claims made to the contrary, there is no evidence of benefit of infant media usage. The best available data suggest the real potential for harm. Media usage during infancy should be avoided.

## PAL4

## PARALLEL LECTURE: WIDENING GULF OF CHILD HEALTH SERVICES ACROSS THE WORLD

## PAL4.1

## WIDENING GULF OF CHILD HEALTH SERVICES ACROSS THE WORLD

**A Costello**

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## RT6

## ROUND TABLE: UPDATE ON SUDDEN INFANT DEATH SYNDROME (SIDS)

## RT6.1

## NEW ASPECTS ON THE EPIDEMIOLOGY OF SIDS

**E Mitchell**

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The identification of modifiable risk factors for SIDS has led to a dramatic reduction in SIDS, although it continues to be the leading cause of death in the postneonatal age group in high-income countries. Sudden unexpected death in infancy (SUDI) comprises cases of SIDS (R95), unascertained (R99) and accidental suffocation in bed (W75) and would have been certified as SIDS in the past. Now, over 50% of SUDI cases occur while bed sharing and reach over 90% in infants less than a month of age. In some countries, there is a recommendation to avoid all bed sharing, although some disagree and advise avoiding bed sharing only if there are other risk factors present such as smoking or alcohol use. There is substantial evidence that infants of mothers who smoke are at increased risk of SUDI while bed sharing. Babies whose parents have recently used alcohol or drugs are also at increased risk of SUDI while bed sharing. The only group that has been identified as not having an increased risk of SUDI with bed sharing are those infants older than 3 months, whose mothers have not smoked in pregnancy, and have not drunk alcohol or taken drugs and are not co-sleeping on a sofa. These risks have to be balanced against the postulated benefits of bed sharing, such as improved breastfeeding and attachment. These benefits have been over emphasized and have led to some groups actively promoting bed sharing. Bed sharing is fine for cuddles and breastfeeding, but baby should be in own bed when parents go to sleep. We recommend placing the baby to sleep in its own cot next to the parents' bed for the first six months of life (room sharing).

**RT6.2**

**GENETICS**

**DE Weese-Mayer**

*Northwestern University Feinberg School of Medicine, Director, Center For Autonomic Medicine in Pediatrics (C.A.M.P.), Chicago, IL, USA*

Sudden infant death syndrome (SIDS) is defined as the sudden and unexpected death of an infant <1 year of age that remains unexplained after a complete autopsy, death scene investigation, and review of the clinical history. It is the leading cause of postneonatal mortality in the developed world. The cause of SIDS is unknown, but is postulated to involve a genetic basis based on clinical, epidemiological, and/or neuropathological observations in SIDS victims. Extensive evidence from postmortem genetic studies include candidate gene research in five categories: (i) genes for ion channel proteins based on electrocardiographic evidence of prolonged QT intervals in SIDS victims, (ii) gene for serotonin transporter based on decreased serotonergic receptor binding in brainstems of SIDS victims, (iii) genes pertinent to the early embryology of the autonomic nervous system (ANS) (and with a link to the 5-HT system) based on reports of ANS dysregulation in SIDS victims, (iv) genes for nicotine metabolizing enzymes based on evidence of cigarette smoking as a modifiable risk factor for SIDS, and (v) genes regulating inflammation, energy production, hypoglycemia, and thermal regulation based on reports of postnatal infection, low birth weight, and/or overheating in SIDS victims. Several genetically controlled pathways appear to be involved in at least some cases of SIDS. Given the diversity of results to date, genetic studies support the clinical impression that SIDS is heterogeneous with more than one entity and with more than one possible genetic etiology. Future studies should consider expanded phenotypic features that might clarify the heterogeneity and improve the predictive value of the identified genetic factors. With thousands of infants dying from SIDS worldwide, and improved but still imperfect parent/caretaker compliance with known modifiable risk factors for SIDS, it behooves clinicians, researchers, and parents to combine efforts to reach a common goal.

**RT6.3**

**LIFE THREATENING EVENTS AND SIDS**

**CF Poets**

*University of Tuebingen, Tuebingen, Germany*

The incidence of SID has decreased substantially, but its pathophysiology remains unclear. Epidemiologic data point towards many deaths occurring in relation to a potentially asphyxiating environment and the infant's inability to free himself from it. In recordings obtained during SID, prolonged apnea was found in only a minority, while severe hypoxemia appeared to be a common feature. It remains unclear, however, by which mechanism this hypoxemia develops. Arousal appears to fail during most SID cases yet recorded. In contrast, gasping occurred during most SID cases where respiratory patterns were analysed, but why was it ineffective in resuscitating the infant? It also may take 30 min. for heart rate finally to fall to <15 beats per minute, arguing against a strictly sudden death, e.g. due to a circulatory collapse. That gasping usually preceded the development of bradycardia suggests that the latter is triggered by hypoxia, e.g. resulting from positional asphyxia. Recently, a polygraphic video recording that happened to be obtained during a near-death event showed the 2-month-old former preterm infant sleeping supine when she suddenly became restless and agitated, then hypoxic and bradycardic, before starting to arch her back and gasp. Her eyes were intermittently wide open. Nurses ultimately rescued the infant by bagging. Although only a single case report, it suggests that spontaneous airway obstruction may develop despite an infant waking up. The question is what can trigger such a chain of events, and how representative it is of SID.

In conclusion, data from (near) death recordings may provide important insights, but at the same time raise many questions about the sequence of events occurring during these tragedies. Until better understood, emphasis should continue to be on primary prevention, i.e. further propagation of the Reduce-the-Risk campaigns.

Main aims of this presentation:

(1) To familiarize the participant with an overview on the epidemiology and current risk factors of Sudden Infant Death (SID), with particular emphasis on preventable risk factors.

(2) To introduce the participant to recordings obtained during SID and ALTE and discuss potential pathophysiologic implications based in these recordings.

(3) To provide an update on possible primary prevention strategies based on recent research into risk factors for SID.

**RT6.4**

**NICOTINE EXPOSURE AND AUTONOMIC INSTABILITY**

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Early-life exposure to tobacco products may occur under a variety of guises: via the placenta and breast milk if mother is an active or passive smoker, or uses oral tobacco, and by inhaling environmental tobacco smoke after birth. The adverse affects of this exposure on infant development and outcome are well described. Multiple pathways are involved, but exposure to the nicotine in tobacco is one of the most important. Nicotine acts at cholinergic receptors to reprogram the development of central and peripheral structures involved in cardiovascular, respiratory, and

 

arousal activity. This blunts the body's error-detecting and emergency early-warning systems, increasing vulnerability to stress and the risk of short and long-term health complications. Yet one controversial option to wean pregnant and breastfeeding women off tobacco is to encourage them to use nicotine gum or patches (nicotine replacement therapy, NRT). Clinical trials of NRT in pregnancy are underway, and guidelines for its use in pregnancy have been relaxed in some countries. New generation quit smoking drugs that mimic nicotine's actions by partially activating or blocking cholinergic and other (e.g. dopamine) receptors are also on the horizon. Can nicotine or its agonists be used with reasonable safety during pregnancy? Simulating human NRT can reproduce in newborn animals many of the autonomic deficits reported in infants of smokers; some could be triggered by a form of postnatal nicotine withdrawal. The use of nicotine by potentially thousands of pregnant or breastfeeding women is therefore unlikely to be risk-free.

### RT6.5

### INFECTIOUS DISEASES AND SIDS: AN INFLAMMATORY PATHWAY TO APNEA AND AUTONOMIC DYSREGULATION

**E Herlenius**

*Neonatal Research Unit, Department of Women and Child Health, Karolinska Institute, Stockholm, Sweden*

Death in Sudden Infant Death Syndrome) SIDS is often preceded by a mild viral or bacterial infection (Weber et al., 2008). A malfunction in the regulation of cardio-respiratory functions during sleep in predisposed infants has long been suspected to contribute to SIDS. Children with immature brainstem respiratory control as well as infants may have periodic irregular breathing with potential detrimental apneas that are increased during sleep as well as during infectious episodes. The hypothesis we address is that infection in infancy dramatically aggravates an underlying cardio respiratory dysfunction during a susceptible postnatal period.

We have revealed how the proinflammatory cytokine interleukin (IL)-1$\beta$ impairs respiration during infection via PGE2 (Hofstetter et al., 2007) and that infection, with associated eicosanoid release, is the main cause of respiratory disorders in preterm infants (Hofstetter et al., 2008). Brainstem microsomal Prostaglandin E synthas-1 (mPGES-1) is rapidly activated during transient hypoxia and levels of PGE2 and its metabolites correlate to the degree of asphyxia experienced during birth.

In experimental models hypoxia, *per se*, rapidly induces brainstem specific release of PGE2 with a synergistic depression of respiratory centers, to that induced by IL-1$\beta$. PGE2 is thus involved in the acute hypoxic response.

An inflammatory mediated activation of the mPGES-1 pathway, e.g. by viral or bacterial infection, rapidly induces release of PGE2 in the vicinity of brainstem cardio-respiratory related centers. This will depress the autonomic control networks, including the central drive to breathe. Hypoxia may then further reduce the activity of vital brainstem centers. In vulnerable infants, during a susceptible time frame, this might have fatal consequences. I will present some new data and suggestions for further investigations to test this hypothesis regarding an important mechanism that may cause SIDS.

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### RT7

### ROUND TABLE: PAIN MANAGEMENT

### RT7.1

### ANALGESIC TOXICITY IN PAEDIATRIC PATIENTS

**I Choonara**

*Academic Division of Child Health, University of Nottingham, The Medical School, Derbyshire Children's Hospital, Derby, UK*

At least one in ten children in hospital will experience an adverse drug reaction (ADR). It is important to treat pain effectively but one needs to recognise that analgesics, like all medicines, can result in toxicity. One of the most severe ADRs is respiratory depression and this is a particular problem associated with morphine and other opiates. Data on the risk factors associated with respiratory depression following the use of morphine and other opiates will be presented. Non steroidal anti-inflammatory drugs (NSAIDs) have a variety of side effects including gastro-intestinal bleeding and nephrotoxicity if associated with dehydration. Oral paracetamol has proven exceptionally safe when given therapeutically. Intravenous paracetamol is now more frequently used and there have been numerous tenfold errors resulting in overdose of paracetamol with the risk of hepatotoxicity.

### RT7.2

### MANAGEMENT OF ACUTE PAIN IN NEONATES

**KJS Sunny Anand**

*Anesthesiology, Anatomy & Neurobiology, University of Tennessee Health Science Center, Memphis, Tennessee, USA*

### RT7.3

### PAIN MECHANISMS AND EVIDENCE BASED MANAGEMENT

**R Howard**

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### CS6

### INTERACTIVE CASE STUDY: ABUSIVE HEAD TRAUMA

### CS6.1

### ABUSIVE HEAD TRAUMA

**A Kemp**

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### WO2

### WORKSHOP: HOW TO MAKE BEDSIDE EVIDENCE BASED DECISIONS

### WO2.1

### HOW TO MAKE BEDSIDE EVIDENCE BASED DECISIONS

**I Wacogne**

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### WO3

### WORKSHOP: INTERACTIVE CASE STUDIES IN CHILDHOOD FAECAL INCONTINENCE

### WO3.1

### INTERACTIVE CASE STUDIES IN CHILDHOOD FAECAL INCONTINENCE

**G Clayden**

*Evelina Children's Hospital, Kings Health Partners, London, UK*

Introduction: Faecal incontinence in children imposes a major stress on the child's ability to fully engage with social opportunities and undermines the child-parent relationship. The challenge to the paediatrician is to discover any factors that may be modified to accelerate the child's acquisition of this key skill and to be vigilant for any evidence of underlying disorders that require more investigation and treatment.

Purpose: To increase the understanding of the pathophysiology of the common causes of childhood faecal incontinence.

To improve the awareness of faecal incontinence as a symptom in a number of rarer conditions.

To outline treatment strategies and explore levels of consensus amongst paediatricians related to this.

Material and teaching methods: Following a brief introduction that will cover common presentations of faecal incontinence through childhood, illustrative cases will be described and key points in the clinical management will be debated.

Attendees will be given the opportunity to reach conclusions on key points by electronically voting on a series of options presented. Live open discussion will be focused on areas of widely scattered opinion.

Conclusion: By the end of the session attendees should have actively explored a range of causes of faecal incontinence in childhood from delayed development, social disruption, neurological and sphincter abnormality, non retentive and retentive faecal incontinence and the relationship with megarectum. They should also have shared ideas for active management of these problems and to have a better insight into the value and problems of more invasive procedures such as antegrade continence enemas. Models for professional support and information will also be covered and should encourage the development a better international network for this problem.

 

# THEME: GENETICS

## PLL3

## PLENARY LECTURE: PHARMACOGENOMICS

### PLL3.1

### PHARMACOGENOMICS

**MR Hayden**

*Department of Medical Genetics, University Killam Professor, CMMT, CFRI, UBC, Canada*

A striking failure of modern medicine is the debilitating and lethal consequences of adverse drug reactions. A paradox in modern drug development is that clinical trials provide safety and efficacy data for medications at a standardized dose in large populations, yet physicians treat individual patients who differ widely in their response to medications. Adverse drug reactions account for an alarming 7% of hospital admissions and are ranked as the 5th leading cause of death in the USA with costs exceeding $100 billion annually in the USA. Although many factors influence the effect of medications (i.e. age, organ function, drug interactions), genetic factors play a significant role in drug response variability. We hypothesize that genetic polymorphisms in drug metabolism genes underlie a significant portion of severe ADRs. The goal of personalized genomics is to utilize information about a person's DNA to improve the effectiveness and safety of medications. The Canadian Pharmacogenomics Network for Drug Safety (CPNDS) is a Canada-wide ADR surveillance network of full-time clinicians who identify patients with severe adverse drug reactions and matched control patients to identify the genetic factors that contribute to specific ADRs. CPNDS targets severe ADRs, such as life-threatening anthracycline-induced cardiotoxicity, cisplatin-induced hearing loss, and codeine-induced infant mortality. We are now developing pharmacogenetic tests to decrease the occurrence of severe adverse drug reactions by predicting in whom the risk for toxicity is greatest.

# THEME: HAEMATOLOGY

## LA2

## LATEST ADVANCES: HAEMATOLOGY

## LA2.1

## MOLECULAR ADVANCES IN PAEDIATRIC LEUKAEMIA CARE

**F Cotter**

*British Journal of Haematology, Barts and the London Queen Mary School of Medicine, London, UK*

## LA2.2

## NEW TREATMENTS FOR SICKLE CELL DISEASE

**W Wang**

*St. Jude Children's Research Hospital, Memphis, Tennessee, USA*

Aim: Advances in the management of sickle cell disease (SCD) have reduced the mortality rate in childhood to <5%. Remarkable progress is occurring with the three interventional modalities: anti-sickling drugs [in particular, hydroxyurea (hydroxycarbamide)], chronic transfusion, and hematopoietic stem cell transplantation (HSCT). We will summarize the status of major trials of these interventions and provide a glimpse of future approaches.

Methods: We will provde brief descriptions of several recently completed or ongoing multicenter therapeutic trials.

Results: Hydroxyurea studies: (i) BABY HUG is a phase III double-blinded trial of HU versus placebo in infants with sickle cell anemia in which spleen and renal function, toxicity, and effects on blood counts, episodes of pain and acute chest syndrome, and other clinical complications have been determined. (ii) SWiTCH and TWiTCH are prospective randomized trials of HU/phlebotomy versus chronic transfusion/Deferasirox in the secondary and primary prevention of stroke and the management of iron overload in SCD. (iii) CHAMPS was a randomized trial of intervention with HU and/or magnesium in subjects with HbSC disease. Chronic transfusion: SIT is a randomized trial of CTX versus no intervention in the prevention of silent infarcts in the brain. HSCT: new trials are investigating the role of reduced intensity conditioning regimens to achieve clinical benefit with minimal transplant-related toxicity, as well as the potential for utilization of alternate donors (other than matched siblings).

Conclusions: Marked reduction in vaso-occlusive complications and substantial improvement in blood counts, along with the lack of significant toxicity, support the expanded use of HU in children with SCD, including infants as young as 1 year of age. The role of HU in preventing stroke is under intensive investigation, as is the use of chronic transfusion to prevent silent brain infarcts. In the future, HSCT should become more available with expanded indications and donor sources. Finally, investigation into gene therapy leading to increased production of fetal hemoglobin is just beginning in human subjects with hemoglobinopathies.

## LA2.3

## LATEST ADVANCES IN HAEMOPHILIA MANAGEMENT

**R Liesner**

*Department of Haematology, Great Ormond Street, London, UK*

Recent advances in the management of children with haemophilia mean that in the 21st Century the majority of boys with all severities of haemophilia can expect to have reasonably good quality and longevity of life.

Haemophilia affects approximately 1 in 8 500 men in the United Kingdom; a third has severe disease (factor VIII or IX < 1% or <0.01iu/ml). In 30–50% of cases, there is no previous family history and there is a new spontaneous mutation in the FVIII or FIX gene. A molecular diagnosis is now possible in > 95% of cases, and this allows the carrier status of the mother to be accurately predicted facilitating antenatal diagnosis by CVS if desired and the foetal Y chromosome can now be determined by PCR on maternal blood from 9 weeks. Both of these techniques increase maternal choices considerably.

In cases with no family history infants with moderate or severe haemophilia typically present with postcircumcision bleeding, bad 'toddler bruising' or with a soft tissue, muscle or joint bleed at 6 to 18 months of age. Often the first presumed diagnosis is nonaccidental injury, and it is essential that a true coagulation defect be excluded in the work-up of these children.

The aims of the modern management of a haemophilic boy are as follows:

- to prevent chronic joint damage
- to prevent life threatening bleeds
- to facilitate social and physical well-being and help children to achieve full potential
- to avoid doing harm in terms of transmission of viral and other potentially harmful agents
- to provide a comprehensive service to the family

To achieve these aims, the care of children with haemophilia should always be supervised by a specialist haemophilia centre with access to full paediatric-based support services

The mainstay of state-of-the-art treatment is as follows:

- the use of recombinant factor concentrates which are essentially safe in terms of infective risk

 

• prompt, sufficient intravenous replacement of FVIII or FIX to haemostatic levels to treat bleeding episodes, given in the home setting

• the prevention of bleeding episodes and subsequent irreversible joint damage by the regular 'prophylactic' doses of factor concentrate at least every 48hrs in haemophilia A and at least twice weekly in haemophilia B. The dose of prophylaxis should be adjusted in each child to keep the FVIII / FIX level $>$ 1% which usually 25–40 iu/kg/dose and more in infants and toddlers.

• the use of central venous catheters in young children to facilitate regular prophylaxis and many believe the considerable benefit of catheters outweighs the risks. Insertion should only be contemplated in experiences centres and ideally the procedure should be performed by interventional radiologists.

• treatment of inhibitors, occurring in 15–25% of boys, according to nationally and internationally developed protocols. This is usually the biggest therapeutic challenge faced by treaters today and in experienced hands at least 75% can be eradicated relatively easily without significant associated morbidity.

A 'cure' for haemophilia remains an unfulfilled vision, although gene therapy trials are still ongoing. It is likely that concentrates with prolonged stability in the circulation will be introduced 1st and may reduce the need for infusion to once weekly. Other ongoing clinical trials are investigating in detail the risk factors for inhibitor formation with the hope that improved understanding may enable risk-reducing treatment strategies for high-risk boys in the future.

# THEME: INFECTIOUS DISEASES & VACCINATIONS

## PLS1

## PLENARY SYMPOSIUM: CHILDHOOD IMMUNISATIONS (MENINGOCOCCAL, PNEUMOCOCCAL AND GROUP B STREPTOCOCCAL VACCINES)

### PLS1.1

### PNEUMOCOCCAL EPIDEMIOLOGY IN THE ERA OF CONJUGATE VACCINES

**R Malley**

*Children's Hospital Boston and Harvard Medical School, Boston, MA, USA*

Vaccination with the protein-°©-polysaccharide conjugate vaccine, PCV7, which targets 7 of the most common Pneumococcal serotypes, has had a dramatic impact on the epidemiology of pneumococcal diseases in populations that have introduced this vaccine in their universal immunization programmes. However, even before the introduction of this vaccine, concern had been raised that its potential benefits may be threatened by a vaccine-°©-induced rise in non-°©-vaccine serotypes. Data from various settings clearly show that this serotype replacement has occurred among asymptomatic carriers, such that, in total, there has been little or no net change in the carriage prevalence of the bacteria. It is also clear that we are now seeing invasive disease because of serotypes that were not prevalent prior to the introduction of the conjugate vaccine, suggesting that – as one may expect with complete serotype replacement in carriage – serotype replacement is also occurring in invasive disease. What is less clear, however, is the magnitude of the increase in replacement in invasive disease. In this presentation, I will review the evidence for serotype replacement in carriage and disease and address some of the confounding issues that might affect these findings. Possible explanations for the differences between replacement in carriage and what has been reported so far in disease will be offered. The implications for these and other potential vaccine development strategies for both the developed and developing world will be discussed as well.

### PLS1.2

### DESIGN AND DEVELOPMENT OF NOVEL VACCINES FOR GROUP B STREPTOCOCCI

**J Telford**

*Research Unit at Novartis Vaccines & Diagnostics, Siena, Italy*

Invasive group B streptococcus (GBS) disease is a leading cause of morbidity and mortality in the neonate in Europe, the US and globally. GBS infection results in bacteremia and sepsis, particularly in the first week of life, and meningitis, particularly beyond the first week of life. The case fatality rate for neonatal GBS disease is 4% among term infants and 23% among premature infants. No vaccine exists to prevent this disease. Currently the only means of prevention is intra-partum antimicrobial prophylaxis (IAP) for women with confirmed antenatal GBS colonization. The use of IAP has reduced, but not eradicated, GBS disease. Development of an effective GBS vaccine would have a significant impact on disease prevention. Epidemiologic studies have demonstrated that natural immunity to the capsular polysaccharide (CPS) that coats the bacterium is protective: low levels of maternal antibody to CPS correlates with neonatal disease susceptibility. Accordingly, programs at Novartis Vaccines & Diagnostics have focused on the development of effective antenatal vaccines capable of inducing anti-GBS antibody. Challenges to vaccine design include the diversity of GBS serotypes (nine) and the poor immunogenicity of polysaccharides in general, as well as the need for a durable response that can be transferred to the newborn. To address these challenges we have prepared Crm-197 CPS-glycoconjugates representing multiple GBS serotypes. Additionally, from extensive analysis of the genome of 8 GBS isolates we identified, cloned and tested over 300 putative surface proteins as vaccine candidates. These studies identified promising novel proteins that induce protection in mice from GBS challenge. Further study identified these protein as pilus-like structures, not previously identified among important gram positive pathogens. Given the relative conservation of these proteins and their effectiveness at inducing protective immunity, they may prove an important component of an effective GBS vaccine approach.

### PLS1.3

### PROSPECTS FOR CONTROL OF MENINGOCOCCAL INFECTION

**AJ Pollard**

 

## PAL5

## PARALLEL LECTURE: HIV

### PAL5.1

### HIV

**H Lyall**

*Imperial College Healthcare NHS Trust, London, UK*

## PAS3

## PARALLEL SYMPOSIUM: NEONATAL INFECTIONS

### PAS3.1

### PATHOGENESIS OF GROUP B STREPTOCOCCAL INFECTION

**P Henneke**

*Centre for Peadiatrics and Adolescent Medicine, Freiburg, Germany*

### PAS3.2

### FUNGAL INFECTIONS – PREVENTION AND TREATMENT

**A Warris**

*Radboud University Nijmegen Medical Centre, Nijmegen, the Netherlands*

Adequate treatment and prevention of invasive fungal infections in neonates admitted to NICUs requires a thoroughly understanding of the epidemiology, the *in-vitro* activity of the antifungal drugs against the fungal pathogens, the pharmacokinetics of specific antifungal drugs in neonates, and clinical efficacy and safety data.

*Candida* species (*C. albicans*, *C. parapsilosis*) are the main cause of invasive fungal infections in neonates admitted to NICUs and is associated with a significant morbidity and mortality. The incidence of neonatal candidiasis raises from <1% in neonates >1500 g to 7–20% in very low-birthweight (VLBW) infants.

Due to a lack of clinical trials in neonates, treatment recommendations are largely extrapolated of data from adults and observational data in neonates. Amphotericin B formulations and fluconazole are considered to be first line antifungals, while the newer azoles and echinocandins are currently being evaluated. Remarkable, amphotericin B is better tolerated by neonates compared to older children and adults and therefore the use of lipid preparations has been limited. The available pharmacokinetic data in neonates have led to different dosing recommendations for fluconazole, micafungin and caspofungin with regard to the older children and adults.

Due to the high incidence of invasive candidiasis in VLBW infants, the difficulties to adequately diagnose these infections, and the well-known risk factors associated with the development of invasive candidiasis, has led to preventive strategies. Systemic antifungal prophylaxis using fluconazole has been widely studied, while topical oral nystatine has been studied to a much lesser extent. Although both strategies have been shown to reduce the incidence of invasive candidiasis in preterm neonates, the potential risks of antifungal resistance and toxicity with fluconazole prophylaxis should be taken into account. Implementation of antifungal prophylaxis differs between NICUs and is related to the local epidemiology and the incidence of invasive candidiasis.

### PAS3.3

### MRSA INFECTIONS

**A Vergison**

*Université Libre de Bruxelles, Brussels, Belgium*

*Staphylococcus aureus* colonises humans early in life. Three quarters of infants will be colonised at least once during their first 6 months of life. Transmission can occur vertically, but is most commonly post-neonatal, acquired from the environment, including mothers and maternity or NICU staff. *S. aureus* remains a very common cause of infection in the premature infant, but also in term babies undergoing surgical procedures. MRSA have been increasingly described in many countries as a cause of community onset infections and neonatal outbreaks. CA-MRSA with their typical skin and soft tissues infections and dramatic transmission characteristics have been also described in NICU outbreaks, mainly in the USA. Incidence of MRSA in the community has been shown to increase also in Europe and some strains tend to be imported into hospitals. Neonatal wards and particularly NICU are very specific paediatric environments where MRSA control may be difficult. First, stays are often prolonged in premature babies. Second, NICAP programs with focus on baby psychological well-being require compromise with contact isolation required for MRSA carriers. Third, *S. aureus* carriage patterns may be different in neonate and decontamination may be problematic, particularly in very low birth weight. However, there are several reports in the literature of successful control of MRSA in neonatal units, emphasising the need for rigorous hand hygiene, cohorting of infected babies and nurses and control for MRSA staff status. In many reports also, molecular typing helped in understanding and controlling the outbreak.

## RT8

## ROUND TABLE: SERIOUS INFECTIONS IN COMMUNITY, HOSPITAL AND NICU SETTING

### RT8.1

### IDENTIFYING CHILDREN WITH SERIOUS INFECTIONS IN AMBULATORY AND PRIMARY CARE PAEDIATRICS – WHAT IS THE BEST EVIDENCE?

**MJ Thompson**

*Oregon Health & Science University, Portland, Oregon, USA*

Identifying children who may have serious infections is a key clinical component of paediatric care in outpatient or primary care settings. Vaccination has markedly reduced the incidence of many invasive bacterial infections, and serious bacterial infections now comprise <1% of acute infections encountered in most ambulatory settings. The definition of serious infections found in primary care settings has also changed, most clinicians now consider serious infections to include pneumonia, some urinary tract infections, as well as complications of viral infections such as dehydration from acute gastroenteritis and respiratory difficulties due to viral respiratory infections. Despite this, consultations with parents of febrile children are very common, and referrals to hospital for admission remain high. Clinicians are caught between risking missing serious infections by under investigating and under-referral, while avoiding inappropriate over-investigation and referral which can compromise secondary care services for children. The diagnostic focus for most clinicians working in ambulatory settings is identifying children who have clinical features which suggest that they need referral to hospital inpatient teams, perhaps more than identifying the focus for the infection itself. Clinicians use several tools to identify children who may have serious infections. These 'red flag' features may include parental reported symptoms, examination features including vital signs, as well as point of care tests such as urine analysis and inflammatory markers such as CRP. This presentation will review the latest evidence for the diagnostic value of these clinical features based on several recent primary studies, as well as key evidence from systematic reviews. In addition, the value of clinical prediction rules in this area will be discussed.

### RT8.2

### SERIOUS NEONATAL INFECTIONS: DEFINING THE PROBLEMS

**P Heath**

*St George's, University of London, London, UK*

### RT8.3

### EVIDENCE – BASED MANAGEMENT OF PAEDIATRIC SEPSIS

**S Nadel**

*Imperial College School of Medicine, St. Mary's, London, UK*

## ME2

## MEET THE EXPERTS: LESSONS FROM THE H1N1 INFLUENZA PANDEMIC

### ME2.1

### ANTIVIRAL TREATMENT

**A Finn**[1]

[1]*Department of Clinical Science, Bristol Medical School, Bristol Royal Hospital for Children, Bristol, UK*

### ME2.2

### DID WE OVERREACT?

**E Miller**

*Health Protection Agency, London, UK*

## ME3

## MEEET THE EXPERTS: SEXUALLY TRANSMITTED DISEASES IN CHILDREN AND ADOLESCENTS

### ME3.1

### SEXUALLY TRANSMITTED DISEASES IN CHILDREN AND ADOLESCENTS

**DE Greydanus**[1,2]

[1]*Pediatrics & Human Development, Michigan State University, College of Human Medicine,* [2]*Michigan State University/Kalamazoo Center for Medical Studies, Kalamazoo, MI, USA*

While representing 25% of the sexually active population, adolescents acquire nearly one-half of all new sexually transmitted infections or diseases (STIs/STDs). Studies note that youth (ages 15–19) have the highest rates of chlamydia, gonorrhea, cervicitis (endocervicitis), syphilis, and hospitalizations due to pelvic inflammatory disease. This *Meet the Expert session* reviews various STDs in children and youth, including gonorrhea, chlamydia, human papillomavirus (HPV), herpes simplex virus (HSV), and others. Children typically develop an STD as a result of sexual abuse. Adolescents have increased risk for acquiring STIs due to many factors and these issues will be discussed.

Those at very high risk of STI acquisition include youth in detention centers or jails, runaway adolescents, those involved in sex-for-survival activity (including prostitution), male homosexuality activity, youth who are abused, mentally regarded adolescents, and those with a history of STIs and/or substance abuse disorders. The cost in terms of *preventable* health care spending is staggering and the complications of STDs are severe, especially for females; these include pelvic inflammatory disease, chronic pelvic pain, ectopic (tubal) pregnancy and poor pregnancy outcomes, HPV-induced cervical cancer, and others. The US Center for Disease Control and Prevention (CDC, 2006) has developed guidelines for the diagnosis (including laboratory testing) and management of STIs. Basic concepts of screening and management as outline by the CDC will be presented. Also discussed is the simplified, syndrome-based approach to STI management that has been develop by the World Health Organization (WHO) to help a wide variety of health care workers in many developing countries deal with STIs where access to expensive laboratory testing and follow-up visits with clinicians are not available or practical. The various WHO STI syndromes will be considered in this discussion.

## ME4

## MEEET THE EXPERTS: ADVANCES IN UNDERSTANDING AND MANAGING SEPSIS

## ME4.1

## ADVANCES IN UNDERSTANDING AND MANAGING SEPSIS

**N Klein**[1,2]

[1]*Great Ormond Street Children's Hospital, London,* [2]*The Institute of Child Health, University College London, London, UK*

# THEME: NEONATOLOGY

## ME5

## MEEET THE EXPERTS: THE NEURODEVELOPMENTAL SEQUELAE OF PRETERM BIRTH

### ME5.1

### THE NEURODEVELOPMENTAL SEQUELAE OF PRETERM BIRTH

**N Marlow**

*Institute for Women's Health, University College London, London, UK*

Despite the undoubted success in enhancing survival for very preterm children, neonatal intensive care has had less clear impact in the enhancing longer-term outcomes. Over the past 15 years we have seen steady improvements in survival and a 30% increase in the number of births at 25 weeks of gestation and below which remain unexplained. It is also clear that 'late' preterms (32–36 weeks) have an increase in health needs and a significant incidence of neurodevelopmental sequelae. Studying the longer-term effects of NIC is hampered by major differences in the definition of outcome, age of assessment and the populations reported.

Major areas of adverse outcome comprise neurosensory morbidity, cognitive impairment and behavioural disorders:

- Neurological morbidity – mainly cerebral palsy; this does show some fall over time in population gestation specific prevalence in the UK in parallel with perceived reductions in the frequency of large haemorrhages.
- Sensory deficits – hearing loss appears infrequent and static; visual impairment due to retinopathy of prematurity remains frequent amongst the most immature infants and less frequent problems (squint and refractive errors) are very common.
- Cognitive outcomes – IQ and executive function deficits remain the most prevalent adverse outcome and appear related to gestational age. Functionally there is an exponential increase in the prevalence of special educational needs as gestation falls.
- Behaviour – recently the importance of behavioural and psychiatric outcomes has been stressed although these outcomes often are found in association with other cognitive impairments, including ADD (inattentive subtype) and autism spectrum problems.

Attempts to understand the causal pathways and ameliorate these outcomes have met with little success and new approaches to this and the design and implementation of interventions is urgently required. Prematurity is associated with adverse outcomes that pervade many aspects of neurocognitive development.

# THEME: NEPHROLOGY

## PAL6

## PARALLEL LECTURE: WORK-UP OF A CHILD WITH AN INITIAL UTI

## PAL6.1

## WORK-UP OF A CHILD WITH AN INITIAL UTI

**S Marks**

*Great Ormond Street Hospital for Children, NHS Trust, London, UK*

Urinary tract infections (UTI) are one of the most common bacterial infections of childhood, affecting over 2% of children under 2 years of age and up to 10% of adolescents. Children may present with upper (pyelonephritis) or lower (cystitis) UTI so age, symptoms and signs are important clinically with the requirement to obtain an uncontaminated urine specimen for analysis and institute prompt treatment to eradicate infection, relieve symptoms and minimise the development of renal scarring and resistance to antibiotics. Acute pyelonephritis is more likely with a febrile patient who has loin pain and/or tenderness and bacteriuria. The aim of subsequent investigations is to prevent suffering from recurrent UTI and long-term complications of chronic kidney disease (when UTI are associated with congenital abnormalities of the kidney and urinary tract [CAKUT]), hypertension and pregnancy complications. Investigations are aimed at 'high risk' patients who will present with unusual clinical presentation (eg. older boy), abnormal antenatal ultrasound scans, poor urinary stream, palpable kidneys, recurrent or atypical UTI associated with bacteraemia, septicaemia, renal dysfunction and/or prolonged clinical course who may have CAKUT with or without vesicoureteric reflux (VUR) and renal damage (whereby clinicians need to differentiate between congenital renal dysplasia and acquired scarring). In the United Kingdom, the National Institute for Health and Clinical Excellence issued guidelines to reduce the investigation of childhood UTI, by not undertaking radiological investigations in children who present with their first, uncomplicated *Escherichia coli* UTI which responds to treatment (unless they represent with recurrent UTI), especially if antenatal ultrasound screening is normal. However, 'high risk' children require imaging to identify patients with CAKUT (those with congenital malformation, obstruction, abnormal renal tract and/or bladder). The natural history is resolution of isolated VUR and the literature debates whether medical prophylaxis or surgical intervention is warranted, except in children with abnormal urinary tracts.

# THEME: NEUROLOGY & NEURODEVELOPMENTAL PAEDIATRICS

## PLL4

## PLENARY LECTURE: AUTISM

### PLL4.1

### AUTISM

**A O'Hare**

*Child Life & Health and Consultant Paediatrician, University of Edinburgh and Royal Hospital for Sick Children, Edinburgh, Scotland, UK*

Active ascertainment in high risk populations has confirmed that ASD affects 1% of the childhood population, of whom half have an IQ below 70. The diagnosis is significantly easier for more severely affected children who present in the preschool years with the corollary that recognition in those who are more mildly affected may be as low as 23% (Baird 2006). Accurate prevalence figures inform configuration of services and techniques such as 'capture-recapture analysis' of standard datasets can identify what proportion of children are likely to be unrecognised (Harrison 2006). Paediatricians working with high risk preschool populations should always consider ASD in their differential diagnosis and regression in language under the age of 2 years is rarely explained by any other cause. Signs of abnormal social cognition, including unresponsive to name and absent joint attention can emerge at 9–14 months. ASD surveillance instruments facilitate early identification, intervention and investigation (SIGN 2007, Seida 2010). Genetic advances in ASD are now part of everyday clinical practice and underline the importance of a careful paediatric examination (Caglayan 2010, O'Hare 2009).

There are major advances in understanding core deficits in ASD (Lombardo 2009, Peppe 2006) and the abnormal brain circuitry and structure (Ecker 2010). Measures of typical development of social cognition (O'Hare 2009) can be introduced into clinical practice to improve the recognition of ASD in more able populations.

Whilst the prognosis is better for those children with higher intellect, language development and social engagement with peers (Howlin 2009), parental stress can be substantial, even for children with Asperger's syndrome (Epstein 2008). Paediatricians advocacy to support families and advance the wider agenda of research and service provision across all forms of ASD affecting children remains as critical as ever (O'Hare 2010).

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## PLL5

## PLENARY LECTURE: FEBRILE SEIZURES

### PLL5.1

### FEBRILE SEIZURES

**C Camfield**, **P Camfield**

*Department of Pediatrics, Dalhousie University, Halifax, NS, Canada*

Introduction: The basic facts about febrile seizures are clear – brain damage and death do not occur, subsequent epilepsy is rare (<3%), recurrences are common (30–40%) and parents are very upset.

Purpose: We address eight major clinical issues that remain perplexing with the hope that clinicians will appreciate rational solutions to these common conundrums.

Methods: The answers to the eight clinical questions are based on extensive literature review and personal experience.

Results: (i) What is the best way to stop a febrile seizure? – Buccal or nasal midazolam appear most effective. (ii) How can you tell that a febrile seizure has stopped? – Sometimes this is remarkably difficult and clinicians need to beware of the 'epileptic twilight state'. (iii) What role do antipyretics play? – Fever is a key ingredient; however, the only role for antipyretics is to make the child comfortable. They do not prevent or stop febrile seizures. (iv) How serious is a complex versus simple febrile seizure? -Complex features are common, probably over-emphasized and likely poorly reported by parents. (v) Are there disorders that resemble febrile seizures? The differential diagnosis is wide including non-seizure, paroxysmal events and the 'afebrile-febrile seizure' syndrome. (vi) How important is the link between prolonged febrile seizures and intractable temporal lobe epilepsy with mesial temporal sclerosis? It remains unclear if the connection is causative, but it is rare, yet important because early epilepsy surgery is valuable. (vii) Is there an effective prophylactic treatment? There still is no clearly effective preventative strategy. (viii) Is there a best way to counsel parents to prevent the 'vulnerable child syndrome'? Probably not, but the evidence indicates that they eventually adapt well.

Conclusions: Febrile seizures remain common and reassurance is the treatment for most. The disorder is complicated but a large, robust literature provides reasonable answers to most management issues.

## PLL6

## PLENARY LECTURE: IDEAL CLINICAL PRACTICE FOR NEONATAL MRI

### PLL6.1

### IDEAL CLINICAL PRACTICE FOR NEONATAL MRI

**MA Rutherford**

*Robert Steiner MR Unit, MRC Clinical Sciences Centre, Imperial College, Hammersmith Hospital, London, UK*

Magnetic resonance imaging of the neonatal brain is the ideal technique to identify and characterise congenital malformations or antenatal injury and to assess the site and severity of a perinatal injury. Good quality imaging of the small neonatal brain with its high water content requires adaptations to both the hardware and the sequences used for older children. Poor quality imaging prevents the accurate interpretation of the images and is usually due to poor signal to noise and motion artefact. Good practice must include techniques to cope with potential motion .e.g. sedation, fast imaging etc. Interpretation is not always easy: normal brain appearances are very different from even a 2 year old child and neonates often demonstrate very specific pathologies.

At present in the preterm infant, MR examination should be restricted to those who have US abnormalities or who have unexplained neurological symptoms. Prediction of motor outcome is best at term equivalent age. Certain conditions such as kernicterus will not be readily identified with US and an MRI is warranted but will be most valuable around 5 months post term.

In the term infant with suspected perinatal injury, the clinical presentation relates to the aetiology and can often predict the pattern of lesions sustained. Full clinical details should therefore be available to the radiologist to aid accurate interpretation of the imaging findings. Perinatal lesions are at their most obvious on conventional imaging between 1 and 2 weeks from birth. Earlier imaging may be useful to make management decisions in ventilated neonates but brain abnormalities may still be subtle using conventional sequences and diffusion weighted imaging (DWI) should be used. MR imaging is an excellent predictor of outcome following perinatal brain injury and can therefore be used as a biomarker in interventional trials designed to reduce injury and improve neurodevelopmental outcome.

## PAL7

## PARALLEL LECTURE: EPILEPSY SURGERY

### PAL7.1

### EPILEPSY SURGERY

**A McLellan**

*Royal Hospital for Sick Children, Edinburgh, Scotland, UK*

Epilepsy is a common neurological condition in childhood with prevalence rates of 3–8/1000 children. Whilst the majority of children will attain seizure freedom with

anti-epileptic drugs (AEDs) there remains up to a third of children who will continue to experience epilepsy with its negative impact on behaviour, learning and quality of life. Epilepsy surgery is well established as an extremely effective therapeutic option for some children with drug-resistant epilepsy. Our current understanding of the natural history of the epilepsies and the efficacy of AEDs means that we now know that continuing to add in AEDs to children with drug-resistant epilepsy only has a small chance of improving seizure control compared to epilepsy surgery, which in an appropriately selected candidate can lead to seizure freedom in 40–90% of cases.

Epilepsy surgery involves removal or modification of part of the brain from which seizures are arising without having a detrimental effect on function. There are a number of different surgical procedures involving resections of lesions/lobes, hemispheric procedures (hemispherectomy and hemispherotomy) and palliative surgical procedures, namely corpus callosotomy and multiple subpial transections. Surgical morbidity is uncommon and mortality now very rare.

Evaluation for surgery requires thorough clinical assessment, electroencephalography (EEG), neuroimaging (MRI for all but may require other investigations such as functional MRI, SPECT, PET), neuropsychology, neuropsychiatry and quality of life assessment. Some children may require additional investigations such as invasive monitoring, functional cortical mapping and wada. A decision about suitability for surgery is taken by a multidisciplinary team.

Outcomes from surgery include not only effect on seizure control but also impact of surgery on behaviour, learning and quality of life. It is important that the range of possible outcomes are discussed with families prior to surgery.

Children with drug-resistant epilepsy should be seen in specialist epilepsy services and possible surgical candidates should thereafter be referred to comprehensive epilepsy surgery programmes.

## DE2

## DEBATE: CONTROVERSIES ON ADHD

### DE2.1

### LIMITATIONS OF MEDICATION AND MINIMIZING HARM

**E Taylor**

*King's College London Institute of Psychiatry, London, UK*

Introduction: There are very large differences in ADHD management, between and within different countries. NICE provides detailed guidelines (www.nice.org).

Purpose: This review provides suggestions for choice of treatment, safety monitoring and counselling.

Material: Published research, information from regulators, clinical experience.

Methods: Systematic literature review, expert consensus development, longitudinal research, reanalysis of published trials, qualitative patient reports.

Results: Short-term efficacy of ADHD medication is established by RCTs, but long-term effectiveness is neither confirmed nor disconfirmed. RCT evidence also supports short-term efficacy of psychological interventions.

Longitudinal epidemiology indicates that several factors other than the severity of ADHD mediate the outcome for mental health. The untreated outcome is unfavourable. Many affected people discontinue medication in adolescence. Cross-sectional epidemiology indicates that differences in practice, between regions and times, are driven by altered public and professional perceptions rather than differences in disease prevalence.

Safety reviews show concerns for hypertension and growth reduction. Concerns over arrhythmias and death have been inflated. Young people's attitudes to continued medication are often, but not always, considered and mature.

Conclusions: Medication is not indicated for all cases of ADHD, but rather for severe cases (eg 'hyperkinetic disorder') and cases where psychological interventions are inappropriate, unavailable, or have failed.

Monitoring should focus on growth, blood pressure and psychological outcome. Long-term therapy should include periodic discontinuation of medication to assess continuing need. Prescribers should build in time for responsible discussion with young people and their families about the nature of the disorder, its treatment, and coping with the disabilities it imposes.

### DE2.2

### BENEFITS OF MEDICATION

**D Coghill**

*Developmental Research Group, University of Dundee, Dundee, Scotland, UK*

ADHD is a common and serious condition that if untreated can result in multiple impairments not only to those with the diagnosis but also their families and communities. Whilst only one of several available approaches to treatment pharmacological approaches to the treatment of ADHD have been demonstrated to be the most effective at reducing core symptoms. The psychostimulants (methylphenidate and dexamfetamine) are among the most effective treatments in psychiatry and comparable in effect to many treatments in physical medicine with effect sizes of around 1.0 and even the non stimulant atomoxetine with an effect size of around 0.6 is more effective than many other well accepted psychiatric treatments (e.g. SSRIs 0.5, atypical antipsychotics 0.25). Whilst medication can be effective across the whole spectrum of ADHD recent evidence suggests that for those with severe, pervasive and impairing ADHD medication is

usually the first choice treatment. For those with less severe ADHD medications may still play an important part in treatment where non-pharmacological approaches have not been completely effective. Newer extended release stimulant preparations and non-stimulants have increased the options available to the clinician and allow more flexible approaches to treatment, particularly for older patients. Although it is true that there is not yet adequate information regarding the long term effects of ADHD medications, evidence is starting to appear and further studies are underway. Recent data from the important MTA study highlights that it is not enough just to write a prescription for medication. For treatment to be maximally effective it is important to work within a carefully crafted protocol that provides a structure that can address adherence, dose optimization, all aspects of clinical response and potential adverse effect. It is of course also essential that we do not polarize the discussion about treatment approaches as most patients will benefit from a thoughtfully integrated approach to management.

## WO4

## WORKSHOP: PAEDIATRIC AUTOIMMUNE ENCEPHALOPATHIES (PAE)

### WO4.1

### PAEDIATRIC AUTOIMMUNE ENCEPHALITIS: AN OVERVIEW OF THE BASIC SCIENCE AND LABORATORY TECHNIQUES

**A Vincent**

*Oxford University, Oxford, UK*

For many years, it has been possible to help in the diagnosis of myasthenia gravis and other peripheral nervous system diseases by measuring the presence of autoantibodies in the patients serum. The antibodies are highly specific for the antigen (eg. Acetylcholine receptors) and indicate that the patient has an immune-mediated disease that is likely to respond to immunotherapies. Over the last few years it has emerged that there are also adult central nervous system diseases that are associated with specific autoantibodies to neuronal ion channels, receptors and associated proteins. The main antigens defined so far are potassium channels and associated proteins, the N-methyl-D-aspartate receptor and also the water channel aquaporin-4. The patients respond to immunotherapies although treatment effects can be slow compared to results in patients with the peripheral diseases. Antibodies to both of these neuronal proteins have now been found in a few (potassium channels) or a number (NMDAR receptor; aquaporin-4) of pediatric patients. This is clearly an area that is important to develop in pediatrics in the hope that these conditions will be diagnosed and treated promptly.

Traditionally autoantibodies are measured by binding to the antigen in tissue sections, on western blots, or by ELISA. These methods are often suitable for detecting antibodies to intracellular or denatured proteins, but do not necessarily detect antibodies that bind to intact native proteins expressed on a cell surface. It is these antibodies that are likely to be important in the pathogenesis of autoimmune diseases. The best way to measure the potentially pathogenic antibodies is by binding to cell-lines that have been transfected with cdnas encoding the relevant antigen. Binding of patients' antibodies can be detected by indirect immunofluoresence and either scored visually or measured by the fluorescence-activated cell sorter. This approach can now be used for antibodies to a range of different antigens that are targets in peripheral and central nervous system disorders, and similar techniques are beginning to be established by commercial companies so that the antibodies can be measured worldwide.

### WO4.2

### PAEDIATRIC AUTOIMMUNE ENCEPHALITIS: CLINICAL FEATURES

**L Ming**

*Evelina Children's Hospital, St. Thomas' Hospital, London, UK*

A range of CNS autoantigens have been reported in patients with immune-mediated encephalitis, although the pathogenicity of the majority of these autoantibodies has not been formally proven[1]. Antibodies to voltage gated potassium channels (VGKC) are often associated with limbic encephalitis, presenting with seizures, amnesia and medial temporal lobe inflammation. These patients do not usually have an underlying neoplasm and do well in response to immunotherapy, with substantial and sometimes complete recovery[2]. The expansion of the VGKC-antibody associated phenotype to patients with drug-resistant epilepsy, new immunotherapy-responsive seizure phenotypes are beginning to be recognized. In addition, antibodies against the N-methyl-D-aspartate subunit of ionotropic glutamate receptors have been reported, predominantly in young women who developed subacute onset encephalopathy, commonly associated with a prominent movement disorder and frequently with underlying ovarian teratoma[3].

Recently, data from a large US cohort[4] and a smaller UK cohort, revealed that up to 40% of anti-NMDAR encephalitis presents in childhood and adolescence. It has become apparent that the incidence of paediatric autoimmune encephalopathies is much higher then previously suspected, and that they comprise both paraneoplasic and non-paraneoplastic cases[5]. Antibody negative cases are also beginning to be recognized on the basis of similar clinical features. In this session, clinical features of childhood autoimmune encephalitis will be discussed.

*References:*

1. *Graus F, Saiz A, Dalmau J. Antibodies and neuronal autoimmune disorders of the CNS. J Neurol 2010; 257(4):509–17.*

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4. *Florance NR, Davis RL, Lam C at al. Anti-N-methyl-D-aspartate receptor (NMDAR) encephalitis in children and adolescents. Ann Neurol 2009;66(1):11–8.*
5. *Vincent A, Dale R. Autoimmune chanalopathies and other antibody-associated neurological disorders. In: Dale RC, Vincent A, editors. Inflammatory and Autoimmune Disorders of the Nervous System in Children. London: Mac Keith Press, 2010:365–388.*

**WO4.3**

## PAEDIATRIC AUTOIMMUNE ENCEPHALITIS: MANAGEMENT AND INVESTIGATIVE STRATEGY

**M Tardieu**

*Université Paris Sud, Assistance Publique-Hôpitaux de Paris, Le Kremlin Bicetre, France*

Childhood central nervous system (CNS) autoimmune and auto-inflammatory diseases comprise of a large group of immune-mediated encephalitis. This session will focus on the acute and chronic inflammatory CNS disorders with a detectable circulating auto-antibody. This is a new chapter of paediatric neurology of still unknown dimensions. Collectively they often have severe disease course that require aggressive and usually prolonged immunosuppression, a major decision for the clinician in charge of the child's treatment.

The different clinical entities are:

(1) Encephalitis with autoantibodies against different types of glutamate receptors, anti GABA receptor, anti VGKC. In children, the anti-glutamate (of NMDA type) receptor antibody encephalitis is the best described: investigation should be done in any child with progressively altered mental state, seizures and abnormal movement and should also look carefully for tumours (we observed a young child with remote neuroblastoma). The term limbic encephalitis that is mostly descriptive on MRI is not fully adapted in children. A specific entity called FIRES or catastrophic epilepsy is probably related although no specific auto antibody has been detected yet.

(2) Hashimoto disease: this should be investigated in children with progressive deterioration and abnormal white matter lesions without other causes. The investigation associates the dosage of T3, TSH and anti TGO antibodies.

(3) Devic disease with autoantibodies against aquaporin four has a different clinical pattern (spinal cord symptoms and optic neuritis but that could be restricted to repeated optic neuritis at onset).

(4) Opsoclonus-myoclonus syndrome is observed in toddlers with three of the four criteria: opsoclonus, ataxia and/or myoclonus, behavioural change and/or sleep disturbances, neuroblastoma. Despite intensive research no auto-antibody has been demonstrated yet.

Treatment will differ between these conditions although no evidence-based data are yet available. The 'expert consensus' is to use early an intensive immunosuppression, using combination of pulse of high doses of steroids, cyclophosphamide, anti CD20 monoclonal antibodies (rituximab); and in very acute cases, repeated plasmapheresis. The rationale and choice of potential first line treatments for each of these disease states would be discussed (for eg rituximab in Devic disease; steroids and cyclophosphamide in OMS syndrome before Rituximab; and the likelihood of repeating this strategy in encephalitis with anti NMDAr antibodies and Hashimoto disease).

 

# THEME: PULMONOLOGY

## PLSS1

## PLENARY SESSION: BRONCHIOLITIS

### PLSS1.1

### PRIMARY CARE ASPECTS

**M Thomas**

*University of Aberdeen, Gloucester, UK*

Bronchiolitis is a common disease of children under the age of 2 years, resulting in an illness of varying severity and duration. It is usually associated with a viral illnessacquired in the community (with Respiratory Syncitial Virus implicated in 75% of cases), and the initial presentation to health-care services is generally to Primary Care practitioners such as General Practitioners (GPs). It is the commonest cause of hospitaliation for children aged <1 year, with 3% of all infants in the UK admitted due to bronchiolitis. However, the majority of children with bronchiolitis have a milder illness and are managed in the community withoutspecialist input, and many who would meet accepted criteria are not diagnosed. Without high-quality care these infants may be at risk of both short-term and long-term adverse consequences.

The diagnosis of bronchiolitis is based on clinical symptoms and signs, and may be problematic to GPs. The symptoms are non-specific, being common to other infections and non-infectious respiratory illnesses, and include breathing difficulties, cough, poor feeding, irritability and apnoea. Signs include tachpnoea, respiratory distress, wheeze and/or crepitations on auscultation. GPs frequently lack confidence in making a diagnosis of bronchiolitis, and may be more likely to make a less specific diagnosis such as 'respiratory tract infection'. Mistaken diagnosis may also occur, for example, 'bronchitis' or 'asthma', leading to ineffective treatment such as antibiotics or inhaled steroids. The assessment of severity of illness in young children can also be sub-optimal in primary care, leading either to unnecessary hopsitalisation or to seriously ill infants being under-treated and inadequately monitored. GPs are frequently unsure of the evidence-based investigation and treatment of bronchiolitis, and there is widespread variation in the management of infants with bronchiolitis both in hospital and in the community. GPs may be unaware of which infants are at high-risk of adverse outcomes.

This presentation aims to review the diagnosis, risk assessment, factors indicating need for referral and the initial and longer-term management in primary care, and to identify ways in which integrated care can be provided more effectively.

### PLSS1.2

### EMERGENCY DEPARTMENT MANAGEMENT

**JL Robinson**

*Stollery Children's Hospital, Edmonton, Alberta, Canada*

After ensuring the child is stable, a priority is to differentiate bronchiolitis from other diagnoses, especially foreign body aspiration. Chest radiograph and bloodwork are generally only useful if alternative diagnoses are being seriously considered. The perceived value of obtaining a nasopharyngeal sample for viral diagnostics varies markedly from center to center. Rapid testing is often performed to allow for cohorting of children with the same virus. However, the high incidence of co-infection with a second virus that becomes apparent if a molecular panel is later used makes this practice difficult to justify. The cost effectiveness of viral diagnostics remains unknown. There is still a need for large high-quality studies of common therapies but it appears that nebulized epinephrine in the emergency department may prevent some hospital admissions. Addition of oral dexamethasone for 5 days may further decrease the admission rate but use remains controversial because of concerns regarding potential adverse events. Hypertonic saline appears to shorten the stay of hospitalized children by about 1 day but there need to be further studies in the emergency department to determine if admissions are averted. Severe outcomes including apnea, intubation, admission to intensive care and death occur primarily in children <7 weeks of age or with respiratory rate ≥ 80/min, heart rate ≥ 180/min or oxygen saturations ≤ 88% on room air when they first present to an emergency room. It appears doubtful that preventing or delaying RSV bronchiolitis can prevent asthma.

### PLSS1.3

### WHAT IS THE EVIDENCE BASE?

**S Cunningham**

*Department of Respiratory and Sleep Medicine, Royal Hospital for Sick Children, Edinburgh, Scotland, UK*

Most infants with bronchiolitis are supported by primary care. Some require an expert review in the Emergency Department to assess their current status and expected clinical course, with some (3%) requiring admission to hospital.

We will review the evidence base for bronchiolitis in the Emergency Department, during the hospital stay and also whether prophylaxis can help reduce disease burden. How strong is the evidence for beneficial effect? Or evidence for lack of effect? Or alternatively lack of evidence, i.e. prime areas for further research?

At the primary/secondary care interface, as judgements are made on disease severity and expected clinical course, does current evidence help us understand what contribution clinical skills, investigations and technology have in determining who is most sick and which of these clinical inputs most improve patient outcomes?

When patients are wheezy, crackly or breathless can treatments commonly used for such signs improve symptoms and reduce length of illness?

How do we manage patients in hospital and what is the evidence for how well our management improves patient outcomes in terms of discharge times from hospital and length of symptoms following discharge?

Can we prevent bronchiolitis, or if not prevented completely then ameliorate acute symptoms and subsequent clinical course?

Bronchiolitis represents a very significant burden of disease for patients, family and healthcare. Adhering to evidence, where it is available, can help clinicians reduce the burden of ineffective practice and improve patient care. An up-to-date review of the evidence, with some best practice tips, will be presented.

## PAL8

## PARALLEL LECTURE: INTERACTIONS BETWEEN UPPER AND LOWER AIRWAY

### PAL8.1

### INTERACTIONS BETWEEN UPPER AND LOWER AIRWAY

**G Scadding**

*Royal National Throat, Nose and Ear Hospital, London, UK*

It is not routine to treat nasal symptoms in asthma yet it should be considered.

The airway is a continuous structure extending from the nasal vestibule to the alveoli, with the same pseudostratified ciliated columnar epithelium along much of its length. Airways disease often does not conform to specific anatomical regions: upper and lower airway disease often coexists, with upper airway involvement often preceding that of the lower airway and even determining severity of disease and quality of life.

The nose filters, warms and humidifies over 10 000 L of air daily and bears the brunt of environmental contact as the site of allergen, microbial and particle deposition. Effective mucociliary clearance is needed for good respiratory health: evidenced by defects as in primary ciliary dyskinesia (PCD) and cystic fibrosis where sinus disease is almost universal.

Rhinitis, whether allergic or non- allergic, predisposes to asthma with an odds ratio of 3. Early diagnosis with either removal from allergen exposure or immunotherapy could probably prevent asthma, as has been shown for grass pollen allergic children. Most asthmatics have rhinitis: upper airways inflammation is demonstrable even in those without nasal symptoms. The reverse is also true- possibly since nasal allergen challenge causes eosinophil ingress to both nose and bronchi and vice versa.

Seasonal allergic rhinitis is associated with increased lower airway hyperresponsiveness (AHR), treatable by reducing nasal inflammation. The same dose of corticosteroid is more effective in reducing AHR when applied nasally than when inhaled.

Most paediatric asthma exacerbations begin in the upper airway with a viral cold. Synergy exists between viral and allergic inflammation: with a high risk of hospitalization for asthma in the allergic child exposed to both relevant allergen plus rhinovirus. The reduction of nasal inflammation in allergic children by regular intranasal corticosteroid should ameliorate the effects of intermittent colds .Large scale retrospective series showed benefits to asthma by treatment of associated rhinitis: including reduced emergency visits, hospitalization or both. Large well-designed prospective studies of rhinitis treatment in asthma are needed as well as studies looking at effective control of rhinitis in asthma prevention.

## DE3

## DEBATE: THIS HOUSE BELIEVES THAT CHRONIC DRY COUGH SHOULD BE TREATED WITH INHALED CORTICOSTEROIDS

### DE3.1

### THIS HOUSE BELIEVES THAT CHRONIC DRY COUGH SHOULD BE TREATED WITH INHALED CORTICOSTEROIDS (PRO)

**M Thomas**

*University of Aberdeen, Gloucester, UK*

Chronic cough is common in children, estimated to affect between 7% and 10%. It results in morbidity and stress for the child and the family. It may be associated with a variety of illnesses, although establishing the aetiology may be challenging. Although practice guidelines offer advice to clinicians encountering chronic, much of the evidence is weak in children, and guidance is largely based on expert opinion. However, establishing the likely cause of a chronic cough is important to to guide empiric therapy and target referrals efficiently.

Cough is a non-specific manifestation of airways dysfunction and can result from a variety of processes. Many of the conditions associated with a chronic cough have airways inflammation as their underlying pathology. Many of the alternative conditions associated with a chronic cough will frequently have characteristic features in the history or on clinical examination. Common inflammatory conditions associated with cough include asthma, eosinophilic bronchitis, post viral illness, allergic rhinitis and chronic rhinosinusitis. It may not be possible to diagnose these conditions on the basis of history and physical examination alone. Detailed objective diagnostic assessments may need to include immunological and allergy

 

tests, measurement of airways physiology and inflammation, bronchial provocation tests, imaging, GI endoscopy and pH monitoring and detailed ENT tests, involving time, costs and inconvenience. The most effective strategy in diagnosing and treating cough in children has not been established. Detailed tests may not always be available, acceptable to patients or careers, or cost-effective in all cases. Empiric therapy is therefore often considered.

Inhaled corticosteroids (ICS) are powerful anti-inflammatory agents with an acceptable risk-benefit profile in children when given in low to moderate doses. ICS treatment is therefore viable as empiric treatment in children with a chronic dry cough in whom the aetiology is unclear on after clinical assessment. Topical steroid treatment to the upper and/or lower airways is a safe therapeutic trial option that is likely to provide symptom relief in a high proportion of children, and allow detailed testing to be restricted to those not responding.

### DE3.2

### THIS HOUSE BELIEVES THAT CHRONIC DRY COUGH SHOULD BE TREATED WITH INHALED CORTICOSTEROIDS (CON)

**M Shields**

*Queen's University Belfast & Royal Belfast Hospital Sick Children, Belfast, N. Ireland, UK*

Normal children experience 10 upper respiratory infections each year (mostly winter) and 10% are still coughing at 3 weeks. Thus some normal children appear to have a chronic problem cough. During these the coughing is worse at night or during cold air exercise. Evidence suggests that anti-asthma treatments have no significant benefit, leaving parents desperate and doctors feeling they have to act. Many of these children are over diagnosed and treated as asthmatic. Prolonged acute cough lasting 4–8 weeks is typically postviral or pertussis cough and anti-asthma medication is also ineffective.There is no doubt that children with classical atopic asthma (with reversible airways obstruction) do cough more and that increasing cough occurs as exacerbations begin.

Parents are accurate at deciding whether a cough is wet or dry. Recently, it has become clear that some children treated for asthma with an associated wet cough have persistent bacterial bronchitis and require a long course of antibiotics rather than a step up in antiasthma medication.

There are many different causes of cough in children and there are clear guidelines for the diagnosis and management of such children (Ref 1). When faced with a child with either chronic or recurrent problem coughing an attempt should be made to arrive at a specific diagnosis and give specific treatment.

However, some children with chronic isolated (no wheeze) dry cough are otherwise well and have no obvious specific 'cough diagnosis' and are labelled 'non-specific isolated cough'. Natural resolution of the cough is common and children have different risk factors to asthma. Bronchoalveolar lavage or induced sputum studies show very few have eosinophillic inflammation (asthma). Eleven systematic literature reviews for treatment of isolated non-specific cough found few or no suitable studies but two clinical trials of inhaled corticosteroids (ICS) showed no benefit in these children. Clearly this leaves general practitioners and paediatricians unsure about 'cough variant asthma' and thus many are started on trials of antiasthma medication. Most often such trials have no end point or outcome measure and some such children end up on escalating doses of ineffective asthma therapy.

*Ref 1. Thorax 2008; 63 (Suppl 3): iii1- iii15. Epub 2007 (doi:10.1136/thx.2007.077370). British Thoracic Society Guidelines Recommendations for the assessment and management of cough in children MD Shields, A Bush, M L Everard, SA McKenzie, and R Primhak.*

### CS7

### INTERACTIVE CASE STUDY: DIFFICULT ASTHMA

### CS7.1

### DIFFICULT ASTHMA

**A Thomson**[1], **D Keeley**[2]

[1]*Paediatric Respiratory Medicine, Oxford Children's Hospital, Oxford, UK,* [2]*The Rycote Practice, Thame Health Centre, Thame, UK*

Purpose: An interactive session to learn about difficult asthma.

Introduction: For children with difficult asthma how much of the difficulty lies with the asthma and how much with the child, their family and their social environment? Do the keys for understanding and improving management of difficult asthma lie in molecular genetics, in good clinical method, in sophisticated techniques of physiological investigation, in advances in therapeutics or in family systems thinking and holistic care for the child and family?

Method: These issues will be explored through case presentations by a specialist respiratory paediatrician and a general practitioner with an interest in childhood asthma, and by discussion with participants at this interactive workshop.

Conclusion: By the end of the session we should together have a better understanding of what having 'difficult' asthma means to the child, and to their doctors and have developed an algorithm for management.

# MEETINGS ORGANISED ON THE OCCASION OF EXCELLENCE IN PAEDIATRICS

### MPS1

### PLENARY SYMPOSIUM: CURRENT STATUS AND CHALLENGES IN THE PREVENTION OF INFECTIOUS DISEASES

### MPS1.1

### INSIGHTS INTO THE UK CERVICAL CANCER IMMUNISATION PROGRAMME

**P Stern**

*Paterson Institute of Cancer Research, University of Manchester, Manchester, UK*

### MPS1.2

### NON-TYPEABLE HAEMOPHILUS INFLUENZAE: THE BURDEN OF DISEASE

**M Slack**

*Haemophilus Reference Unit, Health Protection Agency, London, UK*

### MPS1.3

### ROTAVIRUS DISEASE AND THE IMPACT OF VACCINATION

**M Iturriza**

*Enteric Virus Unit, Health Protection Agency, London, UK*

### MPL1

### PLENARY LECTURE: OPTIMAL EARLY GROWTH – NEW PERSPECTIVES

### MPL1.1

### OPTIMAL EARLY GROWTH – NEW PERSPECTIVES

**A Lucas**

*UCL Institute if Child Health, London, UK*

The roles of early life nutrition and its impact on later health outcomes have become areas of increasing attention. Childhood obesity and malnutrition are important health problems that are both influenced by nutritional intake. Monitoring the growth of infants and using appropriate growth references are critical. Results from a multicenter study conducted by the World Health Organization on growth of healthy breastfed infants have redefined appropriate growth. Evidence suggests that the amount and quality of protein are different in human milk relative to infant formula, and may have an impact on early growth patterns.

### MPS2

### PLENARY SYMPOSIUM: NEW INSIGHTS ON BREASTFEEDING AND THE PROVISION OF HUMAN MILK

### MPS2.1

### NEW INSIGHTS ON BREASTFEEDING AND THE PROVISION OF HUMAN MILK

**Mike Woolridge**[1], **Mary S. Fewtrell**[2]

[1]*Institute of Health & Social Care, School of Healthcare, University of Leeds, Leeds, UK*, [2]*Childhood Nutrition Research Centre, UCL Institute of Child Health, London, UK*

This symposium includes new data on the mechanics of breastfeeding and the application of research to the provision of human milk for infants. Accepted wisdom on how infants feed has been relatively consistent for the past 350 years in emphasizing the importance of peristaltic tongue movements; a view recently challenged by ultrasound research suggesting a predominant role for suction.

In '**The mechanics of breastfeeding revised'**, Dr Woolridge will present data from new ultrasound studies (45 feeds by 29 mother–baby pairs) that confirm irrefutably the traditional view that 'peristaltic tongue movements' are a core mechanism in milk removal and the sole mechanism by which milk is moved into the oro-pharynx for swallowing. These studies confirm the novel view that infants also use localized tongue depression to generate increased suction pressure, drawing milk from the breast. These 'extractive tongue movements' can only be superimposed on tongue peristalsis, at a specific point in the suck cycle; they cannot occur in isolation. The overriding conclusion is that infants do not have a unitary, inflexible style of sucking; rather, they have a dynamic range of options which they employ flexibly to maximize milk transfer.

In '**An evidence-based approach to provision of human milk for the high-risk infant'**, Dr Fewtrell will illustrate the

 

importance of applying physiological principles in practice. Although the health benefits of breast milk are greater for preterm infants than for those born at term, infants below 34 weeks gestation generally cannot breast-feed effectively, and their mothers may need to express milk for long periods to establish breastfeeding. Factors demonstrated to improve milk production in this situation–including frequent expression in a relaxed environment, and using a breast pump incorporating evidence-based, physiological features–are clearly based on the physiology of lactation, illustrating the practical importance of research in this field.

## MPL2

## PLENARY LECTURE: EFFICACIOUS AND SAFE TREATMENT OF RESPIRATORY DISEASES IN CHILDREN WITH PHYTOPHARMACEUTICALS

### MPL2.1

### EFFICACIOUS AND SAFE TREATMENT OF RESPIRATORY DISEASES IN CHILDREN WITH PHYTOPHARMACEUTICALS

**L Namazova Baranova**

*Scientific Research Institute of Prophylactic Pediatrics and Rehabilitation, Scientific Center of Children's Health, Moscow, Russia*

Introduction: Infections of the respiratory tract as rhinosinusitis and acute bronchitis are the most frequent diseases in childhood. Antibiotics are in most cases not indicated due to the predominantly viral origin. Hence there is a need for an efficacious and very well tolerated treatment.

Two phytopharmaceuticals (Sinupret® and Bronchipret®) are proven treatment options in adults for these diseases. Two prospective observational cohort studies with those two drugs have been performed in children.

Results: A 12-day treatment with Sinupret® in children (2–12 years) for rhinosinusitis resulted in an excellent improvement of all assessed symptoms (facial pain/headache, nasopharyngeal secretion, nasal congestion, hoarseness, cough). In 88% of the 3.109 patients the efficacy of Sinupret® oral drops or tablets was rated very good or good by the treating physician. Tolerability of Sinupret® was assessed as markedly good.

A 10-day treatment with Bronchipret® Syrup in 1.234 children (2–17 years) for acute bronchitis with productive cough showed to have a good or very good tolerability in 96.5% of the patients. The efficacy findings of the study matched with those of a randomized placebo-controlled trial with Bronchipret® Syrup in adult patients. In both studies the BSS (Bronchitis severity score composed of the five symptoms cough, sputum, chest pain during coughing, dyspnoea and rales/rhonchi) showed a comparable regression after 10 days treatment: the analysis of the BSS in the adult population showed that the regression of the BSS was faster under Bronchipret® Syrup than under placebo (Day 0: both groups 8.3; Day 10: 3.3 under placebo versus 1.6 under Bronchipret® Syrup). For children regression of symptoms was even more pronounced than in the adult population (Day 0: BSS of 8.8; Day 10: BSS of 1.1).

Conclusions: Clinical proven phytopharmaceuticals as Sinupret® and Bronchipret® show an efficacious and very well tolerated treatment of respiratory diseases in children.

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# Author index

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# ORAL PRESENTATIONS (OP01–OP12)
# THEME: CARDIOLOGY – ENDOCRINOLOGY & METABOLISM

## OP01

### MYOCARDIAL STRAIN IN NORMAL CHILDREN

**K Ichihashi**, A Maruyama, Y Sato

*Saitama Medical Center of Jichi Medical University, Saitama, Japan*

Introduction: Measurement of cardiac strain used by speckle tracking echocardiography is currently available in adult patients with several cardiac diseases. However, there are few reports about cardiac strain in children.

Purpose: The present study aims to derive the reference values for circumferential and radial strains in normal children.

Material and methods: The subjects in this study included 20 children with normal cardiac function. They underwent echocardiac examination; 2D cine-loops recordings of short axis views at papillary muscle level were stored for off-line analysis. Computer analyses were performed and circumferential and radial strains were calculated.

Results: Peak strains were constant during childhood. Circumferential peak strains of Ant. Septal and Septal were larger than those of other areas. That of Posterior was smaller than those of other areas except Lateral. There were no differences of radial peak strains among all of the regions.

Conclusion: Circumferential peak strains of children were different among the regions.

## OP02

### LEFT VENTRICULAR FUNCTION IN HIV-INFECTED CHILDREN

**O Ige**, F Bode-Thomas, S Oguche

*Department of Paediatrics, Jos University Teaching Hospital, Nigeria*

Introduction: In HIV-infected children, a continuum from asymptomatic left ventricular (LV) dysfunction to dilated cardiomyopathy (DCM) to congestive cardiac failure with cardiac associated mortality has been suggested. Screening methods such as echocardiography (ECHO) are useful in the detection asymptomatic LV dysfunction. There are very few published studies of heart disease in HIV-infected children living in sub-Saharan Africa, where 62.5% of individuals infected with HIV worldwide live.

Purpose: To study the LV systolic and diastolic function in HIV-infected children aged <15 years.

Material:The LV function of 150 children with HIV infection aged 6 weeks to 14 years, and an equal number of age- and sex-matched controls were evaluated by means of ECHO.

Methods: The prospective study was carried out in 2008 over a 6 month period, at a tertiary health care facility in Nigeria. An ECHO was performed on each child and LV size was determined by M-mode measurements. Fractional shortening (FS) and ejection fraction (EF) which are measurements of LV function were calculated automatically by the machine.

Results: The mean FS and EF were significantly reduced in the subjects compared with the controls ($P < 0.0001$). LV systolic dysfunction was detected in 50.0% of the HIV infected children and 3.3% of the controls. DCM was present in 8.0% of the subjects but none of the controls. The subjects with LV systolic dysfunction did not differ significantly with respect to treatment with ART or the stage of the disease. The E and A wave velocities were significantly higher in subjects compared with the controls ($P < 0.0001$) LV diastolic dysfunction was detected in 3.3% of the subjects but none of the controls ($P = 0.03$).

Conclusions: LV systolic and diastolic dysfunctions are significantly more frequent in HIV infected children compared with controls.

## OP03

### POLYSOMNOGRAFY AND SPONTANEOUS NOCTURNAL SECRETION OF ALDOSTERONE (ADS), HGH, DHEA AND MELATONIN IN CHILDREN AND ADOLESCENTS WITH SHORT STATURE AGED 4–23 YEARS WITH AND WITHOUT GROWTH HORMONE DEFICIENCY (GHD)

**A Mockel**[1], K Klemp[1], A Hoffmann[2], G Wiedemann, S Ullrich[3], E Von Buren[4], K-P Ullrich[1]

[1]*Helios Kreiskrankenhaus Gotha, Germany,* [2]*Fzmb GmbH Forschungszentrum Fur Medizintechnik Und Biotechnologi, Erfurt,* [3]*Gymnasium Dorsten, Germany,* [4]*Thermo Fisher Scientific, Kalamazoo, USA*

Aims: We investigated the association as well as the dependencies between biological rhythms like sleep, blood pressure regulation and dynamics of endocrine secretion of hGH, DHEA and Melatonin in short stature children with and without GHD.

Subject, materials and methods:We analyzed the 12 h nocturnal secretion of ADS (RIA, DSL), hGH (ELISA, DSL), DHEA (EIA, DSL), MLT (IRA, DSL) with half-hour blood sampling using Conflow Pump in 22 patients aged 4–23 years. Hormone levels were measured in heparinized plasma. Pulsar and AncoPuls programs (Merriam and Wachter, 1982; Albers 1992) were used to evaluate pulsatility. Sleep was analyzed using ALICE 4 for polysomnography under visual control. SPSS was used for statistical analysis, phases and efficiency of sleep were determined according to Rechtschaffen and Kales 1968.

Results: All examined patients had more than one ADS peak during the night. We found no significant difference of the ADS secretion profiles and the average ADS concentration between patients with and without GHD. So we compared prepubertal patients (4–10 years) with pubertal patients (11–23 years). The group of the prepubertal patients showed the max. ADS level at 03:30 a.m. and the pubertal patients around 06:00 o'clock a.m. But there was no difference in the average ADS concentration and the total ADS concentration between the two groups.

The evaluation of the polysomnografies showed that ADS peaks more frequently occur during wake periods (22) and sleep stage 2 (17) than during REM sleep (8) and delta sleep (3).

Conclusions: The nocturnal secretion of ADS in children is pulsatil. It remains unclear why the max. ADS level in prepubertal children occurs earlier than in adolescents.

We found no association between ADS secretion and change of REM – nonREM sleep.

### OP04

## EFFECTIVENESS OF DIETARY PLANT STEROLS ON LOWERING LDL-CHOLESTEROL IN CHILDREN AND ADOLESCENTS

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Introduction: There is growing evidence that plant sterols/stanols lower total and LDL cholesterol concentrations in hypercholesterolemic subjects and have no adverse effects.

Purpose: To evaluate prospectively the efficacy of 2–2.5 g plant sterols as a part of a dietary treatment in children and adolescents with hypercholesterolemia.

Material:Fifty-one otherwise healthy children with hypercholesterolemia, (25 boys, 26 girls) aged 5.5–16.5 years (mean age ± SD 9.76 ± 2.62) were included. No one was on hypolipidemic or other medication.

Methods: All participants consumed a yogurt drink once daily at lunchtime provided 2–2.5 g plant sterols. Children with poor compliance were excluded. Low-saturated fat diet was maintained. Lipidemic profiles were assessed at the beginning of the experimental period and at 6 months; fasting blood samples were collected. Overweight and obesity were defined by international BMI cut off points. Statistical analysis was performed using the SPSS 17.0. Differences between two measurements were tested using paired Student's t test. A $P < 0.005$ was considered significant.

Results: The consumption of plant sterols reduced significantly total (218.02 ± 35.23 vs. 242.29 ± 31.32, *P*, 000), LDL (151.69 ± 33.57 vs. 174.41 ± 29.82, *P*, 000) and non-HDL cholesterol (165.91 ± 34.93 vs. 189.48 ± 31.31 *P*, 000). The mean reduction was 14%. Age, BMI, baseline lipid levels and the ability to lower cholesterol were similar in both sexes. There was no significant difference in serum lipid changes between children with severe and mild to moderate hypercholesterolemia and between baseline serum cholesterol levels in responders compared to non responders. Apo B concentrations were reduced in a lower degree. No significant changes in HDL-C, Lp(a) apo A-I and triglycerides levels were observed.

Conclusions: This dietary intervention may be an effective and safe tool in the treatment of hypercholesterolemia in children and adolescents followed by introduction of pharmaceutical treatment in resistant cases. Therefore, dietary plant sterols consumption may contribute to primary prevention of atherosclerosis and early cardiovascular disease.

# THEME: INFECTIOUS DISEASES – HAEMATOLOGY & ONCOLOGY

## OP05

### 18FDG PET/CT IN CHILDREN LYMPHOMAS: EXPERIENCE OF A LARGE NON PEDIATRIC HOSPITAL

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Introduction: PET/CT is a widely used method for the evaluation of patients with neoplasias.

Purpose: To evaluate the role of $^{18}$FDG PET/CT in children with lymphomas.

Material: This is a retrospective study involving 17 children (10 boys, seven girls) aged 7–16 (mean age: 13.5 years) with lymphomas who had PET/CT scan from March 2007 to February 2009.

Methods: PET/CT was performed after the injection of 3.7 MBq/kg of $^{18}$FDG. Whole body CT and PET scans were obtained 60 min later with adequate acquisition parameters. Additional images of brain, head, neck and lower limits were obtained when necessary. No child needed sedation. The collaboration with all of them was excellent.

Results: Twelve children have been referred for HL and five for NHL and had totally 26 PET/CT scans: for initial staging (three scans), end treatment restaging (13 scans), early assessment of treatment response (five scans), recurrence (three cases) and follow up (two cases). $^{18}$FDG PET/CT and conventional imaging findings were concordant in 5/17 children (29.4%): in three children excluding the disease and in two showing the same clinical stage. 13/26 (50%) scans were positive showing more sites involved in six cases and leading to upstaging in three of them, and less sites in three cases without change of the clinical stage. 13/26 (50%) scans were negative, correctly excluding residual disease after therapy in 11 cases, showing complete early treatment response in one case and excluding recurrence in one case. Findings have been confirmed by follow up.

Conclusions: $^{18}$FDG PET/CT seems to be well tolerable by children and easy to perform even in a non specialized pediatric hospital. It may be a useful method for the evaluation of lymphomas of the childhood improving the staging and restaging and elucidating equivocal findings of other imaging modalities when recurrence is suspected.

## OP06

### REVIEW AND ANALYSIS OF CASES RELATED TO THE NOVEL INFLUENZA VIRUS A(H1N1)

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Introduction: Human influenza A(H1N1) virus had spread across the world in the year 2009 and had important transmission in the pediatric community.

Purpose: Review and analysis of cases related to the infection from novel influenza virus A(H1N1) who had visited the emergency ambulatory and admitted at the pediatric clinic.

Material and methods: From April 2009 to February 2010 a number of 38 children, age 30 days–14 years old, was admitted to the clinic with symptoms related to the infection by A(H1N1). Pharyngeal specimens were collected and sent to the nearest tertiary center, where it is available a Polymerase Chain Reaction assay (PCR).

| Age | Boys | Girls | Total | Seasonal prevalence | Clinical presentation | 38 children |
|---|---|---|---|---|---|---|
| <1 year | 1 (2.63%) | 1 (2.63%) | 2 (5.26%) | April 1 | Pneumonias | 14 (36.8%) |
| | | | | May 0 | | |
| 1–5 years | 10 (26.31%) | 6 (15.78%) | 16 (42.1%) | June 2 | Sore throat | 15 (39.4%) |
| | | | | July 1 | | |
| 5–10 years | 6 (15.78%) | 6 (15.78%) | 12 (31, 5%) | August 0 | Gastroenteritis | 3 (7.9%) |
| 10–14 years | 6 (15.78%) | 2 (5.26%) | 8 (21%) | September 2 | Febbrile seizures | 1 |
| | | | | October 14 | | |
| | | | | November 43 | Encefalitis | 2 (5.2%) |
| | | | | December 21 | | |
| Total | 23 (60.5%) | 15 (39.4%) | 38 | January 11 | Benign myositis | 3 (7.9%) |
| | | | | February 9 | | |
| Specimen | Total | Positive | Negative | Admissions | Home | |
| | 238 | 104 | 134 | 38 | 66 | |

Results: On a total number of 9592 children (age: 30 days–14 years) examined at the emergency ambulatory, n = 238 (2.48%) were examined via pharyngeal swab, due to the severity of the symptoms and the chest X-ray findings, n = 104 (43.6%) were positive in the A(H1N1) PCR. In the period of study n = 1068 children were admitted at the hospital (girls n = 459 – 42.9%, boys n = 609 – 57.1%), from which n = 38 (36.5%) were positive. The cases were distributed according to age, gender, seasonal prevalence and clinical presentation. The mean number of days of hospitalization was 5 days.

Conclusions: From the analysis it is deduced that children infected with A(H1N1) present most commonly clinical manifestations from the upper and lower respiratory tract, gastrointestinal tract and from the central nervous system. The most frequently age group involved was from 1 to 5 years old and seasonal prevalence especially during autumn and winter.

### OP07

### CLINICAL DIFFERENCE BETWEEN HOSPITALIZED PAEDIATRIC PANDEMIC H1N1 2009 INFLUENZA AND OTHER ACUTE RESPIRATORY TRACT INFECTIONS AT QUEEN SIRIKIT NATIONAL INSTITUTE OF CHILD HEALTH, THAILAND

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Introduction: In late March 2009, a pandemic $H_1N_1$ influenza virus emerged and spread globally. Limited data on disease characteristics and outcomes in paediatric pandemic $H_1N_1$ 2009 influenza infection existed at that time. The ability to identify the clinical manifestations correlating closely with pandemic $H_1N_1$ 2009 influenza would be useful to guide ancillary diagnostic testing and management decision-making.

Purpose: To determine the clinical courses and outcomes of hospitalized paediatric pandemic $H_1N_1$ 2009 influenza infections at Queen Sirikit National Institute of Child Health, Thailand.

Material: The medical records of 25 pandemic $H_1N_1$ 2009 influenza, proved by reverse transcriptase-polymerase chain reaction (RT-PCR) and 50 other acute respiratory tract infection (ARTI) patients, who had been admitted to Queen Sirikit National Institute of Child Health during the period 1 June–31August 2009 were reviewed.

Methods: Demographic data, clinical manifestations, laboratory and radiographic findings, treatments and clinical outcomes, were explored and analyzed.

Results: It was found that children aged >5 years (72.0%), overweight (32.0%), and with lymphopenia (52.0%), were more common among the pandemic $H_1N_1$ 2009 influenza group than the other ARTI groups (14.0, 10.0, and 20.0%, respectively), while difficulty breathing (36.0%), dyspnea (20.0%), wheezing (16.0%), crepitation (28.0%), and abnormal chest X-ray (37.5%) were less frequent among the pandemic $H_1N_1$ 2009 influenza group. Twenty-four of 25 (96.0%) pandemic $H_1N_1$ 2009 influenza patients recovered fully after treatment with oseltamivir, even though some of those patients had underlying diseases.

Conclusions: The findings suggest that child's age >5 years, and overweight, correlated with pandemic $H_1N_1$ 2009 influenza. The respiratory manifestations were less severe in paediatric pandemic $H_1N_1$ 2009 influenza patients, while gastrointestinal symptoms were more common than other (ARTI) patients. Lymphopenia can be used as a predictor for pandemic $H_1N_1$ 2009 influenza infection. Paediatric pandemic $H_1N_1$ 2009 influenza did not appear to cause more severe disease than the other ARTI.

### OP08

### PERSISTENCE OF IMMUNITY OF THE HAEMOPHILUS INFLUENZAE TYPE B AND *NEISSERIA MENINGITIDIS* SEROGROUP C (HIBMENC-TT) CONJUGATE VACCINE WHEN COADMINISTERED WITH DIFFERENT PNEUMOCOCCAL CONJUGATE VACCINES

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Introduction: This study investigated the long-term persistence of MenC and Hib antibodies in children, approximately 2 years after a full vaccination course with Hib-MenC-TT (*Menitorix*™, GSK Biologicals) or a control meningococcal serogroup C conjugate vaccine (MenC-$CRM_{197}$, *Meningitec*™, Wyeth; or MenC-TT, *NeisVac*-C™, Baxter), co-administered with DTPa- or DTPa/Hib-containing vaccines and pneumococcal conjugate vaccines (PHiD-CV, *Synflorix*™, GSK Biologicals; or 7v$CRM_{197}$, *Prevenar*™/Prevnar™, Wyeth).

Methods: This was a Phase IIIb, open, long-term, multicentre follow-up study (NCT00891176). In the primary (NCT00334334) and booster (NCT00463437) vaccination studies subjects received: A) HibMenC-TT+PHiD-CV+DTPa-HBV-IPV (Pn-HibC, N = 149), B) HibMenC-TT+7v$CRM_{197}$+DTPa-HBV-IPV (Pr-HibC, N = 141), C) MenC-$CRM_{197}$+PHiD-CV+DTPa-HBV-IPV/Hib (Pn-Men, N = 144), or D) MenC-TT+PHiD-CV+DTPa-HBV-IPV/Hib (Pn-Neis, N = 147); the DTPa- or DTPa/Hib-containing booster vaccinations were administered with/without HBV according to local recommendations. Serum bactericidal activity was measured using baby rabbit complement assay (rSBA) for MenC (seropositivity defined as titre ≥1 : 8), and anti-PRP (Hib) antibodies (seropositivity defined as concentration ≥0.15 μg/mL) were measured by ELISA. Serious adverse events (SAEs) considered related to vaccine, which occurred since the booster, were recorded retrospectively.

Results: At 2 years post-booster, rSBA-MenC antibody titres ≥1 : 8 were retained by 88.8%, 82.5%, 86.3% and 98.6% of subjects in the Pn-HibC, Pr-HibC, Pn-Men and Pn-Neis groups, respectively. All subjects in all groups had

anti-PRP antibody concentrations ≥0.15 μg/mL, while 92.7%, 83.3%, 76.5% and 75.5% of subjects in the Pn-HibC, Pr-HibC, Pn-Men and Pn-Neis groups, respectively, had concentrations ≥1.0 μg/mL. No vaccine-related SAEs were reported since the booster vaccinations.

Conclusion: Approximately 2 years after vaccination at 2, 4, 6 months with a booster at 11–18 months, more than 82% of subjects receiving HibMenC-TT concomitantly with a pneumococcal conjugate vaccine retained rSBA titres ≥1 : 8 and all retained anti-PRP antibody concentrations ≥0.15 μg/mL, indicating that seropositivity/seroprotection against both antigens persisted in most children to 3 years of age or more.

# THEME: PHARMACOLOGY – NEONATOLOGY – NEURODEVELOPMENTAL PAEDIATRICS

## OP09

### THE PLACE OF PROPRANOLOL AND CORTIOCOSTEROIDS IN THE TREATMENT OF INFANTILE HEMANGIOMAS

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Introduction: 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.

Purpose: Until now for problematic proliferating hemangiomas, the first-line medical treatment were corticosteroids, followed by vincristin or interferon.

Material: 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.

Methods: 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 per 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 per day. Also laser treatment was continued.

Results: 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 didn't saw 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.

Conclusion: In our opinion propranolol will relieve corticosteroids as the first-line medical treatment in case of problematic proliferating hemangiomas.

## OP10

### LONG-TERM MORTALITY OUTCOMES IN SWEDISH PREMATURE INFANTS: A POPULATION BASED STUDY

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Introduction: Preterm birth is increasing worldwide and remains the second most common cause of infant mortality in industrialized countries. Although data on short-term survival in the most premature infants exist, long-term mortality outcomes for children born prematurely are scarce.

Purpose: To estimate mortality risk in infancy and childhood in very preterm, moderately preterm and term children using Swedish register data from infants born between 1990 and 2006.

Material and methods: The main data source was the Medical Birth Register, which contains data on >99% of all births in Sweden. By use of each Swedish citizen's unique personal identification number, data on mortality from the national Causes of Death Register were retrieved through register linkage. Mortality hazard ratios (HRs) were estimated adjusting for sex, maternal age and smoking status, family situation, and delivery method. Children were categorized as very preterm (22–31 weeks of gestation, wGA) moderately preterm (32–36 wGA) and term (≥37 wGA).

Results: Of 1 659 919 births, 5679 (0.3%) were very preterm and 80 462 (4.9%) moderately preterm. During 16.4 million person years of follow-up (mean 9.9 years), 6250 deaths occurred, of which 4326 (69%) occurred during the first year of life. The 1-year mortality was 20.43%, 0.93% and 0.26% for very preterm, moderately preterm and term infants, respectively. Compared to term children, the HRs for very preterm children decreased from 69.8 (64.3–75.7) at <1 year, 4.0 (2.6–6.1) at 1–5 year, to 2.0 (1.1–3.8) after 5 year of age. The corresponding HRs for moderately preterm children were 3.8 (3.5–4.2), 1.7 (1.4–2.2) and 1.4 (1.1–1.9).

Conclusion: Mortality in very and moderately preterm compared to term infants remained elevated throughout childhood, but decreased considerably with age. Continued monitoring of survival is important in order to provide evidence based information to parents.

## OP11

### DOWN SYNDROME AND RISK FACTORS IN NEUROCOGNITIVE DECLINE

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Introduction: Down syndrome (DS) or Trisomy 21 is the most common genetic disorder, associated with congenital heart diseases, craniofacial abnormalities, immunological anomalies, mental retardation (MR). DS people, by the age of 30–40 years, show an increased risk of early-onset Alzheimer's disease. Increased vulnerability to oxidative damage, apolipoprotein E4 genotype (ApoE4), mitochondrial DNA mutations (mtDNA), accelerated neuronal cell apoptosis, are related to early neuronal degeneration.

Purpose: The aim is found predictive markers of early-onset dementia and a strategy for the prevention of oxidative damage in DS.

Material: A population of 50 adolescents/adults with DS, 26 males and 24 females, has been evaluated for the presence of neurological features, biomarkers, genetic factors correlated with neuronal degeneration. The control group was determined by the mother and the siblings of the patients.

Methods: A neuropsychiatric evaluation was obtained from all patients. The levels of thyroid antibodies, some biochemical markers of oxidative stress (homocysteine, uric acid, cobalamin, folate) were measured. All patients, the mother, the siblings were genotyped for ApoE gene.

Results: Forty percent (prevalence of females aged between 19 and 30), showed increased levels of thyroid antibodies. Homocysteinaemia was normal in 52%, increased in 40%; Hyperhomocysteinaemia was associated with normal levels of thyroid antibodies in 75% ($P < 0.005$). The levels of uric acid were elevated in 26%. Patients aged between 1–18 and over 30 showed a prevalence of severe MR. Three patients, aged over 30, showed dementia.

According to the literature, the rate of Down left-handers was high (25%); the laterality was associated with increased levels of thyroid antibodies (70%). Ten patients were ApoE4 positive with a mean/severe MR.

Conclusions: No biochemical evidence of oxidative damage and no deficiency of antioxidant function were found in our patients. mtDNA sequencing could show some mutations age-related and associated with oxidative damage and neurocognitive decline in the early aging of DS.

## OP12

### THE EFFECT OF ANTIBIOTIC TREATMENT ON LIPOPROTEIN (A) LEVELS IN CHILDREN

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Introduction: Lipoprotein (a), [Lp(a)], is a special human lipoprotein, which shows many similarities with the Low-Density Lipoprotein (LDL). Increase of Lp(a) serum values constitutes an elevated risk factor for thrombosis, peripheral angiopathy, encephalic vascular attack and coronary disease. The Lp(a) serum levels seems to be influenced by different drugs.

Purpose: The evaluation of serum Lp(a) levels before and after treatment with certain antibiotic drugs.

Material: In order to establish control values, 3298 Lp(a) values were analyzed in 6–14 years children. One hundred and ten children 6–14 years old (mean = $10 \pm 4$ years) were enrolled in this study. The children were admitted to the outpatient department of a pediatric Hospital in Athens because of fever (>38°C) during the last 3 days.

Methods: Blood was obtained before and ten days after treatment for common laboratory tests (complete blood counts SG0T, etc.). Lp(a) values were estimated by immunoassay. Children were divided into groups:

A (n = 24): received 40 mg/kg BW/24 h of amoxicillin/clavulanic acid

B (n = 25) 40 mg/kg BW/24 h of cefaclor

C (n = 22) 30 mg/kg BW/24 h of loracarbef

D (n = 19) 06 mg/kg BW/24 h of trimethoprim/sulfamethoxazole and

E (n = 20) 15 mg/kg BW/24 h of clarithromycin

Results: Remarkable increase in Lp(a) levels was observed in all groups, except B, whereas the other biochemical parameters did not significantly differed. Lp(a) levels pre *vs* post therapy were in Group A: $105.5 \pm 15$ versus $174 \pm 10$ ($P < 0.001$), Group B: $135 \pm 12$ versus $117 \pm 10$ ($P < 0.05$), Group C: $102 \pm 10$ versus $143 \pm 12$ ($P < 0.01$), Group D: $105 \pm 12$ versus $823 \pm 20$ ($P < 0.00001$) and Group E: $36 \pm 12$ versus $83 \pm 10$ ($P < 0.01$).

Conclusions: This is the first study of the lipidemic profil of children (2–14 years) after the treatment with the most common antibiotics (amoxicillin/clavulanic acid or cefaclor or loracarbef or trimethoprim/sulfamethoxazole or clarithromycin). All antibiotics, except cefaclor, resulted in significant elevation of Lp(a) levels. Cefaclor seemed to reduce Lp(a) levels and may be used as an Lp(a) reducing drug.

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# POSTER PRESENTATIONS (PP001–PP166)
# THEME: ADOLESCENT MEDICINE

## PP001

### OBJECTIVE MEAUSURES OF ATTENTION-DEFICIT/HYPERACTIVITY DISORDER

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Introduction: Attention-Deficit Hyperactivity Disorder (ADHD) is among the most prevalent chronic health disorders affecting children. The disorder attracts a lot of controversies, partly due to difficulties in the diagnostic process. The impact of undiagnosed ADHD might have a significant effect. Computerized continuous performance tests designed to improve the validity of the process, but are controversial due to low odds ratios. There is a need to find more definitive measures of assessment.

Purpose: We introduce a computerized continuous performance functions test (CPF) which includes multi-task approach designed to achieve a higher odds ratios of assessment.

Material: The CPF test includes combination of tasks, based on an algorithm designed to test several domains of attention, introducing a combination of multi-task approach.

Methods: Fifty-eight children (age 6–12 years) participated. Forty five diagnosed as ADHD, thirteen non-ADHD children, served as a control group. ADHD diagnosis, established by a certified pediatric neurologist, based on DSM-IV-TR criteria after interview with the child and parents, neurological examination, filling of DSM based questionnaires by parents and teachers, and neuropsychological evaluation confirming the diagnosis. The children in the study group also completed a commercial CPT. All 58 children completed the CPF test while the child is not under an influence of a medication. All the children in the study were drug naïve.

Results: The CPF test was able to differentiate between non-ADHD and ADHD children. CPF test results were more accurate than other tested CPT. Results were statistically significant in all test parameters confirming the test validity and reliability.

Conclusions: In this study the CPF test found to be valid and reliable tool for the diagnosis of ADHD in children. The CPF test might increase the diagnostic utility of computerized tests. The research issues the need for developing a more definitive process of ADHD diagnosis.

## PP002

### DEMOGRAPHICS, CLINICAL CHARACTERISTICS AND OUTCOME OF HINI PATIENTS IN AN IRISH PEDIATRIC SETTING

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Introduction: As of May 1st 2010 there were 4586 confirmed cases of H1N1 in Ireland of whom 26 died. The effect of the H1N1 on Pediatric Medicine over the past year is of particular interest with the highest rate of hospitalization being in the 0–4 year age group. Presentation was often atypical in a pediatric setting with severity correlating with underlying disease. Vulnerability was enhanced in younger children because of lack of innate immunity and inferior response to inactivated vaccines.

Purpose: To determine the impact of H1N1 infection on Irish children in an effort to characterize the phenotype and explore the implications for future pandemic planning.

Materials and methods: The study period was taken as the 12 month time frame between 01/04/2009 and 01/04/2010. All patients <18 years of age attending a pediatric service, in whom H1N1 infection was proven by influenza A H1N1 PCR assay on viral nasal or throat swab, were identified from the hospital database. Case notes were reviewed and demographics, symptomatology, clinical, radiological and laboratory findings, in addition to clinical course and outcome recorded.

Results: A total of 31 microbiologically confirmed cases were seen during the study period (mean age = 6.24 years), of whom 29 were admitted and 13 (42%) had significant co morbidities. Clinical features in order of frequency- were fever (29), coryzl symptoms (25), gastrointestinal symptoms (8) and headache (1). Mean WCC & CRP on admission were 10.22 (SD 5.36) and 16.43 (SD 24.01). The average duration of admission was 2.44 days (SD = 1.67) and was not affected by presence or absence of any identified comorbidity. HDU admission was required in two cases (both had co-morbidities) with transfer to ICU and ventilation in one case. There were no deaths.

Conclusion: The phenotype was milder than anticipated. Symptomology was non-specific. Trustworthy analysis of pandemics cannot be achieved until at least 2 years after resolution.

## PP003

## WITHDRAWN

## PP004

## CRANBERRY SYRUP VS. TRIMETHOPRIM IN THE PROPHYLAXIS OF RECURRENT URINARY INFECTION: A DOUBLE-BLIND RANDOMIZED CLINICAL TRIAL

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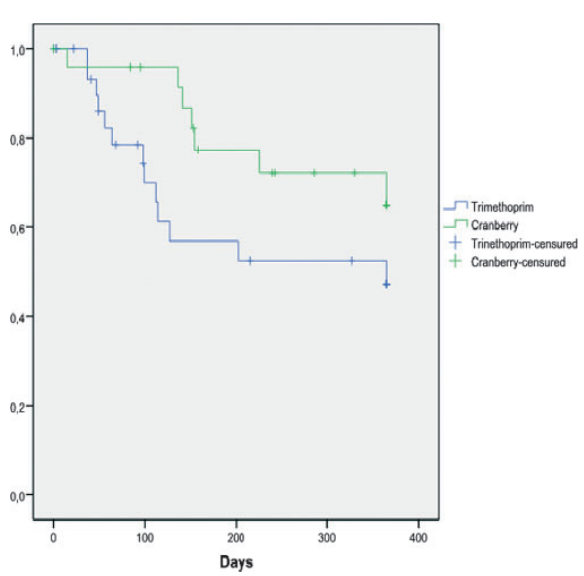
Background and aims: Recurrent urinary infection is one of the indications for antibiotic prophylaxis most frequently encountered in paediatric medicine. It is traditionally considered that the risk of kidney damage is up to 20% higher among patients with vesico-ureteral reflux and recurrent urinary infections. There is much current controversy as to the value of antibiotic prophylaxis for children with recurrent urinary infection or vesico-ureteral reflux. As an alternative, clinical trials have been held with adults to evaluate the utility of prophylaxis with cranberry syrup for patients with recurrent urinary infection. In these trials, after 12 months' follow up, there was seen to be a reduction of 20% in the prevalence of urinary infection among the treatment group. The aim of the present study is to evaluate the efficacy of cranberry syrup in the prophylaxis of recurrent urinary infection among children.

Materials and methods: The study design consisted of a randomized double-blind clinical trial. Patients were given either cranberry syrup (Urell, Pharmatoka) 0.2 mL/Kg or trimethoprim 8 mg/Kg. Criteria for inclusion: recurrent urinary infection (two or more infections in 6 months), vesico-ureteral reflux of any degree, pyelic ectasia or hydronephrosis, or anatomical kidney disorder. Informed consent was requested of the parents, and authorization obtained from the Hospital's Ethics Committee.




Results: The first intermediate analysis was performed after 19 months' follow up of the clinical trial, with 174 patients recruited (35 with vesico-ureteral reflux of different degrees, 46 with pyelic ectasia – hydronephrosis, 89 with recurrent urinary infections and four with anatomical disorders). Of the patients who had been suffering recurrent urinary infections, 51 have now concluded follow up, 28 after receiving trimethoprim and 23 after receiving cranberry syrup. 47% (95%CI: 26.6–67.6) of the patients given trimethoprim remained free of infection after 365 days' treatment, versus 65% (95%CI: 43.1–86.7) of those given cranberry syrup.

Conclusions: We observed fewer recurrences of urinary infection among children after treatment with cranberry syrup, which was found to be 18% more effective than trimethoprim.

## PP005

## CHARACTERIZATION OF CRANBERRY SYRUP USED IN INFANT URINARY TRACT INFECTION AND ANALYSIS OF THEIR INFLUENCE ON SURFACE HYDROPHOBICITY AND ADHERENCE TO NITROCELLULOSE OF P FIMBRIATED *E. COLI*

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Aims: To analyse the polyphenolic composition of a commercial cranberry (*Vaccinium macrocarpon*) syrup and to evaluate the bioactivity syrup, in various concentrations, on P fimbriated *E. coli*. Furthermore, to determine the changes in the hydrophobicity of P fimbriated *E. coli* and its adherence to nitrocellulose surfaces after incubation with commercial cranberry syrup extract at various concentrations.

Methods and results: Characterization of the cranberry syrup was carried out using high performance liquid chromatography coupled to electrospray ionization time-of-flight mass spectrometry (ESI-TOF-MS). Thirteen strains of P fimbriated *E. coli*, obtained from different sources, were grown in TSB culture medium and on CFA agar. After incubating a bacterial suspension with cranberry syrup at dilutions of 1 : 100 and 1 : 1000, a haemagglutination inhibition test was carried out and the surface hydrophobicity determined by salting-out aggregation with ammonium sulphate. The differential percentage of adherence of *E. coli* to the nitrocellulose was also determined. Cranberry syrup (Urell®) used in *in vitro* study contains 1.10% total phenols, 0.71% proanthocyanidins and 0.10% anthocyanins. The surface hydrophobicity of P fimbriated *E. coli* decreases significantly after incubation

with cranberry syrup at diverse concentrations, and this effect is not modified whether the expression of Type 1 or Type P fimbriae is promoted in different culture media. Adherence to nitrocellulose is not affected.

Conclusions: The proanthocyanidin (PACs) content of the cranberry syrup extract assayed was 9.9 mg/mL, and there was found to be an inhibition of the mannose-resistant haemagglutination of *E. coli* up to final syrup dilutions of 1 : 1000, i.e. PAC concentrations of close to 10 $\mu$g/mL. Significant reductions in the surface hydrophobicity of *E. coli* were observed following its incubation with cranberry syrup.

Significance and impact of study: Antiadhesion undescribed mechanism of cranberry extract activity may involve reducing the surface hydrophobicity of *E. coli*, even at very low concentrations.

### PP006

### EATING DISORDERS IN SINGAPORE: 3 YEARS OF DATA FROM AN ADOLESCENT SERVICE

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Introduction: Eating disorders have been reported worldwide. These disorders begin most commonly during the adolescent years, especially among females.

Purpose: To determine the characteristics of children and adolescents referred to an adolescent service over a 3-year period, with eating disorders.

Material and methods: Retrospective case notes review of referrals with eating disorders from 2007 to 2009.

Results: In the 3 year study period, there were 38 referrals (eight in 2007, 17 in 2008 and 13 in 2009). Of these, 34 were female (89%). Nineteen cases were classified as restrictive eating disorder/anorexia nervosa, three were binge-purge eating disorders and 16 were eating disorders not otherwise specified (EDNOS). Mean body mass index at presentation was 14.5 kg/m$^2$ (range 11.5–20.5). Mean length of illness prior to presentation was 10.3 months (range 0.25–29). Age at presentation ranged from 8.3 to 17.9 years (mean 14.6). Mean systolic blood pressure was 103 (range 60–121). Among the females, two had primary amenorrhoea and 17 had secondary amenorrhoea. Ninety-two percent of patients were from intact families. Psychiatric co-morbidities included obsessive-compulsive disorder (7), deliberate self harm (5), depression (4), anxiety (3) and attention or hyperactivity problems (2). A small number of patients presented with somatic symptoms only (one constipation, two gastritis, two chest pain and one syncope). Complications included bradycardia (10), abnormal electrolytes on admission (6), abnormal electrolytes on refeeding (5), pneumomediastinum (1) and osteoporosis (1). Multidisciplinary input included involvement of psychiatrist or psychologist in 89%, dietitian in 95% and adolescent nurse in 76%.

Conclusions: As our adolescent service has developed, the referral rate for management of eating disorders has risen. This has resulted in the need to have a specifically trained multidisciplinary team as well as mental health resources and collaboration in order to deal with this group.

### PP007

### VIOLENCE-RELATED BEHAVIOUR AMONG GREEK HIGH SCHOOL STUDENTS: PREVALENCE AND RISK FACTORS

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Introduction: Violent and aggressive behaviour in the school setting is a phenomenon observed in contemporary societies.

Purpose: To register various types of behaviour that are related to violence among students in the 15–18 years age-group in Northern Greece, and to investigate factors associated with participation in physical fighting.

Material: A questionnaire, developed by the Centers for Disease Control and Prevention (CDC, USA) and adapted to Greek national characteristics, was distributed to students from a representative sample of 20 high schools (13 public, three private, four vocational). A total of 1014 students completed the questionnaire, which contained a series of questions concerning violence-related behaviour.

Methods: The frequencies of specific types of aggressive behaviour were estimated and multivariable logistic regression models were used to evaluate correlates of participation in physical fighting.

Results: About 20% of the students reported deliberate damage of their property by others, and 10% reported having been threatened or injured in the school environment at least once in the previous 12 months. In addition, 51 pupils (5%) reported avoiding going to school because they felt unsafe and 130 (12.8%) had experienced intimate partner abuse victimisation. Of the respondents, 37.5% reported that they had participated in a physical fight at school at least once in the previous 12 months. Taking into consideration the effect of other factors, physical fighting was influenced by gender, school grade, school type, BMI, mother's educational level, smoking and onset of sexual activity.

Conclusions: Bullying and victimisation are quite common in Greek high school environment. There is need for prompt implementation of programs designed for the prevention of violent behaviour among adolescents.

**PP008**

## IS CHILD SUICIDE ON THE INCREASE IN IRELAND?

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Background: Youth suicide is a National tragedy. There is a common perception among health care professionals and the media that child suicide in Ireland is currently on the rise. Shocking media headlines from 2009 such as 'Four young girls take their own lives in suicide cluster' and comments from teen line spokespeople such as 'there are children dying by suicide when they still believe in Santa Claus' are forever engraved on our minds. As Paediatricians dealing with the situation of a successful or failed suicide in a pre-adolescent child is phenomenally disturbing and alien.

Aims: Our objective was to investigate if instances of completed suicide, attempted suicide and deliberate self harm are increasing among Irish Youth.

Methods: Information related to the statistics of suicide was sought from the CSO, HSE, WHO, National Office of Suicide Prevention, National Para suicide Registry, National Registry of Deliberate Self-Harm and teenage suicide prevention helplines.

Results: Since 2002, the suicide rate in Ireland has increased among youth, particularly among youth under the age of 15. Ireland maintains the fourth highest rate of youth suicide in Europe after Finland, Lithuania and Estonia. The incidence of deliberate self harm is increasing among males and females in between the ages of 10 and 19, especially notable among 10–14 year old females. It has been proven that deliberate self harm is the greatest predictor of eventual suicide where over 40% of completed suicides are preceded by a previous attempt. The most common modes of suicide in 10–14 year olds were hanging and poisoning. The most common mode of self-harm was overdose. Calls to teenage suicide prevention helplines have increased by 150% since January 2009.

Conclusion: Suicide is complex. Children who are going to commit suicide can be hard to identify. Heightened awareness, vigilance and strategies to halt this public health emergency are urgently needed.

**PP009**

## DELETION 22Q13 SYNDROME (PHELAN- MCDERMID SYNDROM)

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Introduction: Deletion 22q13 syndrome should be considered in all individuals with hypotonia, profound global developmental delay, absent speech and minor dysmorphic features. On the basis of a case history we present the clinical features and the diagnostic and therapeutic options.

Case history: We report on a 9 year old girl with the clinical symptoms of muscular hypotonia, accelerated growth, severe global developmental delay and absent expressive language. The child avoids eye contact and demonstrates self- stimulatory, peculiar behavier (flapping hands, persistent chewing, rocking). Subtelolmere analysis by MLPA showed a 150 kb deletion. Haploinsufficiency of the SHANK 3 gene is the cause of the neurological features associated with deletion 22q13.

Conclusions: The diagnosis of deletion 22q13 syndrome should be considered in all cases of hypotonia associated with global developmental delay, absent speech and peculiar behavier. The deletion can be detected by MLPA or FISH, because of the different localisation of the deletion at least two different FISH probes are recommended. Due to the presence of only minor dysmorphic features this deletion remains often unnoticed. Behaviour is often described as 'autistic- like'. Affected individuals should be offered intensive occupational and speech therapy. Recently a clinical trial showed that intranasal insulin benefits the motor development, cogntive functions and spontaneous activity.

**PP010**

## CLINICAL AND PROGNOSTIC SIGNIFICANCE OF THE VIRAL (EPISODIC) WHEEZING PHENOTYPE IN PRESCHOOLERS: A PILOT STUDY

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Introduction: Recent guidelines and expert consensuses address the issue of preschool wheezing. Most agree on the important impact of wheezing phenotypes for the diagnosis and management. Nevertheless, evidence-based recommendations in the field are scarce.

Purpose: To evaluate the clinical and prognostic value of the viral (episodic) phenotype wheezing (according to ERS Taskforce recommendations) in the management of preschoolers.

Methods: Preschoolers attending a Regional Centre for children with asthma who were retrospectively (based on parents/caregivers reports) classified with viral (episodic) wheezing were monitored at each monthly visit for a duration of 12 weeks during the cold season. All children received montelukast for the duration of the study. The assessment included clinical findings and anamnestic data collected from parents/caregivers structured interviews. Multivariable linear statistics were used.

 

Results: Thirty-four children [3.9 (2.1–5.4) years old, 21 girls] completed the study. Fourteen patients (41%) presented no wheezing episodes. Ten patients (29%) presented one or more wheezing episodes unrelated to acute upper respiratory infections. The analysis by age, gender, the presence/absence of atopy, environmental or maternal smoking during pregnancy did not yield consistent results.

Conclusions: Our data support the conclusion that in some preschoolers the original (retrospective) classification of viral (episodic) wheezing has to be reconsidered in time. Studies correlating more factors into new, sharper defined phenotypes are needed to evaluate the impact on the management of preschoolers with wheezing.

**PP011**

## ADOLESCENT WITH THORACIC PAIN: THE IMPORTANCE OF CLINICAL SUSPICION

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Introduction: Chest pain is a common presenting complaint in adolescents. Although the etiology is benign in most cases, potentially life-threatening conditions might be present.

Clinical case: We report a case of a 15-year-old boy, with morbid obesity and a recent right ankle fracture, admitted to the emergency department with oppressive chest pain and dyspnea, both initiated after a lipothymia episode. On the physical examination he was hemodinamically stable, with tachycardia, hypoxemia (90%) and subtle right leg oedema. The initial study revealed: 'S1Q3T3' pattern on the 12 derivation electrocardiogram; elevated D-dimer levels and a normal chest X-ray. Based on the clinical suspicion of pulmonary thromboembolism (PE) originated in a deep venous thrombosis (DVT) of the legs, therapy with enoxaparin was started. The diagnoses were confirmed with thoracic computed tomography (CT) – angiography which revealed 'acute PE of right and left pulmonary veins' and legs eco-Doppler examination, which revealed 'recent and occlusive medial gemelar DVT'. The sequential echocardiograms revealed augmented pulmonary pressure with progressive right ventricle dysfunction, analytically with elevation of type B natriuretic peptide. After multidisciplinary discussion, fibrinolysis with alteplase was instituted, with good clinical response. Post-thrombolysis CT-angiography revealed resolution of PE signs. The thrombophilia study was negative. Medical discharge in 17-day with multidisciplinary orientation.

Discussion: PE in an uncommon, but potentially fatal disease in pediatric population. The clinical presentation is often subtle, being essential a high clinical suspicion with promptly medical treatment. Diagnostic, as well as therapeutic strategies are mostly extrapolated from studies in adults. The choice of treatment depends on the clinical presentation and anticoagulation is the mainstay of therapy. In the presenting case, the progression to right ventricular dysfunction with signs of myocardial lesion determined the institution of thrombolytic therapy.

# THEME: ALLERGY - IMMUNOLOGY

## PP012

### ADAPTIVE IMMUNITY GENES IN KAWASAKI DISEASE IN PATIENTS LIVING IN ITALY

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Introduction: In keeping with the most reliable hypothesis, Kawasaki disease is supported by an inflammatory aberrant immune response to a pathogenic, presumably infective, noxa in genetically susceptible individuals.

Purpose: The aim of this study has been exploring the immunogenetic bases of the disease through the definition of Human Leukocyte Antigen (HLA) genomic polymorphism in patients living in Italy.

Material: Sixty patients, mean age 3.0 ± 2.6 years old, 37 males and 23 females, with diagnosis of Kawasaki disease were recruited for the study and subjected to a cardiological assessment.

Methods: Molecular typing for HLA-class I (A, B, C) and II (DRB1, DQA1, DQB1) polymorphisms was performed. Allele frequencies were compared with those of a control group of 1146 healthy adults.

Results: The study has shown some alleles to be significantly more represented in the patients group than in the controls: HLA-A*11 (11.67% vs. 6.11% $P = 0.019$ OR = 2.03) and A*24 (18.33% vs. 10.17% $P = 0.007$ OR = 1.98); HLA-B*07 (10.83% vs. 6.06% $P = 0.043$ OR = 1.88); HLA-DRB1*08 (5.83% vs. 2.53% $P = 0.032$ OR = 2.39). Moreover a significant increase of HLA-Bw6 homozygous individuals was observed in patients in comparison with controls (55.00% vs. 36.39% $P = 0.021$ OR = 2.14). In particular, 6/7 patients, with permanent coronary diseases, were Bw6 homozygous.

Conclusions: The HLA system codifies for important mediators of the adaptive immune response but it is also involved in the control of the innate immunity via the interaction between HLA class I specific epitopes and Killer cell Immunoglobulin-like Receptors (KIRs) on the surface of Natural Killer (NK) cells. The HLA-Bw6 homozygous patients are peculiar, as they lack the sequence motif Bw4 which is the natural ligand of KIRs on NK cells, therefore presenting a partial deficiency of the innate immunity pathway. The 'missing KIR ligand' hypothesis, at the basis of Kawasaki disease, is intriguing but needs to be confirmed in a larger cohort.

## PP013

### GRAVITY OF THE CASE HISTORY AND SENSITIZATION TO AEROALLERGENS IN A COHORT OF ALLERGIC CHILDREN IN SOUTH ITALY

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Introduction: In the last years an increase of incidence of allergic respiratory diseases has been observed. There's an evidence that this trend is due in part to climate change, responsible for both a higher aggressiveness and a prolongation of the pollen season especially in South Italy where some seasonal allergens should be considered as perennial.

Purpose: To determine the gravity of the case history in mono and poli-sensitizated patients, valuing the allergens most frequently cause of respiratory diseases in a sample of children living in South Italy.

Materials: We recruited 200 children, 103 M and 97 F (age 7–16 years), arrived to our centre for asthma and/or allergic rhinitis.

Methods: We performed skin prick tests (SPT) for the main inhalants allergens to all children. Basing on results of SPT we divided the children in two groups: mono-sensitizated and poli-sensitizated.

Results: Forty-three percent of children were mono-sensitizated, 57% were poli-sensitizated.The mono-sensitizated ones showed: 76% rhinitis only, 20% asthma and rhinitis, 4% asthma only. The poli-sensitizated ones showed: 19% rhinitis only, 65% asthma and rhinitis, 16% asthma only.

We observed a statistically significant correlation between mono-sensitization and rhinitis ($P < 0.005$), while the association rhinitis/asthma was more frequent in poli-sensitizated children ($P < 0.005$). We also observed that 62% of poli-sensitizated children had a contributory familiarity for allergy, despite of the 24% of the mono-sensitizated ones. The statistic analysis has showed that the positive familiarity was significantly associated to poli-sensitization ($P < 0.005$) and to a more complex case history. We found a sensitization frequency of 60% for dust mites, 56% for grass, 30% for parietaria judaica, 30% for olive tree, 15% for cat hair, 5% for minor allergens. Moreover, the children mono-sensitizated to

grass showed rhinitis, while in poli-sensitizated children with asthma and rhinitis the dominant allergen was the dust mite.

Conclusions: Our findings show that the sensitization to more allergens is responsible of a more serious case history that involves the upper and the lower airways, while the mono-sensitization causes more frequently only one symptom, rhinitis, a greeing to some literature data.

# THEME: CARDIOLOGY

## PP014

### CHILDHOOD MORTALITY AND SURVIVAL WITH SERIOUS CONGENITAL HEART DEFECTS: A UK COHORT STUDY

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Introduction: Congenital heart defects (CHDs) are the most prevalent type of congenital anomaly and principal cause of death from congenital anomalies during infancy. Reliable information about longer-term survival and factors predictive of death during childhood is lacking.

Purpose: To estimate survival to 15 years of age for children with serious CHDs; to investigate independent effects of early life factors on mortality.

Materials: Prospectively identified multicentre cohort of UK children, born 1992–1995, with CHDs requiring intervention or resulting in death before age 1 year.

Methods: Hospital records of 3897 children (57% boys) were reviewed. Survival and mortality were explored using Kaplan–Meier survival curves and multilevel Cox proportional hazards models. Multilevel multiple imputation of missing data was performed.

Results: By 15 years of age, 932 children within the cohort had died. Five percent of death certificates did not report CHDs. Only 39% of certificates for deaths within 30 days of a procedure mentioned the procedure. Four percent of the cohort died without any procedure, at least 40% of whom were offered palliative medical care. Survival to 1 year was 80% (95% CI 78%, 81%) and to 15 years was 72% (70%, 73%), with variation by cardiac diagnosis. CHD subgroup, female sex, younger age, longer duration of cardiopulmonary bypass and circulatory arrest, and procedure-related complications were independent predictors of higher mortality.

Interpretation: This UK-wide representative contemporary cohort confirmed the high mortality risk associated with CHDs in the first year, but additionally demonstrated an important continuing risk of death persisting throughout childhood that may be underestimated by routine death registrations. CHD subgroup was the most important independent predictor of mortality. Higher mortality was associated with female sex, longer bypass duration and procedure-related complications. Future research is vital to address the impact of technological advances on social, educational and wider health outcomes of children with serious CHDs.

## PP015

### THE RESPONSE OF HEART RATE IN ACUTE FEBRILE CHILDREN AT EMERGENCY ROOM

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Introduction: Increasing heart rate is a normal physiological response associated with fever. However, tachycardia can also reflex compensatory cardiovascular response in children with serious infection.

Purpose: To study the correlation between heart rate and temperature then report the prediction of the increment of heart rate response to the increased of temperature in acute febrile children presenting at emergency room.

Material and methods: Cross sectional study, children age 1–15 years presenting to emergency room with acute febrile illness <3 days form January 2008 to December 2009. Heart rate was measured together with blood pressure by using digital sphygmomanometer and axillary temperature was measured by using an electronic thermometer. We exclude children with vomiting, diarrhea and have any degree of dehydration.

Results: There were 1335 children presented with acute febrile illness, total 2000 visits, 1119 male (56%) and 881 female (44%) respectively. Mean age was 6.24 ± 7.1 years. Mean temperature was 37.2 ± 0.21 degree celsius (°C). The heart rate range between 60 and 200 with mean of 115 ± 23 beat per minute. The most common diagnosis were respiratory tract infection (53%) and non specific viral infection (15%). We found that heart rate and temperature had positive correlation, $r = 0.45$ (Age 1–5 year; $r = 0.37$, Age 6–10 year; $r = 0.57$ and Age 11–15 year; $r = 0.64$) Linear regression show the relationship between the increment of heart rate by 10.2 beat per minute with each 1°C increased in temperature.

Conclusions: Our study showed the correlation between heart rate and temperature in acute febrile children. If the heart rate increased more than expected of the increment in temperature, the further work up should be consider for evaluated occult serious infection.

**PP016**

## OXIDATIVE STRESS IN CHILDREN WITH CONGENITAL HEART DISEASE: MEASUREMENTS OF MALONDIALDEHYDE, PROTEIN CARBONYL AND TOTAL ANTIOXIDANT CAPACITY AND THEIR ASSOCIATION WITH ACUTE PHASE REACTANTS AND PROINFLAMMATORY CYTOKINES

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Introduction: A significant cause of death and chronic illness in childhood is caused by cardiovascular diseases, including congenital heart disease (CHD). The role reactive oxygen species in cardiovascular diseases is well-known.

Purpose: The study aims to investigate the oxidative stress status and to establish its association with CHD in children.

Materials and methods: A total of 43 children (15 with cyanotic and 28 with acyanotic) with CHD were enrolled. Thirty healthy age-matched children severed as the control group. The contents of malondialdehyde (MDA), protein carbonyl (PCO) and total antioxidant capacity, high-sensitive C-reactive protein, fibrinogen and cytokines (IL-6 and TNF-$\alpha$) in serum were measured.

Results: In the cyanotic group, 12 were diagnosed with tetralogy of fallot, 1 with transposition of the great arteries, 2 with tricuspid atresia. In the acyanotic group, 4 had atrial septal defect (ASD), 19 had ventricular septal defect (VSD), 2 had corrected transposition of the great arteries (c-TGA), 1 had patent ductus arteriosus (PDA), 1 had both ASD and VSD, and 1 had ASD–VSD–PDA. MDA and PCO levels were significantly elevated in cyanotic compared with the control and acyanotic. However the cyanotic and acyanotic groups had significantly lower levels of TAC compared with the control. It was found that MDA was positively correlated with PCO, hs-CRP while PCO was positively correlated with hs-CRP, fibrinogen and IL-6. It was also found that TAC was negatively correlated with PCO and age.

Conclusion: The level of OS in children with CHD was established by measuring TAC, MDA and PCO. To our knowledge, PCO is the first ever used as a biomarker in CHD. This may be used as a new diagnostic biomarker in CHD and in the assessment of its severity.

Keywords: Congenital heart disease, Children, Oxidative stress, Acute phase reactants, Cytokines

**PP017**

## MYOCARDITIS PRESENTING AS HEPATITIS IN A SIX-YEAR-OLD BOY

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Introduction: Myocarditis should be considered in any previously healthy child presenting with a viral illness associated with non specific symptoms.

Case presentation: A 6-year-old boy was admitted with a 3-day history of fever, abdominal pain, and dark-coloured urine. Physical examination revealed abdominal tenderness while his blood pressure and cardiac rhythm were normal.

Initial assessment: HT 36%, WBC 3100/$\mu$L, (PMN 80%, LY 10%) platelets 119 000/$\mu$L, CRP 15 mg/dL, SGOT 99 U/L, SGPT 90 U/L, $\gamma$GT 140 U/L, total bilirubin 6.7 mg/dL, direct 5.5 mg/dL, urine examination bil 3+. Serological testing for: EBV, CMV, HAV, HBV, HCV, HSV, enterovirus, adenovirus, influenza A, B, parvovirus B19, mycoplasma were negative. Blood, stool and urine cultures were negative as well. Abdominal ultrasound revealed collapsed gallbladder with pericholecystic oedema.

The second day he was lethargic, tachycardic with dehydratation, hypotension and hepatomegaly.

Electrocardiogram and two-dimensional cardiac ultrasound were suggestive of an acute myocardial injury pattern (ST segment abnormalities, depressed left ventricular systolic function with SF 25%, increased septal thickness, mild mitral and aortic insufficiency). Noteworthy is that CPK-MB and troponin were normal in serial measurements. Chest X-ray showed only interstitial infiltrates and bilateral pleural effusions. The patient was transferred to the PICU where he was supported with inotropic agents and received intravenous immunoglobulin with full clinical recovery and improvement of the left ventricular systolic function.

Conclusions: The clinical presentation of myocarditis varies from gradual onset to acute cardiovascular collapse. However, some children do not present with overt cardiac symptoms. A small percentage (6%) of patients with myocarditis may present with gastrointestinal dysfunction. For such children excessive administration of intravenous fluids may be very cautious as it can deteriorate the heart failure.

# THEME: ENDOCRINOLOGY

## PP018

### HYPOGLYCEMIC EPISODES IN AN ADOLESCENT WITH DIABETES TYPE 1: A CASE REPORT AND A REVIEW OF THE LITERATURE

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Introduction: For children and adolescents with diabetes, the risk of hypoglycemia may not only prevent optimal glycemic control, but can also add significantly to the psychosocial burden of the disease, to morbidity and even to mortality.

Purpose: The aim of this article is to report a teenager girl with diabetes type 1 (T1DM) which presented to paediatric department because of a 3-days history of neurological symptoms associated with severe episodes of hypoglycemia, review current issues surrounding the pathophysiology of hypoglycemia in adolescents with T1DM and outline strategies that could help young people to achieve good glycemic control.

Results: As lack of compliance is frequent among adolescents, we hypothesized for our case that reccurent hypoglycemias could be due to self-administration of high doses of insulin. During a hypoglycemic episode we evaluated insulin and C-peptide and the results were negative for iatrogenic hypoglycemia, so we changed the plan of the treatment and we gave further information of how the patient and the family can avoid these episodes. Recent studies involving children with T1DM, identified several predictors of severe hypoglycemia including younger age, behavioural changes that characterize adolescents, eating disorders, longer duration of disease, higher daily insulin dose per kilogram of body weight, less experience of the treatment facility, and type of injection regimen. The frequency of nocturnal hypoglycemia is generally very high among youth with T1DM and because these events occur with no warning symptoms they are particularly frightening for parents.

Conclusion: The neurological consequences of severe hypoglycemia are particularly important in children and adolescents. Recent advances in T1DM technology reduce but do not eliminate the risk of hypoglycemia in youth with T1DM. These observations underscore the need for a closed-loop insulin delivery system in which the rate of insulin infusion is regulated by real-time changes in glucose concentrations.

## PP019

### PUSTULAR PSORIASIS, SEVERE HYPOCALCEMIA AND ALBRIGHT PHENOTYPE – ASSEMBLING THE PIECES OF THE PUZZLE

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Introduction: The role of calcium homeostasis on the pathogeny and clinical control of psoriasis has been suggested by reports of improvement of skin manifestations with normalization of calcemia. At the best of our knowledge, pseudohypoparathyroidism (PHP) was the cause of the hypocalcemia associated with severe psoriasis in only four reported patients.

Purpose: To report a case of association of pseudohypoparathyroidism with pustular psoriasis.

Material and methods: Case-study.

Results: A 14-year-old girl was admitted with severe pustular psoriasis and hypocalcemia. Single daughter of a mother with psoriasis, her past history included recurrent subungueal exostosis and vulgar psoriasis since she was 10. Three weeks before admission, she developed progressively disseminated erythematous scaly plaques and pustules, fever and malaise. On admission, she presented extensively disseminated pustular psoriatic skin lesions, with signs of secondary infectious cellulitis on the left arm. Physical examination revealed features of Albright hereditary osteodystrophy (AHO) phenotype: short stature (<5th centille), obesity (BMI >95th centille), round face, short neck, brachydactily, with positive Archibald sign, and bilateral shortening of the distal phalanx of the thumb. Trousseau and Chvosteck signs were negative. Laboratory evaluation showed hypocalcemia (4.4 mg/dL), hyperphosphatemia (6.3 mg/dL), hiperparathiroidism (304.6 pg/mL), raised ESR and RCP, and normal vitamin D level, urea and creatinin. Laborious treatment of the dermatosis and calcemia included methotrexate, calcium, calcitriol and antibiotics. A significant improvement of the skin lesions accompanied the normalization of serum calcium. A nonsense pathogenic mutation on exon 6 of the GNAS gene was identified, thus confirming the diagnosis of PHP.

Conclusions: This new case of the rare association between PHP and psoriasis reinforces the importance of calcium in the pathogenesis of psoriasis, adding clinical experience that can further be applied to cases of psoriasis in patients with hypocalcemia of any etiology.

 

**PP020**

**WITHDRAWN**

**PP021**

## EFFECTS OF PHYSICAL ACTIVITY ON INSULIN PUMP THERAPY IN CHILDREN AND ADOLESCENTS WITH TYPE 1 DIABETES: A RANDOMISED CONTROLLED TRIAL

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Introduction: Few papers have been evaluated the effects of physical activity on insulin pump therapy in children with type 1 diabetes.

Purpose: We evaluated the most effective strategy with insulin pump therapy in children with type 1 diabetes undergoing 2 h of aerobic-anaerobic exercise.

Materials: We enrolled 15 children, aged 10–18 years (mean ± SD 13.1 ± 2.7 years), with type 1 diabetes for 7.2 ± 3.3 years, (BMI of 20.05 ± 3.05 m/kg$^2$, insulin requirement 0.85 ± 0.15 U/kg/day, HbA1c 7.66 ± 0.81%), who were using a sensor-augmented insulin pump.

Methods: Exercise (2 h of anaerobic-alactacid, anaerobic-lactacid and aerobic training supervised by a qualified trainer) has been maintained at the same level during each session (reliability has been evaluated by means of an *arm band*; P = 0.339 by ANOVA), and replicated by each patient for three consecutive days, with a different insulin pump scheme during exercise, randomly assigned: pump kept active; pump suspended; pump suspended+'correction' bolus (the amount of the insulin bolus was equal to the basal insulin the patient would have injected during the 2 h-exercise, reduced by 30%).

Results: Keeping the pump active, glycemic profiles were excellent during exercise, but with a significant lowering of glycaemic values 3 h after exercise (4/15 patients had had mild hypoglycemia), with a subsequent glycemic increase during the night. The suspension of the pump has shown good glycemic profiles, even if with a significant increase 90 min after exercise. The 'correction' bolus determined a significant lowering of glycaemia after 90 min from the beginning of exercise (table).

Conclusions: Keeping pump active during exercise seems the best option to properly manage exercise in children with type 1 diabetes, with the recommendation to reduce the basal rate by 20% for the 2–4 h after exercise, in order to avoid late-onset hypoglycaemia. For those sports that do not allow the use of insulin pump, suspending the pump might be a good option, when followed by a + 20–30% temporary basal for 2–4 h after exercise. A practical flow-chart has been drawn.

Table 1: Glycaemic values during and after exercise according to different insulin pump schemes in 15 children with type 1 diabetes. ANOVA comparison has been non-significant for each scheme. CB = correction bolus.

| | During exercise | | | | After exercise | | | Night | |
|---|---|---|---|---|---|---|---|---|---|
| | T'0 | T'60 | T'90 | T'120 | T'60 | T'120 | T'180 | Midnight | 3:00 |
| Pump on | 117 ± 51 | 139 ± 64 | 134 ± 79 | 130 ± 98 | 121 ± 75 | 126 ± 45 | 98 ± 44 | 175 ± 101 | 182 ± 84 |
| Pump off | 141 ± 83 | 130 ± 73 | 133 ± 74 | 132 ± 70 | 156 ± 73 | 164 ± 77 | 131 ± 69 | 165 ± 115 | 169 ± 82 |
| Pump off + CB | 192 ± 131 | 133 ± 71 | 100 ± 39 | 108 ± 43 | 152 ± 69 | 185 ± 74 | 144 ± 103 | 189 ± 109 | 156 ± 86 |

# THEME: GASTROENTEROLOGY, NUTRITION & METABOLISM

## PP022

### AETIOLOGY AND OUTCOME OF ACUTE BLOODY DIARRHOEA IN CHILDREN WARD OF A TERTIARY CARE HOSPITAL

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Introduction: Acute Bloody Diarrhea (ABD) in childhood is a medical emergency. The epidemiology and clinical course of ABD is variable according to geographic locations and climate change which requires updating at regular interval.

Purpose: This study was done to determine the causative agent, clinical course and outcome of ABD in hospitalized children.

Material & methods: All the diagnosed cases of ABD, admitted in the paediatrics ward of Khulna Medical College Hospital between 2007 and 2009 were included. Main outcome measures were magnitude of admitted cases, vulnerable age group, seasonal variation, causative agent, antibiogram, complications and outcome of treatment. The diagnosis of cases was based on compatible clinical feature (bloody mucoid stool, fever, abdominal cramps) and stool examinations (microscopy and culture sensitivity). The patients were managed by appropriate antibiotic, fluid replacement and care of the complications.

Results: A total of 697 patients of acute diarrhoea got admitted in the children ward in last three years among which 72 (10.3%) were ABD. Majority (76.4%) of the sufferers were children below 5 years with the mean age of $3.5 \pm 2.7$ years. There was remarkable difference in seasonal distribution of cases being highest (31.9%) in the rainy season. Bacterial isolation rate from stool specimen was 48.6%. The commonest pathogen was *E. coli* (16) and Shigella (14) which was predominantly susceptible to ciprofloxacin (87%) and pivmecillinium (92%) respectively. Fifteen (20.8%) cases developed complications among which septicemia (3) and haemolytic uremic syndrome (2) were dreadful. Complications from shigellosis was significantly higher (RR = 2.57, 95% CI: 1.01–6.54; $P = 0.033$) than that from *E. coli*. After management, 61 (84.7%) patients improved satisfactorily and mortality figure was 8.3%. Mean hospital stay was $5.6 \pm 3.2$ days.

Conclusion: ABD poses a challenge to the physicians for its complications and high mortality. Choice of appropriate antibiotic and early recognition of complications can contribute to better outcome.

## PP023

### BREASTFEEDING PREDICTING FACTORS: THE ROLE OF A MEDICAL APPOINTMENT AT THE SECOND WEEK OF LIFE

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Introduction: The WHO recommends exclusive breastfeeding until 6 months. In Portugal, recent studies indicated prevalence rates of about 55% and 35%, at 3 and 6 months. Breastfeeding depends on multiple socio-cultural factors and health care support.

Purpose: To evaluate the impact of a medical appointment (second week after birth) on the breastfeeding cessation rate. Analyze the breastfeeding predicting factors in the first 6 months of life.

Material and methods: Prospective randomized study, through a standard questionnaire and follow-up of babies born in our Hospital during a period of 4 months. Randomization of two groups through MSExcel2007®. Data was collected by telephone at 1, 3 and 6 months. The intervention group had a standardized medical appointment on the second week after birth, to promote breastfeeding. Statistical analysis was performed through SPSSv17® (Chi-square analysis and Student *t*-test; $P < 0.05$).

Results: A total of 262 babies were enrolled (22.5% of the total annual deliveries), 161 of the control group, 101 of the intervention group. The global breastfeeding rates were 79.5%, 56.7% e 31.6% at 1, 3 and 6 months. Statistically, there wasn't significant difference in breastfeeding rates between groups. The socio-demographic factor statistically related to success was previous breastfeeding experience. The main conditionals associated to cessation were caesarean delivery and the early (first 15 days) introduction of infant formula (IF). The most frequent reasons to use IF were hypogalactia (33.9%), baby crying (29.4%) and failure to thrive(18.6%).

Conclusions: The breastfeeding rates found were similar to national studies. The additional medical appointment didn't have significant influence in breastfeeding. The main factors associated with success were cultural. The early introduction of IF had a negative influence, emphasizing the maternity permanence and the first 15 days of life as key-periods to success. Strategies as pre-natal appointment and early 'rooming in' in the operative deliveries may have impact improving breastfeeding rates.

**PP024**

## GROWTH AND PHENYLKETONURIA IN A DEVELOPING COUNTRY: IRAN

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Introduction: Dietary phenylalanine restriction is the main treatment of phenylketonuria. There are some studies which have demonstrated growth retardation in dietary restricted patients, and some are in contrast.

Purpose: To recognize if treated patients fail in acquisition of milestones.

Material: One hundred and five treated PKU patients (range 1 month–24.75 years) were compared to 105 controls, matched in age, sex and birth weight.

Methods: Weight/age, height/age, head circumference/age, weight/height and BMI were measured and transformed into Z-scores. Correlations between pretreatment phenylalanine concentrations (a sign of disease severity), plasma phenylalanine concentration means throughout a year, (a sign of dietary adherence), and growth parameters were analyzed in PKU patients. Furthermore, patient's height z-scores were compared with parental height Z-scores.

Results: There was no significant difference between weight Z-scores, weight/height and BMI means, in patients and controls (*P*: 0.842, *P*: 0.257, *P*: 0.622 respectively). The height z-scores in patients more than 2 year/old (−0.56) was 0.51 less than controls (−0.05), (*P*: 0.005 with 95% CI −0.85 to −0.15). The difference between height z-scores of patients and their parents were more than 1.5 in 8.6% of cases. In patients above 3 year/old, head circumference z-score means (−0.82) were 0.94 less than controls'(0.12), (*P*: 0 with CI −1.27 to −0.61). No correlation was found between weight and height Z-scores and pretreatment phenylalanine concentrations, however there was a negative significant correlation between head circumference z-scores and pretreatment phenylalanine concentrations (r: −0.445, *P*: 0.01). Moreover no correlation was found between growth parameters and plasma phenylalanine concentration means (*P*: 0.9, *P*: 0.2, *P*: 0.4 respectively).

Conclusions: Growth parameters are not impaired in early treated Iranian PKU patients, however height in patients more than 2 year/old and head circumference in more than 3 year/old were retarded. Disease severity is a more effective factor in head circumference growth than dietary adherence.

**PP025**

## ACUTE PANCREATITIS DUE TO PRIMARY SCLEROSING CHOLANGIITIS PRECEDING CROHN'S DISEASE

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Introduction: Estimating the true incidence of pancreatitis in children is difficult because most of the literature involves individual case reports or small case series. The incidence of acute pancreatitis is increased in inflammatory bowel disease (IBD), and this can be attributed to the high predisposition to hypercholesterolemia and pigment stones, as a result of ileal disease, anatomic abnormalities of the duodenum, immunologic disturbances associated with IBD, side effects of many medications or it can be idiopathic.

Purpose: We report a patient with acute pancreatitis,due to primary sclerosing cholangiitis predating the overt clinical appearance of Crohn's disease (CD), an association rarely reported in pediatric population.

Material: A 12-years old male, previously healthy, was presented to the Pediatric department because of a 2-days history of epigastric pain. A mild blunt abdominal trauma was reported, 4 days prior to the admission. Physical examination revealed a well nourished boy with only a mild epigastric tenderness. Laboratory workup showed hyperamylasaemia with abnormal hepatic function tests. Ultrasonogram and MRI of the abdomen revealed edematous pancreatitis, which was treated as an acute post-traumatic pancreatitis. Hyperamylasaemia resolved completely during the first week of treatment while hepatic function was normalised by the next 2, 5 months Three months after diagnosis of acute post-traumatic pancreatitis, follow-up revealed a relapse in hepatic function abnormalities without hyperamylasaemia. Further investigation with MRCP, gastroscopy, colonoscopy and magnetic resonance enterography established the diagnosis of primary sclerosing cholangitis (PSC) associated with CD.

Conclusions: Although pancreatitis in children is not seen as commonly as in adults, it may be underdiagnosed and requires a high index of clinical suspicion. Pancreatitis in adults has been occasionally described in association with CD, but it is uncommon in children. Inclusion of CD in the differential diagnosis of atypical gastro-intestinal disease remains important and its comorbidity with PSC may be related to immunological mechanisms.

**PP026**

## EFFECTIVENESS OF PROBIOTICS IN HEALTH AND DISEASES OF CHILDREN

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Introduction: Probiotics are 'live microorganisms' that are able to promote good health through establishing a balance in intestinal micro flora and through its immune-regulatory effects, it's use in the prevention or treatment of certain diseases have been reported in many studies.

Purpose: To conduct a review in order to determine the effectiveness of Probiotics in health and diseases of Children.

Materials and methods: The review was conducted on various published reports on double-blind, placebo-controlled trials and papers related to the use of Probiotics in Children. To identify the original trials, search was made in MEDLINE, PUBMED, GOOGLE SCHOLAR, EBSCO-HOST, COCHRANE LIBRARY databases and the retrieved articles were screened to meet the inclusion criteria. All the selected studies were conducted between 1900 and 2010.

Results: Viable Bifidobacterium lactis Bb12, added to acidified infant formula, was found to have protective effects against acute diarrhoea in healthy children. Clinically significant benefit of Probiotics was observed in the treatment of acute infectious diseases, particularly in rota viral gastroenteritis. Lactobacillus GG showed most consistent effect. The overall analysis of the included studies suggests that probiotics are efficacious in preventing acute diarrhoea showing a reduction of at least 21%.Effectiveness in treatment and/or prevention of probiotics was also seen in antibiotic associated diarrhoea and Clostridium difficile infections, necrotizing entero-colitis, allergic diseases and inflammatory bowel disorders. Probiotics mixtures were also reported to reduce symptoms of constipation.

Conclusions: Probiotics might function as 'surrogate' for adequate colonization and help to prevent and/or treat certain clinical diseases.

Keywords: Microorganisms, Colonization, Prevention, Treatment, Diarrhoea.

**PP027**

## THE EXTENT OF COLON MUCOSA INFLAMMATION IN CHILDREN WITH IDIOPATHIC ULCERATIVE COLITIS

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Introduction: Idiopathic ulcerative colitis is a relatively rare and severe chronic disease. It is characterized by chronic mucous hemorrhagic diarrhea associated with sideropenic anemia, anorexy and the loss of body weight.

Purpose: We analyzed the extent of colon mucosa inflammation in children with idiopathic ulcerative colitis during the diagnosis at the onset of the disease.

Methods: The goals of the study were performed on a sample of 17 children, 11 male and six female, aged 3.58-15.00 ($x = 11.26 \pm 3.68$) years, with idiopathic ulcerative colitis diagnosed based on characteristic endoscopic and pathohistological findings.

Results: In 8/17 (47.06%) patients we revealed left-sided colitis, pancolitis in six and proctosigmoiditis in three (17.65%). Endoscopic and pathohistological changes of the colon mucosa were most severe in the patient with pancolitis, and the mildest in those with rectosigmoiditis. Also, extraintestinal manifestations of the disease were more frequent and more severe in patients with extensive changes of the colon.

Conclusion: The obtained findings indicate that idiopathic ulcerative colitis of childhood in our regions is most frequently disclosed in later stages of the disease, i.e. as left-sided colitis or pancolitis, and in $<20\%$ of patients as proctosigmoiditis.

# THEME: GENERAL PAEDIATRICS

## PP028

### DIURNAL VARIATIONS OF DHEA AND ALLOPREGNANOLONE IN ATTENTION-DEFICIT/HYPERACTIVITY DISORDERED CHILDREN TREATED WITH PROLONGED RELEASE METHYLPHENIDATE

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Introduction: ADHD is associated with alterations in prefrondal cortex through dopaminergic and noradrenergic neurotransmission. Allopregnanolone (ALLOP) and Dehydroepiandrosterone (DHEA), have important effects on neural function, including cognition.

Purpose: Examine the diurnal fluctuations and relationship between blood levels of DHEA and ALLOP in ADHD patients, before and after PRMPH.

Material: One hundred seventy-nine children (137 males, 42 females), aged 5–14 years [mean: 9.57 ± 2.6 years], underwent complete diagnostic evaluation for ADHD between September 2007 and May 2010. All have an abbreviated intelligence test (KBIT) combined punctuation >79, and were free of antecedents of epilepsy.

Methods: Groups [1.- Diagnosed as ADHD (n = 136); 2.- Brothers of ADHD patients and a few non-related healthy children (CG, n = 43)]. Blood samples were taken at 09:00 and 20:00 h. In the ADHD group, after 4.53 ± 2.3 months of prolonged release MPH taken daily early in morning, identical study protocol was repeated. All subjects were enrolled after written informed consent. Measurement: DHEA by RIA, ALLOP by ELISA. Statistics: mean, SD, Mann–Whitney test, Wilcoxon test. Funding: Proyecto FIS-PI07-0603.

Results: 84.7% of the patients improved their psychometric evaluation under MPH, with 31.4% of patient punctuations achievement belonging to CG after treatment.

Conclusions: We noticed diurnal morning/evening fluctuations with higher concentrations in the morning for both parameters; with increases after treatment and shorter diurnal oscillations. We reinforce a possible protective effect of both neurosteroids on the expression of ADHD symptomatology.

## PP029

### RENAL AGENESIA AND MOWAT-WILSON SYNDROME: A CASE REPORT FROM DENMARK

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Introduction: Mowat-Wilson syndrome (MWS) is an autosomal dominant intellectual disability syndrome characterized by unique facial features, and associated with congenital anomalies such as Hirschsprung disease, congenital heart defects, corpus callosum agenesis and urinary tract anomalies. Some cases also present with epilepsy, growth retardation, speech impairment and microcephaly. It was first described in 1998 by Mowat et al, and the syndrome is caused by heterozygous mutations or deletions in the ZEB2 gene at chromosome 2q22-q23. ZEB2 encodes a transcriptional co-repressor and the gene is widely expressed in embryological development. The incidence of MWS is unknown. Approximately 180 cases have been reported worldwide, but it could potentially be an underdiagnosed syndrome given the high number of ZEB2 mutations and the highly variable phenotype.

Methods: Here we present the first three molecularly confirmed Danish cases with MWS. One case showed unilateral renal agenesia, which to our knowledge not previously has been described in relation to MWS.

Conclusions: Nowledge of the typical facial features, which also have been reported to envolve over time and become more recognisable in older individuals, together with knowlegde of the structural and functional abnormalities could improve the detection rate of this condition.

Table 1: For abstract PP028

| | CG | | Pre-MPH | | Post-MPH | |
|---|---|---|---|---|---|---|
| | Day | Night | Day | Night | Day | Night |
| DHEA | 7.11 ± 6.88 | 5.37 ± 3.7[a] | 5.02 ± 5.02[b] | 3.76 ± 2,78[c,d] | 6.06 ± 7.65 | 4.13 ± 3.18[e] |
| ALLOP | 14.5 ± 10.46 | 10.91 ± 4.52[f] | 13.03 ± 10.41 | 11.4 ± 8.59[g] | 16.59 ± 10.78[h] | 14.3 ± 11.7[i,j] |

Z values: [a]0.046 versus DCG, [b]0.012 versus DCG; [c]<0.001 versus DPre, [d]0.009 versus NCG; [e]0.001 versus DPost, [f]0.026 versus DCG, [g]0.003 versus DPre, [h] 'versus 0.01 versus DPre, [i]0.003 versus PostD, [j]0.001 versus PreN.

**PP030**

## PARATHYROID HORMONAL STATUS IN BETA THALASSEMIA

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Beta-thalassaemia is a congenital haemolytic anaemia characterized by partial (intermedia, TI) or complete (major, TM) deficiency in the production of beta-globin chains. The aim of this study was to estimate the parathyroid hormonal status in patients with beta-thalassaemia.

Subjects and methods: Our study was carried upon forty one patients with B-thalassemia (GroupI).They were classified into two groups; Group I (A): included 33 Patients with B-thalassemia major and GroupII (B): included eight Patients with B-thalassemia intermedia .We had another group (Group II) which included ten apparently healthy children, age and sex matched served as the control group. All groups were subjected to full history taking, clinical examination, laboratory investigations which included complete blood count, liver function tests, serum Ferritin, serum Calcium, serum Phosphours and serum level of Parathyroid hormone (PTH).

Results: We found that there were statistical significant differences between all groups regarding to serum Calcium, Phosphorus and parathyroid hormone where serum Calcium and parathyroid hormone were statistical significant lower in group I than group II & in group I (A) than group I (B),and serum Phosphorus was statistically significant higher in groupI than group II & in group I (A) than group I (B).Furthermore, there were moderate significant positive correlation between PTH and serum Calcium level, moderate significant negative correlations between PTH and serum phosphorus and ferritin levels.Comparison between group IA and group IB regarding to hypoparathyroidsim, serum ferritin, revealed that they were statistically significant higher in group I A than group I B.

Conclusion: Hypo-parathyroidism was more frequent among thalassemic patients especially those with major type with subsequent low serum Ca which was manifested by bone tenderness and pathological fracture in some of them. This could be explained by deposition of iron in parathyroid gland due to frequent blood transfusions and improper chelation therapy.

**PP031**

## A STUDY OF CD62P (P-SELECTIN) IN β-THALASSEMIA

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Introduction: $\beta$-thalassemia major (TM) affects 60 000 births per year worldwide. These people must cope with complications of the disease that develop over time. In particular, profound hemostatic changes have been observed in patients with $\beta$-thalassemia major ($\beta$-TM) and -thalassemia intermedia ($\beta$-TI).

Aim of the study: Detection of the percentage of CD62P (P-selectin) among $\beta$-thalassemic patients and correlation of its presence and the presence of haemostatic abnormalities.

Patients & methods: Our study included two groups; Group I: included 45 patients who were diagnosed as $\beta$-thalassemia patients, and furtherly subdivided into two subgroups; Group Ia: thalassemia intermedia included 10 patients (22.2%).Group Ib: thalassemia major included 35 patients (77.8%) and finally Group Π which included 15 apparently normal children as a control group, age and sex matched to the diseased group.Laboratory investigations were done including: Complete blood count (C.B.C) and Reticulocytic count,Serum ferritin, Bleeding time and Clotting time (BT and CT),Prothrombine time and concentration (PT & PC), Liver enzymes and serum bilirubin and finally CD62P (P-selectin).

Results: The percentage of CD62P in thalassemic patients was significantly higher when compared to the normal controls ($P = 0.0001$) even in the absence of overt thromboembolic events, furtherly it was higher in patients with thalassemia intermedia than thalassemia major and in splenectomized patients than non-splenectomized.

Conclusion: The expression of P-selectin at the surface of the platelet was taken as a clinical marker of activation, easily detectable with flow cytometry.

**PP032**

## COMPARATIVE ABNORMAL LIPID PROFILES IN OVERWEIGHT AND OBESE CHILDREN IN A RURAL AREA OF A GREEK ISLAND

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Introduction: Abnormal lipid profiles pose children at risk for cardiovascular diseases during adulthood. Limited evidence exists regarding children's lipid profiles in Greek rural islands.

Purpose: To evaluate the prevalence of abnormal lipid profiles of Greek island children in relation to their body mass index (BMI).

Material: A cross-sectional study was conducted among minors (n = 788) residing in Samos, Greece during Jan–Dec 2009.

Methods: Participants (mean age ± SD: 13.5 ± 2.7 years) were directly assessed for height and weight. Overweight and obesity were defined by international BMI cut-off points. Fasting blood samples were collected to assess lipid profiles, including Total (TC), LDL and HDL cholesterol and triglycerides (TG). Non-HDL was computed by equations according to age and gender. Complete assessment was achieved in 786 (99.7%) participants (boys: 51.5%). Continuous variables were compared with student's *t*-test, and categorical variables with chi-square test and Mantel-Haenszel method.

Results: The prevalence of overweight and obesity were 28.2% (n = 222) and 13.0% (n = 102), respectively. Overweight children had higher mean (±SD) levels (in mg/dL) of TC (170.3 ± 33.6 vs. 164.9 ± 30.3; $P = 0.036$), LDL (99.2 ± 28.3 vs. 91.7 ± 23.4; $P = 0.0003$), non-HDL (117.5 ± 31.7 vs. 107.5 ± 26.7; $P < 0.0001$) and TG (84.4 ± 44.2 vs. 67.4 ± 29.6; $P < 0.0001$). Obese children also had higher LDL (99.1 ± 21.7; $P < 0.004$), non-HDL (118.4 ± 27.6; $P = 0.0002$) and TG (102.6 ± 57.4; $P < 0.001$). Both groups had lower HDL levels ($P < 0.0001$). Among overweight children, the likelihood of abnormal TC and TG scores were 1.79 (95% CI: 1.09–2.92) and 4.75 (95% CI: 2.17–10.37) times greater, respectively. Also, they were more likely to have abnormal LDL (adjusted odds ratio, AOR: 2.74;95% CI:1.45–5.19) and non-HDL (AOR: 3.54; 95% CI:2.07–6.06) scores. In obese participants the likelihood of abnormal TG was 10.90 (95% CI: 4.85–24.51) times greater, while HDL (AOR: 3.04; 95% CI: 1.45–6.35) and non-HDL (AOR: 3.58; 95% CI: 1.78–7.20) were thrice greater.

Conclusions: Overweight and obese children in rural islands have an increased risk of differential abnormal lipid profiles. Public health interventions should consider these differences to prevent cardiovascular diseases in adulthood.

### PP033

### SNORING, OBSTRUCTIVE SLEEP APNOEA - HYPOPNOEA SYNDROME (OSAHS) AND EXPOSURE TO ENVIRONMENTAL TOBACCO SMOKE

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Introduction: Numerous risk factors for snoring and OSAHS have been reported including enlarged adenoids and/or tonsils, obesity, allergies or other causes of nasal obstruction, and exposure to environmental tobacco smoke.

Purpose: The aim of this study was to investigate if a correlation exists between domestic environmental factors, such as parental smoking and snoring in children with OSAHS.

Material and methods: All patients (N = 29) that visited sleep laboratory underwent standard full night polysomnography to assess the presence and severity of OSAHS. The apnoea-hypopnoea index (AHI) was defined as the number of apnoeas and hypopneas occurring per hour of sleep. There were 16 males and nine females, aged 8.12 ± 3.15 year-old with AHI 7.18 ± 6.47.

Results: 9/25 children had mild OSAHS, 9/25 (36%) medium and 7/25 (28%) severe OSAHS. Parental smoking was reported in 17/25 (68%) cases and snoring in 23/25 children (92%), while 16/23 snorers' parents smoke (69.6%). 12/25 children (48%) had elevated levels of immunoglobin IgE for their age. No statistical significance was found between the parental smoking and: (i) the AHI ($P = 0.907$, z= −0.117), (ii) the presence of snoring ($P = 1.00$), (iii) mouth breathing ($P = 0.527$), and (iv) nasal congestion ($P = 1.00$). Finally, elevated levels of IgE were found in children who parents smoke, although there wasn't any statistical significance ($P = 0.667$).

Conclusions: Snoring is common in children with OSAHS. Domestic environments and especially passive smoking may play a significant role in the increased prevalence of snoring. Thus, the home is a predominant environment for exposure to many environmental irritants, such as allergens and air pollutants.

### PP034

### CYTOMEGALOVIRUS GENETIC VARIABILITY AND THE CLINICAL COURSE OF CYTOMEGALY

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Introduction: The human cytomegalovirus (HCMV) is the most frequent factor of intrauterine infections and an important opportunistic pathogen. Studies suggest a certain influence of the virus genetic variability on its virulence and pathogenicity.

Purpose: In the reported study, the clinical course of congenital and acquired HCMV infection was evaluated in children, taking into consideration UL55 and UL144 gene variability.

Material and methods: The study involved 25 children with HCMV infection (congenital – 14, acquired – 11). Viral genotype was determined by a sequential analysis of UL55 and UL144 gene fragments.

Results: An analysis of UL55 gene sequence demonstrated the presence of gB2 genotype in 19 children, gB1 in two children and gB3 in one child. In one of the children, infected with gB1 genotype virus, a severe, congenital

cardiac defect was observed, while the other presented with multi-organ defects, observed in 57% of children with congenital infection. In the gB3 genotype viral infection, cleft palate and CNS changes were found. An analysis of UL144 gene sequence revealed the presence of various genotypes of the virus, most often B4. In four children with congenital infection, involving multiorgan changes and severe CNS lesions, viral strains of B1, B4, B3, C2, C3 genotypes were identified. In seven children (six with congenital infection) coinfection with HCMV strains of various gpUL144 and/or UL55 genotypes was observed. In one, out of the four children, treated with blood preparations, double infection with HCMV strains of gB1 and gB2 genotypes was diagnosed.

Conclusions: Almost 50% of the children with congenital infection demonstrated coinfection with HCMV strains of various gpUL144 and/or UL55 genotypes. No effects were observed of either UL55 or UL144 gene variability on the clinical course of infection. Project No. PL0270 aided by Island, Lichtenstein and Norway through the EEA Financial Mechanism, and Polish national budget funds for research and science.

## PP035

### IS ABO HYPERBILIRUBINEMIA PREVENTABLE IN NEWBORNS RECEIVING EARLY PHOTOTHERAPY?

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Objective: To determine whether initiation of early phototherapy in positive direct Coombs' test (DCT) with ABO incompatible newborns would prevent severe jaundice.

Study design: A prospective controlled study was performed at Al Qassimi Hospital. Infants born at term and weighing >2000 g with ABO incompatibility and a positive DCT were included in the study. Within their first 4 h of life and after parental consent, infants were enrolled into one of two groups: prophylactic phototherapy group which received phototherapy during the first 24 h of life (group I), or no prophylactic phototherapy which represent the control group (group II). Selection of infants to either group was by 2-week alternative strategy. Blood group, complete blood count (CBC), reticulocyte count, blood smears, total serum bilirubin (TSB), and DCT were performed on cord blood of all neonates born to mothers with O positive blood group. CBC, reticulocytes, and TSB level were obtained in all enrolled infants at 12, 24, 48, 72, and 96 h of life.

Results: During the study period, 242 newborns with positive DCT were enrolled. One hundred and two infants were allocated to the prophylactic phototherapy arm and 140 as controls. Prophylactic phototherapy was associated with a significant decrease in the TSB at 24 h ($P = 0.002$) and at 48 h ($P = 0.003$) but not later on. The total number of patients who had hyperbilirubinemia at any time during the first 96 h was significantly less in the prophylactic group (17 vs. 45 – $P = 0.006$). Prolonged hospital stay because of phototherapy was more frequent in the control group ($P = 0.03$).

Conclusion: Prophylactic phototherapy was associated with a significant reduction of TSB in the first 48 h of life but not later on. Clinical benefits of this strategy could not be proven.

## PP036

### NEURODEVELOPMENTAL OUTCOME IN VERY LOW BIRTH WEIGHT INFANTS: A THIRD LEVEL HOSPITAL EXPERIENCE

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Purpose: The goal was to identify, among very low birth weight (<1500 g) live births, the proportion of infants who were unimpaired at 24 months of corrected age.

Material/methods: We conducted a retrospective study of inborn very low birth weight (LBW) infants admitted to a 3rd level hospital unit between 2005 and 2008, who either died or had follow-up data available at 24 months' corrected age. Unimpaired outcome was defined as normal neurologic examination findings, normal vision and hearing, normal motor control (head control, ability to seat and walk) and language (communication intention, more than five words spoken correctly, normal language comprehension). Death was included with neurodevelopmental impairment as a composite outcome.

Results: From 142 infants, 26 (18.3%) died, 18 (12.6%) had incomplete assessments and 98 (69.0%) were fully evaluated. 30.2% had extremely LBW. At 24 months' screening, 56 (45.9%) had neurodevelopmental impairments. Impaired infants had smaller gestational age (28.7 vs. 30.5; $P = 0.001$), lower birth weights (1053.2 g vs 1215.2 g; $P = 0{,}001$) and head circumferences (25.7 cm vs. 26.9 cm; $P = 0.006$), male gender (64.3% vs. 37.5% female; $P = 0.038$), higher Clinical Risk Index for Babies score (4.6 vs. 1.8; $P = 0{,}001$), longer duration of ventilation (10.1 vs. 3.6; $P = 0.001$). Neonatal comorbidities were overall more frequent in impaired infants, particularly necrotizing enterocolitis (18.2% vs. 6.1%; $P = 0.038$). Considering later outcome (excluding infants who died), epilepsy (4.1%), cerebral palsy (6.1%), visual impairment (8.2%) and language disturbs (9.2%) were the most common disabilities.

Conclusion: Higher birth weight and head circumference, greater gestational age, female gender and absence of neonatal morbidities increase the likelihood of unimpaired status.

 

**PP037**

## ANALYSIS OF THE GLUCOCORTICOID RESISTANCE MECHANISM IN CHILDREN WITH ACUTE LYMPHOBLASTIC LEUKEMIA USING DNA MICROARRAYS

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Introduction and purpose: The main aim of this study is the glucocorticoid's receptor polymorphism analysis and evaluation of prognostic and predictive importance of this polymorphisms in patients with childhood acute lymphoblastic leukemia (ALL). The DNA microarrays technology can determine gene expression profile of whole genome, in these time approximately 23 thousands of genes. These methods also can determine expressed genes variation, genes polymorphism and chromosomal changes.

Material and methods: The analysis of gene polymorphism was performed in six patients with ALL (in three good prednisolone responders, three bad prednisolone responders). The RNA and DNA were isolated using phenol-chlorophorm method from the bone marrow samples before the treatment (day 0) and after the prednisolone monotherapy (day 8). The *in vitro* chemoresistance test (MTT) using prednisolone (PRED), dexamethasone (DEX) and combination of PRED/DEX were done in each patient. The DNA microarrays analysis was performed using the GeneChip Human Gene 1.0 ST Array and Cytogenetics 2.7M Array (Affymetrix). The statistic analysis was done using R and Bioconductor pack.

Results: The pilot data of the project will be presented. The DNA microarrays analysis was performed in 24 samples from six patients with ALL. There'll be demonstrated benefits and perspectives of DNA microarrays methods and their impact in individualization of therapy in children with ALL.

Conclusion: The DNA microarrays methods can identify gene expression profiles which are in relation to patient chemosensitivity/chemoresistance. Thanks to correlations with MTT glucocorticoids test we can eliminate interindividual variability in metabolism, pharmacokinetics, pharmacodynamics and genetics. The glucocorticoids chemoresistance prediction can individualize the cortoccoid's therapy in children with ALL, improve therapeutic protocols and can reduce the treatment side effects.

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**PP038**

## DETERMINATION OF SERUM NT PRO-BNP LEVELS IN PEDIATRIC HEART FAILURE

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Introduction: The diagnosis of congestive heart failure (CHF) in children is predominantly based on clinical assessment as well as functional echocardiographic evaluation. The biomarkers derived from compensation neurohumoral activation such as natriuretic peptides may increase diagnostic accuracy in pediatric CHF.

Purpose: To evaluate serum NT pro-BNP levels in children with CHF and to establish correlations with the functional NYHA/ROSS class.

Material: The study group included 21 patients with congestive heart failure NYHA/ROSS class III and IV, aged between 0 and 72 months (12 subjects aged 0–12 months and nine patients aged 12–72 months). The control group included 16 subjects with normal ventricular systolic function, of which 10 aged 0–12 months and 6 aged 12–72 months.

Methods: Serum NT pro-BNP levels were assessed by the immunoenzymatic ELISA method (Enzyme-Linked Immunoabsorbent Assay), using a standardized kit containing monoclonal antibodies that recognize epitopes located in the NT-proBNP portion.

Results: The mean NT pro-BNP value for the 0–12 month age group of subjects with CHF was 65.31 fmol/mL, and for the 12–72 month age group, 30.42 fmol/mL. The mean NT pro-BNP value for the 0–12 month age group of controls was 11 fmol/mL, and for the 12–72 month age group, 9.58 fmol/mL. A significant correlation was found between the increased NT pro-BNP value and heart failure NYHA class III – IV developed by patients.

Conclusions: The natriuretic peptide NT pro-BNP has increased values in children with heart failure. Serum NT pro-BNP levels depend on the child's age and are correlated with the functional NYHA/ROSS class.

**PP039**

## CENTRAL AUDITORY PROCESSING DISORDER IN AUTISM

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Introduction: Nowadays the Central Auditory Processing Disorder (CAPD) is an entity with more importance in scientific circles. Knowing that Autism Spectrum Disorder (ASD) is a disease that affects various areas of development and, particularly the sensory processing, is relevant to study the relation between these two nosological entities.

Purpose: To evaluate the relationship established between CAPD and ASD and see what areas of CAPD are most affected.

Material: Griffiths Mental Development Scales, CAPD Screening Test, Childhood Autism Rating Scale (CARS), DSM-IV-TR criteria.

Methods: A cross sectional and retrospective study with a sample of 15 children diagnosed with ASD was collected in two Child Developmental Clinics. The Auditory Process was assessed in all subjects, as well as the psychomotor development. Statistical analysis was performed with SPSS 17, considering significant $P < 0.05$.

Results: All subjects showed positive signs of disturbance of the Central Auditory Processing, which is more pronounced in Verbal Sequential Memory (VSM) and Non Verbal Sequential Memory (NVSM) areas. Statistically significant correlations were observed between cognitive level, symptoms of autism and CAPD. We also observed positive correlations between the Fine Motor level, Language level and CAPD.

Conclusion: We conclude that it is important to assess CAPD in Autism Spectrum Disorders and that a better definition of CAPD profile may allow the construction of a Therapeutic Training more defined and tailored to the needs of each child with ASD.

## PP040

## PRETERM BIRTH AND ADHD IN SCHOOLCHILDREN – A SWEDISH NATIONAL COHORT STUDY

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Introduction: Previous studies have demonstrated an increased risk for ADHD in follow-up studies of preterm survivors from neonatal intensive units.

Purpose: In this study we analyzed the effect of moderate as well as very and extreme preterm birth on the risk for ADHD in school age taking genetic, perinatal and socioeconomic confounders into account.

Material: Register study in a Swedish national cohort of 1 102 305 children born in 1987–2000, followed up for ADHD-medication in 2006 at the age of 6–19 years.

Methods: Logistic regression was used to test hypotheses. A within–mother-between-pregnancy design was used to estimate the importance of genetic confounding in a subpopulation of offspring (N = 34 334) of mothers who had given birth to preterm (≤34 weeks) as well as term infants.

Results: There was a stepwise increase in odds ratios for ADHD-medication with increasing degree of immaturity at birth; from 2.1 (1.4–2.7) for 23–28 weeks gestation, to 1.6 (1.4–1.7) for 29–32 weeks, 1.4 (1.2–1.7) for 33–34 weeks, 1.3 (1.1–1.4) for 35–36 weeks and 1.1 (1.1–1.2) for 37–38 weeks compared with term infants in the fully adjusted model. The odds ratios for the within-mother-between-pregnancy analysis were similar. Low maternal education increased the effect of moderate, but not extreme, preterm birth on the risk for ADHD.

Conclusions: Preterm and early term birth increases the risk of ADHD by degree of immaturity. This main effect is not explained by genetic, perinatal or socio-economic confounding, but socio-economic context modifies the risk of ADHD in moderately preterm births.

## PP041

## FIRST CASE OF AUTOCHTHONUS PLASMODIUM VIVAX MALARIA IN A 8 YEAR OLD CHILD IN GREECE, THE LAST TEN YEARS. A CASE REPORT

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Introduction: A few autochthonous (locally acquired) malaria cases have occurred in declared malaria-free countries of Europe during the last 20 years. In Greece, there are four cases reported in 1994 and 1995, two in 1998, two in 2000, and six in 2009.It is estimated that the global burden of malaria due to *Plasmodium vivax* is 70–80 million cases annually. Outside of African, *P. vivax* accounts for 50% of all malaria cases. Human populations affected achieve little immunity to this parasite; as a result, in these regions, *P. vivax* infections affect people of all ages. The residual malaria burden is likely increasingly to become that of *P. vivax*.

Purpose: We report a case of a 8 year old boy with Plasmodium vivax malaria who was hospitalised in Thriassio General Hospital, Athens in September 2010. Epidemiological data, clinical symptoms, diagnosis and treatment are described.

Material: An 8 year old boy of Gypsie origin who lived in Thiva, a small town north to Athens was admitted because of fever with rigors lasting for several days. On examination he looked pale and had mild hepatomegaly and splenomegaly. FBC revealed thrombocytopenia with mild anemia, WBCs within normal limits. Bilirubin, LFTs and coagulation screen was normal. Blood smears were positive for Plasmodium vivax which was verified with PCR testing. He was treated with combined regiment of hydroxychloroquine followed by primaquine and completed the treatment uneventfully.

Conclusion: Malaria is considered to be eradicated in Europe. Only sporadic cases from travellers in endemic areas are occasionally reported. This is the first case of autochthonus transmission of malaria to be reported in a

child in Greece the last 10 years. Surveillance and prevention are crucial in order to prevent a re-emergence of malaria since populations migrate from Asia to Europe.

**PP042**

## INCREASING HOSPITAL ADMISSIONS AMONGST INFANTS IN ENGLAND: A LITERATURE REVIEW

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Introduction: Routine hospital statistics in England show that hospital admission rates in children under one year old have been rising in recent decades and are significantly higher than other paediatric age groups.

Purpose: To review global trends and typical causes of heightened hospital admission rates amongst children <1 year old.

Materials and methods: I reviewed available routine data and published literature to identify various factors leading to excessive hospitalisations amongst infants below the age of one in different countries. The publications were identified by manually searching MEDLINE, reference lists and journals using relevant key words.

Results: Respiratory diseases remain the leading causes of infant hospitalisation. The underlying mechanisms that may lead to the high admission rates amongst infants across nations include: early discharge, poor socioeconomic status, low breastfeeding rates, preterm births, low birth weight (LBW) deliveries and changes in paediatric medical practice. Likely causes of the rising trend of infant hospitalisations in England appear to be a combination LBW, preterm deliveries, a shortfall in out-of-hours primary care and a reduced admission threshold.

Conclusion: Inappropriate admissions owing primarily to a reduced admission threshold secondary to a decreased average length of hospital stay might have contributed to the increased infant hospital admissions. This is further compounded by reducing out-of-hours GP services as certain illnesses could be better managed in the community. A British-tailored paediatric appropriateness evaluation protocol (PAEP) should be further developed to measure inappropriate admissions and effectiveness of services in order to obtain more reliable evidence.

**PP043**

## THE RECCURENT CROUPS IN CHILDREN: CAUSES AND CONSEQUENCES

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Introduction: The recurrent croup not so rare pathology. One of consequence can be persistent hoarseness in some cases accompanied by organic laryngeal pathology.

Purpose: Theour aim was to compare dates of viral and endolaryngeal examination in recurrent croups children.

Material: The 50 recurrent croups children underwent our observation.The number of croups fluctuated between 4 and 14 episodes. Different degrees of dysphonia have been revealed in all cases.

Methods: In all children we estimate: laryngeal condition (by videolaryngoscopy), voice quality (subjective and objective voice analysis) and viral etiological factors. We revealed 15 respiratory viruses: parainfluenza (type 1,2,3), adenovirus, herpes simplex virus type 1, cytomegalo(CMV) and Epstein-Barr (EBV) viruses.

Results: In 50 children with dysphonia after recurrent croup the different organic laryngeal pathology were revealed in 47 cases (in others 3- normal laryngeal dates): chronic laryngitis in 21 children, subacute laryngitis in eight and vocal nodules in 18 children. The IgG parainfluenza virus were revealed in 38 and IgM in four children; IgG RS virus were revealed in 33 and IgM in one children; IgG adenovirus in 23 and IgM in one children; IgM herpes simplex virus type I in one and IgG in seven children, IgM CMV in one and IgG in two children; IgM EBV in one and IgG in 20 children.

Conclusions: The severity of hoarseness don't correlate with laryngeal condition and croup's number. The dates of viral determination will be useful in future treatment which necessary have to include antiviral drugs. For voice quality improvement have to avoid drugs with potential negative influence to voice quality.

**PP044**

## CLINICAL AND EPIDEMIOLOGICAL CHARACTERIZATION OF COMMUNITY-ACQUIRED PNEUMONIA IN MADEIRA ISLAND HOSPITALIZED CHILDREN

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Background: Community Acquired Pneumonia (CAP) is a substantial cause of paediatric mortality worldwide, prompting a large number of hospitalizations. Although the empirical treatment leads to a favourable response in most patients, identifying a causative agent is always a challenge.

Objectives: To characterize the paediatric population hospitalized with CAP and access the contribution of the etiologic investigation methods [blood culture and detection of pneumococcal capsular antigen in serum (sAgPnc)] for the treatment.

Methods: Prospective study, by form-filling, of the patients hospitalized with CAP in the paediatric department during the year 2008.

Results: There were a total of 101 admissions, noting the higher incidence before age 5 (53.5%). Vaccination

coverage for pneumococcal disease was 43.6%. The first symptoms occurred on average 2.3 days before admission with fever in 91.1% and cough in 81.1%. Breathing difficulty/need for supplemental oxygen was the commonest criterion for admission (35.6%). Chest radiography showed a unilateral lobar or segmental infiltrate in 82.2%. It was possible to identify an etiologic agent in 21.8%, with *S. Pneumoniae* being responsible for 6.9% (serotypes 1, 7F). The detection of sAgPnc sensibility was 6.6%. The CAP mortality was 2%, occurring in children with previous comorbidities. The average length of stay was 6.6 days, as 91.1% patients had a favourable response.

Conclusion: The clinical and epidemiological surveillance is essential in the adequacy of prophylaxis and treatment of CAP. Unfortunately, usual etiologic research methods present low sensitivities. It was shown that the detection sAgPnc is of little use in CAP.

Keywords: Pneumonia, Antigens, Blood culture, Streptococcus Pneumococcus.

## PP045

## PAEDIATRIC PRESENTATIONS TO PRIMARY CARE: TIME FOR A NEW LOOK

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Introduction: Most guidance on acute paediatric presentations originates from studies based in secondary care[1]. By contrast, evidence from primary care stresses the importance of holistic assessment and doctor and parent intuition[2].

Purpose: To document presentation, process and outcome of children's acute illness presentations to a general practice in winter 2009/10.

Material and methods: Data on all paediatric presentations in a three month period to a GP training practice in Wicklow, Ireland with four GP principals and one specialist registrar. An open-access urgent kid's clinic (UKC) is run at the beginning of each week-day. Data was recorded on doctor seen, time of presentation, presenting complaint, diagnosis and management for all paediatric illness presentations.

Conclusions: Most paediatric illness episodes are treated in the community and serious illness is rare; however doctor variability is significant. Some determinants of variability are identified. Most (hospital) training emphasises critical illness and risk aversion. Ways to support doctors in dealing with less differentiated, non-specific presentations are discussed. The evidence-base for guidelines on clinical approach needs to be grounded in the health-care environment in which the physician works. These data suggest that in general practice, a focus on symptom interpretation is essential.

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**Results: (n = 867 consultations)**

| Presentation variables | Percent of total (%) | (Range for doctors) (%) |
|---|---|---|
| Cough (n = 291) | 33.5 | (28–38) |
| Fever as primary presentation (n = 77) | 9 | (4–21) |
| Fever as part of presentation (n = 174) | 22 | |
| Other presentations | ENT = 13; Skin = 15; Gastro-intestinal = 6; Irritable child = 5 | |
| Outcome variables | | |
| Advice and education(n = 261) | 30 | (8–47) |
| Antibiotics (n = 288) | 33 | (17–61) |
| Referred to ED (n = 29) | 3.3 | (0–7.9) |
| Referred to OPD (n = 14) | 1.6 | (0–3) |
| Admitted to hospital (n = 4) | 0.5 | |
| Specific directed treatment (n = 223) | 26 | (18–32) |

Twenty-five percent of visits were to the UKC and 4.5% were to an out-of-hours service. Ninety-five percent of all acute presentations were dealt with in the GP setting.

## PP046

## EFFECTS OF NEW NUTRITIONAL RECOMMENDATIONS ON DIET AND IRON STATUS ON A POPULATION LEVEL

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Introduction: Icelandic recommendations for diet in infancy were revised in 2003. A study on infant nutrition 1995–97 showed low iron status and high protein intake among 12-month-olds.

Purpose: The aim of this study 2005–07 was to investigate the effects of the recommendations on the diet and iron status by comparison to earlier results.

Methods: A randomized sample of Icelandic 4-month-old infants was selected by Statistics Iceland. Dietary history was used to evaluate food intake from 0 to 4 months and monthly information about the diet was

collected by 24 h food records at 5–8 and 10–11 months and by 3 day food records at 9 and 12 months (n = 140). At 12 months blood samples were collected and iron status evaluated (n = 140).

Results: In present study there were no anaemic children (Hb < 105 g/L, s-ferritin < 12 μg/L, MCV < 74fl); 4.3% were iron deficient (s-ferritin < 12 μg/L, MCV < 74fl) and 5.8% had depleted iron stores (s-ferritin < 12 μg/L) versus 2.7%, 20% and 41% respectively in previous study. The main dietary changes were in line with the new recommendations, i.e., a lower consumption of unmodified cows' milk which was replaced by iron-fortified follow-on milk. Other dietary changes that associated with improved iron status were increased consumption of porridges and fruits. Duration of exclusive breastfeeding was longer in the present study compared to the former study, 4 versus 3 months (median). Furthermore, protein intake has decreased significantly since 1995–97.

Conclusion: Improved iron status of Icelandic infants could be explained by changed diet and nutrient intake following new recommendations. Overall feeding practices and nutrient combination is more important for the iron status than single factors. The study showed a strong public health impact of recommendations on infant nutrition.

### PP047

### WITHDRAWN

### PP048

### RAPID TEST FOR DIAGNOSIS OF BACTERIAL MENINGITIS AND SHORT TERM OUTCOME IN CHILDREN UNDER FIVE YEARS IN OMDURMAN, SUDAN

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Introduction: In Sudan, acute bacterial meningitis (ABM) remains a major threat for children under five.

Purpose: The objectives of this study were to determine the causative agents of acute bacterial meningitis by using rapid diagnostic techniques and study the short term outcome.

Material & methods: During a six-month period, a total of 117 patients clinically diagnosed as ABM in Omdurman Children's' Hospital, were investigated using latex agglutination test (serology) and polymerase chain reaction (PCR).

Results: The cerebrospinal fluid tested using serology was positive for ABM in 50 (42.73%) cases of whom 22 (18.8%), 18 (15.38%) and 10 (8.54%) cases were due to *Haemophilius influenzae type b*(Hib), *Neisseria meningitides* (MCM) and *Streptococcus pneumoniae* (SPM), respectively. The PCR showed 58 (54.7%) positive cases of which MCM, Hib and SPM comprised 37 (34.90%), 11 (10.37%) and 10 (9.43%) cases, respectively. The PCR test proved to be a better diagnostic tool particularly for MCM ($P < 0.001$). In Toto, the study showed that the main causative agents of ABM in children under five were *Neisseria meningitides* in 51% (n = 55), *Haemophilius influenzae type b* in 31% (n = 33) and *Streptococcus pneumonia* in 18% (n = 20). Ten of the patients developed neurological complications and three cases died giving a case fatality rate of 2.8%.

Conclusions: The need for rapid diagnostic tests to diagnose ABM in order to lower under-5 morbidity and mortality cannot be overemphasized.

### PP049

### INCIDENCE AND OUT COME OF ENCEPHALOPATHY IN PEDIATRIC INTENSIE CARE UNIT IN ALKHADRA HOSPITAL

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Introduction: Encephalopathy is generalized disorder of cerebral function that may be acute, chronic, progressive, or static. The etiology of encephalopathy's includes infection, toxic, metabolic, ischemic causes trauma, mass lesion, complication of malignancy fluid-electrolyte acid-base disorder, acute ventricular obstruction vascular, endocrine, Reye syndrome, hypothermia/hyperthermia and iatrogenic. We report the results of retrospective review 47(10%) patients out of 460 patient files admitted to PICU Alkhadra hospital, with the diagnosis of encephalopathy over a two years period. Our aim was to determine age, incidence, causes and outcome of patients admitted to PICU with encephalopathy and detect the relationship between pupils sized with outcome.

Patients and Methods: The data analyzed included admission diagnosis, demographic variables, organs failure, pupil condition use of mechanical ventilation, and outcome.

Results: The mean age for all patients was 3 months (range 1 day–19 months). Neonates were 30and 15 were children .Hypoxic ischemic encephalopathy (HIE) was diagnosed in 18 (40%), infection related encephalopathy (IRE) 11 (24%), metabolic related encephalopathy 8 (18%), trauma encephalopathy 2 (4%) and other 6 (13%). Most of those patients were ventilated, pupil size (dilated) is the most significant indicator of outcome, multi organ dysfunction account for 32 (71%). Number of survival with hypoxic ischemic encephalopathy (HIE) 15 (65%), infection related encephalopathy (IRE) 4 (17%), metabolic related encephalopathy 2 (9%), no survivor in trauma encephalopathy.

Conclusion: The high incidence of HIE in this study requires constant attention to the standards of obstetric and neonatal care. The prognosis for the babies with IEM is poor every effort must be made to establish the diagnosis for perinatal counseling. Head injury remains a significant cause of mortality in our study, a significant number of patients; however appear to sustained 2nd brain insult due to improper transportation.

**PP050**

**INCIDENCE OF LANDAU-KLEFFNER SYNDROME (LKS) IN JAPAN**

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Introduction: Landau-Kleffner syndrome (LKS) is a rare neurological disease which begins around 6 years of age. Symptoms of LKS is known to be auditory agnosia with apparent hearing impairment, regression of speech, diffuse spike and wave complexes especially in sleep EEG and those signs and symptoms continue in several years. However, systematic epidemiological study has never been reported in the literature.

Purpose: Objective of our research is to know the incidence of LKS in Japanese children.

Methods: A questionnaire was sent to all 3004 hospitals, which have pediatric department in Japan. Number of the first visit-patients in the past one year was asked. If they had such patients, we also asked their age and sex. We analyzed their answers sent back to us during the next 3 months period in 2009. Chiefs of 1560 pediatric departments answered the inquiry (51.9% of returns). Vital statistics of the same year were referenced and incidence of LKS among schildren aged 5–14 years was estimated.

Results: Six patients (five boys and one girl) with LKS, aged 5–14 years of age, visited to the out-patient clinic as the new patients. Vital statistics of Japan 2009 revealed population of children aged 5–14 was 11 861 464.

Conclusion: Every LKS patient must have visited department of pediatrics at some points of their disease. In our survey, number of the first visit LKS patients aged 5–14 years of age was six during 1 year period. If non-answerers experienced LKS, the number cannot exceed the ratio of six among 1560 departments. Therefore 11.6 should be the maximum data of our survey at 5–14 years of age children. Thus incidence of LKS in 5–14 years was about one in a million (978 000) population in Japan.

**PP051**

**MILLER FISHER SYNDROME: CASE PRESENTATION**

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Aim and introduction: Miller Fisher Syndrome (MFS) is characterized with acute onset of ataxia, ophtalmoplegia and areflexia. The disorder is thought to be a variant of Gullain Barre Syndrome (GBS). MFS comprises 18% of all GBS cases. MFS mostly has a good prognosis and diagnosed with clinical findings. Most severe complications affecting prognosis are bulbar paralysis and involvment of autonomic nervous system. The reason why we presented this case is because of its infrecquency.

Case: A seven year old female patient presented with 6 days history of diplopia, walking imbalance and deficit in external gaze. There wasn't any history of prexisting infection. In physical examination ataxic gait, ophtalmoplegia, bilateral deficit in external and upward gaze, difficulty in standing,loss of strength in lower extremity 3/5,4/5 in upper extremity were present. Deep tendon reflexes were decreased.Body wight: 20 kg. Blood pressure was measured 90/60 mmHg. There wasn't any other pathological finding in physical examination. No pathology was detected in biomicroscopic and fundoscopic examination. Orbital,cranial,spinal MRI's with contrast material were assesed as normal. CK, CK-MB, LDH, SGOT, SGPT levels were detected normal. Lomber puncture was performed. No cells found in cerebrospinal fluid (CSF), CSF glucose:60 mg/dL. CSF protein : 115.4 (20–40). The patient was diagnosed with MFS due to precence of albuminocytologic dissosiation and EMG findings. On the third day of the patients internation 1 g/kg/day (2 days) IVIG treatment has been started. On day 15 she started to gain her muscle strength back. On third week her orbital findings were completely resolved. On forth week ataxic gait decreased and the patient has been externated with complete recovery without any sequele.

Conclusion: MFS is a rare disorder. With early diagnosis and treatment, prognosis of the disease is good. We want to express the efficacy and results of IVIG treatment in this disorder.

**PP052**

**WITHDRAWN**

**PP053**

**ATYPICAL 'MILD' NON-KETOTIC HYPERGLYCINAEMIA IN SIBLINGS**

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Background: Nonketotic hyperglycinemia (NKH) is a rare recessive inborn error of glycine catabolism that characteristically results in a clinical picture of neonatal hypotonia, refractory neonatal seizures and death in early infancy. Milder 'non-fatal' phenotypes presenting with developmental delay and hypotonia are occasionally encountered. Diagnosis is established by measuring the CSF: plasma glycine ratio. Molecular characterisation is

 

possible. We report our experience of this condition in two sisters from infancy to adulthood.

Purpose: To describe the clinical, biochemical and molecular findings in two siblings with atypical NKH.

Materials and methods: Clinical presentation, neurological examination, neuroradiological findings, natural history including outcome in adulthood and genotype of two Irish sisters (aged 21 and 31 years) with atypical NKH are described.

Results: A neonate presented with a history of poor head control associated with poor feeding. Neurological examination revealed truncal hypotonia and visual inattention. Brain imaging was normal. Her plasma and urine glycine levels were noted to be elevated along with her CSF : plasma glycine ratio (0.07). Her developmental milestones in the first 2 years of life were mildly delayed. Her 11 years old sister had a similar history of poor feeding at birth and was noted to have developmental delay (walked at 22 months, few words at 4 years) primarily affecting her speech.

Mutation analysis on both girls identified two missense mutations on exon 10 (L4221) and exon 23 (V905G) of the GLDC gene. Both girls have learning difficulties with occasional behavioural disturbances and in adulthood have required the care of a psychiatrist (deliberate self-harm, depression, psychosis). Tremor and co-ordination difficulties are significant clinical features of their phenotype. A seizure disorder is absent. Both enjoy good general medical health.

Conclusion: A mild form of NKH compatible with long-term survival exists. This diagnosis should be considered in children presenting with developmental delay/hypotonia and appropriate investigation/counselling implemented.

### PP054

### HOSPITALIZED WITH UPPER RESPIRATORY SYSTEM'S INFECTIONS PEDIATRIC PATIENTS – 3 YEARS STUDY

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Introduction: Upper respiratory's infections are a common cause of children's hospitalisation.

Purpose: Retrospective study of our institution's hospitalized patients with upper respiratory diseases.

Material: Our study's material comprises 958 children (536 boys, 422 girls) 1–12 years old.

Methods: We recorded, from our patients' nursing files, their sex, age, the sequence of appearance of symptoms such as fever, rhinitis, sore throat, earache, cough. The symptoms were classified in diagnostic groups as tonsillitis, acute otitis media, cervical adenopathy, sinusitis, mastoeiditis, laryngitis. Comparative study of febrile and non-febrile respiratory's infections was made and we evaluated the data.

Results: Nine hundred and fifity eight pediatric patients, with average age 5.5 years, were hospitalized the years 2007–2009 with upper respiratory system's infections (out of 3683 hospitalisations at the same period). Three hundred and eighty-six (40.3%) children (202 boys, 184 girls) suffered from quinsy, 361 (37.7%) children (196 boys, 165 girls) from acute otitis media,48 (5%) children (27 boys, 21 girls) from cervical adenopathy, seven (0.7%) children (five boys, two girls) from mastoeiditis, 13 (1.4%) children (seven boys, six girls) from sinusitis,143 (15%) children (99 boys, 44 girls) from laryngitis. Febrile upper respiratory's diseases appeared at 68.6% of study's children.

Conclusions: (i) Quinsy, acute otitis media and laryngitis are the commonest causes of young patients' hospitalisation, with boys' predominance. (ii) Febrile diseases outnumber non-febrile. (iii) Upper respiratory system's infections constitute a significant proportion of hospitalisations. Therefore, hygiene's compliance and promiscuity's avoidance for children at risk of getting sick are imperative measures for infections' prevention.

### PP055

### NEW TECHNOLOGIES OF SKIN CARE OF NEWBORN BABIES

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Introduction: The skin condition is an indicator of health of an organism of the child and demands the same attention as other organs. In case of serious illness or birth of premature children, demanding their nursing in incubators the problem of skin care gets a high actuality.

Purpose: To estimate efficiency, tolerance and safety of skin care means for newborn children in conditions of incubators.

Material: Twenty-five newborns, (18 of them premature, gestational age of 32–36 weeks), were under observation all period of their nursing in incubator from 2 till 18 days. The age of children at the moment of prescription of skin care means was $5 \pm 2.8$ days.

Methods: It was conducted clinical research of efficiency (based on reduction of the area of defeated skin, dryness, reddening, anxiety, sleep disturbance), tolerance (based on opinion of doctors and parents); safety (based on an estimation of unwanted side effects), cosmetic characteristics (ease of washing off, absorption, a smell) of a new skin care mean: the cleansing liquid 'Stelatopia' for the newborn child.

Results: By means of 'Stelatopia', in conditions of incubator realized functions of «washing and bathing», cleansing without water, including moistening and skin care. No one of patients complained on allergy reactions, extension of skin irritation, and development of dryness. Doctors and parents noticed tolerance and absence of unwanted side effects, good organoleptic characteristics of 'Stelatopia'.

Conclusions: Use of skin care 'Stelatopia', will allow to reduce damages of wholeness of coverlet and thus to prevent a number of heavy infectious complications especially at the most vulnerable contingent of newborns – prematurely born and critically sick babies, and considerably raise quality of life of children.

### PP056

### ABDOMINAL PAIN: MORE THAN EYE CAN SEE!

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Introduction: Tuberous Sclerosis is a rare mucocutaneous disease (incidence 1 : 5000–10 000), characterized by the presence of hamartomas in multiple organs. Only 1/3 of the cases are inherited, the majority are due to spontaneous mutations or mosaicism. Diagnosis is based on clinical criteria. It has a broad spectrum of clinical presentation with major features involving mainly the central nervous system, skin, eye, kidney and heart. The clinical course depends on the location and rate of development of the hamartomas.

Case report: A 15 year old adolescent, female, originally from Guinea-Bissau, was admitted to our emergency department with sudden post-exercise abdominal and lumbar pain, without a history of major trauma. Her past medical background and family history were irrelevant, including her developmental milestones.

The physical examination showed papular facial lesions, a hypopigmentated lumbar macula and an abdominal pain in the lower quadrants.

Abdominal ultrasound revealed hypoecogenic hepatic and renal lesions, one with an intraluminal haemorrhage that was assumed to be the cause of the sudden abdominal pain. CT showed that hepatic and renal lesions corresponded to angiomyolipomas. To complete the investigation she had a MR-CE that showed subcortical tubers, various subependimal lesions and a giant cell astrocytoma located near the Monro's foramen, without any signs of hidrocephaly. The EEG showed no pathological activity.

At this point she had five major criteria for tuberous sclerosis.

She was discharged without medication and has regular follow-ups. To date she hasn't presented any neurological symptoms or any alteration in her psycho-intellectual development.

Conclusion: ST has a broad clinical spectrum, ranging from asymptomatic for many years to highly symptomatic with refractory epilepsy, delayed development and behavioural changes. Its diagnosis and close follow-up monitoring are crucial to avoid and appropriately treat potential complications.

### PP057

### PERI-OPERATIVE MANAGEMENT OF ICD IMPLANTATION IN A CHILD WITH LONG QT SYNDROME

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For patients with prolonged QT syndrome, who have survived or are at risk of lethal arrhythmias, ICD (Implantable cardiovertor defibrillator) implantation is undeniably the most effective way to prevent arrhythmic death. However, the risks of complications inherent in this procedure, which are especially common and troublesome in patients undergoing ICD implantation at a young age, are not always appreciated. ICD implantation, as an open surgical procedure, is performed under general anaesthesia; involving a multi-disciplinary team of cardiothoracic surgeon, cardiologist, anaesthetist and device specialists. Sub-specialty care is further required for the paediatric patient.

We present the peri-operative challenges and management of ICD implantation in a 6 year old child with recurrent episodes of ventricular fibrillation and torsades de pointes, due to Long QT syndrome. Pre-operatively, the child was monitored in the intensive care unit with invasive blood pressure monitoring, continuous electrocardiogram and defibrillation pads applied at all times. Beta-blocker therapy was continued, with the risk of intra-operative bradycardia and refractory hypotension kept in mind. Normal electrolyte levels was ensured. We found a premedicative dose of IV MgSo4 30 mg/kg bolus given on call to the operating theatre useful, as it could prevent Torsades and had slight sedative/anxiolytic effects. Intra-operative goal was to avoid tachycardia and sympathetic stimulation. Hence, adequate analgesia and anaesthesia was ensured, avoiding drugs such as IV ketamine, pancuronium. Propofol and isoflurane were suitable anaesthetic agents.

A left thoracotomy incision was performed to create a subcutaneous track to place the defibrillating lead, followed by a lower median sternotomy to place the epicardial leads, before finally creating an anterior abdominal wall pocket for the 'ICD can'. VF was induced by R-on-T and successful cardioversion achieved with 15J. Her post-operative course was complicated by a pericardial effusion, which was treated with open drainage and intravenous antibiotics.

**PP058**

## WHEN GENES ARE IMPORTANT....TWINS CASE REPORT

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The genetic predisposition for Celiac Disease (CD) is known since 1970, having been shown an increase of its incidence in patients'relatives. Several studies describe more than 70% concordance in monozygotic twins and incidence of 10–15% among first-degree relatives.

The authors describe a case of two pairs of twins, one at them was monozygotic and the other dizygotic, both with different clinical presentation of CD.

The first pair of monozygotic twins was submitted to medical care at the age of 19 months because of poor weight gain. The physical examination showed an abdominal distension and weight at $P < 5$. Both had anti-transglutaminase antibodies positive. Underwent upper endoscopy (UE) with duodenal biopsy revealed histologically a MARSH3. Subsequently, in both patients the genotyping identified HLA DQ8.

What concerns of the second pair of twins, the second twin was referred for medical care at the age of 14 months because of psychomotor development delay. Because of pallor and serious microcytic hypocromic anemia associated to high consumption of dairy products, the first twin was summoned to medical care. He was also pallid and had microcytic hypocromic anemia. This second pair of twins was submitted to celiac disease screening. The second twin was positive and afterwards submitted to UE. The duodenal biopsy was consistant with CD (MARSH3). The first twin has showed negative serological studies until now. Both await HLA genotyping, together with their other three brothers.

The importance of the research of this disease in close relatives to individuals with CD, either symptomatic or asymptomatic, is significant, due to the fact that if it's not properly treated with a gluten-free diet, it may have an increased incidence of malignant diseases, along with other complications.

**PP059**

## TWO CASES REPORT OF ARTERIOVENOUS FISTULA: A COMPLICATION OF TEMPORARY HEMODIALYSIS CATHETER

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Introduction: The use of jugular temporary catheters as vascular access for hemodialysis, entails a risk of various complications. The most frequent problems are the arterial puncture and haematoma. We describe two cases of AVF between superior cava vein and the Aortic arch artery. And second case arteriovenous fistula (AVF) creation between superior cava vein almost at its junction with innominate vein with aneurysm sac and the right internal mammary artery.

Purpose: We describe two cases of arteriovenous fistulas following the insertion of a double-lumen catheter for hemodialysis access.

Material and methods: A female patient was 8 years old with a diagnosis of ESRD and placement central catheter was placed in the internal jugular vein after placement with severe arterial hypertension with continuous murmur high right parasternal and suprasternal with irradiation vertical thrill supraesternal, cardiac catheterization is performed to systemic arteriovenous fistula of the aortic arch born immediately before the origin of the brachiocephalic trunk with horizontal path to address the superior vena cava at its junction with the innominate vein, correction is performed by placing Meyer Flipper coil in proper position no residual shunt. The second case 17 year old male with ESRD with blow after central catheter placement with high right parasternal systolic murmur, echocardiography vertical irradiation arteriovenous fistula of the right internal mammary artery to superior vena cava at its junction with innominate vein sac aneurysm, correction is performed with the placement of Amplatzer plug device II 14 mm and deployed two discs in the right internal mammary artery.

Conclusions: The usual immediate complications after implantation a temporary catheter for hemodialysis level of the jugular vein are the hematoma, puncture carotid artery and pneumothorax. Among the complications immediate highlight unusual syndrome superior vena cava, phrenic nerve injury, etc. However, the FAV potentially serious complications, which constitute a therapeutic and diagnostic challenge for the nephrologists.

**PP060**

## WITHDRAWN

**PP061**

## REMEMBER ACHALASIA – REPORT OF TWO TEENAGERS

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Introduction: Achalasia affects 1 : 100 000 people and fewer than 5% are children. Idiopathic achalasia is characterized by a hypertensive lower esophageal sphincter (LES) unable to relax and esophageal aperistalsis due to loss of neurons in the myenteric plexus. Current evidence suggests that neuronal degeneration, viral infection, genetic

inheritance and autoimmune disease may cause the destruction of myenteric ganglion cells.

Purpose: To report two cases of esophageal achalasia, describing the clinical course, diagnosis and management based on the patient's clinical files.

Case reports: A 15-year-old female and a 14-year-old male presented with progressive dysphagia, initially for solids and later for liquids, frequent vomiting, dry nocturnal cough and weight loss. The duration of symptoms prior to diagnosis was 23 and 8 months respectively. Both were initially diagnosed with a psychological eating disorder. Achalasia was suggested from chest X-ray, barium esophagram, and upper endoscopy. Manometry in the female patient confirmed esophageal aperistalsis with impaired LES relaxation. The second case had a long and narrowed lower esophageal segment and manometry was not possible. A gastroesophageal junction magnetic resonance imaging was performed to exclude other diseases. Nifedipine was initially used, with slight improvement. Surgery with Heller's miotomy combined with an antireflux procedure was performed in both cases. Laparoscopy with anterior fundoplication (Thal and Dor) was used in one case, and open surgery with Nissen's procedure was used in the other, both with a successful recovery.

Comments: Esophageal achalasia is a rare disease in childhood. In adolescents the clinical presentation may be mistaken with psychological eating disorders, causing a delay in diagnosis as in our patients. If symptoms persist, particularly weight loss, exclusion of an organic disease is mandatory. The gold-standard for an accurate diagnosis is the esophageal manometry. Currently, the surgical myotomy with an antireflux procedure is the treatment of choice.

**PP062**

**WITHDRAWN**

**PP063**

**WITHDRAWN**

**PP064**

**WITHDRAWN**

**PP065**

## CARCINOID TUMOR IN MECKEL'S DIVERTICULUM: REPORT OF A CASE IN CHILDHOOD

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Introduction: Meckel's diverticulum is a very common congenital anomaly of small intestine. Its annual prevalence in general population is estimated at 1–3%.

Purpose: The report of a rare case of carcinoid cancer located in the Meckel's diverticula. The disease involved a paediatric patient.

Material and methods: A 5 year old boy was brought to our clinic, by his parents, complaining of intense abdominal pain of lower right quadrant. Boy's ill appearance, the findings of clinical examination and laboratory testing-elevated count of White Blood Cells-that resembled clinical manifestations of acute appendicitis lead to a surgical operation.

Results: The operation revealed an inflammatory diverticulum of Meckel. Therefore, it was resected and histologically examined. The pathological and immunohistochemical examination of the specimen diagnosed a carcinoid neoplasm.

Conclusions: Cancer of Meckel's diverticula is a very rare entity, estimated to 0.5–1.9% of the amount of the described complications that can be identified in this region. The usual complication at Meckel's diverticula are hemorrhage, inflammation, obstruction. According to current data, carcinoid tumor located in Meckel's diverticulum, in childhood, is undoubtably a very rare finding.

**PP066**

## SUBMANDIBULAR ADENOMEGALY – KIMURA DISEASE, A RARE CAUSE TO CONSIDER

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Introduction: Kimura disease is a rare chronic inflammatory disease of unknown aetiology, more frequent in Asian young adult males. It presents as a painless subcutaneous mass in the head or neck, blood and tissue eosinophilia and elevation of serum IgE. On histological examination a lymph node with follicular hyperplasia, vascular proliferation, endothelial hyperplasia of post-capillary venules and pronounced eosinophils' infiltration is usually found.

Case Report: A 4-year-old boy, previously healthy, admitted with a painless submandibular mass, with no inflammatory signs. Cervical ultrasound showed an adenopathy in the submandibular gland substance. Blood analysis revealed normal white blood count, hepatic and renal function and no inflammatory parameters. Amoxicillin with clavulanic acid and ibuprofen were administered for 8 days, with no improvement. Serology and molecular biology study for CMV, Parvovirus-B19, EBV, HSV-1/2, rubella and toxoplasmosis only showed EBV prior infection. Considering the possibility of a neoplasic lesion, needle aspiration biopsy was performed. Immunophenotyping revealed the presence of a polyclonal population of

 

B lymphoid cells, but the material for cytological smears was insufficient to establish a diagnosis or to rule out Hodgkin's lymphoma. Excisional biopsy of the tumour was then performed and showed lymph nodes with peri-adenitis and reactive lymphoid follicles, with extensive eosinophils' infiltration and vascular proliferation, without Hodgkin's or Langerhans' cells. These results raised the possibility of Kimura disease and a serum IgE determination performed revealed elevated levels.

Discussion: The presumptive diagnosis in this case report is based on the presence of a cervical lymph node, histologically consistent with Kimura disease, associated with elevated serum IgE in the absence of peripheral eosinophilia, a situation already described in previous cases. Kimura disease can mimic a neoplasm, as in this case. Although rare, it should be considered in differential diagnosis of a cervical lymph node with eosinophils' infiltration and prominent follicular hyperplasia.

Key words: Kimura disease, Cervical adenomegaly, eosinophilia.

## PP067

## EFFECT OF TENDON LENGTHENING SURGERY ON MUSCLE TONE IN CHILDREN WITH CEREBRAL PALSY

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The objective of this study is to determine if surgical lengthening of the hamstrings and gastrocnemius/Achilles complex, affect muscle tone in patients with cerebral palsy. The question is if the dynamic component of muscle length changes after orthopedic surgery. A retrospective study was performed on ambulatory children with cerebral palsy who underwent either hamstring lengthening or gastrocnemius/Achilles tendon lengthening.

A total of 135 consecutive patients with an average age of 13 years were included in the study. A single random side was selected for children with bilateral surgery and the affected limp was analyzed for those undergoing unilateral surgery. The popliteal angle was performed with a quick and slow stretch, as well as, the ankle dorsiflexion, and measured with a goniometer.

The difference between initial grab with fast stretch, and end of range with slow stretch was used as a measure of spasticity. The Bohanon modification of the Ashworth score was also assessed.

18̊ popliteal angle improvement in end of range and 32̊improvement in quick stretch in the hamstrings group were noticed postoperatively, with change in slow stretch, quick stretch and $\Delta$ mL (comparison between quick and slow stretch) being significant at $P < 0.0001$. In the triceps surae group, 14̊ ankle dorsiflexion improvement in end of range, and 18̊ improvement in quick stretch were noticed postoperatively, with change in slow stretch, quick stretch and $\Delta$ mL at $P < 0.0001$, $P < 0.0001$, and $P < 0.0180$ respectively.

As worth scale was reduced by at least one grade in 89% of subjects in the hamstring group and 78% of subjects in the triceps surae group of the children with preoperative Asworth three and above. We concluded that significant decreases in spasticity were observed following tendon lengthening in children with cerebral palsy and that the orthopedic surgery can affect both static and dynamic components of muscle tightness in these children.

## PP068

## BREAST FEEDING- RELATED WITH ANXIETY AND OTHER SOCIAL FACTORS

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Purpose: The aim of our research was to examine: (i) The rate and duration of breastfeeding infants, born at our hospital, (ii) The factors that played a positive or negative role in the process and duration of breastfeeding.

Material and methods: One hundred and ninety-six mothers who delivered an infant at our hospital during 2003–2004 and answered: (i) A questionnaire of 21 questions related to demographics and (ii) 20 questions on a questionnaire of stress STAI-Greek version, form Y-1 (STATE-TRAIT ANXIETY INVENTOR) during the second and third day after the birth. There was a telephone contact and a follow up 6 months after they gave birth to their children. The statistical analysis was done with the program SPSS 11.5 WINDOWS.

Results: Out of the 196 mothers (average 26 ± 6 years old) 39.8% gave birth to their first child, 42.9% the second, 14.3% the third one and 3% the forth or more. 55.7% of the women gave had a normal labour and 43.3% had a caesarean section. Full-term infants: 96.9% and preterm <26 weeks: 3.1%.

Educational level of mothers: secondary education: 55%, higher: 12%, University: 8%, no education at all: 25%. Working women were 26%.

The 83.7% of them answered they wanted to breastfeed, the 16.3% refused to (for health reasons, abnormal nipple, breastfeeding is considered 'old-fashioned,' boring 'or' painful '). Breastfed: 32% a few days, 1 month 19%, 17% 3 months, 6 months 15%.

Motivating factors were thought to be: the midwife, the doctor, the desire of the mother. The reasons they wanted to breastfeed were the health of the baby-73%, the health of their own-10%, financial reasons- 3%. Formula milk was granted as a supplement during: the 1st month-74%, 3rd month, 25% in 6 months 14%. Most of the mothers that breastfed until the sixth month, were those who exclusively breastfed ($P = 0.000$). Mothers who were highly stressed, breastfed less, with a statistically significant difference.

($P = 0.002$), but there was no difference in duration of breastfeeding by women with less anxiety.

Correlation with ethnicity: 73% of the Greek women breastfed, 27% of the foreign women and gypsy ones -12% ($P = 0.0002$). There was no correlation with education, type of birth, number of previous children, whether they are working or not.

Conclusion: (i) The rate of breastfeeding in the hospital is very low and the practice should be intensified. (ii) Constant encouragement of the nursing mother emotionally and practically is required, with the perspective of reducing emotional stress. (iii) Giving formula milk affects the process of breastfeeding negatively.

### PP069

### WITHDRAWN

### PP070

### WITHDRAWN

### PP071

### HOW PARENTS AND TEACHERS PERCEIVE CHILD DEVELOPMENT

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Introduction: According to WHO, the worldwide prevalence of developmental, mental and behavioral disorders in childhood and adolescence is 10–20%. In Brazil, a national survey conducted in 2008 found 5 million children between 6 and 17 years old with symptoms of mental disorders. However, only 30% of delayed development is diagnosed in primary care. Several authors described that parents and teachers are accurate in identifying children at risk of developmental delay.

Purpose: To understand how parents and teachers assess children's development.

Methods: This was a descriptive study that used qualitative methodology in order to obtain and analyze parents' and teachers' perception of the children's developmental status. A group of 220 3–6 years old children attending a public kindergarden was evaluated by a physician using the Denver II Test. 10 children with suspected delayed development and 10 children with no delay were randomly selected. The 20 parents and the 10 teachers of these children were individually interviewed and audio recorded. The discourses obtained were analyzed using exploratory technique.

Results: Parents used as reference to assess their children how these performed daily activities and played among other children while teachers compared how their students were learning, executing or developing languague skills in relation to each other. All the children with suspected delayed development elicited parents' and teachers' concerns. Regarding the type of concern reported by parents there was a predominance of complaints relating to fine motor skills and overall performance. In contrast, teachers were more worried whether the children were acquiring the necessary competences that would ensure school entry and later literacy, such as overall school performance and language skills.

Conclusion: Both parents and teachers were able to discriminate between children at risk and no risk for developmental delay. They assess the children using different frameworks and references.

### PP072

### HOW TO COPE WITH A SEVERE SKELETAL DYSPLASIA

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Introduction: Thanatophoric dysplasia (TD) is a lethal chondrodysplasia.

Purpose: We want to present a TD I clinical case in order to better manage this condition both on the medical and parental point of view.

Material and methods: We present the clinical findings and imaging studies of a baby girl with this severe skeletal disorder.

Results: We report the case of a patient with TD, due to a *de novo* heterozygous *Arg248Cys* FGFR3 mutation. Pregnancy was characterized by polyhydramnios, recognition of macrocephaly, thorax and limbs hypoplasia, but parents refused any further diagnosis and wanted to carry on the pregnancy; the only suggestion they accepted was to give birth the baby in third level hospital.

At 37 + 2 week G.E. the baby was born through a caesarean section; birth weight was 2800 g, lenght 50 cm, OFC 38 cm. The baby girl presented macrocephaly, with $6 \times 5$ cm anterior fontanel, full forehead, low nasal bridge, bulging eyes, small facies, short ribs, narrow thorax, micromelia with bowed femurs and brachydactyly and redundant skin folds along the limbs. Babygram showed large cranium and fontanel, short flat vertebrae with wide intervertebral disk space, small square scapulae, square short pelvis with medial spurs. From birth the advanced life care was a necessary support to manage the parents' wishes for provision of comfort-care for the newborn in order to lead her to gradual death. At 9 days she died of respiratory insufficiency. Post mortem measurement showed a 31 cm thoracic diameter, a 34 cm crown-rump length, 6.5 cm foot length, 34.5 cm, addominal circumference, 4.6 cm femur

 

length, 4.4 cm Homerus length and 11 cm rump- feet length.

Conclusions: Our patient rapresent a classical TDI form, associated with short and 'french telephone receiver' shaped femurs, platyspondyly, bell shaped thorax, relative macrocephaly whit frontal bossing, caused by a common genetic mutation for TDI, in comparison with TDII that is characterized by straight femurs and cloverleaf skull deformity and a Lys650Glu mutation of FGFR3. Prenatal and postnatal management of many severe skeletal dysplasia must focus on the difficulty for the parents to accept a troublesome baby but at the same time to accept to terminate the pregnancy. In our patient case, effort were made to avoid pregnancy complication and to give the necessary neonatal support. Genetic counselling was provided and, in spite of the theoretical risk of germinal mosaicism, risk of recurrence was classified not significantly increased over that of the general population.

## PP073

## SUPERIORITY OF DESMOPRESSIN AS ORAL LYOPHYLISATE TO THE TABLET IN CHILDREN WITH NOCTURNAL ENURESIS

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Desmopressin nasal spray 20 $\mu$g, tablet 200 $\mu$g or melt 120 $\mu$g are considered bioequivalent, although comparative pharmacokinetic and dynamic studies in children are lacking. The spray has recently been withdrawn from the market for the indication of nocturnal enuresis for safety-reasons. But the switch to the tablet resulted in lower response rates in some patients. There are several clinical indices that the child friendly melt formulation might be superior to the tablet, but comparative studies are lacking.

The aim of the study was to document the pharamcodynamic superiority of the melt to the tablet.

Design of the study: Pharmacodynamic study of desmopressin as oral tablet 200 $\mu$g (test 1) and melt 120 $\mu$g (test 2) in association with a standardised meal, after an oral water load (15 mL/kg) to obtain maximal diluting capacity. Nineteen children, age 12.1 SD 2.5 years) were eligible for the study.

Compared to the higher 200 $\mu$g desmopressin dose as tablet, the 120 $\mu$g melt formulation shows significantly lower diuresis-rate is, while urinary osmolality and creatinine as parameters of concentrating capacity were higher ($P < 0.05$). In 25% of patients the response is earlier, during the plateau-phase 2–5 h concentrating capacity is higher, and the duration of action is significantly longer, while smaller standard deviations in diuresis rate are remarkable in the early phase. No significant differences were identified in mean serum sodium neither before and 6 h after desmopressin administration nor between different formulations (140 vs. 138 mmol/L (tablet), 140 vs. 139 mmol/L (MELT)). No serious adverse events occurred.

Conclusion: This is the first paired study, demonstrating the superiority of the oral lyophylisatedesmopressin (melt) to the tablet, despite the lower dosing, reaching significance for duration of action, but also for a shorter time to reach maximal antidiuresis, and a higher concentrating capacity. These results can only be explained by superior pharmacokinetic characteristics.

## PP074

## IS OBESITY A RISK FACTOR FOR PROTEINURIA IN EARLY CHILDREN?

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Introduction: The Framingham Heart Study demonstrated that obesity is an important risk factor for hypertension and chronic renal disease (CKD) in adult. Similar results were reported in young adult.

Purpose: Since no studies analysed the correlation between obesity and proteinuria in early children, we carried out an observational study on children aged 6–12 years.

Materials: From November 2007 to April 2008, we enrolled all children from public primary schools in San Marco in Lamis (Foggia – Italy) on a voluntary basis.

Methods: All patients underwent blood pressure measurement(s), height and weight measurement, body max index calculation and proteinuria microtest at the enrollement and after 1 year.

Comparisons were considered significant if $P < 0.05$.

Results: Five hundred and sixteen children aged 6–12 years were enrolled. 115 (22.3%) were obese, 96 (18.6%) hypertensive and 52 (10%) had positive micro test. Obese patients had significantly higher prevalence of hypertension and lower prevalence of proteinuria. Children with positive microtest had a significantly lower BMI than children with negative microtest ($17.5 \pm 3.68$ vs. $19.1 \pm 5.5$; $P = 0.03$), without significant differences in both systolic and diastolic blood pressure levels. At the 1-year follow-up the percentage of children with positive microtest was reduced (from 10% of baseline to 5.2%). The children whose basal positive microtest was become negative after 1 year showed also a significant increase of BMI, but no significant modification in systolic and diastolic blood pressure.

Conclusion: Our study confirms that early children with higher BMI have a major risk of hypertension, but do not support the hypothesis that obesity is a risk factor for renal disease in early children as previously reported in adults.

Since the percentage of children with proteinuria significantly decreased after 1 year, greater caution is probably

necessary to evaluate proteinuria as a negative prognostic finding in this group of patients.

**PP075**

## VOIDING UROSONOGRAPHY: THE BEST IMAGING STUDY FOR OBSTRUCTIVE URETHRAL PATHOLOGY IN BOYS

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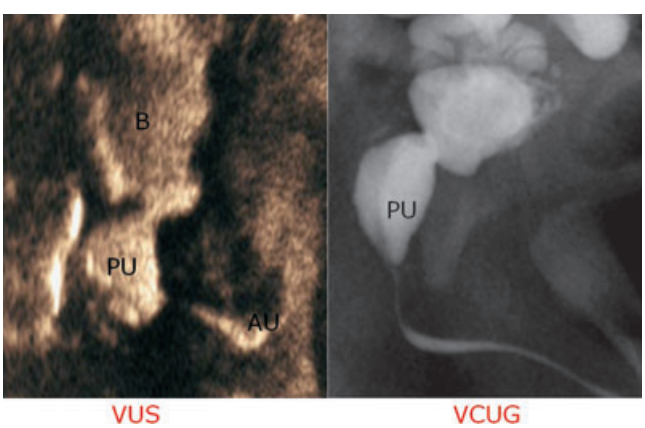
Introduction: Voiding urosonography (VUS) has recently demostrated being a good technique for the study of the urethra.

Purpose: To assess the usefulness of VUS for the evaluation of the upper urinary tract and urethra, in particular for the diagnosis and characterization of posterior urethral valves (PUV) – and subtypes – and anterior urethral valves (AUV).




Material and methods: From October 2005 through April 2009, we performed 667 contrast-enhanced VUS examinations (450 boys) using a multifrequency convex transducer to study the entire urinary tract, including the urethra. To perform VUS we used a specific harmonic imaging mode and administered a galactose-based contrast agent.

Results: We found six cases of urethral obstructive pathology in boys (1.81%). Of these, five patients presenting prenatal oligohydramnios and hydronephrosis were studied 2 days after birth and diagnosed with PUVs. In these five patients, VUS found thickening and diverticula of bladder walls and posterior urethral dilatation. In four cases a poor distension of the valve area were observed (PUV type I) while in the fifth a transitory dilatation of the valve area appeared (PUV type III). In the other case (a 7-year-old boy finally diagnosed with AUV), VUS performed for difficulty in urinating found an abrupt change in the width (with proximal dilatation) of the pendulous urethra, secondary to a valve seen as a linear filling defect along the ventral wall. These findings were confirmed with VCUG and after surgery in five patients. One case, a boy with Prune-Belly syndrome was lost to follow-up.

Vesicoureteral reflux was detected in 4 of the 5 patients with PUVs.

Conclusions: VUS can replace VCUG for the diagnosis, characterization and postoperative follow-up of obstructive urethral pathology and thus obviate irradiation of the patient's pelvis and gonads.

# THEME: GENETICS

## PP076

### CYSTIC FIBROSIS MUTATIONS IN CHILDREN FROM MOLDOVA

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Actuality: Determine the incidence of cystic fibrosis (CF) in Moldova in the absence of neonatal screening is difficult. There are 62 children with the confirmed diagnosis of CF in Clinic of Pediatric Pneumology from Moldova.

Aim: To evaluate genetic profile and clinical characteristic in children with CF from Moldova.

Materials and methods: This study included 34 boys, 28 girls with CF, age variety from 11 month to 23 years. Genetic examination was performed in children and their parents by AND identification with PCR method of 4–8 mutations of CFTR gene (F508del, R334W, N1303, G551D, R347P, R553X, R117H, W1282X and G542X). The explorative program for children with CF includes: sweat test, pulmonary investigations (chest radiology, schintigraphy, spirometry, spiral CT), bacteriological assay, nutritional state and digestive problems evaluation.

Results: Genetic examine allowed the determination of CFTR mutations in 54.84% cases. Identification of both mutations responsible for CF was possible in 25.8% cases, including 19.35% homozygous by F508del mutation and 6.45% heterozygous composite (128 + 1G>A/1677delTA, F508del/185 + 1G>T, G542X/N1303K, F508del/296 + 1G>C). Other revealed mutations in heterozygous form: 25.8% cases – F508del mutation, one case – 3849 + 10kbC>T. The mean age of cystic fibrosis diagnostic is 2.5 years. *P. aeruginosa* was isolated in 41.93% cases, including 29.03% in children with F508del mutation.

Conclusion: There is a dominance of F508del CFTR mutation in children with cystic fibrosis from Moldova. Bronchopulmonary impaired by chronic infection with *P. aeruginosa* in 69.23% cases were identified in patients with the F508del mutation.

## PP077

### DIAGNOSIS OF FAMILIAL DYSAUTONOMIA IN THE UK: THE NEED FOR INCREASED AWARNESS

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Introduction: Familial dysautonomia (FD) is a disabling autosomal recessive disorder that affects Ashkenazi Jews. The diagnosis of FD requires awareness of typical clinical features (e.g. hypotonia, difficulty feeding, vomiting, aspiration pneumonia, blood pressure instability, absence of tears) and genetic testing since 2001. In 2010, four patients with FD were diagnosed in the UK, of whom two were 6 years of age. Prior to 2010, there was an 11 year period when no new patients with FD were reported in the UK.

Purpose: To increase awareness of FD among physicians in the UK and to establish carrier screening programs.

Material and methods: The carrier frequency of the FD mutation in Ashkenazi Jews varies from 1 : 17 to 1 : 32 with a birth incidence of 1 : 3703. According to the 2001 population census, there were 266 740 Jews living in the UK and of those, 83.2% were born there. This probably underestimates the actual number as it is based on self-reporting. Moreover, it doesn't distinguish between Ashkenazi and Sephardic Jews or mixed marriages. It is estimated that 90% of Jews in the UK are Ashkenazi (i.e. 240 066 with 199 730 UK born).

Results: Based on the number of births and FD birth incidence, at least 54 affected patients should have been born in the UK, but since 1970 only 17 FD patients (including the recent four cases) were reported to Great Ormond Street Hospital and to the international FD NYU database.

Conclusion: The number of documented cases of FD is fewer than the estimated incidence, suggesting that FD may be misdiagnosed, unreported or both. Also, after 2001, an unknown number of pregnancies with affected fetuses may have been terminated. Increased awareness of FD is needed, because early diagnosis is crucial for their health. Carrier screening in the Ashkenazi-Jewish population will reduce the National Health Service financial burden.

**PP078**

## CYTOCHROME C OXIDASE DEFICIENCY IN CHILDHOOD

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Introduction: Mitochondrial disorders of energy metabolism represent heterogeneous group of diseases. Cytochrome c oxidase (COX) deficiency belongs to the most common mitochondrial disorders in childhood. COX is the terminal enzyme of the respiratory chain composed of mitochondrial and nuclear-encoded subunits. Due to the incidence, absence of therapy and serious social-economical consequences, elucidation of the molecular mechanisms of mitochondrial dysfunction is essential for diagnostics, prevention and development of future therapeutic protocols.

Purpose and material: The aim of the study was to analyze the clinical consequences and molecular basis in 107 children with COX deficiency.

Methods: Enzymatic activities were measured spectrophotometrically. Amounts and protein composition was studied by BN-PAGE western blotting. DNA sequencing and PCR-RFLP were used for molecular analyses.

Results: Encephalopathy was present in 90% of children, Leigh syndrome in 20%, cardiomyopathy in 23%. No mutations in COX structural genes were found. MtDNA mutations were present in seven patients with combined COX deficiency. In 51 children with isolated COX deficiency, *SURF1* mutations were found in 15/51 children, *SCO2* mutations in 12/51 and *SCO1* mutation in one. Mutations c.845_846delCT in *SURF1* and g.1541G > A in *SCO2* were prevalent. At biochemical level, SCO1, SCO2 and SURF1 deficiency was found to result in highly-tissue specific pattern of COX assembly impairment. In addition, moderate to profound decrease of total cellular copper was observed in all available muscle biopsies.

Conclusions: COX deficiency resulting from mutations in COX assembly factors Surf1 and Sco2 represents the most frequently recognized causes of isolated COX defects in childhood, at least in our population. The markedly reduced cellular copper levels of SCO1, SCO2 and SURF1 samples may indicate additional role of COX assembly proteins in copper homeostasis maintenance. The particular tissue-specific impact of SCO1, SCO2 and SURF1 deficiency suggests once again highly tissue-specific nature of respiratory chain biogenesis. *Supported by MSM 0021620806.*

 

# THEME: HAEMATOLOGY & ONCOLOGY

## PP079

### LANGERHANS CELL HISTIOCYTOSIS (LCH) IN CHILDREN: A SINGLE INSTITUTION EXPERIENCE

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Introduction: LCH is a rare disorder in childhood with unclear etiology and pathogenesis, which is characterized by abnormal clonal proliferation and accumulation of Langerhans cells at various tissue and organs. The clinical presentation of LCH is very heterogeneous, ranging from a single-system involvement, generally benign, to a multisystem life-threatening disease.

Purpose: To present epidemiological data, management and outcome of LCH.

Material and methods: Fifteen children with the diagnosis of LCH treated at a single Greek Pediatric Unit of Northern Greece from 1995 to 2010 were evaluated retrospectively for clinicopathological features, laboratory findings, treatment and long-term outcome.

Results: Median age at the time of diagnosis was 7 years (IR 2.5–10 years) and male/female ratio was 10/5. The most common complaint at presentation was bone lesion-related symptoms followed by recurrent otitis media. Ten patients had initially single-system and five had multisystem disease. Initial organ involvement included bone (60%), ear (20%), skin (13.3%), lung (13.3%) and diabetes insipidus (13.3%). Treatment consisted of surgery in seven pts, chemotherapy in three and combination of them in five pts. Chemotherapy regimen was based on LCHII or LCH III-protocol in nine pts, three of them received as relapse treatment 2-Chlorodeoxyadenosine (2CDA) and Cytarabine (Aracytin). In total, five children (33.3%) relapsed at a median time of 5 years after diagnosis. One patient with multisystem disease died in 2 months from diagnosis. Fourteen children are alive (OS 93.3%). Median duration of follow up was 11 years (range 5 months–15 years).

Conclusion: Due to the lack of understanding of the pathogenesis of LCH and to the limited number of epidemiological studies, optimal therapy remains a challenge.

## PP080

### THE MEASUREMENT OF SYMPTOMS IN CHILDREN WITH CANCER

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Introduction: Usage of high dosage chemotherapeutic medicine causes many symptoms and problems in children with cancer. Understanding symptom prevalence and characteristics in children with cancer is important to observe measurement of outcomes that reflect the impact of treatment and nursing care on patients and families.

Purpose: The purpose of this methodological study was to determine symptom prevalence, characteristics, and distress in children with cancer.

Material and method: The study is being carried out at Gulhane Military Medical Academy, Department of Pediatric Oncology between October 2008 and April 2009. The research sample is constituted of 56 children, 10–18 aged, who had received chemotherapy for cancer. Data is being collected by a descriptive questionnaire and Memorial Symptom Assessment Scale (MSAS 10–18) that has 30 items used to assess patients' symptom.

Results: The most prevalent symptom were lack of apetiate, nausea and alopecia. In the first month, the children with cancer experienced more symptoms than the later months.

Conclusion: The MSAS 10–18 and the other measures clearly demonstrate that children with cancer have a high prevalence of physical and psychological symptoms, and a high level of symptom distress. Pediatric nurses should know these symptoms and arrange the patients' care for them.

## PP081

### THE ART OF TIMING FOR DMSA STUDY FOR THE EVALUATION OF PATIENT OUTCOME AFTER URINARY TRACT INFECTION (UTI)

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Introduction: DMSA study is an established method for the assessment of renal sequeale after acute pyelonephritis related to febrile UTI. However, its prognostic value during the acute phase for the evaluation of the patient's outcome has not yet been well established.

Purpose: To evaluate the contribution of DMSA study during the febrile UTI for the prediction of the patient's outcome.

Material: Our study involved 67 children (three boys, 64 girls: 2 months–5 years). All children had positive suprabubic urine culture (94.5% *E. Coli*, 4% *Proteas mirabilis*, 1.5% *Klebsiela*) and received antiobiotic therapy. Direct

voiding cystography was performed after the acute phase for the detection of vesicoureteric reflux.

Nineteen children (28.3%) with abnormal DMSA study, VUR or recurrent UTI had control DMSA scan (6–8 months after UTI).

Methods: DMSA study was carried out during the acute phase of the UTI (first 4 days). Planar and pinhole scintigraphy was performed.

Results: DMSA study was normal during the acute phase in 48 children (71.7%). We did not effectuate DMSA follow up study in 30 of them because of a good clinical outcome (no VUR, no UTI recurrence). The rest (18) had normal DMSA follow up study.

Nineteen children (28.3%) who presented cortical lesions (focal or indinstinct margins) during febrile UTI underwent DMSA control study. Fifteen presented normal study. The rest four (6% of all) presented cortical lesions, one associated with high grade VUR.

Nineteen children were followed up by control DMSA and no significant correlation between initial and follow up study was observed.

Conclusions: We conclude that DMSA study performed during the acute (febrile) phase may not be a useful tool for the prediction of the children outcome. Control DMSA and cystography appears to be more useful for the detection and selection of patients at risk for future chronic cortical lesions development.

**PP082**

## ALLOIMMUNE THROMBOCYTOPENIA AND TWO PARADIGMATIC CASES

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Introduction: In fetal/ neonatal alloimmune thrombocytopenia (NAT) maternal sensitization occurs against a paternal antigen present in fetal platelets, usually HPA 1a. Its estimated incidence is one case in 800–1000 births. Most cases manifest as early isolated and severe thrombocytopenia. Intracranial haemorrhage (ICH), the most dangerous complication, dictates prognosis.

Purpose: To present two paradigmatic cases of NAT observed in the first semester of 2010 in a metropolitan area secondary hospital.

Clinical cases: Third child of a 37-year-old healthy woman, uneventful 39-week pregnancy, normal delivery and birth weight, no malformations. With 18 h of life the newborn presented generalised petechiae and bruises. Isolate Platelet count of 10 000/mm$^3$. No ICH, but deep bilateral retinal haemorrhages were found. The patient started compatible donor platelet transfusion and immunoglobulin. Strongly positive crossmatch between maternal serum and paternal platelets but negative antiplatelet antibodies on maternal serum – genotyping study revealed incompatibility anti HPA 1b. The newborn recovered from purpura in the sixth day of life and was discharged on the 27th with 163 000/mm$^3$ platelets.

The second case refers to the fourth son of a healthy 41-year-old ORh- woman, 39-week uneventful pregnancy, normal delivery and birth weight, no malformations. Newborn blood group ARh-, no isoimmunization. Platelet count was 32 000/mm$^3$ on the third day – no anaemia, leucopenia or infection parameters. Next day platelets felt to 23 000/mm$^3$. Positive crossmatch between mother and father and newborn antiplatelet antibodies were present. The newborn made one dose of immunoglobulin and platelet transfusion with platelet raising to 67 000/mm$^3$, stable until discharge on the 10th day.

Comments: NAT is the most important cause of severe thrombocytopenia in healthy newborns. Neither patients had ICH, but one had retinal haemorrhage: treatment must not be delayed, even in the absence of confirmatory tests.

**PP083**

**WITHDRAWN**

**PP084**

**WITHDRAWN**

**PP085**

**WITHDRAWN**

 

# THEME: INFECTIOUS DISEASES

## PP086

### SAFETY OF PROCALCITONIN LEVEL OF <0.25 NG/ML AS CUT-OFF FOR WITHOLDING ANTIBIOTICS IN CHILDREN WITH SUSPECTED VIRAL INFECTION

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Introduction: Previous studies in adults with respiratory tract infections have demonstrated that a procalcitonin level of <0.25 ng/mL on admission could be used as a cut off for with holding antibiotics. With this cut off there was noted to be a reduction in antibiotic use and duration.

Purpose: To demonstrate the safety of a procalcitonin level of <0.25 ng/mL as a cut-off in paediatric patients admitted with suspected viral infection.

Material: Children assessed in hospital for suspected viral bronchiolitis or influenza during November and December 2009.

Methods: Retrospective analysis of clinical management and microbiology results in children who had a procalcitonin level determined on admission.

Results: A total of 64 children were included. 37/64 (57%) had a procalcitonin level <0.25 ng/mL. 11/37 (29%) patients with procalcitonin <0.25 ng/mL had an identifiable viral infection (eight RSV, three influenza) isolated from nasopharygeal aspirate or throat swabs and none bacteria isolated from throat swabs or blood cultures. 4/27 (15%) patients with procalcitonin ≥0.25 ng/mL had viruses (three RSV, one influenza) isolated and a further 3/27 (11%) had a serious bacterial infection (one Neisseria meningitidis on PCR, one group A streptococcal meningitis, one *E. coli* pyelonephritis). 8/37 (21%) patients with PCT < 0.25 ng/mL had no antibiotics or antibiotics were discontinued within 48 h. In one patient with a history of <24 h of features of a viral upper respiratory tract infection there was a rise of procalcitonin levels from 0.07 ng/mL to 3.83 ng/mL within 17 h of the first blood sample.

Conclusions: No patient with a procalcitonin of <0.25 ng/mL had a proven bacterial infection. In one patient the PCT rose to a level compatible with a serious bacterial infection. Viral infection with RSV and influenza can be associated with PCT levels ≥0.25 ng/mL. Our study supports the adult finding in a paediatric population.

## PP087

### MODEL-BASED PROJECTIONS OF THE POPULATION-LEVEL IMPACT ON 19A INVASIVE PNEUMOCOCCAL DISEASE (IPD) OF SWITCHING PNEUMOCOCCAL CONJUGATE VACCINES (PCV) FROM PCV7 TO PCV13 AND SUBSEQUENTLY TO PHID-CV

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Introduction/purpose: In some countries, IPD due to serotype 19A has risen post-7-valent-PCV (PCV7)-introduction. Different PCVs [PCV7; pneumococcal non-typeable *Haemophilus influenzae* protein-D conjugate vaccine (PHiD-CV); 13-valent-PCV (PCV13)] will likely have different impacts on 19A-colonisation and disease due to differing vaccine characteristics (inclusion/exclusion of 19A; 19F-conjugation method). Modelling of IPD in US <2-year-olds projected relatively small vaccine-induced reductions in 19A-colonisation may produce much larger impacts on 19A-IPD.[1] The duration of PCV13 use needed to substantially lower 19A-IPD is unknown, as is the impact of subsequently introducing PHiD-CV. The published model[1] was used to project the population-level impact on 19A-IPD of switching from PCV7 to PCV13, then to PHiD-CV.

Materials/methods: Based on published data, 0% efficacy against 19A-colonisation was assumed for PCV7;[2] extrapolating from PCV7 impact against vaccine-serotype colonisation, 50% efficacy against 19A-colonisation was assumed for PCV13; based on experience with PCV7[2] and on the published model,[1] efficacy against 19A-IPD once colonised was assumed to be 45–50% (PCV7 and PHiD-CV), and 90% (PCV13). Impact of switching vaccines on 19A-IPD was projected for different switching times and different effects of PHiD-CV on 19A-colonisation.

Results: (i) Irrespective of 19A-IPD level at PCV13 introduction, PCV13 should cause 19A-IPD to fall below pre-PCV7-introduction levels within 2 years. (ii) After switching to PHiD-CV, the post-vaccination steady-state 19A-IPD level would remain at approximately pre-PCV7-introduction levels if PHiD-CV had a 15% effect and would be 3–4-fold lower with a 20% effect. An effect of 25–30% was projected to eliminate 19A-IPD, with little added benefit above 25%.

Conclusions: PCV13 was projected to reduce 19A-IPD within 2 years to levels below those seen prior to its rise. Subsequently switching to PHiD-CV could still maintain 19A-IPD at a low level, even when assuming only a 15–20% impact on colonisation; a ≥25% impact could eliminate 19A-IPD.

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**PP088**

## IMMUNOGENICITY AND SAFETY OF 13-VALENT PNEUMOCOCCAL CONJUGATE VACCINE GIVEN WITH ROUTINE PEDIATRIC VACCINES TO INFANTS IN KOREA

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Purpose: Immunogenicity and safety of 13-valent pneumococcal conjugate vaccine (PCV13; PCV7 serotypes 4, 6B, 9V, 14, 18C, 19F, 23F plus serotypes 1, 3, 5, 6A, 7F, 19A) compared with PCV7 when administered with routine pediatric vaccines was evaluated in infants in Korea.

Materials and methods: Healthy infants (n = 180) aged 2, 4, 6, and 12 months were randomly assigned (1 : 1) to receive PCV13 or PCV7. Diphtheria, tetanus, and acellular pertussis vaccine was given concurrently, inactivated poliovirus and *Haemophilus influenzae* type b vaccines were given 7–21 days after each infant-series dose, and hepatitis B vaccine was given 7–21 days after dose 3. Antipneumococcal immune responses were measured by ELISA 1 month after the infant series and toddler dose. Reactogenicity was monitored for 4 days after vaccination; adverse events were assessed throughout.

Results: After the infant series, percentage responders with serotype-specific anticapsular polysaccharide immunoglobulin G (IgG) concentrations ≥0.35 $\mu$g/mL for the seven common serotypes were comparable in PCV13 (n = 83) and PCV7 (n = 85) groups (≥97.6% and ≥98.8%, respectively); IgG geometric mean concentrations (GMCs) between the two groups were similar (range: 3.33–14.83 vs. 3.78–16.29, respectively); PCV13/PCV7 GMC ratios ranged from 0.77 to 1.17. For all six additional serotypes, percentage responders were higher in the PCV13 group (≥97.6%); IgG GMCs were notably higher in the PCV13 group with PCV13/PCV7 GMC ratios ranging from 2.24 to 329.44. The toddler dose resulted in higher immune responses. Incidences of local reactions and adverse events were similar between the two groups. There were no related serious adverse events.

Conclusions: PCV13 and PCV7 are comparable with regard to safety and immunogenicity when given with routine pediatric vaccines in Korea. PCV13 should be as effective as PCV7 in preventing pneumococcal disease caused by the seven common serotypes and should provide protection against six additional serotypes.

**PP089**

## PATTERNS AND PRESENTATIONS OF PEDIATRIC TB/HIV CO-INFECTION AT A TERTIARY HOSPITAL IN DAR ES SALAAM, TANZANIA

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Introduction: Of nine million global annual TB cases, about one million (11%) occur in children (under 15 years of age). Of these childhood cases, 75% occur in 22 high burden TB countries. Tanzania ranks 14th on the list of 22 high-burden TB countries in the world.

Purpose: The purpose was to describe the patterns and presentation of TB/HIV co-infection among paediatric patients admitted at Muhimbili National Hospital (MNH) between May 2007 and April 2009.

Material: Data was collected using a structured questionnaire whereby patients' particulars were recorded from the medical case file.

Methods: The study design was retrospective and descriptive. Data was analyzed using SPSS version 15.0. Chi squared statistical tests ($\chi^2$) were used to find association between variables. *P*-value of $<0.05$ were considered significant.

Results: Ninety six children were diagnosed with TB in the 2 year period, ages ranging between 2 and 84 months. Of these, 60.4% were males and 39.6% were females. Thirty-four percent had history of contact with a TB source case. Seventy four percent had Pulmonary TB (PTB), 21% Extra-pulmonary TB (EPTB), 5% both PTB and EPTB. The common sites of EPTB were the lymph node (34%), abdominal TB (32%), TB pericarditis (12%) and spinal TB (12%). Only 68% of the TB patients were tested for HIV; 28% of these testing positive. Seventy six percent of the patients were discharged while 24% died in the ward.

Conclusions: Pulmonary TB is the most common form of pediatric TB at MNH. The lymph node is the most common site of EPTB. Almost a third of the TB patients were not tested for HIV despite Tanzania being a high HIV prevalent country.

**PP090**

## CERVICAL LYMPHADENITIS IN CHILDREN – 11 YEARS AT A LEVEL II HOSPITAL

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Introduction: Cervical lymphadenitis (CL) is common in children. Acute bilateral CL is the most frequent presentation, usually caused by virus. Acute unilateral CL is frequently bacterial, especially by Group A *Streptococcus*

(GAS) and *Staphylococcus aureus* (SA). When the CL is subacute/chronic, *Bartonella*, *Mycobacteria* and *Toxoplasma* must be considered.

Purpose: To analyze socio-demographic, clinical and laboratory data of children admitted to our department diagnosed with CL.

Material and methods: Retrospective study from 1999 through 2010. Clinical files were reviewed. Statistical analysis by SPSS 13.0 (chi-square test, independent *t* test).

Results: Sixty-one patients were identified. Forty-five percent were male. The etiology and age for each clinical category are described in Table 1.

Table 1:

| Clinical category | | Acute bilateral (n = 19) | Acute unilateral (n = 35) | Subacute/chronic (n = 7) |
|---|---|---|---|---|
| Median age | | 3 years | 2 years | 4 years |
| Etiology | Bacteria | GAS (n = 5) | *S. aureus* (n = 5) | *B. henselae* (n = 1) |
| | | *B. henselae* (n = 1) | GAS (n = 3) | *S. aureus* (n = 1) |
| | | Unknown (n = 12) | *R. conorii* (n = 2) | *M. tuberculosis* (n = 3) |
| | | | GBS (n = 1) | Unknown (n = 2) |
| | | | Unknown (n = 23) | |
| | Other | Virus (EBV) (n = 1) | *T. gondii* (n = 1) | |

Previous head and neck infections were found in 27 patients. Cervical (47.5%) and submandibular (44.3%) nodes were the most frequently involved. Fever was present in 85.2% and regional complains (torticollis and trismus) in 45%. In 29%, the nodes developed fluctuation and 24.6% needed surgical drainage. Six patients underwent fine-needle aspiration and 45 had imaging studies (ultrasound: 40, computed tomography: 10). Leucocyte count >15 000/$\mu$L and positive C-Reactive Protein were present in 83.6% and 65.5% respectively. GAS and SA accounted for 58.3% of all isolated agents. These cases had more inflammatory lymph nodes and more need for surgical drainnage ($P < 0.05$). Antibiotics were used in all patients, most frequently Amoxicillin-clavulanate (n = 35) and flucloxacillin (n = 12). The outcome was good.

Conclusions: CL in children sometimes requires hospitalization. In our series, acute clinical presentations were the most common, related to bacterial infections, especially GAS and SA. In subacute/chronic presentations it's important to consider *M. tuberculosis*, mainly in endemic countries as Portugal.

**PP091**

## EFFECTIVENESS OF A MONO-VALENT ADJUVANTED VACCINE (PANDEMRIX) FOR THE PREVENTION OF HOSPITALISATION FOR INFLUENZA A (H1N1)V INFECTION IN CHILDREN

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Introduction: A vaccination program with the adjuvanted vaccine (Pandemrix®) started on October 12 for children with risk factors and on November 9 for other children.

Purpose: To investigate the protective effect of Pandemrix® in prevention of hospitalisation for influenza in children.

Method: We compared the vaccination rates of influenza positive and influenza negative children among those admitted and tested for influenza because of an influenza-like illness. The diagnosis was verified with RT-PCR. Information about date of immunisation was obtained from a vaccine register kept at the Stockholm City council. A patient was considered 'vaccinated' when more than 14 days had elapsed between vaccination and admission. Children younger than 6 months were not eligible for vaccination and were not included in this study. We studied the period from October 28th to December 6th 2010 when many children were considered to be vaccinated and were exposed to high influenza transmission.

Results: Fifty-six influenza positive and 129 influenza negative children were included. One influenza positive child (1.8%) had been immunised, compared to 19 (15%) of the influenza negative control children. All but one of the vaccinated children had underlying conditions. A statistically significant difference in vaccination rate between influenza positive and influenza negative children could be shown for the whole group ($P = 0.009$), for children with underlying conditions ($P = 0.038$) and children in the age group 3–12 years ($P = 0.046$).

Conclusions: The rapid fall in influenza transmission in Stockholm after November 2010 and the late arrival of the vaccine leaves a short window of approximately 6 weeks to study the effect. However, our study shows a statistically significant protective effect of the vaccine against influenza illness requiring hospitalisation.

**PP092**

## HUMAN BOCAVIRUS REPLICATION OCCURS VIA HEAD-TO-TAIL INTERMEDIATES AND HAIRPIN-LIKE STRUCTURES

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Introduction: The human bocavirus (HBoV), a human parvovirus, was detected in 2005 by Allander and coworkers. In a large series of clinical studies it was associated with respiratory and gastrointestinal infections in all age groups with emphasis in children up to the age of 5 years. So far the modified Koch's postulates were not completely fulfilled for HBoV as the virus is frequently detected as a copathogen, is hitherto not transmittable to a small animal model, and was cultured solely once in an air-liquid-interface culture with

primary human respiratory cells. Thus far it must be assumed that the genome is not deciphered in total as the flanking hairpin structures, a unique but essential feature of parvorviruses, are still unknown.

Purpose: The aim of the study was to decipher the flanking hairpin-like structures and the replication mechanism of HBoV.

Material: Three HBoV isolates from patients suffering from respiratory infections with positive HBoV-PCR and cell culture supernatant from the Bonn-1 strain cultivated in air-liquid-interface cultures.

Methods: Replication intermediates were amplified by PCR, cloned and sequenced, or sequenced directly. DNA sequences were subject to bioinformatical processing (aligments, BLAST, mfold).

Results: PCR and sequencing analyses based on HBoV-specific primer-sets able to amplify and distinguish between typical parvoviral replication intermediates (tail-to-tail; head-to-head; head-to-tail) revealed that HBoV forms head-to-tail replication intermediates. Thereby the so far unknown terminal genome sequences were identified.

Conclusions: The present study reveals novel insights into the replication mechanism of human bocavirus. It can be assumed that it replicates in a typical parvoviral manner as previously described for other parvoviruses. The results are of major interest: Based on the current results synthetic replication models can be established that will help to understand the role of HBoV as a pathogen, the full replication cycle, and develop potent disinfectants against human parvoviruses.

## PP093

## CHEST ULTRASOUND IN INFANTS WITH BRONCHIOLITIS: A DESCRIPTIVE STUDY

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Introduction: Bronchiolitis is the most common lower respiratory tract infection in infants. While current evidence does not support routine radiography in children with bronchiolitis,[1] the chest ultrasound has become a promising imaging tool for evaluating paediatric thoracic disease.[2]

Purpose: The aim of the study is to describe the chest ultrasound findings in infants with bronchiolitis.

Patients: The study has been conducted on infants hospitalized for bronchiolitis. The diagnosis has been formalised according to the position statement of American Academy of Pediatrics.[1] A clinical classification of bronchiolitis severity has been performed in mild, moderate, severe and life-threatening forms of the disease.

Methods: The chest ultrasound has been executed by the same operator with a 10–12 MHz linear-array transducer in supine and prone position with transverse and longitudinal approaches that have assessed the presence, distribution and size of abnormalities in the pleura and peripheral lung: pleural effusions, pneumothorax, alveolar or interstitial consolidations/infiltrations (B-lines or 'ring down'), atelectasis.

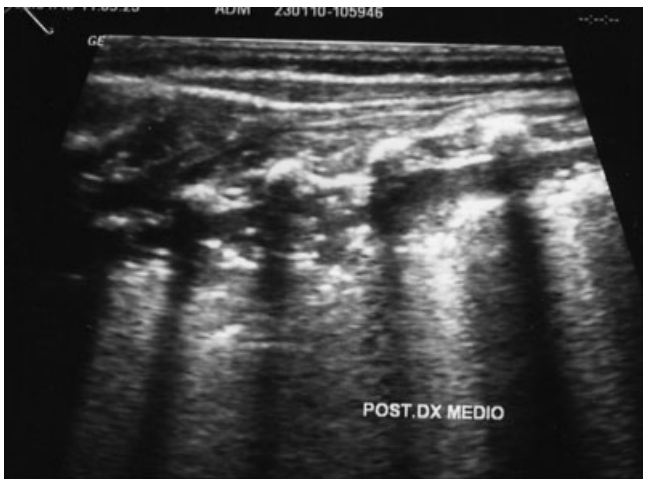


**Figure 1**

Results: Twenty-five infants have been enrolled (11 males, median age: 4.0 months). Clinically 44% has mild bronchiolitis, 40% moderate and 16% severe. One third of infants have taken oxygen. Seventy-eight percent are positive to the test for Respiratory Syncytial Virus. Eight percent infants are normal at chest ultrasound; 40% have interstitial infiltrations without atelectasis and 48% with atelectasis (Figure 1), 8% have minimal pleural effusion, none pneumothorax.

According to clinical severity of disease, the interstitial infiltrations are present in 82% (18% with atelectasis) of cases with mild bronchiolitis, in 90% (70% with atelectasis) with moderate bronchiolitis and in the totality of severe bronchiolitis (75% with atelectasis).

Conclusions: Interstitial infiltration is the most common ultrasound finding of bronchiolitis. In moderate or severe disease it appears with bilateral and thick B-lines, frequently associated to multiple micro-atelectasis under the pleura.

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## PP094

## HOMEOPATHIC MEDICINE OSCILLOCOCCINUM AND INFLUENZA VACCINE IN PREVENTING INFLUENZA-LIKE ILLNESSES IN CHILDREN

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Introduction: Children tend to be among the first to be infected with influenza and influenza-like illnesses. In recent years, the epidemic process of ARVI has been char-

acterized by simultaneous circulation among children of the following viruses: influenza viruses, adenoviruses, parainfluenza viruses, rhinoviruses, respiratory syncytial viruses, coronaviruses, etc.

Purpose: Of the comparative controlled epidemiological study was to evaluate the effectiveness of administering homeopathic medicine Oscillococcinum in combination with immunization against influenza and influenza-like illnesses for children and adolescents.

Material and methods: The study involved 560 children and teenagers aged between 7 and 17 who were split into two groups. The first group consisted of the children immunized against seasonal influenza; the second – vaccinated against seasonal influenza and administered preventive doses of Oscillococcinum for the first 6 weeks. The epidemiological surveillance was conducted from mid-September until December 2009. The monitoring conducted during this period showed that in September–October the population of Moscow was not to any significant extent affected by 'seasonal' influenza viruses, against which immunization was carried out.

Results: The largest number of infected (29.7%) were detected in the group of children who had been administered preventive doses of 'seasonal' influenza vaccine, with the majority of the cases occurring in October (7.1%) and November–December (16.1%), when the population was not to any significant extent affected by the influenza viruses included in the vaccine. The second group which was immunized against influenza and was administered Oscillococcinum showed a lower rate of infections during the same period (1.1%). The preventive effectiveness of this procedure is confirmed by the epidemiological indicators: the efficacy index stood at 3.7%, with immunity indicator at 73%.

Conclusion: The results of the studies have shown good prophylactic efficacy of Oscillococcinum in children in respect to a broad spectrum of respiratory viruses.

### PP095

### COMMON COLD IN INFANTS AND BABIES: ANALYSIS OF PREDICTIVE PARAMETERS FOR ACUTE OTITIS MEDIA, THE USE OF ANTIBIOTICS, AND QUALITY OF SLEEP

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Introduction: Viral Rhinitis (VR) in early childhood can lead to complications such as Acute Otitis Media (AOM) and Acute Rhinosinusitis (AR) and may require antibiotics. Impaired breathing makes sleep difficult and may lead to serious sleep disturbances.

Purpose: To analyze predictive parameters in the occurence of AOM, the prescribing of antibiotics, and the quality of sleep in early childhood.

Material and methods: Parent's diaries of 434 children (age $>$ 2 months $<$ 2 years) were reviewed as part of an observational study which evaluated VR and its complications during the winter, using the Narhinel method (physiological saline solution + aspiration) or Narhinel physiological saline solution alone. The parents' diaries of the children covered the Quality of Sleep (QoS), diet and respiration, and use of any drugs.

Results: By means of logistic regression, we found: AOM episode at basal visit and Nursery School Attendance (NSA) was associated with a greater probability of a first relapse of AOM, the second relapse was associated with runny nose and NSA. Antibiotics prescription (AP) at the first relapse was associated with fever and AOM; decreased oral respiration during the first relapse reduced the probability of AP; during the second relapse, AP was increased in relation to increase in age and fever. Related to the first three relapses, the QoS was affected by the presence of cough, fever and by difficulty in breathing; during the third relapse the progression of age made the QoS worse.

Conclusions: Our data reaffirm the importance of normal respiration for sleep quality during early childhood. We found a very high probability that children at nursery school are prescribed antibiotics for AOM: these data are particularly significant taking into account the recommendation on restricting AP fo AOM. We found the Narhinel method being useful in AOM prevention and it may also help to reduce AP, as reported previously.

### PP096

### ADVANCED TUBERCULOUS OSTEOARTHRITIS – CLINICAL CASE REPORT

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Introduction: The incidence of Tuberculosis (TB) in Portugal is still high. Osteoarticular tuberculosis is responsible for 10–35% of extra-pulmonary cases and represents 2% of all TB cases.

Clinical case: We describe a clinical case of a 14-year-old boy with a hip pain on the left side lasting for 1 year, with initial inflammatory pattern, followed by a mixed pattern (mechanic and inflammatory). Two months later the pain increased, with nocturnal awakening and he started having fever, loss of appetite, loss of weight and nocturnal sweating.

He had left claudication and functional limitation of the ipsilateral hip. Magnetic resonance and CT scan showed

effusion of the left coxo-femoral articulation. Radiography revealed alterations of the left coxo-femoral articulation with articular interline space disappearance and alteration of acetabular and femoral head morphology. Laboratory investigation showed sedimentation velocity of 78 mm/h, C-reactive protein of 6.4 mg/dL, normal leucogram, negative serology and blood culture for Brucellosis. PCR and culture for *Mycobacterium tuberculosis* were positive in the articular effusion as well as culture of the biopsy. Mantoux test and culture of bronchial secretions were negative. TB screening of close contacts was negative. So far, investigation for immunodeficiency is normal.

He started treatment with Isoniazid, Riphampicin, Pyrazinamide and Ethambutol. Despite his good clinical response, his hepatic enzymes increased, which led us to reduce the doses of tuberculostatic drugs and initiate ursodeoxycholic acid. The patient has an orthosis with unilateral hip immobilization since 2 months ago, waiting for a probable 'natural' fixation of the hip, in a functional position.

Conclusions: This is a severe clinical case, in which a future hip replacement by a prosthetic implant seems highly probable in the long-term. Because of its indolent clinical course, delayed diagnosis is still common, with consequent irreversible joint damage and marked functional impairment.

Keywords: Osteoarthritis, Mycobacterium tuberculosis.

**PP097**

## PROMOTION OF HYGIENE MEASURES TO PREVENT PANDEMIC INFLUENZA TRANSMISSION IN GREEK NURSERY SCHOOLS: THE TEACHERS'A PERSPECTIVES

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Introduction: School children play a major role in the spread of influenza during epidemics. In order to prevent transmission, it is essential that teachers promote hygiene measures, especially among younger age groups lacking pre-existing immunity.

Purpose: To evaluate the acceptance of Greek nursery teachers to promote the hygiene interventions, proposed by the Hellenic CDC during the novel H1N1 influenza A epidemic. A secondary objective was to assess their knowledge regarding the novel virus and the vaccine.

Material: A pre-designed anonymous, four section questionnaire, consisting of 28 questions.

Methods: During the intra-pandemic period, the above questionnaire was distributed to the teachers of public nurseries in Athens, to abstract information. Qualitative variables were compared by $\chi^2$ for independent and McNemar test for paired samples. SPSS, version 15.0 was used for statistical analysis and $P$-values of $<0.05$ were considered significant.

Results: Between February and March, 2010, a total of 557 nursery teachers were recruited (response rate: 92.8%). Overall, general etiquette practices such as handwashing, hand sanitizer solution use and covering coughs were highly acceptable to over 92% of teachers, while using masks and antiseptic solutions for surface disinfection were less. Teachers with longer experience were found to promote hygiene measures more often ($P = 0.02$), and older children were more likely to familiarize with them ($P = 0.003$).[1] However, most educators presented suboptimal knowledge concerning the novel virus; only 282 (50.6%) answered correctly to all relevant questions and 6 (1.1%) admitted receiving the pandemic influenza vaccine, expressing fear of adverse reactions (n = 310; 55.7%) as their main drawback. In contrast, their uptake of seasonal influenza vaccine increased two-fold (10.4% during 2008/9 vs. 21.4% during 2009/10).

Conclusions: Simple preventive measures were promoted effectively by more experienced teachers and better adapted by older children during the novel influenza threat. Knowledge gaps and distrust to the pandemic vaccine, highlight communication issues.

**PP098**

## VISCERAL LEISHMANIASIS – ONE CAUSE OF PROLONGED FEVER: REVISION OF CLINICAL CASES

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Introduction: Visceral Leishmaniasis, or Kalazar, is a potentially serious antropozoonosis, which can be fatal. It occurs mainly in children above 5 years of age. The clinical manifestations include prolonged fever with anorexia, loss of appetite and marked reticuloendothelial system hyperplasia.

Purpose: In this article, the authors purpose to a revision of the clinical cases with the diagnosis of Visceral Leishmaniasis in the last 10 years (January of 2000–December of 2009).

Material and methods: Demographic, epidemiologic, clinical, laboratory, therapeutics, evolution and follow-up data were assessed based on the consultation of the clinical files of the patients with the diagnosis of Visceral Leishmaniasis.

Results: We found a total of five cases. The age at diagnosis varies from 11 to 18 months (with an average of 15 months) and the majority (80%) was males. All the child lives in the region of hydrographic area of Dão-Mondego.

 

Diagnosis hypothesis were supported by clinical characteristics like fever, enlargement of liver and spleen and pancytopenia. In three cases, the diagnosis was made by demonstration of parasite by microscopic examination of bone marrow aspiration and, in the other two cases, by serological confirmation.

All had good evolution with the drug of choice, antimony gluconate, and no relapses were found.

Conclusions: It is important to maintain an elevated suspicion index to make a timely diagnosis of this insidious and potentially fatal disease.

Keywords: Visceral leishmaniasis, Pediatrics, Diagnosis, Treatment.

**PP099**

## KAWASAKI DISEASE AND H1N1 INFLUENZA A VIRUS: A CASE REPORT

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Introduction: Kawasaki disease (KD) is an acute vasculitis of childhood that predominantly affects the coronary arteries. KD is the most common acquired heart disease in children in developed countries. The etiology of KD remains unknown, although an infectious agent is strongly suspected. In April 2009, a novel H1N1 influenza A virus was identified with a widespread community transmission, the so-called pandemic H1N1/09 virus.

Purpose: We report a case of KD and H1N1 influenza A infection not described previously in the literature.

Material and methods: In October 2009, a 11-month-old boy was admitted to our hospital due to fever for 5 days (39–39.5°C). His medical history was insignificant, no vaccine recently. On admission, the physical examination revealed polymorphous exanthema, bilateral non-exudative conjuntival injection, fissured red lips, and a strawberry tongue. Laboratory findings: leukocitosis (18.720/mm$^3$) with neutrophils and immature cells, anemia (hemoglobin 10.0 g/dL, hematocrit 29.7%), platelet count 366.000/mm$^3$, C-reactive protein 225.7 mg/L, erythrocyte sedimentation rate 74 mm/h, albumin 29.7 g/L, triglycerides 172 mg/dL, cholesterol 158 mg/dL, low density lipoproteins 105 mg/dL, high density lipoproteins 19 mg/dL, serum sodium 135 mEq/L. Other laboratory parameters were in normal range. The chest X-ray, electrocardiogram and serum cardiac troponin I were normal. Cultures (blood, urine, pharynx) were normal. Viral studies were negative, except for influenza A (H1N1), performed by the rapid test and confirmed by polymerase chain reaction (PCR). On the ninth day, the platelet count rised (655 000/mm$^3$), the echocardiography showed perivascular brightness in the coronary arteries, and the internal diameter of the proximal segment of left main coronary artery was 3.3 mm (>1.5 times that of the adjacent segment and Z-score >2 SD for size). The diagnosis of incomplete KD was made and the patient was treated with intravenous immune globulin (IVIG), 2 g/kg in a single infusion, together with aspirin 3 mg/kg/day (we did not use high-dose aspirin). Fever disappeared and 2 weeks later there was a desquamation of fingers and toes. Coronary artery ectasia resolved by 8 weeks after disease onset.

Conclusions: We report a case of incomplete KD and H1N1 influenza A virus, this relationship remains unknown by now, but we consider it interesting because of epidemiologic reasons (pandemic virus) and clinic management (risk of Reye syndrome with high-dose aspirin and influenza A infection).

**PP100**

## PERINATALLY ACQUIRED HIV AND EMOTIONAL DISORDERS IN CHILDREN

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Introduction: HIV is a complex, chronic disease that is often associated with poverty, prenatal drug exposure, birth complications and family disruption. These are all risk factors for emotional and behavioural disorders in children, suggesting that children with HIV are at high risk of developing psychiatric problems. However, whilst research involving long term follow up of adults with HIV does now show an increase in the prevalence of depression, research in children has not been able to reach a consensus on what, if any, emotional disorders are associated with HIV.

Methods: Review of current evidence.

Conclusions: The current evidence suggests that mental health problems, particularly ADHD and depression, are highly prevalent in children with HIV. The aetiology of this is unclear: it may be that the negative life events and chronic stressors associated with HIV infection as opposed to the disease itself put the children at high risk. It is also possible that the virus itself can cause subacute encephalopathy that presents as mental health problems. Whatever the aetiology it is imperative that mental health issues are identified in these children: treating them would not only improve quality of life, but also adherence to medication and possibly a slowing in disease progression. These children generally have regular hospital appointments and are well known to services, so it should be relatively easy to screen for and try to treat any mental health issues they have. However, as the social factors in these children's lives seem to play an important role in their susceptibility to mental health problems it is important not to forget uninfected siblings living in the same environment as the children with HIV, and to treat families as a whole rather than focusing only on the child with HIV.

**PP101**

## MAXIMIZE DIAGNOSIS OF STREPTOCOCCAL PHARYNGITIS OR MINIMIZE ANTIBIOTIC OVERUSE: RETHINKING THE DIAGNOSIS PARADIGM

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Introduction: Strategies for diagnosis of Group A Streptococcal (GAS) pharyngitis are driven by prevention of acute rheumatic fever (ARF), but ARF is now rare in developed countries. Rapid antigen detection tests (RADTs) are insufficiently sensitive to maximize diagnosis. Throat culture on blood agar (TC) can be used alone or to confirm negative RADTs. Many physicians ignore management guidelines.

Purpose: Re-examine current management guidelines in light of low US rates of ARF and other complications of GAS.

Methods: Analysis of current literature.

Results: (i) RADT sensitivity is typically 75–85%. In several studies physician office TC sensitivity was ~80% when compared to a simultaneous reference lab TC. RADTs and TCs exhibit spectrum effect – sensitivity is greater when symptoms are more typical of GAS and lower when symptoms are more consistent with viral infection (cough, rhinorrhea, diarrhea, etc.). (ii) US physicians cite prevention of ARF and suppurative complications, symptom relief, and reduced contagiousness as reasons to identify and treat GAS pharyngitis. (iii) Antibiotics are used much more often than warranted by rates of confirmed GAS pharyngitis. Failure to follow guidelines is associated with substantial overuse of antibiotics. Physicians who use a diagnostic test prescribe antibiotics less often than those who do not test for GAS. (iv) Antibiotic overuse contributes greatly to bacterial antibiotic resistance. (v) Decision and cost analyses have not established an optimal approach.

Conclusions: In areas with low rates of ARF: (i) Guidelines should emphasize avoidance of antibiotic overuse; (ii) Avoid testing patients with clinical findings highly suggestive of viral infection; (iii) Results of either RADT or TC should be considered definitive whether positive or negative; (iv) Antibiotics should be restricted to patients with a positive diagnostic test; (v) In areas with substantial rates of ARF or other GAS complications other approaches are needed.

**PP102**

## EVALUATION OF THE DURATION OF HAART IN CHILDREN INFECTED BY HIV

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Introduction: HAART must be kept on for life. It has been demonstrated in adults, that the first antiretroviral regimen is the most lasting and the effective one.

Purpose: Our objective was to determinate the duration of HAART regimen in children with HIV infection and to analyze which factors can have influence on it.

Patients and methods: We studied 56 patients from the paediatric infections unit from La Paz Hospital. Information was gathered about demographic, clinical, analytical data and about the treatment of each one of the patients.

Results: The average duration of the first HAART regimen in the patients studied was 39.5 months. In patients that have changed of HAART regimen the average duration of the first treatment was 41.31 (SD 31.15), the second one was 27.9 months (SD 29.68) and third was 25.66 months (SD 25.24). Non adherence to treatment was found to be determinant in the duration of the first HAART regimen (CI95%: 1.01; 5.42; $P = 0.046$). Children taken care by their parents, an institution or by adopted parents were at less risk than those who lived with biological relatives other than their parents (CI95%: 1.08; 4.63; $P = 0.03$). There was no association between the duration and the age, the regimen used, CD4, CD8 cell count nor with the viral load at the beginning of the treatment.

Conclusions: The duration of the first HAART regimen in our children is longer than that found in adult studies. The first HAART regimen in children was lasting than next too. It is necessary to concern the child and the caretaker of the important of realizing a complete adherence for a long lasting treatment. All the risk factors for failure of the treatment must be specially controlled in the paediatric age, in order to increase the duration an efficiency of HAART regimen.

**PP103**

## PROTECTIVE EFFECT OF HEPETITIS A VACCINE AGAINST AN OUTBREAK IN A ROMA COMMUNITY

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Introduction: Hepatitis-A virus is present worldwide however the risk of transmission and the disease burden depends upon the socio-economic conditions of populations. Communities were poor hygienic conditions and environmental sanitation are susceptible to occurrence of outbreaks.

Purpose: To evaluate the efficacy of Hepatitis-A vaccine during an outbreak in a roma-community duringan emergency vaccine campaign.

 

Material: Roma-people live in caravans of 25–100 people with close household contacts.

Methods: In June 2007 an outbreak of hepatitis-A occurred in a roma-community of 135 members. A vaccination programme was organised by the local health authorities and Hepatitis-A vaccine was offered to all members of the roma-community aged >6 months.

Results: Attack rate was 5.2% (seven cases) prior to the vaccination campaign. Vaccination up-take rate was of 76%. Thirty-three members of the community refused vaccination. Following vaccination campaign no Hepatitis-A cases were detected in the vaccinated-group. However attack rate increased to 12%(four new cases) in the non-vaccine group during the outbreak period. The infection rate of hepatitis-A was significantly different among two groups.

Conclusion: Our report demonstrated an excellent efficacy of Hepatitis-A vaccine during an outbreak in a community with close household contacts and increased susceptibility to the virus due to the specific lifestyle conditions.

**PP104**

## HEMATOLOGICAL PROFILE IN VISCERAL LEISHMANIASIS IN HOSPITALIZED CHILDREN

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Visceral leishmaniasis (VL) is caused by Leishmaniaspp, a common parasite, which is found mostly in Mediterranean countries. Leishmaniasis usually presents with fever, hepatosplenomegaly, lymphadenopathy and pancytopenia.

Aim of The Study: To investigate the possible causes of febrile pancytopenia in children and also to assess the clinical characteristics and the course of hematological findings during VL.

Materials and methods: We studied 117 children, 4.0 ± 3.8 years old (range:0–14), who were admitted to a Pediatric Ward of a tertiary Children's Hospital because of febrile cytopenia during a 2-year period and were investigated with indices of infection, cultures of body fluids and serological tests.

Results: Among our patients with febrile cytopenia, pancytopenia was detected in 9/117 (7.7%). In all the children with pancytopenia, leishmania was detected. All children with VL had fever (mean duration: 8.9 ± 8.7 days) (Tmax: 39.5 ± 0.6°C) and remarkable hepatosplenomegaly (9/9), while 2/9 had lymphadenopathy. A thorough investigation was performed (including bone marrow aspiration in al nine cases). The mean ± SD age of the VL group was 4.5 ± 3.0 years, WBC:3827 ± 1455/mL, ANC:1229 ± 655/mL, Hb: 8.3 ± 1.1 g/dL and the mean ± SD platelet count was 88200 ± 20186/mL. All patients were treated with L-Ambisome and had an excellent response rate. Pancytopenia recovered within 17.6 ± 17.3 days (range 8–60) and there was no relapse in 1 year and in 2 years' follow-up.

Conclusion: Visceral leishmaniasis may affect one or more blood cell lines, with a relatively short duration of cytopenia. In Mediterranean countries VL is the most common cause of febrile pancytopenia in otherwise healthy children. Nevertheless, a thorough examinationmustal ways be performed.

**PP105**

## TOXOCARIASIS AS A COMMON CAUSE OF EOSINOPHILIA IN CHILDREN: A CASE REPORT

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Background: Eosinophilia is defined as an abnormally high number of eosinophils in the blood stream and can be categorized as mild (AEC 600–1500 cells/$\mu$L), moderate (AEC 1500–5000 cells/$\mu$L) and severe (AEC > 5000 cells/$\mu$L). In countries where parasitic diseases exist, parasites are a usual cause of eosinophilia. Human toxocariasis is a parasitic infection with a great variety of nonspecific clinical characteristics and a common cause of severe eosinophilia in children. Most children with toxocara infection are asymptomatic and will not develop overt clinical sequeale over time.

Case Report: A 13-year old girl presented with fatigue and malaise, without having any concurrent symptoms. Her blood tests revealed moderate eosinophilia (WBC: 8.7 × 103/$\mu$L, N: 38%, Ly: 29%, Eo: 27% (AEC : 2300), Hb: 13 g/dL, Ht: 38%, PLT: 366 × 103/$\mu$L. A thorough examination was performed in order to investigate the possible causes of eosinophilia and we only revealed high serum titres of antitoxocara antibodies. The patient was treated with albendazole for 5 days and had an excellent response. The eosinophil count in 15, 60 and 90 days after treatment was in normal range and the patient had no symptoms.

Conclusion: Infections that are particularly common in children, such as toxocariasis, must always be a possible diagnosis in cases with moderate/severe eosinophilia, since the prevalence of toxocariasis is high in patients with nonspecific symptoms and eosinophilia.

**PP106**

## POSTMARKETING SURVEILLANCE OF INTUSSUSCEPTION FOLLOWING MASS INTRODUCTION OF THE HUMAN ROTAVIRUS VACCINE IN MEXICO: AN INTERIM ANALYSIS

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Introduction: In 2007, the human rotavirus (RV) vaccine (*Rotarix*™, GSK Biologicals) was introduced in Mexicobythe InstitutoMexicanodelSeguro Social (IMSS), with a significant decline in diarrhoea-related deaths among young children subsequently reported.

Purpose: We prospectively evaluated any potential temporal association between *Rotarix*™and definite intussusception (IS) within 31 days of vaccination in children aged <1 year.

Methods: Prospective, hospital-based active surveillance for definite IS was conductedin 66IMSShospitals across Mexico covering a birth cohort of approximately 500 000 infants (i.e. approximately 40% of the annual birth cohort).The temporal association between vaccination and onset of IS was assessed by self-controlled case-series analysis. This wasa planned interim analysisin subjects enrolled from January 2008–December 2009. The primary interim safety objective was considered met if the upper limit of the 99%CI of the relative incidence (RI) of IS within 31 days of vaccinationwas <4.33 for dose 1 and <2.18 for dose 2 corresponding to an additional risk of 2/10 000 based on experience with a previous RV vaccine (*RotaShield*™, Wyeth Laboratories).

Results: Four hundred and sixty-one IS episodes were reportedin 459 subjects (92.4% had received one dose of *Rotarix*™ and 57.7% 2 doses), with 37.7% of IS episodesin vaccinated subjects occurring post-dose 1.RI of IS was 1.752 (99% CI: 0.997–3.080) post-dose 1 ($P = 0.010$) and 1.076 (99% CI: 0.618–1.873) post-dose 2 ($P = 0.734$). Clustering of IS cases within 7 days of vaccination was observed post-dose 1, but not post-dose 2.

Conclusion: This interim analysis suggests a temporal association, borderline significant between *Rotarix*™ and IS within 31 days post-dose 1, but not post-dose 2, and allowsfor exclusion of the additional risk of 2/10 000 that this analysis aimed to reject.The known benefits of the human RV vaccineoutweigh any potential suggested increased risks.


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# THEME: NEONATOLOGY

## PP107

### COMPLICATIONS ASSOCIATED WITH TWO DIFFERENT TYPES OF PERCUTANEOUSLY INSERTED CENTRAL VENOUS CATHETER IN VERY LOW BIRTH WEIGHT INFANTS

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Introduction: Percutaneously inserted central venous catheters (PICCs) are extensively used in very low birth weight infants. PICC provides not only reliable intravascular access but also threat of associated complications.

Purpose: To identify the prevalence and risk factors of PICCs associated complications and evaluate the effect of different catheter types and their indwelling time on catheter-related complications.

Material: Between 2004 and 2007, 518 single-lumen PICCs (defined as old type) and 290 PICCs with stiffening stylet and thicker introducer (new type) were inserted in totally 534 neonates with birth body weight ≤1500 g.

Methods: A retrospective cohort study was conducted to analyze the effect of different catheter types on the complication rates. Univariate and multivariate logistic regression analyses were used to identify the independent risk factors for catheter-related complications.

Results: Independent risk factors of catheter-related sepsis (CRS) were longer duration of PICC placement and PICC inserted at femoral site (compared with non-femoral sites) [OR (95% CI) = 1.53 (1.07–2.25), $P = 0.044$]. Independent predictors of catheter-related non-infectious complications was time spent for PICC insertion (compared with <30 min) more than 60 min [OR (95% CI) = 1.96 (1.08–3.53), $P = 0.026$]. New type PICCs were significantly associated with a higher rate of femoral site insertion, catheter-related non-infectious complications, and longer time for successful insertion than old type PICCs. The hazard rates of CRS according to indwelling time, determined over 5-day periods by survival analysis, showed 0.05%, 0.27%, 0.40%, 0.68%, 1.18%, 3.96% and 10.45% for the catheters indwelled for ≤4 days, 5–9 days, 10–14 days, 15–19 days, 20–24 days, 25–29 days, and ≥30 days.

Conclusions: Different catheters do influence the complication rates. The time spent of more than 60 min for successful PICC insertion and PICCs indwelled more than 30 days are associated with higher rate of catheter-related complications.

## PP108

### CAN CHANGES IN POSTNATAL CARE REDUCE NEONATAL EMERGENCY DEPARTMENT VISITS?

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Introduction: Length of postnatal stay has fallen dramatically over the past 30 years; with the introduction of the 6 h discharge neonates are leaving hospital increasingly quickly post-delivery.

Although studies have demonstrated no increase in neonatal readmission rates with early discharges, few have assessed the impact of increased neonatal attendances to the Emergency Department (ED) with problems traditionally addressed during longer postnatal stays.

Purpose: By reviewing the profile of neonatal ED visits, this study aimed to identify patterns of presentation including any modifiable factors during postnatal care that could reduce such attendances.

Methods: Retrospective data was collected on all neonates presenting to the ED of a North London District General Hospital over a 6 month period. Data included information about: the length of the postnatal stay, the ED presentation (parental complaint, diagnosis, age at presentation, source of referral, days since postnatal discharge) and any subsequent admissions or follow-up.

Results: Two hundred and seventy neonates presented to ED during the study period, with 304 discrete patient episodes, representing 3% of all paediatric ED visits (n = 9582) and 15% of all inter-region births (n = 2071). Eighteen percent (n = 55) of neonates had no discernible signs or symptoms upon ED presentation.

Thirty-one percent (n = 94) required admission, most commonly with jaundice (32%), feeding problems (23%), presumed sepsis (15%) and bronchiolitis (7%). Admission rates and post-admission behaviour varied depending on: presenting month, day and time; ethnicity; length of stay on postnatal ward; neonatal age; and diagnosis.

Neonates referred to ED by community-based healthcare professionals (general practitioner or midwife) were significantly more likely to need admission than those who self-referred (40% vs. 23%, $P < 0.05$).

Conclusions: By identifying 'trends' in neonatal ED attendances, predictions can be made about the specific population needs, helping in service provision planning for unavoidable presentations and allowing more targeted postnatal and community education and support to reduce the avoidable visits.

**PP109**

## ESTIMATION OF RENAL AND TUBULAR FUNCTION IN VERY PREMATURE NEONATES WITH PERINATAL PROBLEMS

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Introduction: We have previously reported the effects of various perinatal factors that affect renal function in neonates of gestational age (GA) more mature than 34 weeks. However, limited data exist concerning neonates under the gestational age of 34 weeks and previous studies have produced inconsistent results. Taking under consideration that nephrogenesis continues up to 36th week of gestation, renal function in such premature neonates may be affected by exposure to various nephrotoxic agents other than the ones observed in the more mature neonates.

Purpose: In the present study we sought to investigate perinatal risk factors that may be related to renal function in very premature neonates (GA <34 weeks) during the first 2 weeks of life.

Materials: The case-notes of 130 neonates of GA <34 weeks were studied retrospectively.

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 (RDS), 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 and potassium to creatinine ratio (UCa/UCr, UK/UCr). Associations were identified by multiple and logistic regression analysis.

Results: In infants with GA <34 weeks affected SeCr was related to antenatal steroid treatment, odds ratio (OR) 0.38, confidence interval (CI): 0.15–0.96, $P < 0.05$. Affected FEK and FENa were solely related to RDS, OR = 2.72, CI: 1.04–7.12, $P < 0.001$ and OR = 5.38, CI: 2.30–12.62, $P < 0.001$, respectively. UCa/UCr and UK/UCr were independently associated with the duration of aminoglycosides treatment ($t = 2.37$, $P < 0.05$ and $t = 2.95$, $P < 0.05$).

Conclusions: In neonates with GA <34 weeks impairment of renal function may be caused by the additive effect of various perinatal factors but it is mainly attributed to RDS and aminoglycosides treatment.

**PP110**

## RENAL PROBLEMS AMONG 7 YEARS-OLD EXTREMELY LOW BIRTH WEIGHT INFANTS – REGIONAL COHORT FOLLOW-UP STUDY

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Purpose: Assessment of renal long term complications in the regional cohort of ELBW children born in 2002–2003.

Material: Seventy-two children born as ELBW infants (81% of available cohort) with mean birthweight 841 g (SD: 134) and mean gestational age 27.3 weeks (SD: 2.2) were evaluated at the mean age 6.7 years. Control group included randomly selected from one GP office 23 full-term children.

Methods: Serum Cystatin C, microalbuminuria, renal ultrasound and 24-h ambulatory blood pressure measurements were performed.

Results: Mean estimated GFR (94.8 vs. 103.9 mL/min/1.73 $m^2$; $P < 0.01$) was significantly lower and mean serum Cystatin C level was significantly higher (0.64 vs. 0.57 mg/L; $P < 0.01$) in the ELBW group. Hypertension was diagnosed in 8/72 ELBW and none of the control children ($P = 0.1$). Microalbuminuria (>20 mg/g of creatinine) was detected only in three ELBW children. Mean renal volume was significantly lower in ELBW group (absolute left kidney volume 42 vs. 59 mL; $P < 0.01$, absolute right kidney volume 40 vs. 58 mL; $P < 0.01$, relative left kidney volume: 86 vs. 105% $P < 0.01$, relative right kidney volume: 87 vs. 101% $P < 0.01$). Small kidneys (<70% of predicted size) were detected in 13 ELBW and none of the control children ($P = 0.04$).

Conclusions: The prevalence of renal problems in 7 year old children born as ELBW infants is considerable. It is important to include systematic renal evaluation in the follow-up programs of ELBW infants.

**PP111**

## ASSOCIATION OF AGRININE SUPPLEMENTATION WITH FECAL CALPROTECTIN IN VERY LOW BIRTH WEIGHT INFANTS

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Introduction: Calprotectin is a cytosolic component of neutrophils. Arginine supplementation was found to reduce the incidence of necrotizing enterocolitis in pre-

mature infants. Fecal calprotectin is a useful marker of inflammatory bowel disease. Arginine supplementation was found to reduce the incidence of NEC in premature infants. We measured fecal calprotectin in very low birth weight (VLBW) infants during the first month of life to evaluate whether arginine supplementation leads to lower calprotectin values.

Purpose: The aim of the study was to determine whether supplementation with L-arginine in very low birth weight neonates (VLBW) leads to lower calprotectin values.

Materials and methods: The study enrolled 41 VLBW infants with birth weight ≤1500 g and gestational age ≤34 weeks. In this double blind study 40 neonates received a daily oral L-arginine supplement of 1.5 mmol/Kg/day (261 mg) between third and 28th day of life and 43 neonates placebo. Stool samples were collected at third, 14th and 28th day of life and calprotectin was measured. Longitudinal Poisson regression model was used to compare calprotectin values between the two groups.

Clinical cases or summary of results: The arginine group comprised of 40 infants with a mean gestational age of 28.8 weeks and mean birth weight 1125.3 g, while the control group comprised of 43 infants with a mean gestational age of 29.9 weeks and mean birth weight of 1176 g. Six neonates from the arginine and seven from the control group developed NEC. Mean calprotectin values at day 3, 14 and 28 were in arginine group 434, 267 and 182 $\mu$g/g and in control group 355, 235 and 228 $\mu$g/g respectively.

Conclusions: There was no statistically significant difference in the incidence of NEC between the two groups. Neonates receiving arginine supplementation had statistically significant lower stool calprotectin values compared with the control group ($P < 0.001$).

## PP112

## MALPOSITIONING OF UMBILICAL VESSEL CATHETERS

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Introduction: Umbilical artery and vein catheterization is a common intervention in newborns. Malpositioning of the catheters is associated with complications.

Purpose: To evaluate the catheter positions after insertion.

Material and methods: The study is based on retrospective evaluation of all relevant X-ray images of newborns admitted to the neonatal intensive care unit, Vestfold Hospital June 1998–June 2010. Accurate localization of the catheter tip was determined in all images. For arterial catheters, acceptable positioning of the catheter tip irrespective of gestational age was at the level of the sixth to ninth thoracic vertebral body (high position, preferred) or at the third to fourth lumbar vertebral body (low position). In term infants, acceptable positioning for venous catheters were defined as ≤10 mm above or below the level of diaphragma and in preterm infants ≤5 mm. When inserting the catheters authorized nomograms were used as guide for a correct positioning of the catheter tip.

Results: One hundred and three umbilical artery and 294 umbilical vein catheters were inserted in 314 patients. 48/294 (48%) of the arterial catheters and 82/294 (28%) of the venous catheters were correctly positioned from the start. Significantly more arterial catheters were positioned too low (44/103; 43%) than too high (10/103; 10%) ($P < 0.001$). Correspondingly more venous catheters were positioned too low (132/294; 45%) than too high (80/294; 27%) ($P < 0.001$). Coiling occurred in six (6%) arterial catheters and in 16 (5%) venous catheters.

Conclusions: Umbilical vessel catheters are often malpositioned. More catheters are positioned too low than too high. X-ray images are important for evaluation and, if necessary, correction of the catheter position to reduce risk of thrombosis and circulation disturbances.

## PP113

## RISK FACTORS FOR POSTNATAL EVOLUTION IN EXTREMELY LOW BIRTH WEIGHT INFANTS FROM BIHOR COUNTY, ROMANIA

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Introduction: The life of the surviving prematures with extremely low birth weight is impaired by numerous complications.

Purpose: The description of the surviving extremely low birth weight newborn's postnatal evolution.

Material and method: The subjects were 168 newborns, representing all extremely low birth weight preterms born in Maternity of Oradea, Bihor, between 2000 and 2008. We compared the surviving preterm infants' features with the deceased ones. Data was obtained from case report forms and statistically processed with MedCalc program.

Results: Survival rate among the studied infants is 61.31%. It is more frequently noted in girls (OR = 2.56; 95% IC = 1.35–4.85). Gestational age is significantly shorter in deceased newborns' case (27 ± 1.31 weeks, vs. 28 ± 1.57 weeks; $P = 0.04$). The risk for death is higher in infants weighing <799 g at birth (OR = 1.65), it decreases progressively to 1.29 when birth weight is between 800–899 g, and it is null if birth weight is above 900 g. The average admission period is 47 ± 36.18 days (limits 32–1121 days). The survivor infants remain significantly more days in hospital ($\chi^2 = 160$, $P < 0.0001$). All the surviving preterm infants developed complications: respiratory (100%), anemia (70%), neurological (56%), retinopathy of prematurity (22%), cardiac (21%). Pulmonary and intraventricular hemorrhage always lead to death (OR = 204) while respiratory distress syndrome, apnea, hypothermia, metabolic acidosis, cerebral edema, periventricular leukomalacia represent less important risk factors (OR = 1.25).

Two thirds of the preterm infants required at least one blood transfusion.

Conclusion: The most important risk factors for death in the extremely low birth weight infants' case are: the shorter gestational age, the lower birth weight, male gender, pulmonary and neurological complications.

**PP114**

## PERITONEAL DRAINAGE VERSUS LAPAROTOMY FOR PERFORATED NECROTIZING ENTEROCOLITIS OR SPONTANEOUS INTESTINAL PERFORATION: A RETROSPECTIVE COHORT STUDY

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Introduction: Perforated necrotizing enterocolitis (NEC) and spontaneous intestinal perforation (SIP) in preterm infants are associated with high morbidity and mortality. The optimum surgical management during the acute stage remains unclear.

Objective: To compare the outcomes of preterm infants (gestation at birth <30 weeks) with perforated NEC or SIP undergoing primary peritoneal drainage versus laparotomy.

Methods: Retrospective cohort study (January 2004–February 2010). Initial search of hospital database followed by review of the medical records was done to identify eligible infants. Thirty-nine infants were included in the study. Information regarding the baseline characteristics and outcomes of interest were recorded using the medical charts, radiology and laboratory databases. NEC was differentiated from SIP based on radiological, operative and clinical findings retrospectively for this study.

Results: Among 39 infants, 19 underwent primary peritoneal drain (PD) while 20 had primary laparotomy. Gestational age and birth weight were similar between the two groups. The composite outcome of mortality before discharge or hospital stay longer than 3 months post term was significantly worse in PD group as compared to laparotomy group (74% vs. 40%, $P = 0.038$).

Conclusions: Infants undergoing peritoneal drainage appeared to have increased risk of adverse outcomes compared to laparotomy. More randomised controlled trials are necessary to confirm these findings.

**PP115**

## UNUSUAL ULTRASOUND FINDINGS IN NEONATES: LENTICULOSTRIATE VASCULOPATHY (LSV)

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Introduction: Small basal ganglia arteries are difficult to distinguish from the brain parenchyma in ultrasound scans of healthy infants. Bright linear 'branched candlestick' stripes in these regions have been well described and were defined as lentriculostriatevasculopathy (LSV). Its etiology is unknown but pathologic examination reveals basophilic deposits in vessels 'walls'. LSV is considered a nonspecific marker of brain injury. Furthermore, it has been associated with neonatal hypoxia, congenital infections and chromosomal abnormalities.

Purpose: The aim was a retrorespective study of the prevalence of LSV and its associated clinical characteristics.

Material: The patients were 17 neonates out of the total NICU admissions during 2008–2009.

Results: The annual prevalence of LSV was 2.44%, comparable to the literature (2.45%). In 10 neonates LSV could be attributed to a specific cause (CMV infection, trisomy 21, twin-to-twin transfusion syndrome, fetal stress, fetal hydrops). The etiology of the lenticulostriate vasculopathy is unknown.

Conclusion: When LSV is associated with congenital infections, fetal hypoxia and chromosomal abnormalities, the neurodevelopmental development of the infant is poor. Clinical researches proposed LSV as a prediction marker of neurodevelopmental delay, especially when it is of unknown origin and suggest further imagine testing.

**PP116**

## BURDEN OF RESPIRATORY SYNCYTIAL VIRUS (RSV) AND POTENTIAL IMPACT OF PROPHYLAXIS IN INFANTS IN SWEDEN: A COST-EFFECTIVENESS ANALYSIS

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Introduction: RSV is the most common cause of lower respiratory tract infection in young children and may result in hospitalisation, especially in premature infants. Palivizumab reduces RSV-related hospitalisations and provides a prevention option for high-risk infants, but comes at additional costs.

Purpose: The aim of this study was to determine the cost-effectiveness of RSV-prophylaxis compared to no prophylaxis in preterm infants (<29wGA) in Sweden.

Materials/Methods: A simulation model was developed to reflect potential disease sequelae (asthma, mortality) to severe RSV infection requiring hospitalisation. It was populated with country-specific data derived from the literature, national statistics and a register linkage (Swedish Medical Birth, Causes of Death and National Patient Register). Efficacy data were taken from clinical trials. Outcome measures included events avoided, total costs and effects, and incremental cost per Quality-Adjusted Life-Year (QALY).

Results: For a hypothetical cohort of 1000 preterm infants, 67 hospitalizations including eight ICU stays due to RSV-infections occurred in Sweden resulting in hospitalization costs of 10 million SEK during the RSV-season. Prophylaxis in preterm infants could prevent 52 hospitalisations and six ICU visits during the RSV-season. Over a lifetime horizon, 17 cases of asthma could be avoided. Overall, RSV-prophylaxis in preterm infants was estimated to result in 0.10 QALYs at a cost of 20 000 SEK relative to no prophylaxis leading to a lifetime incremental cost-effectiveness ratio (ICER) of 200 000 SEK/QALY from a societal perspective.

Conclusions: Severe RSV-infection in premature infants represents an important cause of morbidity and results in high economic costs. Palivizumab was found to be a cost-effective alternative to no prophylaxis in Swedish preterm infants, under the assumption of a causal link between RSV-hospitalization, mortality and asthma.

## PP117

## DIFFUSE NEONATAL HEMANGIOMATOSIS TREATED WITH PROPRANOLOL

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Introduction: Diffuse Neonatal Hemangiomatosis (DNH) is a rare, and despite treatment, frequently fatal disorder at an early age. Response to systemic corticosteroids is variable while second line medication carries a high risk for adverse effects. Recent case reports suggest a potential role for propranolol in the management of DNH.

Purpose: We describe the case of a DNH treated with oral propranolol.

Material: Physical examination of a female infant at birth revealed a large, $6 \times 5$ cm, necrotic mass of the right upper arm and numerous hemangiomas of various sizes, from pinpoint to 1.5 cm in diameter. Lesions increased in size and number over the first week of life, scattered mainly over the lumbosacral, perianal region and extremities. Visceral sonography was unremarkable. Magnetic Resonance Imaging (MRI) revealed multiple small $<1$ cm lesions in the lung, posterior mediastinum, liver, spleen, kidney and brain with characteristics of capillary hemangiomas. Neurological, ophthalmological, cardiac examination and serum chemistry was normal. The patient was treated with propranolol on a dose escalation protocol with a starting dose of 0.25 mg/kg every 8 h. Vital signs and blood glucose were monitored 1 and 2 h after each dose. If two doses were tolerated the amount doubled up to a maximum of 1 mg/kg/dose.Treatment was well tolerated and an improvement in color was noted within a few days of treatment with a later reduction in size.

Conclusion: Oral propranolol has earned a role as a first-line therapy in the management of infantile hemangiomas over the last 2 years. Early treatment of DNH, especially if five or more organs are involved, and growth arrest of hemangiomas with propranolol, might have a role in preventing fatal complications, such as congestive heart failure, in patients with DNH. MRI evaluation for the potential presence of extracutaneous hemangiomatosis should also be considered in patients with a highly suspected diagnosis of DHN.

## PP118

## LIPIDS AND BONE METABOLISM MARKERS IN PREMATURE INFANTS WITH OSTEOPENIA

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Introduction: According to several studies the lipid profile of preterm infants seems to correlate with metabolic, cardiovascular and respiratory disorders. In addition premature infants are high risk group of neonates for bone metabolic disorders.

Purpose: Purpose of this study is to correlate lipid profile and markers of bone metabolism in premature osteopenic infants.

Material: Fifteen premature osteopenic infants with gestational age $<34$ weeks were examined in the period 2007–2009. Inclusion criteria are described by previous study by Beyers N, et al. All infants should not have any disease to influence bone metabolism, respiratory distress syndrome, congenital abnormalities, intrauterine infection, congenital syphilis, maternal disease or medication that may influence bone metabolism.

Methods: Demographic data (gender, gestational week), somatometrics data (body weight), serum levels of biochemical markers of bone metabolism (alkaline phosphatase – ALP, calcium – Ca, phosphorus – P, magnesium – Mg) and serum total cholesterol – TC and triglyceride – TG were recorded.

Results: The increased ALP ($878.8 \pm 112.89$ IU/mL) and decreased serum P ($4.93 \pm 0.719$ mg/dL) agree with the current literature concerning premature infants with osteopenia. Parametric (Pearson test) and non-parametric (Kendalls test, Spearmans test) correlation tests revealed that both TC ($P = 0.007$ – $P = 0.017/0.015$) and serum Ca ($P = 0.017$ – $P = 0.021/0.023$) are significantly correlated with the weight of the osteopenic premature infant.

Conclusions: ALP, P and weight of infant are essential for the diagnosis of osteopenia in premature infants. Further studies in TC sub-fractions are needed, in order to correlate the lipid profile with bone metabolism markers in osteopenic premature infants.

**PP119**

## MEASURING ECONOMIC CONSEQUENCES OF PRETERM BIRTH – METHODOLOGICAL RECOMMENDATIONS FOR THE EVALUATION OF PERSONAL BURDEN ON CHILDREN AND THEIR CAREGIVERS

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Introduction & Purpose: To identify the impact of preterm birth on financial and emotional burden from the perspective of the family. Additionally, a comprehensive scheme of recommendations for sufficient evaluation of all aspects of burden is developed.

Material & methods: Based on the results of a literature search focusing on multiple aspects of associated burden experienced by parents relevant categories are identified and converted into a research grid for future evaluations.

Results: The results illustrate the large extend of burden of prematurity on parents. This results in substantial out-of-pocket expenditures (OOPE) and emotional distress to parents besides medical problems and further financial costs borne by the health care system. Considering the state of health of an infant, OOPE and emotional distress are inversely related with gestational age. Short-term costs during the neonatal period (mainly for initial hospitalization and associated OOPE, e.g. for transportation, child care or accommodation) can be distinguished from long-term costs after this period (e.g. for re-hospitalization, outpatient visits, medication as well as non-medical costs primarily for transportation, special education or earnings losses of parents). Various studies estimated that non-reimbursed OOPE can amount for up to 4% of families' gross annual income with transportation being the main cost dimension for parents.

Conclusions: The family perspective has to be taken into account when calculating overall costs of preterm births from a societal point of view. For future studies a set of four major categories should be considered: Besides direct medical costs (OOPE for in- and outpatient cost domains), direct non-medical costs may arise for additional transportation, accommodation, special educational needs or care for siblings. Moreover, caregivers may have to reduce other productive activities which lead to indirect costs, such as missed working days. Further problems may arise through intangible costs, in terms of emotional distress and reduced quality of life.

**PP120**

## STROKE IN NEWBORNS

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Introduction: Neonatal stroke is an acute neurologic syndrome due to cerebral injury of vascular origin. The incidence is not well established because many strokes are asymptomatic or present with nonspecific signs or symptoms.

Purpose: To study differences between five cases of neonatal strokes in a general hospital in Portugal.

Material and methods: Retrospective study of medical records of children with neonatal stroke diagnosis between February 2009 and February 2010 in a level II perinatal care unit. Personal antecedents, clinical manifestations, laboratorial and imaging alterations, treatment and evolution were analysed.

Results: Neonatal stroke was diagnosed in three boys and two girls. The pregnancies were all surveilled and the deliveries were non-instrumented in one case, instrumented in 2 and by cesarean section in the other two cases (fetal distress). Apgar score ranged from 3 to 7 in the first minute and 6–10 in the fifth minute. The time of onset of symptoms varied from the 5th hour to the 2nd day of life. Three children had seizures and two had hypotonia and apneas. CT-scan showed signs of hemorrhagic stroke in two children and ischemic stroke in the other 2. The remaining child had seizures in the first day of life though the brain ultrasonography was normal as well as developmental outcome at 6 months; she then repeated seizures and the CT-scan showed signs of ischemic stroke in the neonatal period. Coagulation study was normal in all cases.

Conclusions: Neonatal stroke is an important cause of mortality and chronic neurological morbidity. As in the presented cases seizures are the most common findings and occur on the first day after birth. The systemic signs presented were subtle and nonspecific witch reinforces the importance of early diagnosis to avoid late sequelae and improve life quality.

**PP121**

## WITHDRAWN

**PP122**

## GESTATIONAL AGE, BODY WEIGHT AND BONE METABOLISM MARKERS IN PREMATURE INFANTS: A SINGLE INSTITUTION EXPERIENCE OF NORTHERN GREECE

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Introduction: Premature infants are high risk group for bone metabolic disorders. Factors that may contribute to the pathophysiology of premature bone metabolism disturbances include the lack of calcium and phosphorus in the 3rd semester of pregnancy, placental vitamin $D_3$ imbalances, intrauretine infections and drug overuse (e.g. diuretics).

Purpose: Purpose of this study is to clarify certain aspects of bone metabolism in preterm neonates in Northern Greece.

Material: Forty premature infants with gestational age <34 weeks were examined in the period 2008–2009. Inclusion criteria are described by previous study by Beyers N, et al. All infants should not have any disease to influence bone metabolism, respiratory distress syndrome, congenital abnormalities, intrauterine infection, congenital syphilis, maternal disease or medication that may influence bone metabolism.

Methods: For each neonate demographic data (gender, gestational weeks) and anthropometric data (body weight) were recorded. Double blood sample was obtained in order to estimate the biochemical markers of bone metabolism (serum alkaline phosphatase – ALP, calcium – Ca, phosphorus – P, magnesium – Mg).

Results: The ratio male: female in the premature infants of this study was 2 : 3, with gestational age 30.9 ± 2.98 weeks and body weight 1391 ± 471 gr. Parametric (Pearson) test revealed the significant negative correlation of ALP with Mg in premature infants ($P = 0.038$). In addition non-parametric (Kendalls, Spearmans) correlation results imply the statistically significant negative correlation of gestational age and body weight with ALP ($P = 0.034$ – $P = 0.045$).

Conclusions: Taking account that 90% of serum ALP is bone derived in neonates, ALP level is negatively associated with both body weight and gestational age in preterm infants It seems that very low birth weight preterm infants with small gestational age may have bone metabolism alterations.

**PP123**

## CURRENT NEONATAL PRACTICE RELEVANT TO INCIDENCE AND MANAGEMENT OF NECROTISING ENTEROCOLITIS IN THE EAST OF ENGLAND

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Introduction: Necrotising Enterocolitis (NEC) causes significant morbidity and mortality in the preterm population. 15.8% of neonatal admissions in the East of England received treatment for NEC in 2009. The East of England Perinatal Networks are supporting the development and implementation of an evidence based care bundle as part of a regional approach to reduce the incidence on Necrotising Enterocolitis. As part of this pathway, a more detailed understanding of current practice across our networks was needed.

Purpose: To collect and analyse information, from all East of England neonatal units, regarding current practice relating to potential antecedent factors and the management of suspected and proven NEC.

Materials and methods: Detailed questionnaires containing forty-five questions seeking information on: education and training, feeding practices, dietetic support, preparation of milk feeds, use of antibiotics and other medications and any other additional pertinent information were completed by all seventeen neonatal units in the region.

Results: Of the 17 units, 10 (58.8%) have a formal enteral feeding guideline, 7 (41%) have some neonatal dietetic support and 15 (88.2%) have a milk kitchen on the unit. One unit has a donor breast milk bank and four other units buy donor breast milk.

There are differences in the length of time babies being treated for NEC, are kept nil by mouth (7–14 days). The timing of commencing feeds, volume and frequency of trophic feeds, the interval between feeds and the rate of increasing feed volume in the at risk population varies widely in the region. There is also considerable variation in methods of preparing milk feeds including the addition of fortifier, defrosting milk and time-frames for use of defrosted milk.

Conclusion: There are significant differences in current practice in the region. Through implementation of the care bundle, we aim to unify practice across the network and reduce our incidence of NEC.

**PP124**

## ADMINISTRATION OF ENDOTRACHEAL SURFACTANT VIA LARYNGEAL MASK: EIGHT CASES

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Introduction: administration of surfactant (SF) in babies ≥30 weeks' gestation often requires prior sedation. Laryngeal mask (LMA®) is a device that allows to get air into the airways without tracheal intubation.

Purpose: To administer SF via LMA in babies that were both energetic and ≥30 weeks' gestation and suffered moderate respiratory distress syndrome (RDS).

Patients and method: RDS, diagnosed by clinical and radiological criteria, was defined moderate if required 30–50% oxygen in nasal-CPAP. Porcine SF (Curosurf®) at the dose of 200 mg/kg was given as a bolus directly with a syringe in the tube of LMA and then we awaited until the baby made a breath and directly inhaled it. Manual bag ventilation with the same gas mixture used before SF was then conducted for 30–60 s. The baby was subsequently shifted again to nasal-CPAP, reducing FiO2 if transcutaneous SatO2 was over 96%.

Results: We treated eight patient with g.a. 30–38 weeks. In all case we could observe an immediate increase in PaO2 but not as sustained as after the usual endotracheal administration; anyway a slow progressive improvement of gas exchange was seen. In two cases re-treatment with SF (100 mg/kg) was necessary after 6–12 h and it was given by conventional intubation. During administration in the first three cases we recorded transient bradycardia and cyanosis. For such a reason atropine was administered with success in the remaining cases to avoid any vagal reflex. Radiologically the improvement was more rapid in the right lung than in the left one.

Discussion: These first data suggest administration of SF via LMA: (i) is feasible and effective in babies ≥30 weeks' gestation; (ii) is better distributed to the right lung, as physiologically do any inhalation of substance; (iii) gives a slower response. Atropine resolved problems observed during administration. No sedation was required.

**PP125**

## DESCRIBING THE KNOWLEDGE OF PARENTS ABOUT NEWBORN SCREENING

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Introduction: Screening is generally consider part of the routine care for newborns. Newborn screening for phenylketonuria (PKU) has been available since the early 1960s. The fist newborn screening for PKU started in Ankara in Turkey in 1986 and extended countrywide in 1993. PKU rate in Turkey occurs 1 in 4000 newborns because of consanguineous marriage. Consanguineous marriage rat in Turkey is 21%.

Purpose: This research was planned to describe the knowledge of parents about newborn PKU screening. A questionnaire was used to gather the data. To determine the effects data were evaulated by using chi square test and percentage analysis on the SPSS 11.0 program package. The study was performed during the period of January 2005 and March 2005 in a University Hospital and 150 mothers in postpartum period were included in the research. The questionnaire was obtained by face to face technique.

Results: The mean age of mothers was 26.49% of mother were graduated basic school. 74.7% of mother were house wife. 68% of mothers were primipara. 47% of mothers stated that the test was 'a IQ test'. Sixty-four percent of mothers didn't know how to execute the test. 69.3% of mothers didn't know how long to continue the test. 61.3% of mothers didn't know how to learn the results of the test. Although 99.3% of newborns were seem to be physically healthy, it was stated that postpartum screening tests should be applied. Considering this results, in order to inform the mothers about the obtained results, a PKU education brochure was prepared and given to the unit.

Conclusions: Nurses who understand the pathophysiology and management of PKU in pregnancy can provide the care necessary for maternal and neonatal health. Healthcare providers are responsible for informing parents about the implications of newborn screening to improve awareness and understanding.

**PP126**

## THE RISK FACTORS OF INTRAUTERINE GROWTH RETARDATION DEPENDING ON THE GESTATIONAL AGE

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Introduction: In the last years there's a tendency to increment of number of cases in intrauterine growth retardation (IUGR). On average every tenth baby is born underweight. The formation of IUGR is conditioned by many factors as maternal, fetus and those of placenta.

Purpose: To determine frequency extragenital and pregnancy pathologies leading to IUGR depend on the gestational age.

Material and methods: One hundred and forty-two women are inquired. The first group includes 80 (56.3%) women with aggravating pregnancy and IUGR, the second -29 (20, 4%) women with aggravating pregnancy but without IUGR. The third group includes women with physiological development of pregnancy. Depending on gestational age each group is divided into two subgroups. The subgroup A includes women with premature inter-

 

ruption of pregnancy. The subgroup B takes in women whose pregnancy ended in time.

Results: In obstetrical anamnesis women of the subgroup B have experienced abortion (20.8%) meanwhile the subgroup A includes high frequency in birth of underweight babies.

From somatic diseases in both groups can be met the diseases of urinary tract system (1A- 41.2%, 1B – 41.7% 2A – 31.3%, 2B – 42.9%).

The women included by the subgroup 1A had complications caused by development of anaemia during pregnancy at the same time with nephropathy (70.6%). In the subgroup B anemia was met among 87.5% and 18 of them it was the main cause of IUGR. In the subgroup B nephropathy is encountered in 5.6% of cases.

Taking into consideration the frequency that nephropathy is met there are significant differentiations between the subgroup of women with IUGR and indices of analogical subgroup of the second group ($P_{2A} < 0.01$, $P_{2B} < 0.05$).

In the 1A subgroup in 29.4% of cases nephropathy had complications caused by preeclampsia that is significantly higher than in 1B subgroup (4.2%).

In structure of causes of IUGR in premature pregnancy on the first place was danger for interruption of pregnancy that was met in 43.7% of cases and was accompanied by exfoliation of placenta in 37.5% of cases (8.3% and 5.5% accordingly in 1B).

Conclusions: Hard course of nephropathy endangered by interruption of pregnancy equally with IUGR leads to premature interruption of pregnancy which in its turn worsens perinatal outcomes.

## PP127

## SERUM PROCALCITONIN AS A MARKER FOR THE DIAGNOSIS OR PREDICTION OF SEVERITY OF NEONATAL SEPSIS: A SYSTEMATIC REVIEW OF THE LITERATURE

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Introduction: The use of several biochemical markers has been studied with the aim to improve the clinical management of neonates with suspected bacterial infection. Yet, no single laboratory test is considered to reliably predict neonatal sepsis at the time of initial presentation.

Objective: To assess the value of baseline serum PCT for the differentiation between patients with and without neonatal sepsis.

Methods: We systematically searched PubMed, Scopus, and the Cochrane Library for studies evaluating PCT in neonatal sepsis. PCT measurements had to be performed at the initial presentation of patients with suspected neonatal sepsis, before the administration of antibiotics, using neonatal blood samples.

Results: Overall, 29 studies eligible for inclusion, were identified. We focused on the studies evaluating a PCT cut-off value between 0.5–1 ng/mL. Ten of these studies evaluated PCT in clearly defined patients with and without neonatal sepsis. The sensitivity of PCT for the diagnosis of neonatal sepsis varied in the included studies between 57% and 97%; the specificity varied between 50% and 100%. Six additional studies evaluated PCT in patients with and without evidence of severe disease. The sensitivity of PCT for the prediction of severity of neonatal sepsis varied between 76% and 100%; the specificity varied between 62% and 96%.

Conclusions: Baseline serum PCT performed reasonably well as a marker of neonatal sepsis, showing, in the majority of the studies included in this review, good diagnostic accuracy. However, the available data are not strong enough to support clinical decision-making based solely on this test.

## PP128

## PARENTS' EXPERIENCE OF PROVIDING SKIN-TO-SKIN CARE TO THEIR NEWBORN INFANT. A METASTUDY

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Introduction: Skin-to-skin care (SSC) has shown many beneficial effects in neonatal care. Several studies have tried to explore parental experiences of caring for their newborn infant skin-to-skin.

Purpose: To synthesize and interpret the findings from research focusing on parental experiences of SSC.

Method: Meta-study based on 17 original papers with a qualitative design, performed in Brazil, England, Japan, Sweden, South Africa, Uganda and the US 1989–2008. The studies reflect a wide variation in type and duration of intervention: SSC from single occasions to continuously use

The findings were analysed by a qualitative content analysis, in order to find patterns in common and thereby gain a deeper knowledge of the phenomena skin-to-skin care. The method also includes analysing the methodological, as well as the theoretical approach used in the studies, in order to highlight their impact of the results reported.

Preliminary results: The preliminary results shows that SSC from the perspective of parents, is viewed as something concerning the individual parent, the other parent, as well as siblings and extended family. It was found that by SSC the parents had a bonding experience, but were also afraid of hurting the infant. They experienced that they

were important for the infant's recovery and that the infant's wellbeing was enhanced. The fathers expressed that they, at times, felt criticized by the staff when providing SSC. Providing SSC can make mothers ambivalent towards family and household matters. The family dynamics and responsibilities were altered. However, parents also described an increased family intimacy after experiencing SSC.

Conclusion: It is important to care for the whole family. In doing this, health care personnel must evaluate interventions designed to help families achieve goals from the perspective of the individuals, as well as from the perspective of the family as a whole.

# THEME: NEPHROLOGY

## PP129

### HYPOIMMUNE CONDITIONS IN CHILDREN WITH NEPHROTIC SYNDROME

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Introduction: Abnormalities in T-cell regulation of the immune system plays an important role in pathogenesis of primary nephrotic syndrome in children. Character and frequency of hypoimmune conditions and their impact to the diseases progression has not established.

Aims of the study: To determine range of changes in cell immunity in children with nephrotic syndrome with different results of immunosuppressive treatment.

Methods: By the non direct immune fluorescence with markers for CD cells (CD3, CD4, CD8, CD16, CD20, CD25, CD38, CD71) subpopulation of lymphocytes determined in 18 children with steroid sensitive nephrotic syndrome and in 14 children with steroid resistant nephrotic syndrome.

Results: Increasing of T suppressors and decreasing ratio of $T_h/T_s$ noted in children with steroid resistant nephrotic syndrome – overall suppressive type of the immune response was found. Decreased level of particular indicators of cell immunity (B lymphocytes and natural killer cells) found in more than 1/3 patients with steroid resistant nephrotic syndrome in comparison with less than ¼ of patients with steroid sensitive nephrotic syndrome. In children with steroid sensitive nephrotic syndrome ratio of $T_h/T_s$ normalized, frequency of cell immunity abnormalities decreased after treatment with prednisolone. In children with steroid resistant nephrotic syndrome ratio of $T_h/T_s$ continued to decrease, frequency of cell immunity abnormalities increased.

Conclusions: Suppressive type of immune response and immunodeficiency condition was distinctive for children with steroid resistant nephrotic syndrome. This may become a basis for justification of prescribing stimulators of immune system.

## PP130

### PULSE CYCLOPHOSPHAMIDE THERAPY IN MESANGIAL PROLIFERATIVE GLOMERULONEPHRITIS IN CHILDREN

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Background: Mesangial proliferative glomerulonephritis (MPGN) occurs in idiopathic nephrotic syndrome. Approximately, 46% patients with MPGN did not respond to steroid therapy but showed a protracted course.

Materials and methods: Thirteen patients with steroid resistant nephrotic syndrome were diagnosed as MPGN. The IVCP was refused by only three parents. There were four patients with initial steroid resistant nephrotic syndrome and six with late steroid resistant nephrotic syndrome. The patients were given pulse IVCP 500 mg/m$^2$ per month for 6 months. The children were followed up monthly for the first 6 months and thereafter once every 3 months. The patients were observed for 4 years.

Results: Seven patients responded after the 4th dose of IVCP; three of them sustained complete remission with no relapses over the 4 years observation period. These three patients had mild mesangial hypercellularity with no IgM deposition. One patient who could not be weaned from steroids and showed late response to IVCP had moderate mesangial hypercellularity with no IgM deposition and continued to be steroid dependent until the end of the observation period. Another two patients showed relatively late response to IVCP; they developed early relapses, became steroid dependent by the end of the 1st year of follow-up and had moderate mesangial hypercellularity; one of them had IgM deposition. There was one patient who could not be weaned off steroids after the 2nd relapse in the 2nd year of follow-up and continued to be steroid dependent; he had mild hypercellularity with IgM deposition. The renal function was normal in all the patients by the end of the observation period.

Conclusion: None of our patients suffered from complications related to IVCP. The infusions were well tolerated. We believe that IVCP is an effective and safe therapeutic modality in the steroid resistant MPGN.

## PP131

### COPING – ISN'T THIS THE FOUNDATION BEHIND WELL-BEING; REVIEW

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Introduction: For several years, there has been a proliferation in coping research across social and behavioural science, medicine, public health, and nursing. The coping process is initiated in response to an individual's appraisal that important goals have been challenged, threatened or lost. From a psychological viewpoint; coping is a process that unfolds in the context of a situation or a condition that

is appraised as personally significant and has taxing or exceeding an individual's resources for coping.

Purpose: The objective of this review is to identify whether coping is actually the foundation behind well-being.

Coping theory and models: Hans Selye's General Adaptation Syndrome (1936) may be thought of as the physiological analogue of the psychological model of coping. Richard Lazarus's theory (1966) had drawn a distinction among three kinds of stress; (i) Harm, (ii) Threat and (iii) Challenge. Research is now also thriving involving the Psychoneuroimmunology (PNI) concept in understanding coping with chronic illnesses. George Engel's Biopsychosocial model (1977) recognized that the autonomic nervous system could serve as an avenue in understanding health and the exacerbation of disease. Folkman's (1997) positive emotions model highlights that the coping process helps restore physiological and psychosocial coping resources.

Discussion: This review asserts that coping is the foundation behind well-being. There are no standard coping models; coping itself requires a definition across disciplines, but to affirm that central to health and disease, the nervous, psychology, endocrine and immune systems must intertwine, especially in children/young people facing a chronic illness such as chronic kidney disease (CKD).

Conclusion: More research is required to produce a physiological definition for coping and efforts should collaborate across disciplines; this is achievable. Unequivocally, coping, adaptation and mechanisms in side with the PNI concept are topics to contemplate in future for further understanding.

Keywords: Coping, Stress, Well-being, Psychoneuroimmunology, Psychology, Nephrology, Review.

**PP132**

## NEAR-INFRARED SPECTROSCOPY OF THE BLADDER: NEW PARAMETERS FOR EVALUATING VOIDING DYSFUNCTION IN CHILDREN

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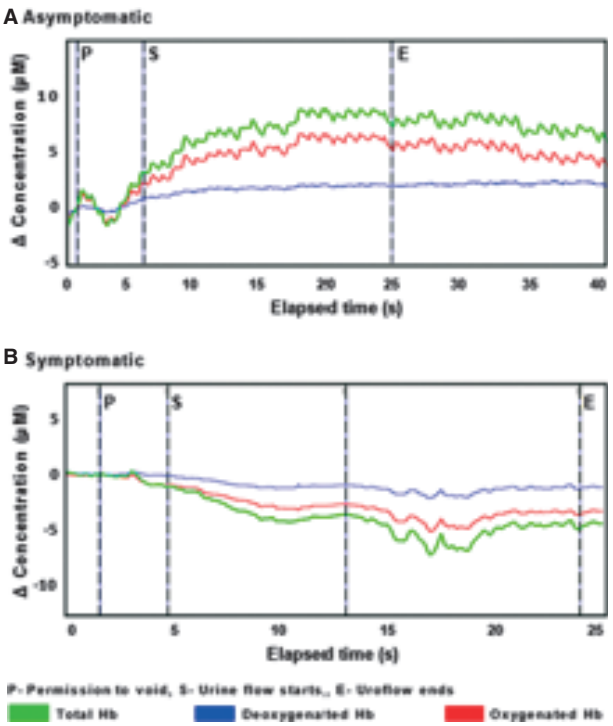
Introduction: Near-infrared spectroscopy (NIRS) is an established non-invasive optical technique that monitors alterations in tissue oxygenation and haemodynamics via changes in chromophore concentration (oxygenated [$O_2$Hb] and deoxygenated [HHb] haemoglobin, and their sum total haemoglobin [tHb]). Recent innovation expands NIRS monitoring to the bladder; adds novel parametersfor evaluating voiding dysfunction that differin health and disease;and includes wireless technology that extendsNIRS monitoring to children.

Purpose: To describe wireless NIRS monitoring of bladder function. Hypothesis: changes in chromophore concentration will differ between asymptomatic subjects and children with voiding dysfunction if altered detrusor muscle hemodynamics/oxygenation underlies symptoms.




Material: Convenience sample: 20 children 4–14 years referred for evaluation of non-neurogenic lower urinary tract dysfunction (NLUTD), five asymptomatic comparison subjects 5–15. Monitoring instrument:miniaturized NIRS-device ($83 \times 52 \times 20$ mm, 84 g) incorporating self-contained emitter/detector interface, light emitting diode light source (wavelengths 760/850 nanometers), silicon photodiode detector, and 'Bluetooth'.

Methods: Data collected transcutaneously at 10 Hz during spontaneous voiding following natural filling with device tapped to abdominal skin over the bladder. Patterns of change in chromophore concentration were compared during three phases of voiding from permission to void through to uroflow end.

Results: Asymptomatic children showed three consistent directional changes: [$O_2$Hb] and [tHb] increased on permission;rose further following uroflow start; and had a positive trend during voiding. Chromophore patterns differed in children with voiding dysfunction: [$O_2$Hb] and [tHb] response on permission absent or blunted; [$O_2$Hb] [tHb] fell following uroflow start; and had a negative trend during uroflow.

Conclusions: During natural voidingdetrusor[$O_2$Hb] and [tHb] increased in asymptomatic children (as occurs in NIRS studies when healthy voluntary muscle contracts); in contrast children with NLUTD showed a fall in [tHb] mainly reflecting decreased[$O_2$Hb]. NIRS muscle data suggests altered detrusor haemodynamics/oxygenation during bladder contraction underlies NLUTD.

# THEME: NEUROLOGY-NEURODEVELOPMENTAL PAEDIATRICS

## PP133

### DIURNAL VARIATIONS OF SEROTONIN AND MELATONIN IN ADHD CHILDREN TREATED WITH PROLONGED RELEASE METHYLPHENIDATE

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Introduction: Recently has been published that children with ADHD and chronic sleep onset insomnia may have a delayed sleep-wake rhythm and melatonin have shown as an effective therapy in this scenario.

Purpose: To examine the diurnal fluctuations and relationship between blood levels of melatonin and serotonin in ADHD patients, before and after PRMPH.

Material: One hundred and seventy-nine children (137 males, 42 females), aged 5–14 years [mean: 9.57 ± 2.6 year], underwent complete diagnostic evaluation for ADHD between September 2007 and May 2010. All have an abbreviated intelligence test (KBIT) combined punctuation >79, and they were free of antecedents of epilepsy and without remarkable sleep problems by anamnesis.

Methods: Groups [(i) Patients diagnosed as ADHD (n = 136); (ii) Brothers of ADHD patients and a few of non-related healthy children (CG, n = 43)]. Blood samples were taken at 09:00 and 20:00 h. In the ADHD group, after 4.53 ± 2.3 months of prolonged release MPH taken daily early in morning, identical study protocol was repeated. All subjects were enrolled after written informed consent. Measurement: by RIA. Statistics: mean, SD, Mann–Whitney test, Wilcoxon test. Funding: Proyecto FIS-PI070603.

Results: 84.7% of the patients improved their psychometric evaluation under MPH, with 31.4% of patient punctuations achievement belonging to CG after treatment.

Conclusions: After treatment serotonin partially restores the diurnal fluctuation seen in the CG. Surprisingly, also the CG subjects (brothers of ADHD group) have diurnal rhythm with greater melatonin values in the morning, suggestive of delayed phase of melatonin rhythm, without significant changes after MPH.

Table 1: For abstract PP133

| | CG | | Pre-MPH | | Post-MPH | |
|---|---|---|---|---|---|---|
| | Day | Night | Day | Night | Day | Night |
| Serotonin | 22.58 ± 19.43 | 14.75 ± 6.04[a] | 16.69 ± 10.6 | 18.98 ± 18.45 | 16.7 ± 8.72 | 15.59 ± 11.92[b] |
| Melatonin | 29 ± 21.36 | 15.11 ± 7.87[c] | 29.17 ± 24.55 | 18.19 ± 20.4[d] | 25.91 ± 20.37 | 21.39 ± 30.38[e] |

Z values: [a]0.019 versus DCG; [b]0.068 versus DPost versus NCG; [c]0.013 versus DCG; [d]<0.00126 versus DPre; [e]0.002 versus DPost.

## PP134

### DIFFERENTIAL RESPONSE OF NEUROSTEROIDS TO CHRONIC ADMINISTRATION OF PROLONGED RELEASE METHYLPHENIDATE BETWEEN ATTENTION-DEFICIT/HYPERACTIVITY DISORDER SUBTYPES

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Introduction: Allopregnanolone (ALLOP) and Dehydroepiandrosterone (DHEA), have important effects on neural function, including cognition, probably inducing increases of dopaminergic and noradrenergic neurotransmission.

Purpose: Examine if the reported increase of these neurosteroids after PRMPH is different between the two ADHD patients subtypes: Attention deficit (AD) and Hyperactivity (H).

Material: One hundred and thirty-six children (106 males, 30 females), aged 5–14 years [mean: 9.57 ± 2.52 year], underwent complete diagnostic evaluation for ADHD between September 2007 and May 2010. All have an abbreviated intelligence test (KBIT) combined punctuation >79, and were free of antecedents of epilepsy.

Methods: Patients were classified in two groups: [(i) AD = Isolated or Predominantly inattentive and (ii) H/CD = Isolated or Predominantly hyperactive-conduct disorder] based on the EDAH scale score (Spanish validation of the Conner's modified scale for ADHD), after meeting DSM-IV criteria for ADHD. Blood samples were taken at 09:00 and 20:00 h. After 4.53 ± .2.3 months of prolonged release MPH taken daily early in morning, identical study protocol was repeated. All subjects were enrolled after written informed consent. Measurement: DHEA by RIA, ALLOP by ELISA. Statistics: mean, SD, Mann–Whitney test, Wilcoxon test. Funding: Proyecto FIS-PI07-0603.

Results: 84.7% of the patients improved their psychometric evaluation under MPH, with 31.4% of patient scores achievement belonging to 'normal' after treatment.

Table 1: For abstract PP134

| | Pre-MPH | | Post-MPH | | | |
|---|---|---|---|---|---|---|
| | Day | Night | Day | | Night | |
| DHEA | | | | | | |
| AD | 5.49 ± 4.90 | 3.84 ± 3.3 | 5.03 ± 3.18 | Z = −1.2, *P* = 0.229 | 3.66 ± 1.85 | – |
| H/CD | 4.93 ± 5.27 | 3.74 ± 2.76 | 7.02 ± 9.64 | | 3.76 ± 3.28 | |
| ALLOP | | | | | | |
| AD | 11.91 ± 5.68 | 12.36 ± 9.26 | 24.03 ± 13.91 | Z = −2.52, *P* = 0.012 | 18.52 ± 14.44 | *Z = −2.2, P = 0.027* |
| H/CD | 12.74 ± 11.5 | 11.21 ± 8.83 | 13.63 ± 8.68 | | 13.31 ± 11.15? | |

Conclusions: The differential response to MPH are in concordance with experimental evidences of dissociable effects of pharmacologic manipulations on attention and impulse control (Davies et al, Biol Psychiatry 2009), and may be a marker disease, of hyperactive type for DHEA, and of the inattentive type for ALLOP. Both neurosteroids may share a protective effect on the expression of ADHD symptomatology.

## PP135

## THE EFFECT OF FETAL VALPROATE EXPOSURE ON MEMORY FUNCTIONING IN SCHOOL AGED CHILDREN

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Introduction: Women with epilepsy are usually advised to continue taking anti-epileptic drugs (AEDs) throughout pregnancy. Compared to other AEDs, children exposed to sodium valproate *in utero* have higher rates of birth defects and reduced intellectual abilities. The long-term effect of fetal valproate exposure on other cognitive skills has been poorly characterised.

Purpose: The aim of this study was to investigate memory functioning in school-aged children who were exposed to valproate during pregnancy.

Subjects: One hundred and four school-aged children (aged 6–8 years) exposed to AEDs *in utero* participated in the study. Children with birth malformations were excluded.

Methods: Information on AED exposure was collected prospectively. Children underwent a neuropsychological assessment that included standardised memory measures. Ethical approval for this study was obtained from the Royal Children's Hospital and Monash University, Melbourne, Australia

Results: Forty children had been exposed to valproate *in utero*. Children exposed to valproate scored significantly lower than children exposed to other AEDs on a story recall task ($F_{(1,99)} = 7.65$, $P < 0.01$) and a list learning task ($F_{(1,101)} = 7.25$, $P < 0.01$). Delayed recall was significantly reduced ($F_{(1,101)} = 6.27$, $P < 0.05$) and was susceptible to retroactive interference. Valproate dose was negatively correlated with verbal learning ability ($r = -0.41$, $P < 0.01$). A regression analysis showed that valproate was a significant predictor of verbal learning ($\beta = -0.24$, $P < 0.01$) and delayed recall ($\beta = -0.22$, $P < 0.05$). There was no effect of valproate exposure on measures of visuospatial memory.

Conclusions: Preliminary findings suggest that children exposed prenatally to valproate have an increased risk of poor learning and memory skills. Verbal memory skills appear to be more severely affected than visual memory skills. Higher doses of valproate appear to pose a greater risk to memory functioning. These data have significant implications for care of children exposed to AEDs *in utero* as well as care of affected women.

## PP136

## SLEEP DISORDERS IN CHILDREN WITH ADHD: A CASE-CONTROL STUDY

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Introduction: There is a growing interest in sleep disorders (SD) associated with Attention-Deficit/Hyperactivity Disorder (ADHD). The etiology of these SD is multifactorial. Parents commonly report sleep onset insomnia, nocturnal awakenings and restless sleep.

Polysomnography has failed to find consistent results. Recent studies haven't verified differences in sleep

 

variables between children with or without stimulant medication.

Purpose: Determinate the prevalence of SD in children diagnosed with ADHD and on stimulant medication followed in a tertiary pediatric neurology centre, while comparing the results with a control population.

Describe existing comorbidities in these children.

Material and methods: Case-control study by applying a sleep questionnaire to parents of 60 children with ADHD medicated with stimulant drugs (random sample retrieved from a 338 patient population) and 30 normal children.

Results: Forty-six questionnaires were concluded with a clear predominance of males (88%), age being 12(±5.8) years old. A median of 9 h of sleep was registered. The majority initiated methylphenidate therapy at 6–10 years of age and only 13% had transitory sleep disturbances in the initial period.

Seventy-six percent of children presented SD prior to beginning medication and 72% maintained them afterwards.

The most common SD were restless sleep (39.1%), sleep onset insomnia (26.1%) and difficulty waking in the morning (19.6%). A statistically significant association was found between ADHD and restless sleep ($P = 0.001$).

Comorbidities found in the study population were oppositional-defiant disorder (n = 5), tics (n = 2) and severe anxiety disorder (n = 1).

Conclusions: The most prevalent SD in this study are consistent with recent studies. Although the relation between SD and ADHD is complex, the authors highlight the importance of this diagnosis as well as the implication existing comorbilities may have in the SD itself.

## PP137

### NEUROLOGIC COMPLICATIONS ASSOCIATED WITH 2009 PANDEMIC INFLUENZA A H1N1 VIRUS INFECTION IN CHILDREN

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Introduction and purpose: Little is known about the neurovirulence of the pandemic influenza A 2009 H1N1 virus in the paediatric age group. We report the neurological manifestations and outcomes of children with the 2009 H1N1 virus infection who presented to Evelina Children's Hospital, a tertiary children's hospital in London.

Methods: Hospital data of all children hospitalised with the 2009 H1N1 virus infection from April to December 2009 were reviewed. Children with associated neurological manifestations were included in the series. Children with underlying disabling neurologic conditions were excluded.

Results: Five children aged 2–10 years were identified. All five patients had respiratory symptoms up to 7 days before the onset of neurological symptoms. One child presented with seizures and ataxia and the other four presented with encephalopathy (three of them also had seizures). Some neurological manifestations resolved including: One patient with ataxia, one with neuropsychiatric manifestations and two with movement disorders. All patients had H1N1 influenza viral ribonucleic acid detected in respiratory tract specimens although not in CSF. Neuroimaging showed evidence of Acute Necrotising Encephalopathy in one and non-specific white matter changes in the other. Although initial neuroimaging was normal for the other three; interval MRI showed increase signal in a periventricular distribution bilaterally in one and significant cerebral volume loss in the other. All five patients were treated with antiviral therapy and three had intravenous immunoglobulin. Outcomes varied: two recovered fully, three are on anticonvulsants with one having significant neurological sequelae. Significant systemic involvement with cardio-respiratory compromise predicted worse neurological outcome.

Conclusion: Encephalopathy and seizures are the most common neurological presentation associated with pandemic 2009 H1N1 influenza virus infection in children. Outcome is variable and systemic involvement appears to be associated with worse neurological outcome. It remains uncertain which, if any, treatment options can impact outcome.

## PP138

### TREATMENT OF STATUS EPILEPSTICUS IN CHILDREN: 15-YEAR SINGLE CENTER EXPIRIENCE

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Status epilepticus (SE) is one of the most urgent conditions in pediatrics and requires very fast appropriate treatment.

Purpose was to evaluate efficacy of antiepileptic drugs (AEDs) and anesthetic agents in the treatment of SE in children.

Methods: The study included 509 episodes (first and recurrent) of SE in children aged 2 months-18 years (4.3 ± 3.9 years). SE was defined as an acute epileptic condition characterized by continuous seizures more then 30 min. The drug assessed as effective if clinically seizure stopped within 20 min, without recurrence within next 6 h.

The efficacy of AEDs was compared and statistically analyzed by chi-squared test.

Results: After initial clinical assessment, one or more AEDs were administered: diazepam (214), midazolam (313), phenobarbital or phenytoin (127) and in remaining episodes: thiopental, chloralhidrat, lorazepam, propofol, lidocain and levetiracetam. The difference in drug response between first and recurrent SE was found: midazolam in 95.5% first/88.5% recurrent SE, diazepam in 36.6%/5.7%, phenobarbital/phenytoin in 65.1%/54.4%, thiopental and chloralhidrat in 56.8%/72.2%. Midazolam was significantly more effective comparing to other drugs in both groups (first SE: $P = 0.0001$, $\chi^2 = 105.7$; recurrent SE: $P = 0.0001$, $\chi^2 = 105.59$), and also phenobarbital or/and phenytoin comparing to diazepam (first SE: $P = 0.0001$, $\chi^2 = 35.81$ and recurrent SE: $P = 0.0001$, $\chi^2 = 28.6$). Propofol was effective in two of four refractory SE. Lignocain was ineffective in two cases, and slightly improvement by ketamine was observed in three of six nonconvulsive SE. Five of seven cases with serial focal and multifocal seizures responded to levetiracetam.

Conclusion: The most effective drug in SE cessation was midazolam in high doses administered as intravenous injection or continuous infusion. In the cases with prolonged infusion side effects were observed. Phenobarbital, thiopental and phenytoin were also effective but significantly less comparing to midazolam. New AED such as levetiracetam could be good choice in serial seizures.

### PP139

### PROBLEMS OF READING AND WRITING IN ELEMENTARY SCHOOL CHILDREN: PART II. RELATIONSHIP WITH ADHD RATING SCALE

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Introduction: In our preceding study, about 15% of Japanese children in elementary school were found to have some difficulty in reading and writing. Attention deficit hyperactivity disorder (ADHD) is well known to co-occur with learning disorders including developmental dyslexia, but there is little literature on the actual situations in Japan.

Purpose: We examined the characteristics of children with difficulties in reading and writing, using the ADHD-RS-IV school version (ADHD-RS).

Material: We conducted a nationwide study by mailing questionnaires to elementary schools. The questionnaire on reading and writing included eight questions, preceded by the ADHD-RS.

Methods: Approximately 1000 teachers reported on up to four of their students. A total of 3791 school children's data, between grade 3 and 6 was analyzed.

Results: Positive correlation between reading-writing rating scale score and inattention subscale score (Spearman $r = 0.511$) was significantly higher than that of reading-writing and hyperactivity-impulsivity ($r = 0.314$), according to comparison of the two correlation coefficients ($P < 0.001$). In the subgroup encountering reading-writing difficulties ($n = 562$), inattention subscale of ADHD-RS distributed similarly in all grades. The average (SD) inattention score for children with/without reading–writing difficulties was 9.0 (6.8)/1.6 (2.9) in grade 3, 8.0 (6.1)/1.8 (3.4) in grade 4, 9.0 (6.8)/1.5 (3.1) in grade 5 and 8.9 (6.8)/1.4 (3.1) in grade 6. The following three items, 'Has difficulty organizing tasks and activities,' 'Fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities,' 'Avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort,' showed close correlation with worse reading-writing rating scale scores. Children with higher inattention scores were considered to face more difficulty especially in dictation, transcription and reading Kanji (Japanese ideogram).

Conclusion: These suggest that inattention may be a negative factor for achievement especially in reading Kanji and writing overall.

### PP140

### PROBLEMS OF READING AND WRITING IN ELEMENTARY SCHOOL CHILDREN: PART I. NATIONWIDE STUDY IN JAPAN

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Introduction: According to the national survey to school teachers by the Ministry of Education in Japan (2002), 4.5% of children in mainstream elementary or junior high schools have some difficulty in learning despite of normal intelligence. Japanese is orthographically and phonologically different from alphabetic languages. It is suggested that some have difficulty in learning due to problems in basic reading and writing function.

Purpose: We aimed to make clear the general status of problems in basic reading and writing in elementary school children, from a class teachers' point of view.

Material: A questionnaire on reading and writing included eight items was mailed to 100 elementary schools. Primary component of Japanese orthography has phonetic letters (Hiragana) and ideogram, Kanji, so the questions consisted of reading Hiragana (2), reading Kanji (2),

 

reading and comprehension using both orthography (2), transcription (1) and dictation (1).

Methods: More than 1000 teachers reported on up to four of their pupils. Subjects were randomly selected according to their position in the roll book and those without written consent from guardians were excluded. A total of 3833 children's data, between grade 3 and 6 was finally analyzed.

Results: About 15% children in all grades were considered to have difficulty in reading and writing. Boys were twice or more likely to have difficulty than girls, but there was no gender difference in the nature of the difficulties encountered. Problems were remarkable in three items (reading Kanji, comprehension and dictation). There was a positive correlation between reading Kanji words and reading sentences (Spearman $r = 0.572$), and also dictation and transcription($r = 0.534$).

Conclusion: Although the number of boys facing difficulty was large, equal attention and support for girls seem to be necessary when they are in trouble with reading and writing. Difficulty in reading and writing might constantly exist in young childhood.

## PP141

## INFANTILE SPASMS: DEVELOPMENTAL OUTCOME AND PROGNOSTIC FACTORS

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Introduction: Infantile spasms (IS) is a severe infantile epilepsy, commonly refractory to the usual antiepileptic drugs. Due to its usually poor outcome, IS remains an important cause of cognitive deterioration during infancy.

Purpose: Provide a general perspective of IS cases, including seizure and development outcome according to etiology.

Material and methods: Retrospective analysis of medical records of all children treated for IS at a tertiary pediatric neurology centre in an 18 year period (1992–2009), with a minimum follow-up of 1 year.

Results: Nineteen children were included in the study (11M, 8F) with a peak of onset between 3.75 and 6 months (median age of 6 months), age of diagnosis of 7 months and median time lag to diagnosis of 0.25 months.

Etiology was symptomatic in 15, cryptogenic in 3 and idiopathic in 1. Hypsarrhytmia was present in 10. Onset of IS was associated with developmental arrest (4) or regression (11) in the majority of children. Neuroimaging was abnormal in 14 (CT-7, MRI-11, PET-2). A median of 2.5 antiepileptic drugs were tried.

Cessation of spasms was attained between days 4 and 30 of therapy in 10 patients (median of 8 days in this group and 30 days in the total responder population), and electroencephalographic response a median of 13 days later; two of them relapsed. Follow-up had a median duration of 7.5 years (min = 1.0, max = 17.8); 11 patients developed epilepsy (eight symptomatic, three cryptogenic), including six refractory cases and only four (three symptomatic, one idiopathic) have an adequate psychomotor development.

No deaths occurred during the study period.

Conclusions: Our study found a high prevalence of symptomatic cases, which is consistent with published IS series.

Regardless of the therapeutical approach, the outcome of this encephalopathy is poor, as verified in 15 of our patients. Interestingly, three of the symptomatic cases (tuberous sclerosis, cerebral tuberculoma, neuroblastoma) have a normal developmental outcome.

## PP142

## EEG FINDINGS AND CLINICAL FEATURES OF EPILEPSY IN CHILDREN WITH AUTISM

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Introduction: Autistic spectrum disorders (ASD) are neurodevelopmental disorders of unknown etiology, characterized by deficit of social responsiveness, communication deficits, restricted interests and repetitive, stereotyped behaviors. Approximately 20–35% of individuals with autism have a seizure disorder.

Purpose: By reviewing serial EEG findings and underlying abnormality of background and paroxysmal discharges, we wanted to clarify the relationship between any kind of problematic clinical findings and epileptiform EEG abnormality in ASD patients.

Material: Thirty-six patients diagnosed as ASD in early childhood were selected.

Methods: Retrospective review of EEG (including video/EEG) data and independent review of medical record charts were done.

Results: According to DSM-IV-TR criteria 25 children were diagnosed with autism, three with Asperger syndrome, and eight children were diagnosed with PDD-NOS (Pervasive developmental disorder).

Epilepsy was diagnosed in 33.3% of children with ASD referred for EEG. The EEG was abnormal in 63.8% of children. In seven children with autism (19.4%), the abnormal electroencephalogram showed slow background; 16.4% showed generalized sharp and wave discharges, 21.6% showed continuous sharp and waves during slow sleep and 42.6% showed abnormal epileptiform activity with focal onset. The remaining 36.2% of the children had normal EEG.

The 33.3% children with convulsions as the referring symptom had an epileptiform electroencephalogram and were diagnosed with epilepsy.

Conclusions: Intellectual disability is an independent risk factor for higher prevalence of epilepsy. Epilepsy

should be suspected in children in the autism spectrum who have paroxysmal events.

Clinical suspicion for epilepsy should be high if there is a history of convulsion in agreement with other studies showing that nearly all autistic children with seizures exhibit epileptiform activity on electroencephalograms.

Table 1: Seizure type in children with epilepsy

| Seizure type | N = 12 (33.3%) |
|---|---|
| Partial seizure | 5 (41.6%) |
| Partial seizure with secondary generalization | 3 (25%) |
| Generalized seizure | 2 (16.6%) |
| Myoclonic seizure | 2 (16.6%) |

## PP143

## LATE DELIRIOUS BEHAVIOR WITH NOVEL INFLUENZA A H1N1 IN JAPANESE CHILDREN; MILD AUTOIMMUNE-MEDIATED ENCEPHALITIS?

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Introduction: Infection or fever is known to be a common cause of delirious behavior in children. Delirious behavior with influenza usually has an onset within a few days after fever and lasts for <24 h.

Purpose: As we have encountered several patients with novel influenza A H1N1 infection who presented with late-onset and longstanding delirious behavior, we retrospectively evaluated the clinical, radiological and laboratory features to elucidate the possible pathophysiology in these patients.

Methods: Clinical, radiological and laboratory information on patients with influenza A H1N1 infection who presented late onset (later than 3 days after fever) and longstanding (for more than 48 h) delirious behavior was collected.

Results: Five previously healthy Japanese patients (three males and two females, aged from 10 to 15 years) presented with delirious behavior 3–8 days after developing fever, and lasting for 5–14 days. Each exhibited mild to moderate drowsiness during the bouts of delirious behavior. EEG showed high voltage and slow activity in two patients, diffusely in one and bilaterally in the occipital regions in another. Brain MRI was normal. The outcome in the five patients was excellent with no neurological sequela. Autoantibodies against NMDA-type glutamate receptor were found in CSF or serum in three patients so examined.

Conclusions: At least in Japanese children, influenza A H1N1 virus has a tendency to cause late-onset and longstanding delirious behavior. Mild autoimmune-mediated encephalitis should be considered as an underlying cause.

## PP144

## RISK FACTORS OF SUDDEN INFANT DEATH SYNDROME – RISK FACTORS OF INFANT SLEEP DISTURBANCES

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Introduction: Relationship between major risk factors of sudden infant death syndrome (SIDS) and of sleep disorders in the infants was examined in the series of own studies.

Findings: SIDS babies had less developmental stimulation and a less well-organized environment, were less often put to sleep at the same time at night, were less ready for bedtime, and fell asleep more often in the parental bed (Kelmanson, 1993). Future SIDS victims more often woke up from sleep (Kelmanson & Adulas, 2004, 2006). Poorer micro-environmental characteristics were associated with less rhythmic infant behavior (Kelmanson et al., 2002). Other well-known SIDS risk factors are pre-term delivery and infant's low birth weight (LBW). Young LBW infants have longer average total sleep duration, principally due to longer night sleep. Parents of LBW infants more often rated them as sleeping too long and falling asleep while being transported. Although LBW infants were often ready to fall asleep at bedtime, they more frequently needed parents in the room and were more often put into parental bed beforehand (Kelmanson & Adulas, 2002). Maternal smoking during pregnancy is an important SIDS risk factor. The odds ratio on infant bedtime problems, including irregular sleep, associated with maternal smoking during pregnancy, was equal to 2.75 [95% CI = 1.15–6.58] (Kelmanson, 2009). Changes in sleep integrity and altered arousal mechanisms observed in infants exposed to tobacco smoke have been repeatedly implicated in explanations for SIDS. Epidemiological data are indicative that high risk of SIDS is associated with the practice to put baby to sleep in parental bed. Infant–parent(s) bed sharing has been associated with more common maternal reports of disturbed night sleep. Compared with the solitary sleeping infants, mothers of the bed-sharing babies described them as more often struggling at bedtime, sleeping too little, waking more than twice during the night, and requiring parental help to fall asleep after waking. Mothers also re-

ported bed-sharing infants as more frequently suddenly falling asleep in the middle of daytime activities. More common maternal reports on noisy breathing during sleep in the bed-sharing babies compared with the solitary sleeping ones were also found (Kelmanson, 2008).

Conclusion: Risk factors of SIDS and infant sleep disturbances largely overlap. As an attempt to fix sleep problems, some inexperienced parents may try infant-rearing practices that may only aggravate sleep troubles and lead to further increased risk of SIDS, thus giving start to a vicious circle. Health care providers need to be aware of such situations as an opportunity to provide parents with guidance with respect for individual infant and family characteristics.

## PP145

## CHIARI I MALFORMATION. A DIAGNOSIS TO KEEP IN MIND

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Introduction: New onset of neurologic symptoms in a previously healthy adolescent is often distressing for the patient, family and clinicians. The incidence of space occupying lesions and demyelinating diseases in this age group forces Neurologist to keep these diagnoses in mind. However, symptoms overlap several other diseases and clinical evaluation by itself may be insufficient to establish the diagnosis.

Case report: A 15 year-old male presents with a 3 month history of ataxia, right lower limb weakness, dysphagia for solids and intermittent visual disturbances. There is no history of dysphonia, dysphasia, sensitive disturbances, vomits, fever, recent infection or head trauma. He refers sporadic evening headaches without nocturnal awakening since he was younger without recent worsening. A head scan had already been done and was described as normal. On physical examination he has horizontal nystagmus without ocular nerves palsies, hoarse voice, palatal dysfunction, right hemiparesis, generalized hyperreflexia with bilateral aquilian clonus, Babinsky sign, intention tremor, dysmetria and ataxia. Considering the clinical presentation, the initial hypothesis were tumoral or demyelinating lesion of the cerebellum or brainstem. Cranial magnetic resonance imaging showed a Chiari I malformation without hydrocephalus but with upper medullar compromise. He underwent surgical posterior fossa decompression. Two months after surgery there was significant improvement of ataxia and dysphagia with persistence of pyramidal signs.

Discussion: Chiari I malformations often present with a complex clinical picture. Symptoms evolve slowly during early to mid-adulthood. Its protean manifestations cause significant overlap with multiple sclerosis, chronic fatigue syndrome and numerous other conditions. Accordingly the diagnosis of Chiari I is difficult to establish by clinical evaluation alone. Neuroimaging should be considered in patients with cerebellar, brainstem and cervical cord dysfunction. Surgical success is highly correlated with preoperative neurological symptoms and requires long-term follow-up to assess the permanency of the improvement.

## PP146

## OCULAR MYASTHENIA GRAVIS – REVIEW OF THE DISEASE IN A CLINICAL CASE CONTEXT

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Introduction: Myasthenia gravis (MG) is an autoimmune disorder characterized by weakness and fatigability of skeletal muscles. Muscle weakness is due to dysfunction of the neuromuscular junction and MG may be an acquired disorder. When the symptoms of MG are isolated to the levator palpebrae superioris, orbicularis oculi, and the oculomotor muscles, it is referred to as ocular myasthenia gravis (OMG).

Purpose: The authors intend to review the pathology, clinical features, treatment and prognosis of OMG, based upon a clinical case.

Material: Scientific articles and textbooks on OMG, OMG patient file of the Pediatric Neurology department.

Methods: Review of literature on the topic of OMG, correlated with a review of OMG patient case file.

Results: A 2-year-old boy, with no underlying condition, is brought to the pediatric emergency service due to fever and ptosis of the right eyelid.

The mother reports ptosis of the right eyelid on occasion, particularly when the child is febrile and more noticeable as the day progressed. There was also reference to sporadic ocular axis deviation during infancy.

The child was referred to a Pediatric Neurology consultation, after which he started a trial of pyridostigmine, 7.5 mg q5h. The additional diagnostic evaluation included a chest X-ray and serum antibodies against the acetylcholine receptor. The child had a near complete recovery of ptosis within a week, establishing the diagnosis of OMG.

Conclusions: This rare disease depends on a high degree of suspicion, and a careful and systematic approach to the patient. The diagnosis of OMG is strongly suggested by the triad of ophthalmoparesis, ptosis, and orbicularis oculi weakness; however, isolated ptosis and ophthalmoparesis frequently occur. Two thirds of patients with OMG will continue to develop signs and symptoms of weakness of the extremities and other bulbar muscles while a third have pure OMG.

**PP147**

## TREATMENT OF THE PROGRESSIVE NEUROMUSCULAR PLANOVALGUS FOOT DEFORMITY IN CHILDREN AND ADOLESCENTS

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Materials-methods: Twelve patients (17 feet), with neuromuscular flexible planovalgus foot deformity, underwent subtalar arthrodesis using the combined Batchelor-Grice procedure. The etiology of the deformity was cerebral palsy in 9 cases, myelomeningocele in two and cord-tethering syndrome in one. Five patients received bilateral and seven unilateral fusion. The mean age was 10.1 years and the average follow-up was 10 years. The main preoperative complaints were the deformity and the skin irritation. Assessment of the results was based on preoperative and postoperative clinical and radiological criteria. The former were the appearance of the feet, the hindfoot valgus/varus position, skin pressure signs and pain. Evidence of graft fusion and measurement of the talocalcaneal angle on lateral radiographs, as well as the percentage of talar head uncoverage were the radiological criteria taken in a weight bearing position.

Results: Hindfoot position was in neutral position or $<\mathring{5}$ valgus and the appearance was markedly improved on all feet. All grafts were stable and fusion appeared solid in the corrected position. The mean preoperative lateral talocalcaneal angle was reduced from $40.\mathring{7}$ to $32.\mathring{6}$ postoperatively. The talonavicular joint returned to normal and full coverage 100% of the talar head was obtained in all feet, compaired with the mean preoperative uncoverage 61.53%. The gap at the graft donor site filled with new bone, without any upward migration of the lateral malleolus.

Conclusion: The combined Batchelor-Grice subtalar extra-articular technique is easily performed and gives a greater assurance of solidarity than when either of the two procedures is used alone. Supplementary soft tissue operations for restoration of the muscle imbalance and improvement of the foot function may be required, either prior or concomitantly with the fusion in complex paralytic planovalgus foot deformities.

**PP148**

**WITHDRAWN**

**PP149**

## UNUSUAL PRESENTATION OF MYASTHENIA GRAVIS IN THE EMERGENCY ROOM

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Introduction: Myasthenia gravis is a relatively rare autoimmune disorder that remains one of the most challenging medical diagnoses due to the nonspecificity and fluctuating character of the symptoms. Respiratory muscle failure is not uncommon in this disorder, although, in most of the cases it manifests during the late course of disease. We report a case of a 17-years old teenager with respiratory failure as the presenting symptom.

Purpose: Highlight the importance of considering neuromuscular disorders in cases of unexplained respiratory failure.

Case Report: A 17 years old teenager was admitted in Intensive Care Unit (ICU) with acute respiratory failure of unknown origin with need of mechanical ventilation. He had no relevant medical history, until 6 months ago, when he was hospitalized in another ICU with sudden onset of acute respiratory distress, that was interpreted in the context of community acquired pneumonia. Since then, he refers swallowing difficulty, nasal speech and reduced exercise tolerance. The diagnosis of myasthenia gravis was made on the basis of the clinical history and physical examination. Neurophysiological studies and acetylcholine receptor antibodies (AChR) were requested and the results were consistent with the diagnosis of myasthenia gravis. The patient started piridostigmina and oral steroids with slow but progressive recovery.

Conclusions: The most important elements of diagnosis are clinical history and examination findings of fluctuating weakness. Work up for other causes can be exhaustive and expensive, if a high index of suspicion for neuromuscular causes is not present. Due to the unpredictable development of respiratory failure, hospitalization is recommended for most patients with exacerbations or complications of myasthenia gravis.

Myasthenic crisis is a neurological emergency and when suspected and treated, the patient can get back to normal respiratory functions with adequate medical treatment.

**PP150**

**WITHDRAWN**

# THEME: PHARMACOLOGY

## PP151

### PARENTS' OPINIONS AND BEHAVIOURS REGARDING ANTIBIOTIC USE BY CHILDREN

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Introduction: Parents' pressure and expectations regarding antibiotic prescriptions may influence antibiotic prescribing patterns, leading to an increased drug resistance in certain illnesses.

Purpose: To determine opinions and behaviors among parents in Kalamata, Greece, regarding antibiotic use by their children.

Material: Five hundred and thirty-eight adult caregivers, with children 1–17 years old, were the subject of our study.

Methods: A 8-question survey relative with antibiotics use, was distributed and completed by caregivers, highlighting their views and behaviors. Descriptive statistics were calculated for all survey items.

Results: The questionnaire was answered by mothers in 80%, fathers 19% and other caregivers 1%. They believed that antibiotics were appropriate for ear infections (79%), tonsillitis (75%), bronchitis (70%), influenza (21%), rhinitis (12%), colds (6%) and cough (4%). Fourteen per cent of caregivers reported that had previously requested an antibiotic for their child while 44% of children had received antibiotics in the previous year. Twenty-two percent believed that a previous antibiotic prescription had been unnecessary and 12% stated that they do not always agree with their doctors' given treatment. Concerns about antibiotic use were: adverse effects (60%), harm to the immune system (35%), antibiotic resistance (28%) and lack of efficacy (16%).

Conclusions: In the surveyed population a lack of knowledge and understanding about antibiotics indications and their adverse effects were noticed. Disagreements and misconceptions with doctors were also reported. To improve parents' beliefs and behaviors, a better health education program is needed. In that way the judicious use of oral antibiotics will be reduced.

## PP152

### MEDICINES FOR CHILDREN : THE PROACTIVE APPROACH OF THE FIMP-MCRN (FAMILY PAEDIATRICIANS -MEDICINES FOR CHILDREN RESEARCH NETWORK)

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Introduction–purpose: Paediatric clinical trials in children are mandatory to generate data on new drugs as well as on drugs used off-label or for unlicensed indications. The FIMP-MCRN (member of ENCEPP and ENPREMA) was established with the aim of developing competence, infrastructure, networking and education for paediatric clinical trials.

Materials and methods: The FIMP – MCRN have developed and improved its expertise in Phase 3 and 4 clinical trials: observational and epidemiological studies; LTFU, efficacy and safety studies. The FIMP-MCRN took part in most of the important clinical studies conducted in Italy in the last 3 years.

Results: A significant role can be played by the Family Paediatricians with the participation to active pharmacovigilance projects. Epidemiological post-marketing Clinical studies give estimates of the risk of ADRs much more reliable than those resulting from spontaneous reports. The primary objective of FIMP Antibiotics Study was to assess in patients with pharyngotonsillitis and rhinosinusitis the antibiotic tolerability profile after the days of administration. A different, more proactive, approach is needed to use of disease databases (FIMP-Dumbo Othitis Study) and FPI-Sentinel H1N1 Survey.

The FIMP –MCRN contributed to regulatory activities (Paediatric Working Group-AIFA) 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). A systematic analysis was conducted off-label use of medicines for children. It was drawn up an updated list of off-label drugs associated with the availability of scientific evidence. Twenty-nine off-label drugs that are necessary to treat cardiovascular pathologies in children are legitimized by the PWG-AIFA and authorized by the National Health Service.

Conclusions: The FIMP-MCRN has achieved valuable improvements concerning the conduct of paediatric clinical trials with the participation to active pharmacovigilance projects. Some ADRs may be known in their qualitative and quantitative aspect only after successful marketing and use in large unselected populations. Having a proactive approach means to anticipate the possible identification of the problems of safety reducing the risks to the community.

# THEME: PULMONOLOGY

## PP153

### THE EFFICACY OF NEBULIZED SALBUTAMOL, HYPERTONIC SALINE AND SALBUTAMOL/HYPERTONIC SALINE COMBINATION IN FIRST BRONCHIOLITIS ATTACK

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Introduction: The mainstay of treatment in bronchiolitis includes supportive care, maintenance of hydration, oxygenation and follow-up for possible complications. Since the symptoms resemble asthmatic attacks, the first choice becomes nebulized bronchodilators in clinical practice although the place of nebulized bronchodilators in treatment is controversial.

Purpose: We aimed to compare the efficacy of nebulized salbutamol, nebulized hypertonic (3%) saline and salbutamol/hypertonic saline combination in the treatment of bronchiolitis in the emergency department.

Material and methods: One hundred and twenty infants admitted to emergency department for their first bronchiolitis attack were included in this randomised, double-blind, prospective study. Infants were grouped according to the nebulized treatment they received;group I – salbutamol + saline, group II – salbutamol + hypertonic saline, group III- hypertonic saline, group IV – saline.

Results: The mean values of posttreatment breath count per minute, oxygen saturation, corticosteroid usage and hospitalization ratio were not statistically different among the groups. Breath counts per minute were significantly decreased after the treatment in all groups ($P = 0.005$, $P = 0.0001$, $P = 0.0001$, $P = 0.004$, respectively). The mean clinical scores after the treatment were lower in all groups ($P = 0.0001$). In group I, improvement percentage in breath count values and clinical scores were significantly low among infants without the family history of atopy ($P = 0.019$, $P = 0.021$, respectively). Differently, in groups III and IV, improvement percentage in breath count values and clinical scores were significantly high among infants with the family history of atopy ($P = 0.023$, $P = 0.0001$, respectively).

Conclusions: In conclusion, in infants with the history of atopy, improvement percentage of breath counts and clinical scores are higher with nebulized salbutamol + saline treatment than saline and HS treatments. Moreover, nebulized saline and HS improved the breath count and clinical score values in infants without history of atopy. So, salbutamol could be accepted as 'effective' in the first bronchiolitis attack of infants with the history of atopy.

## PP154

### EPIDEMIOLOGICAL FEATURES OF HOSPITALIZED BRONCHIOLITIS

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Introduction: Bronchiolitis is the commonest lower respiratory illness of infancy and early childhood and the most common reason for admission to the hospital in the first 6 months of life.

Purpose: To study the epidemiological features of hospitalized bronchiolitis.

Material: Seventy-eight infants aged 2–24 months who were hospitalized with bronchiolitis, were the subject of our study.

Methods: For each patient who was hospitalized for bronchiolitis from 1st January 2009 to 31st December 2009, was collected information from the clinical notes, about chronological age, sex, ethnicity, date and days of hospitalization. Descriptive statistics were calculated for all survey items.

Results: Of the 78 hospitalized children, 31 (39.7%) were Roma, 30 (38.5) Greek and 17 (21.8) immigrant children. The average age was 7.3 months. 54 (69.2%) were boys while 24 (30.8%) were girls. The median hospital length stay was 5 days with no significant difference depending on ethnicity. A marked seasonal variation was noticed with 47 (60.3%) hospitalized infants during February, March and April. No hospitalization was recorded in August. Twenty infants (25.6%) had been hospitalized for the same reason in the past. Three infants (3.8%) showed severe bronchiolitis and had to be transported to a university children's hospital for further treatment.

Conclusions: The majority of children hospitalized for bronchiolitis was <1 year of age and with a male predominance. High risk period was found to be in late winter and spring season. Roma infants are more prone to bronchiolitis probably due to living conditions.

**PP155**

## EFFICACY OF AN ISOTONIC SMALL DROPLET SIZE NEBULIZED DSCG ON ASTHMA CONTROL IN CHILDREN

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Introduction: Asthma is a small airways disease where chymase-positive mast cells located in the alveolar attachment play a critical role. Recent animal models demonstrated comparable efficacy of disodium cromoglycate (DSCG) to dexamethasone and anti-inflammatory effects via different pathways including antiviral properties. The relative lack in clinical efficacy may in part be explained by the hygroscopic nature of DSCG leading to particle growth and subsequently poor peripheral lung deposition and by less efficient drug delivery systems.

Purpose: The aim of this randomized open labelled study was to investigate the efficacy of an aqueous 1% isotonic DSCG solution (IsoCrom®) on asthma control in children using a perforated vibrating membrane nebulizer (eFlow®) generating droplets with a MMAD of $\sim$3.3 $\mu$m.

Methods: Fifty children (22 girls, aged 10.3 ± 2.8 years) with stable allergic asthma were included in the study. Children were randomized to either inhaled DSCG at a dose of 60 mg/day, administered in three inhalations (n = 27) or inhaled corticosteroids (ICS) without dose adjustments (n = 23), over a period of 6 months. DSCG was inhaled using the eFlow® device, ICS were given by pMDI. FeNO and Symptom scores were assessed monthly, whereas clinical examination, lung function, blood eosinophil counts and serum cortisol level were measured at baseline, 3 and 6 months.

Results: Three children were withdrawn from the study due to asthma exacerbation (2 DNCG/1 ICS). FeNO decreased in the ICS group whereas blood eosinophil count decreased in the DSCG group. Asthma score, beta-mimetic use, lung function and serum cortisol levels remained unchanged in both groups with no differences between the groups for none of the parameters.

Conclusion: With an aqueous isotonic 1% DSCG solution (IsoCrom®) has similar effects on asthma control, symptoms, lung function and FeNO levels as compared to ICS in children with allergic asthma. The isotonic DSCG solution was well tolerated in all children.

**PP156**

## HIGH FREQUENCY CHEST WALL OSCILLATION AND STANDART AIRWAY CLEARANCE TECHNIQUES: RESULTS OF COMPARATIVE STUDY IN PATIENTS WITH CYSTIC FIBROSIS

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Introduction: High frequency chest wall oscillation (HFCWO) is one of methods of chest physiotherapy, which prescribes to clear airways in patients with cystic fibrosis (CF).

Purpose: To compare the short-term effects of HFCWO applied by 'The Vest® Airway Clearance System' with standard airways clearance techniques in patients with CF hospitalized with pulmonary exacerbation.

Material: Patients admitted to hospital who met the inclusion criteria were enrolled. The inclusion criteria were: diagnosis of CF, age ≥5 year, signs of pulmonary exacerbation, previous use of standard airways clearance techniques for at least 6 months, ability to give informed consent. Exclusion criteria were: presence of haemoptysis, pneumotorax, pain in the chest and acute heart failure.

Methods: A 14-days comparative study in two groups was conducted. 1st group received HFCWO, 2nd – routine airways clearance techniques two times per day. Both groups used forced expiratory technique for expectoration. Spirometry was done. Efficacy, comfort and preference to type of therapy were assessed by completing a questionnaire.

Results: Totally16 patients from 5 till 18 years were examined (mean age 10.6 ± 1.7 years), six girls and 10 boys, equally divided on two groups. The change of mean ΔFEV1 predicted between groups was statistically significant (14.5% vs. 9.2%, $P < 0.01$), while ΔFVC and ΔMMEF predicted were not changed significantly. Most of patients from 1st group (6) considered HFCWO method as more effective, four patients – as more comfortable and five patients demonstrated the preference for HFCWO. No side effects were registered.

Conclusions: HFCWO improves respiratory function in CF patients with pulmonary exacerbation by decreasing obstructive component of disorder. The method is well tolerable and is safe.

**PP157**

## PREVENTION OF TRACHEOSTOMY BY EARLY LASER TREATMENT OF HEMANGIOMAS OF THE TRACHEA

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Introduction: Hemangioma is a well-recognized cause of airway obstruction in infants with stridor. In former times tracheostomy was the only way in treating these life-threatening hemangiomas of the trachea.

Purpose: Due, to the possibility to transmit laser light with flexible fibres to the trachea, an early treatment of airway hemangiomas became possible.

Material: We reviewed our experience with the use of laser therapy in treating airway hemangiomas. During the last 11 years (July 1996 until October 2007), 27 infants with airway hemangiomas underwent endoscopic Nd : YAG laser treatment.

Methods: All of the 27 children treated with the Nd : YAG laser, seventeen showed regression of the hemangioma following a single laser treatment, the other ten children required repeated laser treatments. Three children needed artificial respiration for 24–48 h after the treatment.

Results: All of the 27 children could be spared the intervention of a tracheostomy. During the same period of time, we treated four children with subglottic hemangiomas, that were previously cannulated. All children could be decannulated after 1–3 treatments.

Conclusions: If we compare the medical history of these both groups, the preoperative findings prior to tracheostomy respectively the first endoscopic laser procedure where comparable. These show that Nd : YAG laser therapy are effective in stabilizing the airway and prevent tracheostomy.

**PP158**

**WITHDRAWN**

**PP159**

**WITHDRAWN**

# THEME: RHEUMATOLOGY

## PP160

### CHEMICAL SYNOVIORTHESIS IN JUVENILE IDIOPATHIC ARTHRITIS

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Introduction: Chemical synoviorthesis is a commonly utilized procedure in the management of patients with active arthritis in a limited number of joints. It involves the intra-articular administration of a therapeutic agent, such as long-acting corticosteroid. Its use in children is described since 1979. Currently, it is recommended in the oligoarticular form of juvenile idiopathic arthritis (JIA) and also used in the other forms of JIA when arthritis refractory to conservative treatment is present.

Purpose: To assess the efficacy and safety of chemical synoviorthesis in patients with JIA, which had poorly responded to systemic therapy.

Material: Twenty-six patients (six males, mean age 13.4 years) who met the ILAR criteria for JIA (two systemic JIA, 20 oligoarthritis, one RF-positive polyarticular JIA, two RF-negative polyarticular JIA and one psoriatic arthritis) were included in the study. Thirty-seven synoviorthesis were performed from January 2006 to December 2009, using Triamcinolone acetonide (35) or hexacetonide (2).

Methods: A retrospective review of patient's data was performed using a protocol which included demographic information, disease characteristics, evolution and follow-up after synoviorthesis. Microsoft Excel 2003 and SPSS Statistics 17.0 for Windows were used for data organization and analysis.

Results: Mean disease evolution was 27.4 months and mean follow up time was 6.3 years. Relapse occurred in six cases. In the oligoarthritis subgroup, 92.9% of the treated joints showed no inflammatory activity in 24 months versus 62.5% in the other subgroups of JIA. Fifteen patients were considered to be in clinical remission, with a tendency for the oligoarthritis subgroup ($X^2_{(1)} = 5.38$, $P = 0.020$). Complications of the procedure occurred in two cases (subcutaneous atrophy).

Conclusions: Chemical synoviorthesis is a safe and effective procedure for treatment of arthritis in pediatric patients with JIA. Despite small sample size, we found a positive association between the oligoarthritis subgroup of JIA and clinical remission.

# THEME: THEMES ON CHILDREN'S ENVIRONMENTAL HEALTH

## PP161

### PREDICTORS OF VITAMIN D STATUS IN CHILDREN: A GREAT BRITAIN POPULATION BASED STUDY

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Introduction: Vitamin D insufficiency (VID) may result in autoimmune diseases such as diabetes and multiple sclerosis. There is a lack of data on the relative importance of childhood VID predictors.

Purpose: To evaluate predictors of childhood VID by undertaking a secondary analysis of the Great Britain National Diet and Nutrition Survey (NDNS) of young people (YP) dataset.

Material: One thousand one hundred and two YP aged 4–18 years (999 white, 570 male).

Methods: Design: nationally representative survey of YP living in private households in Great Britain. Fieldwork covered 12 months (January 1997–1998). Interventions: interview and record providing information about; dietary habits; physical activity; lifestyle and socio-demographics; and blood sample. Outcomes: Vitamin D deficiency (<25 nmol/L) and VID (<50 nmol/L).

Results: Vitamin D levels (mean = 62.1 nmol/L, 95% CI 60.4–63.7) showed deficiency = 7.4% and insufficiency = 35.1%. Levels were higher for those living between 53 and 59° latitude (compared with 50–53, $P = 0.045$). Dietary intake had no effect on vitamin D status. A logistic regression model showed the following significant ($P \leq 0.05$) associations for VID:

Table 1:

| Predictors | Odds Ratio (OR) | 95% CI |
|---|---|---|
| Age (year) | | |
| (9–13 years) | 2.1 | 1.3–3.2 |
| (14–18 years) | 3.0 | 1.5–6.0 |
| Non-white | 27.1 | 11.2–65.4 |
| Blood test taken Dec–May | 5.9 | 3.9–8.9 |
| On income support | 2.4 | 1.3–4.3 |
| Less than half hour exercise/day | 1.5 | 1.0–2.3 |
| Watches >2.5 h TV/day | 1.5 | 1.0–2.2 |
| Not taking vitamin D supplement | 2.6 | 1.0–6.5 |

Conclusion: We report the high prevalence of childhood VID and a previously under-recognised risk of VID in adolescents. The marked higher odds for VID in non-white children and those on income support suggest these groups should be targeted in preventative strategies. Marked seasonal differences and the association of higher risk of VID amongst children who exercised less outdoors and watched more TV highlights potentially modifiable risk factors. Clearer guidelines for safe sunlight exposure and an increased awareness are needed as there are no recommendations for supplementation in YP.

## PP162

### KEEPING CHILDREN SAFE

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Introduction: Accidents are a leading cause of childhood morbidity and mortality with a peak incidence in 0–4 and 15–19 year olds. In Ireland in 2008, 93 children died as a result of unintentional injury. Accident types in order of frequency were transport, falls, drowning, strangulation, exposure and poisoning.

Child accident prevention should always be a target for improvement. Success is based on implementation of an integrated safety strategy across education, engineering and enforcement. Parental education is the cornerstone in preventing paediatric accidents.

Purpose: Our aim was to assess parental knowledge regarding child safety in an urban Irish setting.

Methods: A random selection of parents of children aged between 1 day and 18 years were recruited from outpatient and mass H1N1 vaccinations clinics, wards and the emergency department of a paediatric hospital during the week 11–18th March 2010. Of 100 parents approached 76 agreed to participate and completed a specifically constructed questionnaire. The questionnaire was designed to collect demographic data on the parents (parental age, gender, educational level, number and ages of children) in addition to their answers to 10 true/false questions (marked out of 100%) on child safety issues. (e.g. Childproof gates are only required at the top of the stairs true/false). Data was then extracted and statistically analysed.

Results: Parental knowledge was hugely varied. The average mark was 70% range (56–95%).

A somewhat shocking finding was that 17% of parents surveyed believed that children were safe when left in the front seat of a car or left lying in a prone position in the cot.

Conclusion: Our study suggests that parental awareness of preventative strategies for childhood injuries is insufficient, yet Ireland has one of the lowest incidences of childhood unintentional injury worldwide. There is room for improvement and by striving for better standards we can save more lives.

**PP163**

## WHAT DO PARENTS KNOW ABOUT INJURY PREVENTION MEASURES

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Introduction: Unintentional childhood injury is the leading cause of mortality and morbidity in children 1–4 years in Portugal. Most injuries occur at home or on road traffic accidents and many are preventable through simple safety modifications. Pediatricians and General Practitioners (GPs) play an important role in educating parents about these injury prevention measures.

Purpose: Describe injury prevention measures (IPMs) used by parents and the frequency of anticipatory guidance (AG) about IPMs for Pediatricians and GPs.

Material: Parents of children from 6 months to 6 years attending a public pre-school completed a written assessment.

Methods: Data collected in questionnaires were analyzed using the Statistical Package for the social Sciences (SPSS), version 17.0 for Microsoft Windows®.

Results: Parents of 245 children (40 months median age) answered the questionnaire. Regardless their school level, 95% considered this subject very important; 99% use car seats and follows the recommendations for children's age and weight; 89% refer to fasten seatbelts adequately all the time. The most frequent IPM's used by parents at home are placing dangerous substances in inaccessible places, verifying toy recommendation for children's age (93% each) and safety bars and cots (79%). Only 37% refer the use of helmet every time in sports practice. Most parents with highest educational level visit the Pediatrician and use less IPMs. Parents with less educational level refer to receive AG almost always or always (25% and 44%), whereas 30% of parents with highest educational levels refer receiving AG rarely and 22% always. Parents whose children go to the Pediatrician consider their knowledge adequate more often than the ones who visit GP's (55% vs. 42%).

Conclusion: Many parents are not using IPMs or receiving AG from physicians for the most common childhood injuries. AG on IPMs use should be a routine on every visit.

**PP164**

## RETROSPECTIVE CASE STUDY OF POISONING IN CHILDREN

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Introduction: Poisoning in children constitutes a major problem which sometimes becomes life threatening especially at lower ages.

Purpose: To investigate the cases of poisoning in children due to drugs or other chemical substances and to analyze the epidemiological data concerning the principal risk factors and the means to avoid them.

Material-Methods: A retrospective case study in a large district general hospital from January 2006 to December 2009. From the archive, on a total number of 6684 admissions, the cases related to poisoning were n = 322 (4.81%).

Results: In the gender distribution of the 322 children admitted (100%), n = 179 (55.5%) boys and n = 143 (44.4%) girls. N = 28 of them (8.6%) were between 3 months and 1 year old, n = 196 (60.8%) 1–3 years old, n = 51 (15.8%) 3–5 years old, n = 16 (4.9%) 7–12 years old and n = 14 (4.3%) 12–14 years old. Relatively to their residence, the study has revealed that n = 134 (41.6%) come from a rural region. According to the analysis, the most frequent causes of poisoning were: Drugs n = 132 (41%) [antipyretic n = 29 (9%), psychotropics n = 21 (6.5%), antihypertensive n = 9 (2.8%), antitossic/mucolytic n = 26 (8%), antihistaminic n = 5 (1.5%), nasal decongestants n = 5 (1.5%), antibiotics n = 8 (2.5%), others n = 29 (9%)]. Petroleum derivatives n = 53 (16.4%) [turpentine n = 33 (10%), gasoline n = 12 (3.7%), Vaseline n = 8 (2.4%)], domestic use agents n = 39 (12.1%) [chlorine 15 (4.6%), detergents n = 17 (5.2%), moth killers n = 7 (2.1%)], cigarette swallows n = 35 (10.8%), organophosphoric esters n = 21 (6.5%) [insecticides n = 9 (2.7%), pesticides n = 12 (3.7%)], ethanol/alcoholic beverages n = 9 (2.8%), ratkillers n = 7 (2.1%), cosmetics n = 5 (1.5%) and others n = 24 (7.5%). On the total number of admissions, n = 69 (21%) were taken away by their parents, n = 243 (75%) remained for almost 2 days and n = 10 (3.1%) were transferred to the closest pediatric I.C.U. due to the severe symptoms.

Conclusions: The greater percentage of poisoning concerns children between 1 and 3 years old, boys versus girls, drugs versus other chemical substances and urban versus rural places. Children are exposed everyday in a large number of substances, which can potentially be harmful. It is necessary that who takes care of them become aware of the possible danger and take all the precautions.

**PP165**

## DOES MATERNAL SMOKING DURING PREGNANCY AND BREASTFEEDING INFLUENCE THE INFANT'S RESPIRATORY TRACT INFECTIONS RATE?

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Introduction: Maternal smoking increases the frequency of respiratory infections in infants.

Purpose: To identify the influence of maternal smoking during pregnancy and breastfeeding on the infants respiratory tract infections rate.

Material and method: A prospective case control analytic study was conducted on 132 smoker mothers infants controlled with 102 non smoker mother's infants. Hospital interviews and general practicer's records provided information. Data underwent statistically methods: chi square test, relative risk, corelation.

Results: Respiratory tract infections were registered in approximately 85% of infants in both studied groups ($\chi^2 = 14.54$; $P = 0.06$). The mothers declared between 1 and 10 episodes of respiratory tract infections. Most frequently noted was the acute rhinopharyngitis, followed by laryngitis, pneumonitis, bronchitis, and acute otitis. There is no significant difference among the two groups ($\chi^2 = 1.76$; $P = 0.77$). In the study group 80 (60%) infants were admitted in the hospital, while in the control group only a quarter needed to be treated in hospital (26 subjects) ($\chi^2 = 36.76$; $P < 0.0001$). Among the smoker mother's infants we identified a significant negative correlation between the respiratory tract infections rate and feeding type ($\rho = -0.18$; $P = 0.04$), weaning age ($\rho = -0.24$, $P = 0.0052$), diversification age ($\rho = -0.26$; $P = 0.0027$), weight at 1 year ($\rho = -0.34$; $P = 0.0001$). Daily smoked cigarette number, nicotinuria and cotininuria are not correlated with this item. The infant's from control group show a significant negative correlation only with the weight at 1 year ($\rho = -0.42$; $P < 0.0001$).

Conclusion: Respiratory tract infections rate is not increased by maternal smoking, but it is influenced by the feeding type and breastfeeding reduces it significantly.

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## DISCOVERING LARYNGOMALACIA

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Introduction: Laryngomalacia is the most common congenital malformation of the larynx. It results from abnormal prolapse of supraglottic structures during inspiration. Symptoms usually appear within the first 2 weeks of life. Its severity increases in up to 6 months. 15–60% of infants with laryngomalacia have synchronous airway anomalies.

Purpose: To expose the airway anomalies and health problems associated with laryngomalacia.

Methods: Five hundred full term babies ≥37 weeks, of both sexes, delivered by different modes of delivery, with birth weights ≥2.5 kg and no history of natal or post-natal complications. Mothers of these babies are of varying socioeconomic standards and from the same community. These babies were diagnosed as having laryngomalacia within the first 4 weeks after birth and were followed up until the age of 1 year. Clinical, flexible nasal and laryngeal scope, radiological and milk scintiscan were the tools used in our assessment for the diagnosis of the most observed airway anomalies and health problems associated with laryngomalacia. One thousand full term babies delivered with normal larynx, almost within the same period of time and from the same community were used as a control.

Results: Laryngomalacia was recognized with significant statistical difference in babies with dacryostenosis, deviated nasal septum, adenoid hypertrophy and gastroesophageal reflux disease. No significant statistical difference was observed in babies with pectus excavatum, cleft lip and/or palate, tracheoesophaeal fistula and choanal atresia.

Conclusions: Laryngomalacia is a common and self-limited disorder. It is associated with different airway anomalies and other complications that are serious and life threatening whilst others are controllable and improve with time. Early diagnosis and counseling mothers on laryngomalacia helps them to understand some of the early symptoms their baby's exhibit, how to deal with them and how to protect them from associated complications.

 