Methods Children aged 1–16 yrs. old from primary, secondary and tertiary care in the Connacht area were invited; recruitment is ongoing; a target of 100 patients has been set. Participants are screened via a detailed telephone consultation using a non-standardised questionnaire to ensure they meet the inclusion criteria: single, non-immediate (>1 hour) skin rash or other symptoms compatible with an allergic reaction after beta-lactam including urticaria or angioedema occurring > 1 hour and persisting > 12 hours. Exclusion criteria are: immediate allergic reaction < 1 hour; or > 1 hour but resolving within 12 hours; cardiorespiratory involvement; multiple antibiotic allergy, atypical/severe drug reaction or IV beta-lactams and insufficiently controlled asthma. Eligible candidates attend an outpatient visit, are confirmed as clinically well, including pre-challenge temperature and cardio-respiratory exam. A single, age-appropriate dose of the causative beta-lactam is administered. Visual assessment is performed every 30 minutes for 2 hours; adverse events recorded and managed accordingly. A 5-day beta-lactam course is prescribed to negative challenge participants. Delayed hypersensitivity and parental satisfaction is assessed via follow up phone-call 6 days post-challenge. Study approval by the hospital clinical research ethics committee was obtained.

Results To date, 76 children (16 months to 15 years) have been enrolled; 59 have undergone pre-challenge screening; with skin rash being the main indication (53/59, 90%). Six/seventy-six (8%) were excluded, one withdrew; 17 children are from secondary care, 55 from primary care, 4 self-referrals. Twenty-five children have completed the challenge (24 amoxicillin, 1 flucloxacillin) with no reactions. Parents reported high satisfaction with the challenge process and confidence in using a beta-lactam antibiotic in the future.

Conclusion This study demonstrates that performing a streamlined, single dose, oral challenge to low risk patients in an outpatient setting is feasible, safe and acceptable to participants. This method may be reproducible in primary care.

GP5

THE IMMUNOGENETICS AND RISK FACTORS OF POLLINOSIS AMONG RUSSIAN CHILDREN. CASE-CONTROL STUDY

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Background and aim Pollinosis is an allergic disease that manifests during spring or summer with symptoms of allergic rhinitis, conjunctivitis, asthma and atopic dermatitis. In Russia the most common reason for pollinosis is birch and grass pollen. Since pollinosis is a multifactorial disease, the aim of this study was to investigate the association between polymorphic markers of candidate genes and the development of the disease.

Methods and patients The genotypes of polymorphic markers of genes-candidates (IL4, IL4R, IL13, IL33, IL6, TLR4, MMP9) were examined by Real-time PCR for a group of

131 children 5–17 y.o. (average age 10.9, 81 boys and 50 girls) with pollinosis and for a control group of 78 healthy children. 86% of children with pollinosis had any family history of allergy, 58% had one allergic parent (33% - allergic mother, 25% - allergic father); 20% had both allergic parents; 51% had some family history of pollinosis. 75% of patients had atopic dermatitis while being toddlers. The average age of pollinosis debut was 4.9 ± 2.8 . The diagnosis of pollinosis was confirmed by the positive skin prick tests or by high level of specific IgE to tree or grass pollen in blood serum.

Results We reveal a statistically significant association of the rs1805010 of IL4R gene with pollinosis. The children with GG genotype of rs1805010 had increased risk of pollinosis compared with healthy controls ($P = 0.010$; $OR = 3.73$; 95% CI, 1.24 – 11.28). Moreover, there was a tendency to increase the allele C frequency of the rs1805015 of the IL4R gene in children with pollinosis ($OR = 1.81$, $p = 0.040$). No significant association was found with other polymorphisms.

Conclusion The results of the present study revealed an association of cytokine gene polymorphism IL4R rs1805010 with pollinosis. Our results indicate a high predictive value of this polymorphic marker for the development of pollinosis in Russian pediatric population.

GP6

POOR CONTROL OF ALLERGIC DISEASE AMONG ADOLESCENTS

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Background The prevalence of food allergy in adolescents varies with estimates of 2.3–4.5% in different populations (1,2). This group are a vulnerable population. They are at greater risk of fatal anaphylaxis and fatal asthmatic episodes. In Ireland, they have a potential further risk in that most have not had an opportunity to see an allergist through childhood due to extremely limited access.

Aims To examine the presence of risk factors for poorly controlled allergic disease identifiable in adolescent patients on the routine waiting list (WL) in the allergy department.

Methods Adolescents attending their first allergy clinic appointment who were on the routine outpatient WL were included between September- December 2017. Clinical data pertaining to each adolescent's allergic disease was collected at this appointment. A scoring system was utilised to numerically grade the cause for concern for each adolescent after review in clinic. A 1A point was awarded for each major concern identified and a 1B point was awarded for each moderate concern identified.

Results Data was collected on 17 adolescents over the 3-month period. The primary reason for referral in all patients was investigation of food allergy. Ten were referred by GPs, 5 by general paediatricians and 2 by dermatologists. 15/17 adolescents had between 1–3 criteria for major concern; uncontrolled asthma ($n=6$), recurrent reactions while on the WL ($n=11$), anaphylaxis while on WL ($n=3$), no AAI prescribed ($n=4$). 14/17 had criteria for moderate concern; not carrying a prescribed in date AAI ($n=9$), poorly controlled allergic rhinitis ($n=10$), social isolation ($n=3$). The highest score was 3A + 1B in 2 adolescents.

Conclusion This study shows that adolescents are at significant risk of allergic reactions, uncontrolled asthma and recurrent food reactions prior to review by a specialist allergist. 10/17 (59%) had a reaction while on the WL. Three cases were anaphylaxis. This study has prompted design of a specific information leaflet for GPs referring adolescents to the allergy clinic as well as review of criteria for urgent review in clinic.

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GP7

IMPACT OF A SYSTEMATIC RISK BASED ULTRASOUND SCREENING PROGRAM ON OPEN SURGERY RATE IN NEWBORNS WITH DEVELOPMENTAL DYSPLASIA OF THE HIP

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Introduction Early detection of DDH can reduce the surgical morbidity in children. A risk based ultrasound (US) screening criteria was introduced which was audited to assess its impact on open surgical rate.

Methodology All newborns born in the years 2014–2016 referred to the screening US service were included in the study. Screening criteria included breech presentation, Maternal/1stdegree relative History of DDH and Abnormal Clinical Exam. All newborns were investigated and treated with a standardized algorithm. A Comparison group of newborns referred in 2011–2013 was used. Referrals for surgical opinion were done based on abnormal clinical or radiographic findings.

Results 494 newborns 6 weeks or younger were referred in screening group. 268 Patients were treated in harness. 42 were referred for surgical opinion. 17 required surgical treatment. 12 required EUA and arthrogram, 8 closed reduction, 11 pelvic osteotomy, 1 femoral osteotomy and 7 are currently being observed. In comparison prior to screening between 2011–2013 only 81 newborns 6 weeks or younger were referred of which 27 patients required open surgery.

Conclusion There was a significant increase in outpatient but not surgical burden due to introduction of screening criteria. There was a marked improvement in early referrals.

GP8

ASSESSMENT OF NEW POTENTIAL BIOMARKERS OF INFLAMMATION IN CHILDREN WITH COW'S MILK ALLERGY

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Introduction Cow's milk allergy (CMA) is a frequent food allergy in young children. In some children allergy symptoms persist for many years, that is why searching for markers allowing to follow the dynamics of the inflammatory process is still underway. Currently, routinely determined parameters have a limited value in this disease and do not fully reflect all the mechanisms of the inflammatory process. The measurement of proinflammatory factors of various origins may be helpful in both diagnosis and monitoring the effectiveness of treatment in the children with CMA.

The aim of the study was to assess serum concentrations of C-reactive protein (CRP), interleukins (IL-6, IL-10) and tumor necrosis factor- α (TNF- α) in the patients with cow's milk allergy and in the healthy children.

Patients and methods The study included 20 children (aged 3–6 years) with diagnosed cow's milk allergy, who were under systematic medical and dietary control at the Institute of Mother and Child (Warsaw, Poland). Patients had been treated with elimination diet, providing a milk substitute: extensively hydrolyzed formulas (54%) and soy-based formulas (46%). Children with cow's milk allergy had different initial symptoms: atopic dermatitis, gastrointestinal symptoms, and recurrent respiratory tract infections. The control group consisted of 15 healthy children matched for age and sex.

Anthropometric measurement and dietary constituents were assessed in all studied children. Concentrations of serum CRP, IL-6, IL-10, and TNF- α were determined in serum samples by immunoassays. Statistical analyses were done using Statistica software. This study was approved by the Ethics Committee at the Institute of Mother and Child.

Results There were no significant differences in the anthropometric parameters: weight, height and body mass index in both studied groups. Average daily dietary energy and macronutrients (protein, fat, carbohydrates) intake was similar in the children with cow's milk allergy and the controls. No significant difference in serum CRP and IL-6 concentrations between the two groups of children was found. Median value of serum IL-10 and TNF- α were significantly higher ($p < 0.05$) in the children with CMA than in the healthy children: 2.10 (1.85–3.21) vs. 1.54 (1.01–2.01) pg/mL and 12.84 (9.49–14.6) vs. 10.52 (6.94–13.21) pg/mL, respectively.

Conclusion Our data allow us to suggest that IL-10 and TNF- α may be a promising biomarkers in the assessment of inflammation in the patients with cow's milk allergy.

GP9

SKULL X-RAYS IN THE DIAGNOSIS OF ABNORMAL SKULL SHAPES

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Introduction Differentiation between plagiocephaly and craniosynostosis continues to provide a challenge for the clinician. Historically, initial investigations would have included a skull x-ray. However, it is widely accepted that this investigation is difficult to interpret and its value in diagnosis of craniosynostosis is debated. Aside from creating the burden of additional investigations, it also exposes children to ionising radiation.

Aim and Objectives Examine the correlation between reported skull x-rays and clinical diagnosis of craniosynostosis to