interactions and support improve the outcome of asthma teaching. Therefore, we developed a new teaching concept especially tailored for children and parents, including action plan, asthma quality of life questionnaire and a booklet. It explains in an easy and illustrative way the various symptoms and the classification of asthma. It also advices how to avoid common triggers. Antiasthmatic drugs are described, with emphasis on difference between acute and chronic medication, as well as different inhalation techniques. The teaching sessions for asthmatic children and their parents last 2x90 minutes. It has been worked out by hospital and practice pediatricians, pediatric and specialized nurses, and a physiotherapist to better answer personal needs of children and parents with the following objectives: recognition of asthma attacks, adequate use of medications to avoid emergency visits, hospitalizations and school absences. During teaching sessions, the interaction between families is stimulated and allowing also teaching by peers, which confers a membership and support feeling. Our presentation will detail the working-out and the first experiences with asthma education in Valais. Such an education programme is important to decrease morbidity of asthma in children.

CL12

Recurrent spontaneous pneumothorax: treatment by simple talc poudrage under videothoracoscopy and local anesthesia

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Patient 1: A 14-year-old boy presented with left complete pneumothorax which was drained by a chest tube. However, the pneumothorax recurred every time the drain was clamped. After 8 days of unsuccessful attempts, a videothoracoscopy was performed under local anesthesia. Surprisingly, many blebs and bullae were discovered on both the apical and basal regions of the lung parenchyma. Talc (1 g) was gently sprayed over the visceral pleura. The patient was discharged after 4 days but relapsed 8 days later and was treated by surgical pleurectomy. No skin lesions or signs of Marfan syndrome were observed and alpha 1-antitrypsin deficiency was also excluded. Despite a negative family history for recurring pneumothoraces or renal cancers, Birt-Hogg-Dubé syndrome is suspected and results of FLCN gene analysis are pending.
Patient 2: A 15-year-old boy suffered from left complete neumothorax, successfully drained by a chest tube. Five months later a new pneumothorax occurred controlaterally, on the right lung, and was successfully treated by the same technique, which showed again bullae on the lung parenchyma. Unfortunately, after 11 months the left pneumothorax recurred, requiring wedge resection of the left superior lobe with mechanical pleural abrasion. 3 months later, a third partial left recurrence of pneumothorax happened, successfully controlled by a chest tube. Physical examination suggested Marfan syndrome, no skin anomalies were noted and family history was non inductive for any known relevant predisposing disease. Alpha 1-antitrypsin levels were normal. Echocardiography revealed mitral valve prolapse, furthermore supporting the Marfan syndrome hypothesis. FBN1 and FLCN gene analysis was negative and TGFBR1/2 mutation search is ongoing.
Take home message: Simple talc poudrage under videothoracoscopy is a safe mininvasive technique to control persistent or recurrent pneumothorax, allowing, in case of relapse, to perform surgical pleurectomy with or without bullectomy. Recurrent spontaneus pneumothoraces in children should make one consider a genetic etiology, such as Marfan syndrome or the cancer-prone Birt-Hogg-Dubé syndrome.

CL13

Association between breastfeeding and lung function in childhood

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Aim: It has been postulated that breastfeeding may influence lung development in children, but findings are inconclusive. Some studies reported even a reduced lung function effect in school-age children of asthmatic mothers (Guilbert, AMJRCCM, 2007). We examined this relationship in a large population-based cohort.
Method: Breastfeeding and its duration was recorded at recruitment in 1998 in children from Leicestershire, UK. We performed spirometry (FVC, FEV_1, and FEF50) after several years in a nested sample (N = 1005) of children aged 9–13. Lung function in breastfed and non-breastfed children was compared using linear regression adjusting first for anthropometric factors (height, weight, age, and sex) and then also for potential confounders (birth weight, ethnicity, maternal asthma and parental smoking). Cut-offs of 3 months and 6 months for breastfeeding duration and effect modification by maternal asthma were also tested.
Results: Of the 1005 children in the sample 673 (67%) children were breastfed, 363 (36%) for over 3 months and 222 (22%) for over 6 months; 176 (17%) children had asthmatic mothers. We found no difference between children who were breastfed or not breastfed when adjusting for anthropometric factors: FVC(L) 2.58 vs. 2.62 (p = 0.06); FEV_1 (L): 2.24 vs. 2.27 (p = 0.19); FEV_1/FVC(%): 86.9 vs. 86.3 (p = 0.18) and FEF50(L/s): 2.92 vs. 2,88 (p = 0.45). Results remained similar after adding the confounders to the model (all p >0.37) or when looking at children breastfed for >3 months or >6 months.
There was little evidence for effect modification by maternal asthma (all p-interaction >0.09).
Conclusion: In our dataset breastfeeding was not associated with lung function assessed by spirometry at school age. Importantly, we found no evidence for a harmful effect of breastfeeding in children with asthmatic mothers.
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CL14

Use of NSAIDS compared to paracetamol as potential risk factors for asthma

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Introduction: Use of paracetamol has been associated with an increased risk of asthma in several epidemiological studies. In contrast, it has been suggested that non-steroidal anti-inflammatory drugs (NSAIDs) might be protective (Kanabar, Clin Ther 2007), but data relating to these drugs are scarce.
Methods: Prevalence of asthma and intake of analgesics in the past 2 years were assessed by questionnaire in 2008 in young adults (≥;16 years) diagnosed with cancer between 1976 and 2003 (Swiss Childhood Cancer Survivor Study). In a multivariate logistic regression we analysed the association between asthma and intake of paracetamol only, NSAIDs only or their combination, adjusting for age, sex, cancer diagnosis, cancer therapy and time since diagnosis.
Results: Of the 1293 participants (response rate 68%), 83 (6%) reported asthma and 845 (65%) intake of analgesics in the past 2 years. Of these, 257 (29%) took paracetamol only, 224 (25%) NSAIDs only, 312 (35%) a combination of both and 52 (6%) other analgesics. Adjusted Odds ratios for asthma were 2.2 (95% CI 1.0-4.7; p = 0.04), 1.9 (0.9–4.3; p = 0.12) and 2.9 (1.4–6.1; p <0.01) in those using paracetamol only, NSAIDs only or their combination respectively.
Conclusion: These cross-sectional data in a selected population do not support a protective effect of NSAIDs against asthma, neither taken alone nor in combination with paracetamol. All analgesics were positively associated with reported asthma episodes in the past two years. This can be explained by reverse causation, with intake of analgesics being a result rather than a cause of asthma events. Randomised controlled trials in unselected populations are needed to clarify the direction of causation.

CL15

Validating of the Tucson asthma predictive index in an independent cohort

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Introduction: The loose and stringent asthma predictive indices (L_API and S_API; Castro-Rodriguez AJRCCM 2000), very popular clinical decision rules for children, need external validation. We assessed the predictive performance of the API in an independent cohort and compared it with the simple predictor "frequency of wheeze".
Methods: 3155 3-year old children from a population-based cohort study in Leicestershire (UK) were classified as being at no, medium (L_API) or high (S_API) risk for later asthma. We then compared odds ratio (OR), positive predictive value and specificity of these indices at 7 and 10 years with results from Tucson. Predictive performance was then compared to predictions based only on frequency of wheeze (any wheeze, ≥4 attacks).
Results: Prevalence of L_API and S_API were 33% and 13% in our cohort vs. 24% and 6% in Tucson. In Leicester, children with L_API had an increased risk of asthma (OR 5.2 and 6.3 at ages 7 and 10 respectively). For children with S_API, ORs were 7.7 and 6.7 for ages 7 and 10. These results were comparable to those published for Tucson (OR 5.5 and 2.6 for L_API; 9.8 and 4.3 for S_API). The positive

predictive value for asthma at age 10 was 26% in our cohort vs. 27% in Tucson for L_API, and 37% vs. 42% for S_API. Specificity of S_API was above 90% at both ages in both cohorts. Risk prediction based on frequency of wheeze yielded similar results to L_API and S_API.
In conclusion, performance of the API in the validation cohort was comparable to that in the original study. However, a simpler risk classification based only on frequency of wheeze performed comparably in our population. This highlights the need for improved clinical decision rules.
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CL16

Liver transplantation for inborn errors of metabolism in children: the Geneva experience

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Background: Liver transplantation (LT) is accepted as the treatment of choice for inborn errors of metabolism (IEMs) that are difficult to manage medically or are associated with end-organ damage secondary to toxic metabolites.
Aim: The aim of this study was to evaluate retrospectively the outcomes of the pediatric cohort transplanted in Geneva for IEMs.
Methods: The Geneva transplant registry was queried for LT and IEMs in children. The cohort was then analyzed for demographic parameters, pre- and post transplant variables, and long term outcomes including actuarial survival, associated renal transplant, and special diet post LT.
Results: 16/100 patients required LT for IEMs (16%). Indications were similar to published series from other centers (4 had Wilson's disease = 25%). Median age at transplant was 9 years [0.5–17] in contrast to 1.5 years for the overall cohort. No living-related transplants were performed for IEMs. Actuarial survival was 90 % for the overall cohort (n = 100) and 88% for the IEM cohort (p = ns). There were 2 early deaths owing to acute, non-metabolic complications (12.5%). Median follow up was 8.9 yrs. 2/16 patients with oxalosis (12.5%) required associated renal transplantation. Patients with oxalosis or OTC deficiency were maintained on specific diets post LT with the view to optimize metabolic stability during growth and development. No patient required re-transplantation. Patients requiring phototherapy pre-LT for Criggler Najjar were weaned post LT.
Summary and conclusion: LT for IEM is an acceptable therapeutic option offering good actuarial survival in our center. Further studies are required 1) to determine optimal timing for transplant to minimize the need for combined transplants 2) to establish the necessity for post LT dietary restrictions in patients with IEMs.

CL17

Psychomotor evaluation of pediatric liver transplant recipients and parental assessment before and after transplantation

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Increasing evidence points to psychomotor deficits in pediatric liver transplant (LT) recipients. Parental involvement and family dynamics are important for psychomotor development, and both are challenged in the families of children with life-threatening disease.
Aims: 1) to assess children and parents individually, 2) to assess the parent-child relationship 3) to look for correlations between parental functioning and patient outcome.
Methods: Patients, parents and the child-parent pair were assessed using age-appropriate scales before transplant, 1 year- and 2-years-following transplant. Written and spoken French or German was required. The study was approved by the institutional ethics committee.
Results: Subjects: 21/80 patients participated in the study over 2 yrs. 57% of families were Swiss. Indications for LT were similar to those reported previously. 4 patients were not evaluated pre LT. 19 mothers and 16 fathers were evaluated pre-LT, while only 8 fathers were seen post-LT. Development quotient (DQ): No subjects scored in the 'very good' range. There was an increasing proportion of children with deficits from LT to 2 yrs: 17.6% vs 28.6%. Subjects 0–2 yrs were more likely to have normal DQ at transplant (66.7% vs 50% for older children). Abnormal development was more prevalent 2 yrs post-LT among patients transplanted in the older age group (p = 0.02). Mother-child relationship was measured as normal in 59% of families pre-LT, increasing to 67% at 2 yrs. The trend was more favourable when the child was transplanted as an infant (p = 0.014 at 12 months post LT, P = 0.022 at 24 months post LT). Protective factors for normal DQ: a) higher maternal score pre-LT (p = 0.03), b) diagnosis of biliary atresia at all time points, and c) German or French mother tongue pre-LT. Parents: Mothers' performance score improved from a mean of 59% pre-LT to 71% post-LT. Positive predictors of normal functioning included siblings and a diagnosis of biliary atresia. Employment was predictive of better adaptation at 2 yrs. Fathers scored higher than mothers for performance at all time points.
Conclusions: In this representative cohort, we show that there is a trend toward increasing psychomotor impairment post LT, confirming the findings of others. Novel findings include: parental education has unpredictable effects on DQ peri-transplant, maternal functioning is more severely affected than paternal, and employment and siblings aid in the recovery of maternal functioning.

CL18

A successful intervention to increase immunization and protection in liver transplanted children: tailored recommendations based on serologies

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Despite well established vaccine recommendations for solid organ transplanted patients, children referred for orthotopic liver transplantation (OLT) in Geneva, Switzerland, were not vaccinated optimally. In 2002, new guidelines recommended to base catch-up immunization schedules on serum antibody titers against vaccine-preventable diseases assessed before and after OLT. We measure here the results of this intervention by comparing vaccine coverage and antibody titers in the pre- (1990–2002, P1) and the post- (2003–2008, P2) intervention cohorts. P1 children (n = 44, 57% female, mean age at OLT 4.4yr, range 0.6–16.8yr) and P2 children (n = 30, 47% female; mean age at OLT 4.5yr, range 0.5–16.5yr) were evaluated. At the pre-OLT visit, DT, Streptococcus pneumoniae (SPn) and MMR serologies were checked more frequently in P2 than P1 children (P = 0.001, <0.001 and 0.021 respectively). More P2 than P1 patients were up-to-date for DTaP (70% versus 43%, P = 0.023) and MMR (74% versus 44%, P = 0.049) or had received at least one dose of HBV, HAV, SPn and VZV vaccines (P <0.001, 0.011, <0.001 and 0.029 respectively). In patients to whom pre-OLT catch-up immunizations were recommended, HBV, HAV, SPn, MMR and VZV serologies were assessed more frequently in P2 (P <0.001, <0.001, 0.001, 0.013 and <0.001 respectively). Pre-OLT antibody titers were higher in P2 patients for D, T and Hib (P = 0.007, 0.011 and 0.016 respectively). One year post-OLT, DT, SPn, MMR and VZV serologies were more frequently checked in P2 children (P <0.001, <0.001, <0.001 and 0.159 respectively). Antibody titers were higher in P2 for D, T and HAV (P <0.001, 0.008 and 0.009 respectively). Confounding factors such as gender, age at OLT or diagnosis did not explain these differences. Among P2 patients, pre- and post-OLT titers for D, T, Hib, HBV, SPn14 and SPn19 were correlated (P = 0.025, 0.005, <0.001, 0.005, 0.045 and 0.013 respectively); however, there was no influence of pre- or post-OLT titers on titers after post-OLT booster immunization. We couldn't demonstrate an influence of gender, diagnosis, number of vaccine doses before OLT on titers, either after OLT or after post-OLT booster immunization. Protection against vaccine-preventable diseases of high-risk children such as OLT patients may be significantly improved by tailored recommendations using serologies to vaccine-preventable diseases.

CL19

Assessing Accuracy of Interpretation of a Rapid Celiac Assay in a Ward Setting

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Celiac Disease(CD)is a autoimmune condition that can cause several manifestations largely underdiagnosed. To allow faster counseling and treatment, a prospective study has been conducted from April 2008 to December 2009 in a Gastroenterology consultation ward to evaluate the clinical accuracy of screening CD in high risk populations (HRP) using a new point-of-care device.
Methods: Patients were enrolled at the pediatric Departement of the Hospital of Geneva.Local ethical committee approval was granted. Criteria for inclusion, apart from signed informed consent,were clinical symptoms suggestive of CD, known CD under gluten-free diet (GFD) and first degree relatives of CD patients. Intestinal biopsy and genetic profile were performed in all CD patients. A multi-analytic lateral flow immunochromatographic assay (CD-LFIA) based on the detection of both IgA and IgG anti-transglutaminase and total IgA was evaluated. Whole-blood sample results were compared to anti-transglutaminase enzyme linked immunoabsorbant assays (ELISA) and total serum IgA determination.
Results: A total of 122 patients were sequentially submitted for CD testing using ELISA and CD-LFIA devices. A positive CD seroprevalence was found in 17 patients (13.9%) of wich 10 were new CD patients and 7 were known CD with poor GFD. CD-LFIA results